

Gravity-defying
DRAGONFLY

p.22

Class up your patio with this
OUTDOOR TABLE

p.25

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magazine



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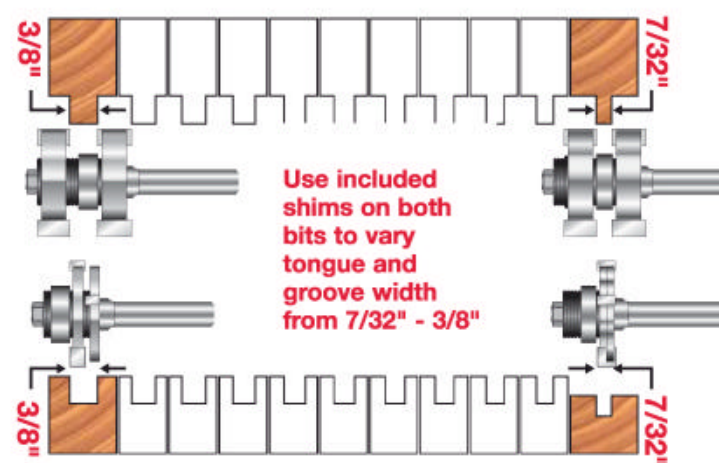
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Apr/May 2023 | Issue 112

30



ON THE COVER



Sarah Marriage designed and built this modern sideboard with tambour doors as a coffee bar for her java-loving brother, Toby.



46

25



22

Features

22 Balanced Dragonfly Sculpture

Striking a fine balance between craft and physics.

25 Slatted Outdoor Table

Thermo-wood and great design make for an elegant outdoor piece.

30 Modern Sideboard

Retro modern buffet with sliding doors.

39 Tambour Technique

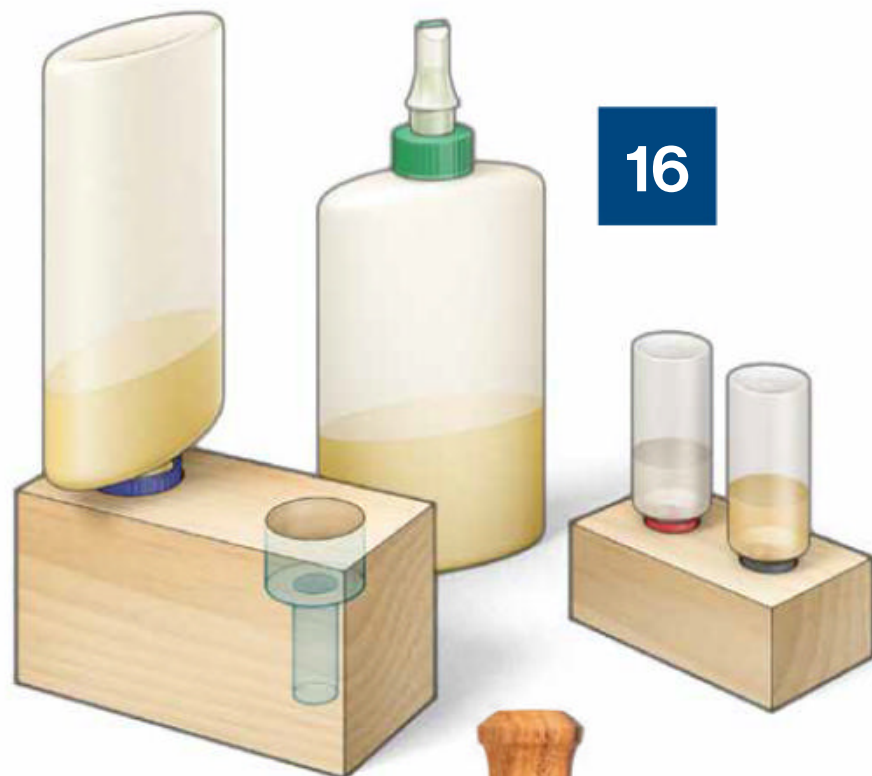
Demystifying the slats and slots of this flexible fabric-backed panel.

46 Bent-Lam Guitar Stand

Curved veneer stacks assembled to hold your favorite "axe".



39



16

Departments

04 Getting Sharp

- Take a walk outside today

06 News & Views

- Open the window
- A big hit
- Back to the garage
- Soitenly!
- Shout outs for shop class

10 Reader Showcase

12 Tool Reviews

- Bobs CNC Revolution

16 Tips & Tricks

- Ergonomic pocket holes
- Shop-made bottoming bit
- Keeping glue at the ready
- Ladder does extra duty

54 Woodsense

- Persimmon

56 Great Gear

- *Chip Carving: Techniques for Carving Beautiful Patterns by Hand*
- Vyper Robust Steel Max Quick Height Chair
- FastCap Original Saw Hood

61 Buyer's Guide/Ad Index



10



54

Contributors



LARISSA HUFF is a woodworker, furniture-maker, and teacher. She designs and builds custom furniture at her studio in Philadelphia, teaches classes at craft schools around the country, and works for the Wharton Esherick Museum. Larissa recently completed a residency at Arrowmont School of Arts and Crafts and a fellowship at the Center for Furniture Craftsmanship. **Read Larissa's technique on page 39.**



ROBERT J. SETTICH has been a woodworking journalist for nearly 30 years, serving as both a staff editor and freelancer. He has authored hundreds of articles on virtually every topic and also provided photography and original project designs. In addition, he's written eight books and produced seven videos. **Read Bob's articles on pages 54 and 60.**



JOHN WEBSTER has been a designer/illustrator for 45 years. He lives in Vista, CA with his wife Claudia, who is also an artist. When they are not creating art they work at their craft brewery, play music, and garden. **See John's illustrations on page 54.**

Take a walk outside today

Nearly every day, especially in warmer weather, I take a walk outside. Usually during my lunch break, I leave my desk or bench behind and head to the woods. Not far from the magazine office is a wildlife refuge with a paved walking path and several well-maintained trails for hiking. So I drive the few short minutes it takes to get to the park and enjoy the fresh air. Reserving this time for myself pays dividends. These daily constitutionals have a whole host of physical health benefits. I get my heart rate up, increase my immune function, and strengthen my joints, to name a few. But they also do wonders for my mental health.

Stepping away and stepping out helps me to recalibrate. I can put things into perspective and shift my mind to other matters, reducing stress all the while. Often, as I'm communing with nature in this way, ideas present themselves, nurturing my creativity. And solutions to problems, woodworking and otherwise, spring up as if they were there all along. A helpful boost to my mood.

Your mood will no doubt improve as you stroll through the projects on the pages ahead. The table on page 25 is designed to be of service outdoors, so you can enjoy nature and your craftsmanship together. Another way to celebrate the natural world is by making the dragonfly (p. 22) with all its gravity-defying wonder. Learn the basics of bent lamination by building a stand for your guitar on page 46. And finally, the modern sideboard (p. 30) with its tambour-teaching technique (p. 39) will keep you plenty busy between your treks.

Walks have been life-changing for me, and I hope you can get some good out of them, too. So, take a walk outside today, and breathe in all that the natural world has to offer. Perhaps pay particular attention to the trees you come across. Not only do they supply the material we all love, but they also filter the air and water, provide habitat for wildlife, and moderate the weather. National Arbor Day is April 28, and it turns 150 this year. What better time to do what you can to ensure that the next generation of woodworkers have the material they need and a happy, healthy environment in which to enjoy a restorative walk. Maybe I'll see you out there. ■



Chad McClung

Chad McClung, Chief Editor
Chad_McClung@woodcraftmagazine.com

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Open the window

The “Making a panel plan” section of the Louvered Interior Shutters story (Feb/Mar 2023) contained an error. The last paragraph should have read, “Determine the number of louvers by subtracting twice your desired rail width from the panel height and dividing by 2. Round to the nearest whole number to get your number of louvers. Then modify the width of the rails to make the opening in the panel frame equal to twice this whole number.” Sorry, math is hard.

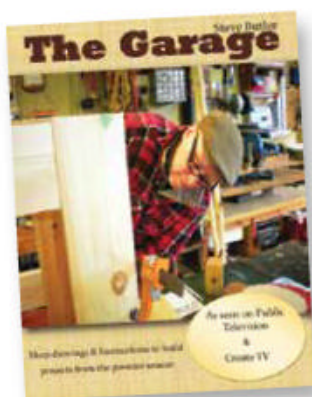


A big hit

The Tenderizing Mallet (Dec/Jan 2023) is one of the best I’ve seen in years, and I was compelled to make one for each of my children. But cutting the grooves with a bandsaw is time-consuming, and the accuracy is subject to user skill. Instead, I used my router table and a ¼" 60° bit to cut the face. Starting right of center, I rotated the workpiece 90° after each cut, moving the fence every four passes.

—Gordon Patnude, via email

Back to the garage



Steve Butler, host of PBS’s *The Garage with Steve Butler*, has published his first book, *The Garage with Steve Butler, Volume 1*. Full of tips, techniques, and projects highlighted in the first season of the show, the book hit bookstores in early February. Through his show and book, Butler aims to translate his 20 years of woodworking experience into economically and technically accessible projects for DIYers—all from the approachable confines of his garage workshop. The book is available through select retailers and as a print-on-demand publication through lulu.com. The show airs on 260 PBS affiliates and on Butler’s YouTube channel.

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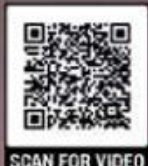
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Soitenly!

I received the Feb/Mar 2023 issue and plan to build the Turning Accessories Cart. Of course, I want to build the best version of this shop stooge, so I'm wondering: which stooge is the smartest?

—Rick Shaffer,
Cottonwood, AZ

Senior Editor Ken
Burton replies:

That's a very good question, and I'm not sure I know the answer. But it made me reconsider my choice of materials for the cart. Obviously, I should have used Curly maple. Nyuk, nyuk, nyuk.



Shout outs for shop class

I suspect many of *Woodcraft Magazine's* readers learned the pleasures and rewards of woodworking as I did: in shop class and from my parents. But now that many schools are phasing out shop (or industrial arts, or whatever they call it these days), we are in danger of losing that hard-earned knowledge. We owe it to the next generation to pass along the tips, tricks, and techniques we were taught. I can't remember the last time I used trigonometry, but I did put my shop class skills to use last week as I hung a door in my latest project.

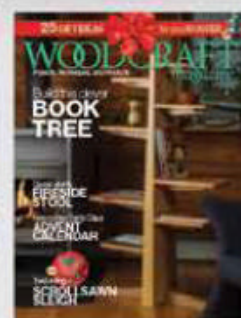
—Richard Entwistle,
Highland Lakes, NJ

Senior Editor Ken Burton replies:

Passing on our skills and experience is a must. And it is concerning that many schools are cutting back on the kinds of hands-on classes we grew up with. Fortunately, this isn't true everywhere. Case in point, shop teacher Ben Hudson, issue 110's Top Tip winner, wrote in to say he planned to put his prize (a \$250 Woodcraft Gift Card) toward a Domino joiner for his local high school's shop class. ■

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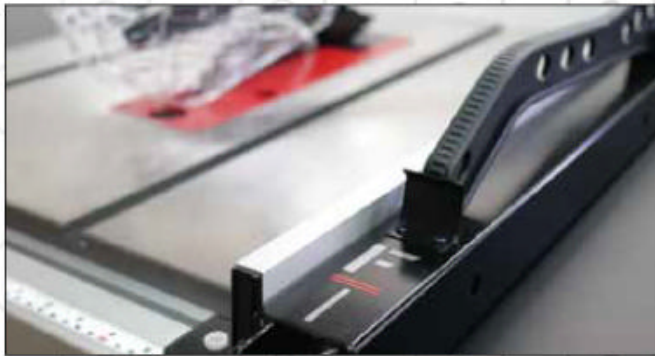
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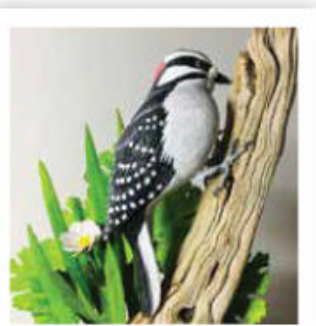


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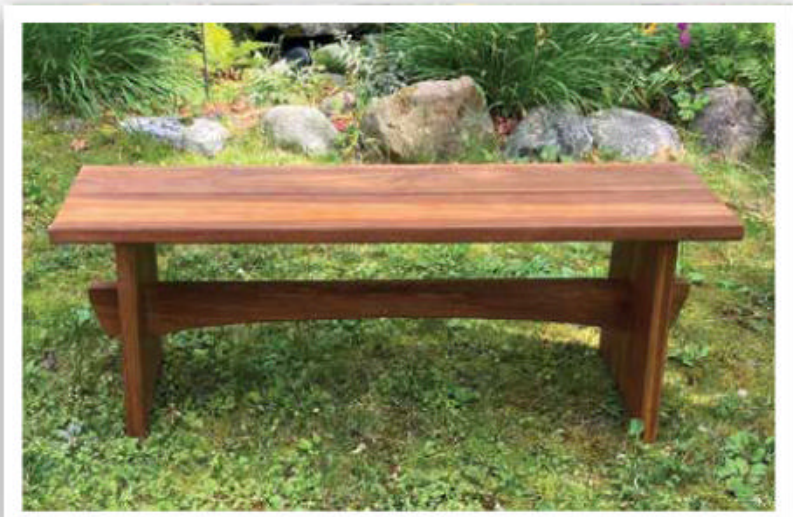
JAMES KROMM BALTIMORE, MD

Basswood blues. A longtime woodworker and birdwatcher, Kromm has carved dozens of birds and their habitats out of North American and exotic softwoods, including this pair of lifesize basswood bluebirds. After rough shaping with an electric vibrating chisel, he switched to gouges and knives to fine-tune the shapes. Finally, Kromm burned in feathers before finishing the avians with oil paint. Then he set the birds in a hand-carved version of their natural environment. Even the leaves and flowers are carved and painted wood.



LYNN KIRSTEATTER CONOVER, WI

Benchmark. Inspired by the bench featured in Issue 107 (June/July 2022), subscriber and veteran woodworker Kirsteatter crafted this bench for his eldest daughter. He used teak that had spent its former life as the countertop in her kitchen prior to a remodel. He says it was pretty ugly when it came out of the kitchen, but when he gifted his daughter the finished bench, there was no way it was going to stay outside. With thinner stock than called for, Kirsteatter opted to attach the benchtop with dowels. He finished the bench, appropriately, using teak oil.



RICK WALDRIP SR. BARGERSVILLE, IN

Rural address. In need of a new mailbox, Waldrip crafted this two-level barn around a store-bought metal box. The hay loft houses three bird roosts—one on each end and one in the middle. The barn measures 14 × 22 × 30" and is topped with a $\frac{3}{8}$ " plywood roof. After painting and sealing the barn, he attached it to a trellis made of 4 × 4" posts surrounding hog-panel mesh. Waldrip says it was a small project that just kept growing; he sure didn't mail this one in!

DAN MENKE STRONG CITY, KS

House of bird-ship. Menke, a hobbyist woodworker, reached back into the archives for the plans to this country church birdhouse (Feb/Mar 2011). He used oak scraps liberated from a local cabinet shop, then painted the finished structure. He says sawing the siding and roof on his old equipment was the most challenging part. The finished birdhouse was auctioned by his church and bought by a young couple. ■



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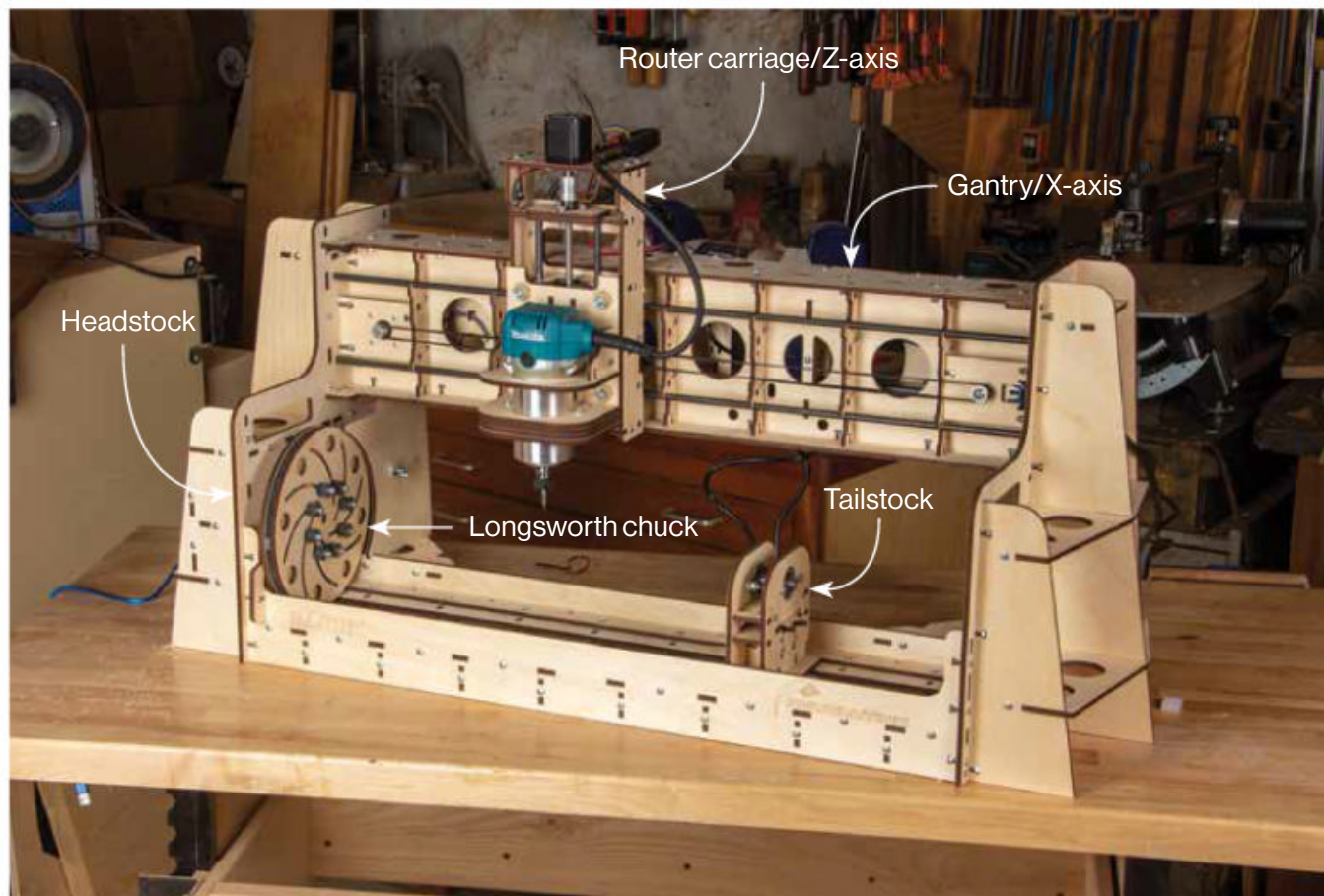
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A CNC lathe made from plywood

BobsCNC Revolution



FEATURES

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Over the past few weeks, I've been having a lot of fun setting up and exploring a CNC lathe. I'd been toying with the idea of adding a 4th axis to my flatbed CNC router when I came upon the Revolution from BobsCNC. Even in the CNC world, the Revolution is a unique critter. Instead of being an add-on accessory, this machine is a dedicated computer-controlled lathe. And instead of coming as a plug-and-play, steel and aluminum tool, the Revolution arrives in kit form, primarily made of plywood. After giving

the matter some consideration, I decided I was up to the challenge the kit offered.

All of BobsCNC kits are similarly designed with laser-cut plywood pieces bolting and slotting together, much like an Erector set combined with Lincoln Logs. While you'd think that ¼" plywood wouldn't be stiff enough for such use, the clever engineering behind the way the parts fit together yields a remarkably rigid assembly. By building their machines this way, Bobs can offer more capacity at a lower price than their competitors.

The rub is that you do have to put the kit together. I spent about 12 hours over three days assembling the Revolution. It wasn't a difficult build, but there are just a lot of parts to assemble and bolts to tighten—among other things, the hardware kit included a bag of 300 M4 × 16 machine screws and a matching bag of M4 nuts. These are the primary connectors used throughout, and there were only a few left over at the end. The



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online assembly manual ran about 150 pages. I opted not to print it out, although that might have made things easier as I had to scroll up and down a lot as I worked. The instructions were mostly clear, though there were a handful of places where some of the hardware was misidentified and at least one place where the bolt count was wrong, which left me puzzled for a few minutes.

By the end of the process, I had my new machine ready to connect to the computer but for a couple of necessary tweaks. The tailstock needed to be trimmed so it could slide readily on the base. The Z-carriage holding the router needed to be adjusted—be sure to take the time to make sure it moves smoothly before attaching it to the gantry. And it took some fussing to get the Longworth chuck to operate. This is my least favorite part of the machine, and I'm wondering if I can swap it out for a commercial four-jaw scroll chuck.

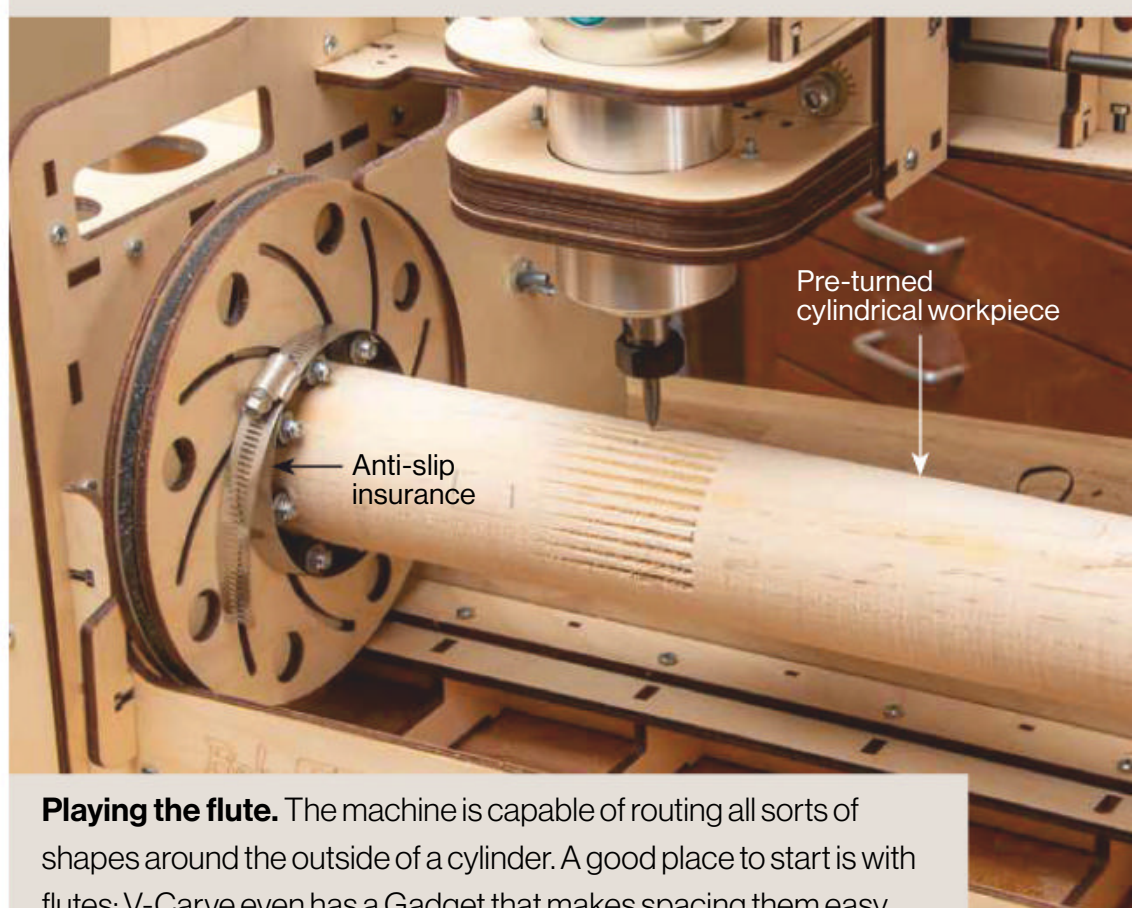
Physically connecting the Revolution to the computer was as easy as plugging in the included USB cable. But getting the computer to talk to the Revolution was a little more involved. Every CNC machine needs three pieces of software to operate: a design program where you draw the part you want, a G-code generator that converts your drawing into toolpaths that are called G-code, and finally, a G-code sender that actually communicates the G-code to the CNC machine. Some software programs, such as V-Carve, combine design and tool path generation. Fortunately, I already had V-Carve resident on my computer. If you don't, *bobscnc.com* has some options. I did, however, need to download the G-code sender specific to the Revolution. You'll want the *Basic Sender* (link on Bobs website), not the open-source G-Code sender mentioned in the manual. You'll also need to add the post-processor made specifically for the Revolution; the two resident in V-Carve for Bobs other machines won't work right with round work. It helps to have a little knowledge of computers (or a computer geek on standby) to interpret what the computer tells you to do as you install the software. Once I had all the pieces in place, I was ready to fire up the Revolution and make some dust. For that experience, see Routing in the Round at right. ■

—Tester, Ken Burton

Routing in the Round

Even after more than a decade of playing with CNC machines, I still get excited when a new one responds to the touch of a keyboard. And the gentle whir the Revolution made as its router traversed the gantry for the first time was just thrilling. Now to get to work. The machine is capable of cutting all sorts of three-dimensional shapes, including spirals, relief carvings, regular spindles (and duplicates), and more. I found learning to design pieces to be cut with the Revolution to be challenging, but V-Carve includes some built-in "Gadgets" that make cutting shapes such as flutes and spirals relatively straightforward. I'm going to need some more time, however, before tackling anything more complex than adding a piece of 3-D clipart to my work. More important is how well the machine cut

the pieces I did design. The machine itself is sound and performs well. I had some initial trouble with the chuck slipping, but adding a hose clamp (see photo below) took care of that. And, as with every other CNC machine I've used, there is a learning curve here, and I made some mistakes (taking too aggressive a cut, for example) and spoiled some pieces as I climbed it. I think the online documentation could be more comprehensive, but Bob's tech support is very good—I think Bob himself even picked up the phone on one of my calls. The bottom line? This isn't the best machine for someone new to CNC, but if you're looking to get into more advanced machining, it has a lot to offer. I know I'm looking forward to exploring what else it is capable of—I've only scratched the surface.



Playing the flute. The machine is capable of routing all sorts of shapes around the outside of a cylinder. A good place to start is with flutes: V-Carve even has a Gadget that makes spacing them easy.

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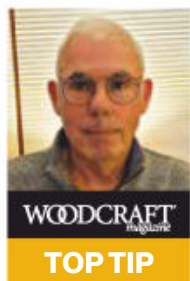
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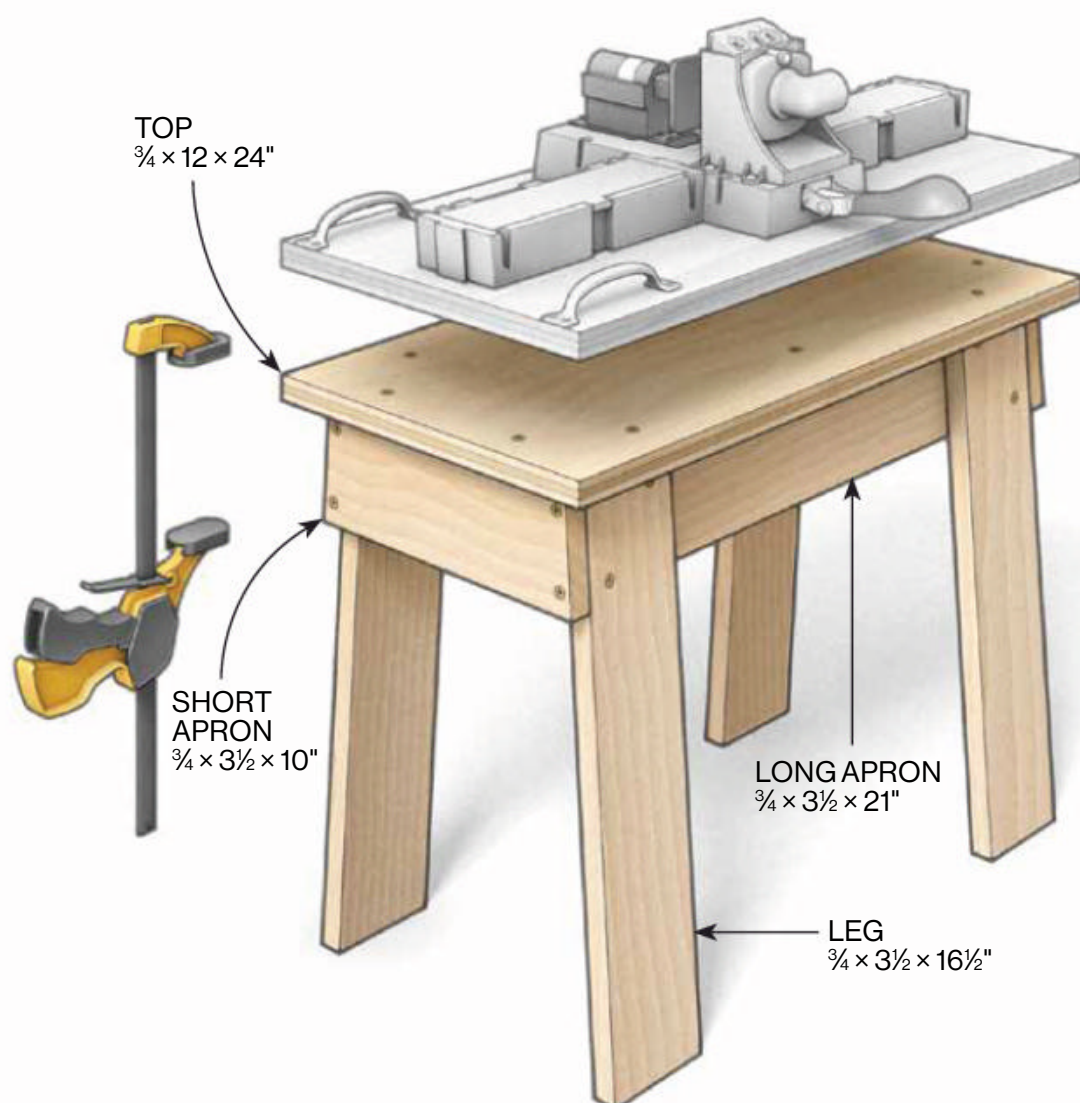


TOP TIP

I find drilling pocket holes at bench height awkward at best and literally a pain in the neck (and shoulder) with the pressure required for some harder species of wood. To combat this, I made a low horse upon which to mount my pocket hole setup.

Screwed together from 1 × 4s, the 17" high surface holds the jig and its mounting board at a perfect height for pain-free operation. The 4° splay of the legs provides a stable stance while the 12 × 24" top serves as an ample surface to clamp to. When I'm not drilling pocket screws, I hang the jig on the wall and use the horse as an occasional seat and work platform.

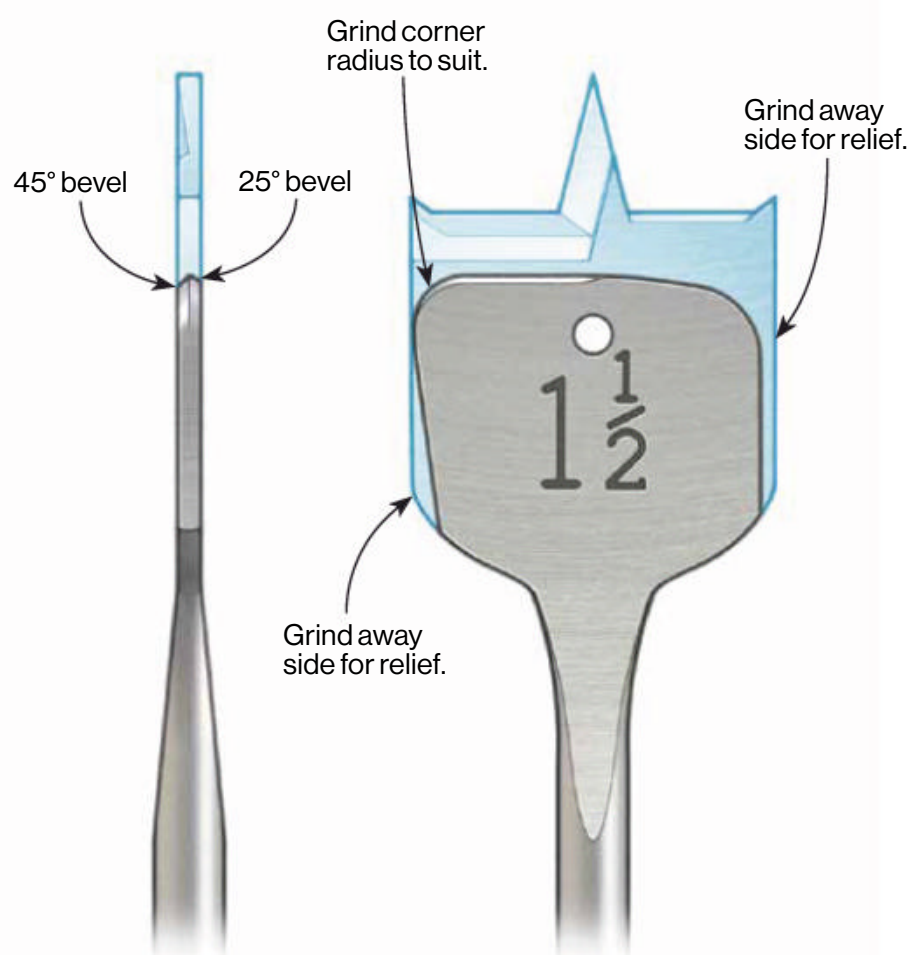
—Dan Martin,
Galena, Ohio



Shop-made bottoming bit

I turn a lot of small, lidded boxes. One of the challenges is shaping the end grain surface at the bottom of the cavity. To make this onerous task easier, I make my own bottoming scrapers by grinding spade bits to conform to the shape I want. Start with a bit that matches or is a little bigger than the inside diameter of your box. Grind off the tip, then shape the bit as shown. I find performance is best if the cutting edge has a negative rake, so grind the underside to a 45° bevel and the topside to 25°. To use the bit, first drill out the bulk of the waste with a Forstner bit chucked in a tailstock-mounted drill chuck. Then swap that bit out for the bottoming bit and finish the cavity, eliminating the dimple from the Forstner bit and rounding the outer corner. As you cut, advance the bit slowly—otherwise it may chatter and overheat.

—Jeff Peters,
Redgranite, Wisconsin



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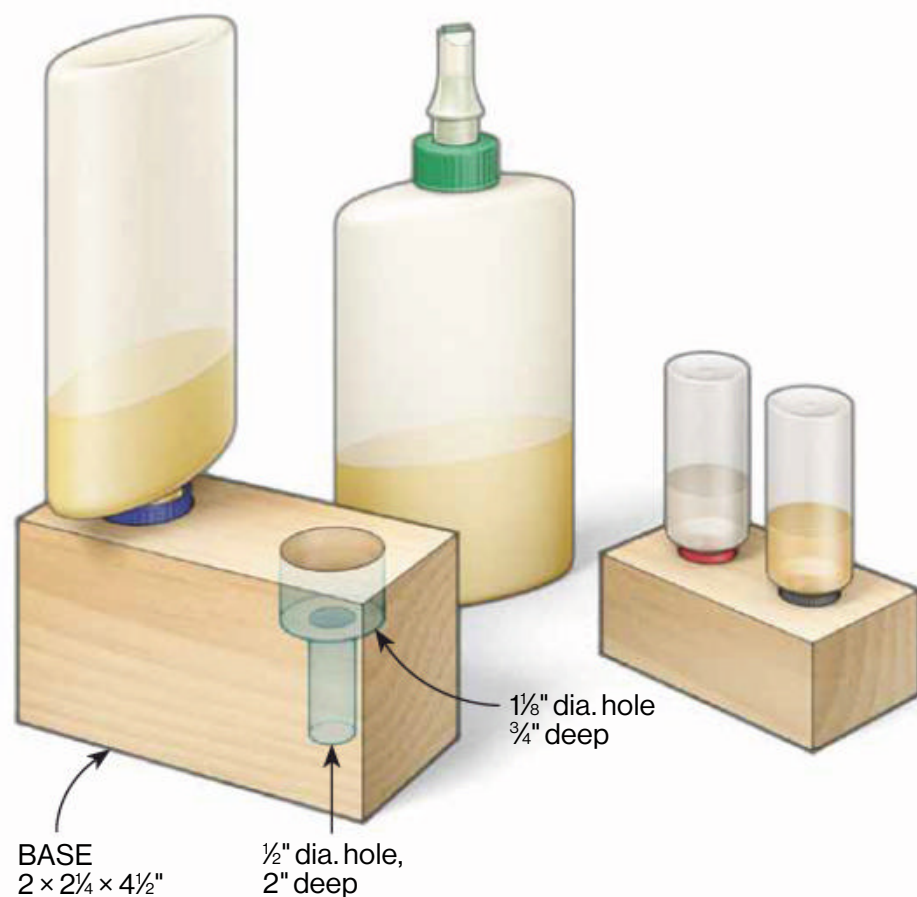
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Tips & Tricks

Keeping glue at the ready

Glue bottles work great when they are full. But once the glue level drops below half, I find waiting for the viscous stuff to make its way to the tip frustrating. To remedy this, I made wooden bases for my glue bottles that allow me to store them nozzle down, keeping the glue immediately accessible. To make a base, find scrap thick enough to accommodate the length of the bottle's entire screw cap. Then drill two holes; a shallow one large enough to fit the screw cap and a narrower, deeper one for the nozzle. For two-part glues such as epoxy, make the base large enough to hold both bottles.

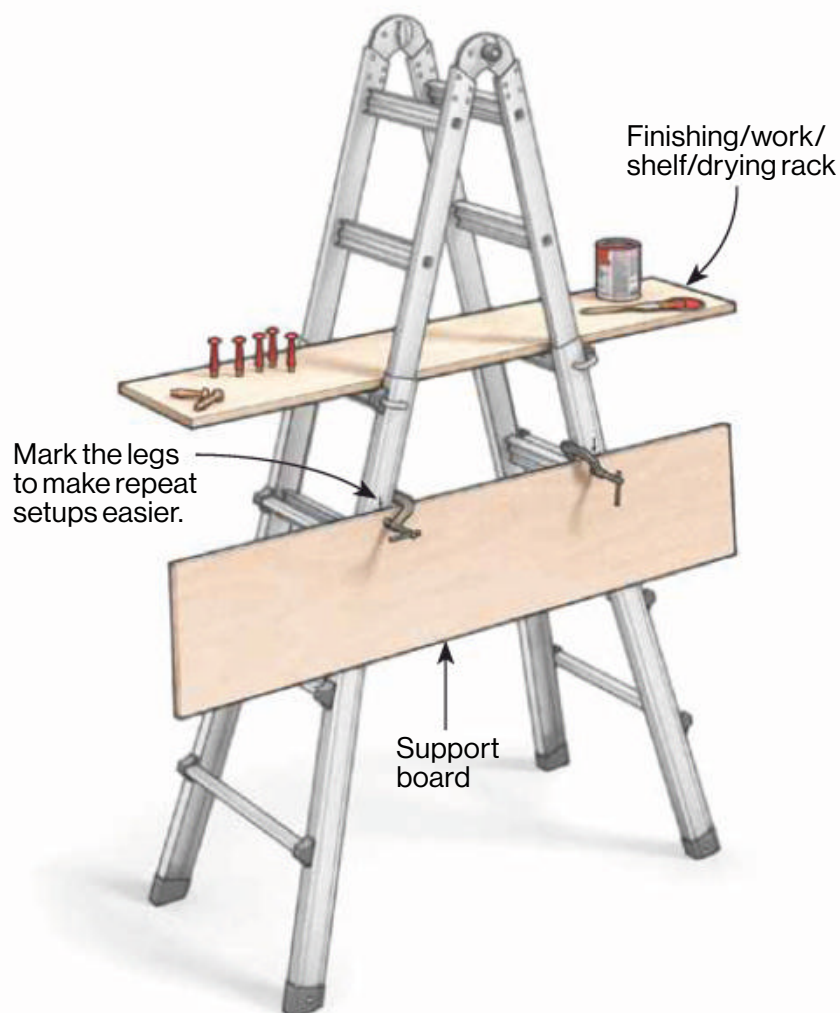
—Jim Kelly,
Trappe, Pennsylvania



Ladder does extra duty

In addition to its intended use, I get extra duty from my folding ladder. I made a series of shelves from scrap plywood that I sit on the rungs as needed. For some tasks, I'll use a single shelf to keep my tools readily available at a convenient height, or I'll use several shelves as a drying rack when finishing multiples of a project. I also use the ladder as a support when sawing long pieces with my chop saw. For this, I clamp one of the shelves oriented between the legs, as shown. When I first set this up, I marked the legs to make realigning the shelf easier the next time. ■

—Richard Entwistle,
Highland lakes, New Jersey



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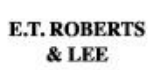
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Balanced DRAGONFLY SCULPTURE

A marvelous, “gravity-defying” figurine

By Ken Burton



I remember making a “sky hook” with my fellow Webelos years ago in my dad’s basement shop. It was a simple sawn-out shape that hung a belt off the side of a table, seemingly in defiance of gravity. Ever since then, I have been fascinated by clever objects that take advantage of the laws of physics to create an illusion. This simple dragonfly sculpture does just that; the low, forward

sweeping wings put the center of gravity right below the tip of the dragonfly’s nose, allowing it to balance “magically” on nearly anything. The design grew out of a similar one that I saw once in a craft gallery. I modified it and used it as an “introduction to the scroll saw” project for some of the technology education classes I was teaching. It was a great project on several levels: the kids liked

the finished product, it was forgiving of mistakes, it didn’t use a lot of material, and it offered students a chance to think about why it worked. Now I offer it to you as a fun way to spend a couple of hours in the shop. Maybe you have some scouts or a grandchild or two to share it with. Enjoy.

Three thin parts combine to balance on a dowel

All three parts are cut from $\frac{3}{16}$ " (or slightly thinner) solid stock. I used pine or poplar with my classes as they were cheap. I don't recommend using plywood as it would make cutting the bevels on the ends of the wings and trimming the tail difficult. For the wood-tone dragonfly shown here, I used cherry. The painted one is basswood. Copy the patterns for the wings and body on p. 24 and adhere them to your stock. Scrollsaw the pieces to shape. Then bevel and carve the wings before gluing them to the underside of the body. I worked on top of a bench hook to prevent scarring my bench.



Trim the bevel. Mark the bevel line on each wing, being sure to make a left and a right. Pare from the bevel line to a point at the tip of the wing.



Add detail. Mark the dividing lines down the center of the wings and carve along them with a veiner chisel. Alternatively, you can simply draw the lines with a colored pencil.



Attach the wings. Apply glue to the beveled surfaces and clamp the wings to the underside of the body with binder clips. If you need to hurry things along, use CA glue with a shot of accelerant.



Order of Work

- ✓ Scrollsaw parts
- ✓ Bevel and glue wings
- ✓ Make base
- ✓ Add pin, and tweak balance

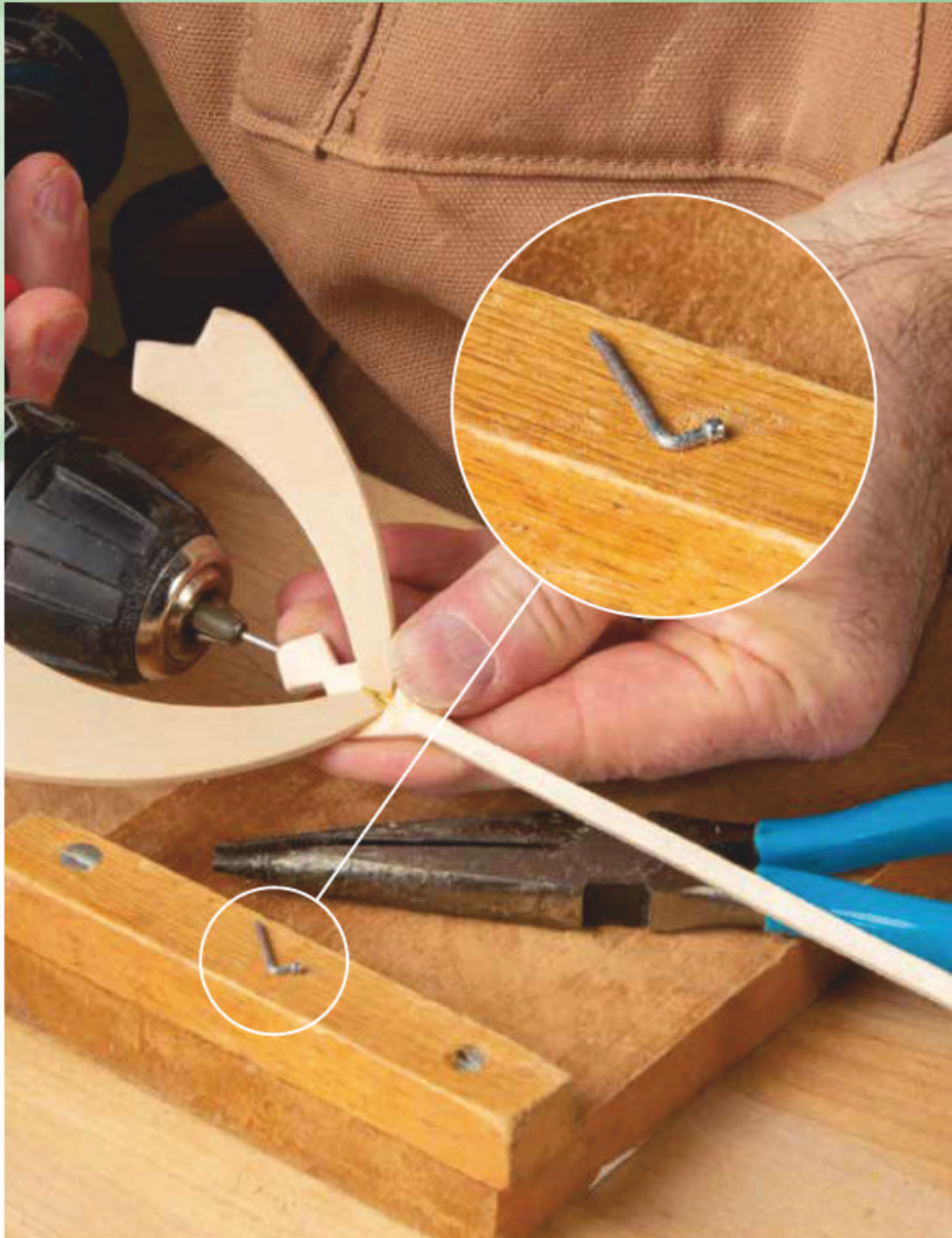


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Add the balance point. If you use the same size brad to drill the pilot hole, the bent brad should fit snugly enough that it won't require glue to stay in place. Cut a small flat on the nose to make the hole easier to start.

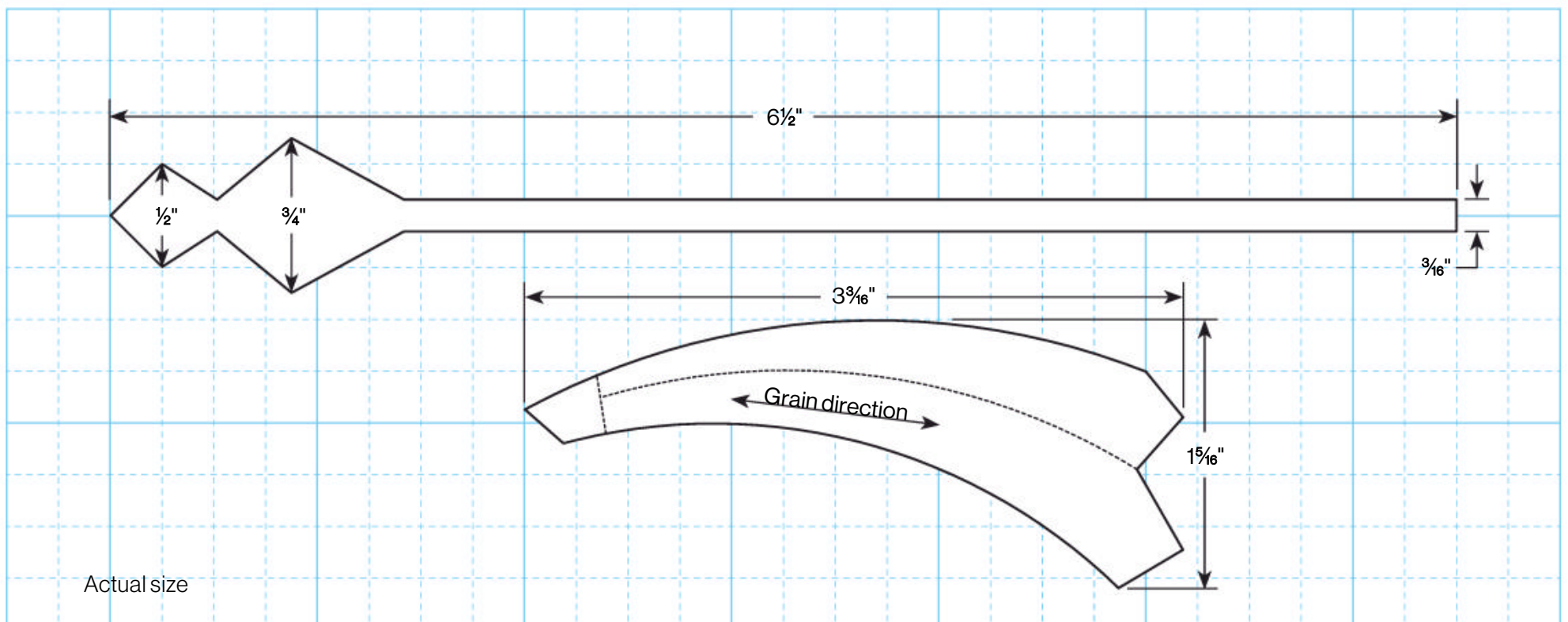
Balance and Finish

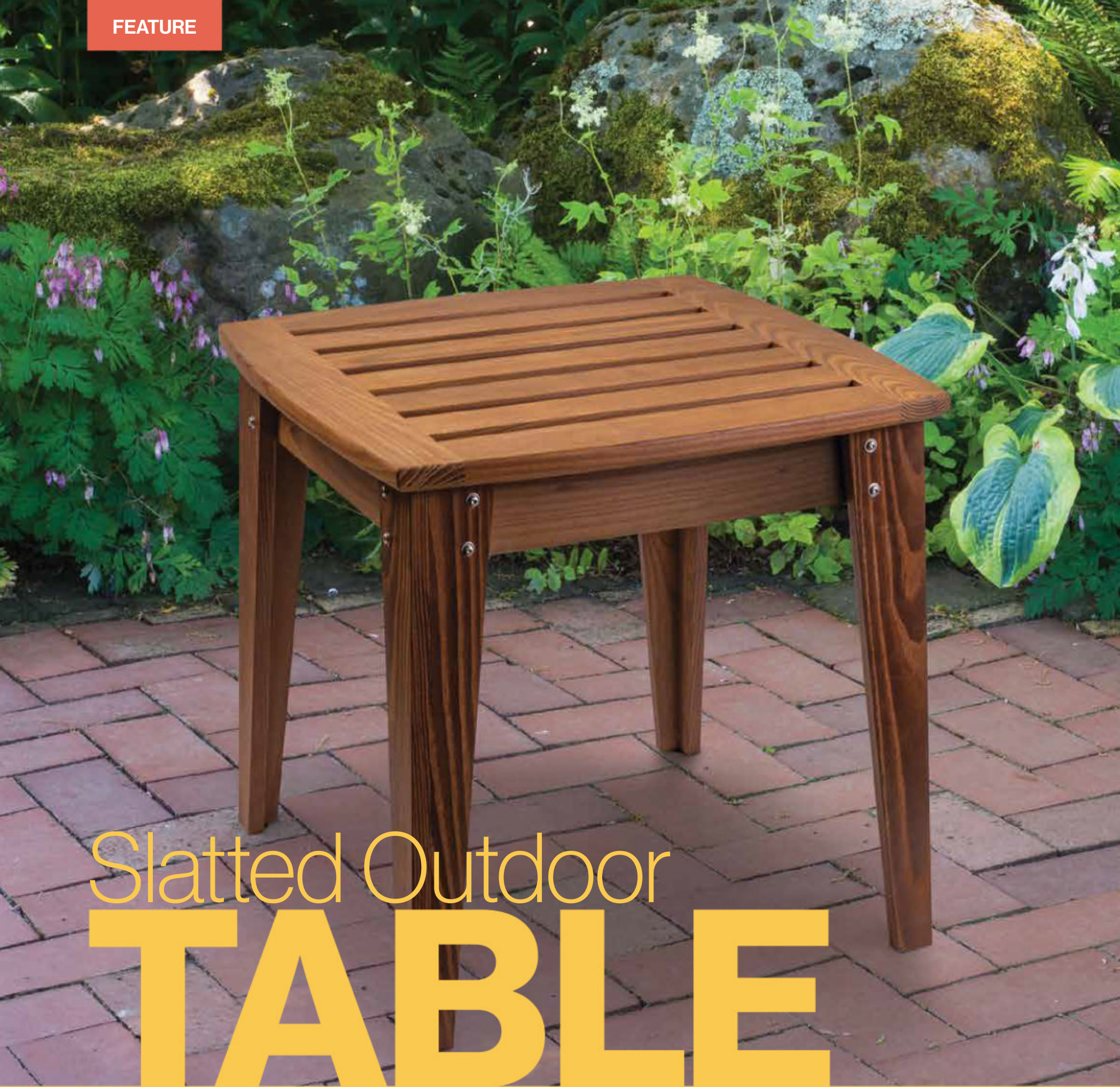
While the glue is drying, bandsaw a 2" disk from $\frac{3}{8}$ " thick scrap for the base. Drill a $\frac{1}{4}$ " hole in the center and insert a length of $\frac{1}{4}$ " dowel. (I used 3 and 4½" long dowels in mine.) Clip the head from a 1" × 17 gauge brad and use it to drill a pilot hole in the dragonfly's nose. Bend a second brad and insert it into the hole. Check the balance on the base. If the dragonfly sits nose up, shave a little off the tail. If the nose is down, make the wings a little thinner. Sand and finish as desired. I used oil on the wood-toned one and iridescent, metallic acrylic paint on the other. ■



Taper to adjust. Shave off small amounts with a block plane, tapering the tail towards its tip to fine-tune the balance. If necessary, you can also shorten the tail $\frac{1}{8}$ " at a time.

BODY AND WING PATTERN





Slatted Outdoor TABLE

Thermo-wood makes for durability and dark good looks

By Ken Burton

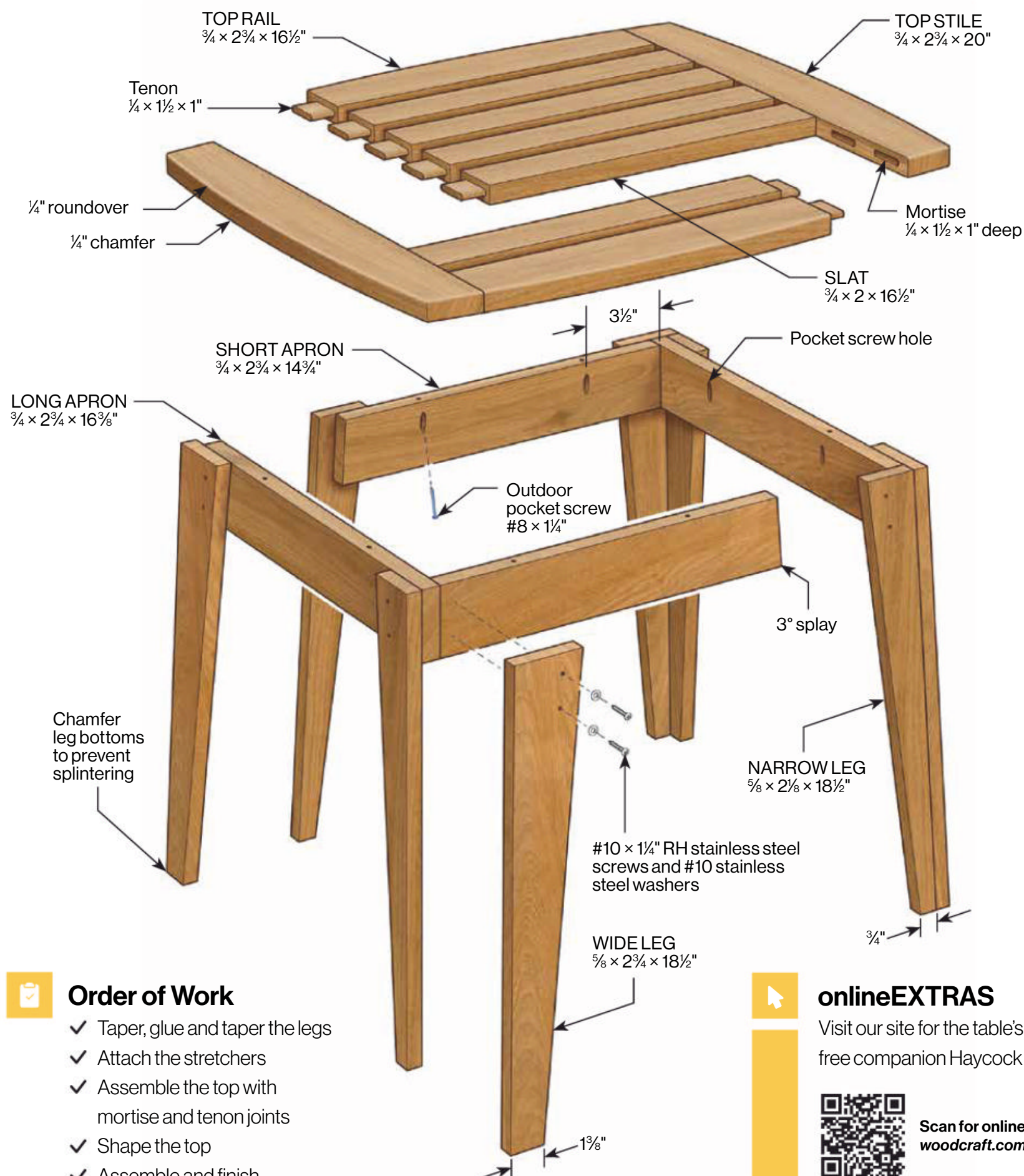
It's one thing to have a nice patio, porch, or deck, but to truly make it special, you need to furnish it well. In addition to some great seating (see OnlineEXTRAS), a small occasional table such as the one presented here will go a long way towards making your outdoor space a genuine extension of your home. This little table is designed for both service and longevity. Its low height makes it the perfect companion to hold your

morning coffee or evening sundowner beside your favorite chair. Or press it into service as a plant stand. It's made from thermally-modified lumber and joined with stainless steel fasteners so it should last for decades with minimal upkeep. The slatted top won't collect rain water and the splayed legs provide a solid, stable stance. Make one, or a pair and you'll be on your way to gracious outdoor living.

Tapered and splayed legs support a slatted frame top

Relatively thin boards, tapered and glued into an angle iron shape, form the legs. Their splay comes from the slightly trapezoid-shaped aprons that are screwed to the legs' inside faces. The top is joined with mortise and tenon joints and features a series of generously-spaced slats that allow rain water to drain through. The tenons on the

slats and top rails are integral to the pieces rather than being cut separately (or using domino tenons). This helps to minimize the chance of water infiltrating the joints and causing rot. Be sure to use a good, weather resistant glue throughout the build. I went with Titebond III.



Order of Work

- ✓ Taper, glue and taper the legs
- ✓ Attach the stretchers
- ✓ Assemble the top with mortise and tenon joints
- ✓ Shape the top
- ✓ Assemble and finish



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Illustrations: Greg Maxson

Make the legs: taper, glue, taper, bevel

Mill the stock for both the wide and narrow leg blanks to size. Make a tapering sled and taper the wide leg blanks. Then glue the narrow leg blanks to them, being careful to orient the pieces as shown. Leaving the narrow pieces rectangular for now provides parallel

edges for an easier glue up. After the glue dries, scrape away any squeeze out and use the same tapering jig to make the second taper cut. Bevel the top and bottom of the legs to accommodate the splay angle.



Glue edge to face. Edge glue the narrow leg blanks to their wide counterparts orienting all four pairs as shown. Orienting the pieces this way allows you to reuse the tapering sled you used to cut the wide blanks.



Cut the second taper. Load the glued up legs on the tapering sled with the wide leg on edge against the sled's long fence. Guide the sled along the saw's fence to make the cut.



Top and bottom bevels. Hold a glued up leg against the blade with the trough down. Pivot the miter gauge to match the leg angle (about 4°) then tilt the blade to 8°. Bevel the tops of all four legs. Without changing any of the angles, switch the miter gauge to the other side of the blade to cut the bottoms.

Make and attach the stretchers

Mill the stock for the stretchers to size leaving the pieces about $\frac{1}{2}$ " overlong. Then crosscut them to their final length with the miter gauge pivoted 3° off square to create the leg's splay. This will make the aprons into trapezoids—the stated length is that of the base (or long side). Drill pocket holes along the top edge of each apron for attaching the top. Then glue and screw a pair of legs to each of the long aprons. Finally connect the leg assemblies by gluing and screwing them to the short aprons.

Steely gaze of quiet determination.

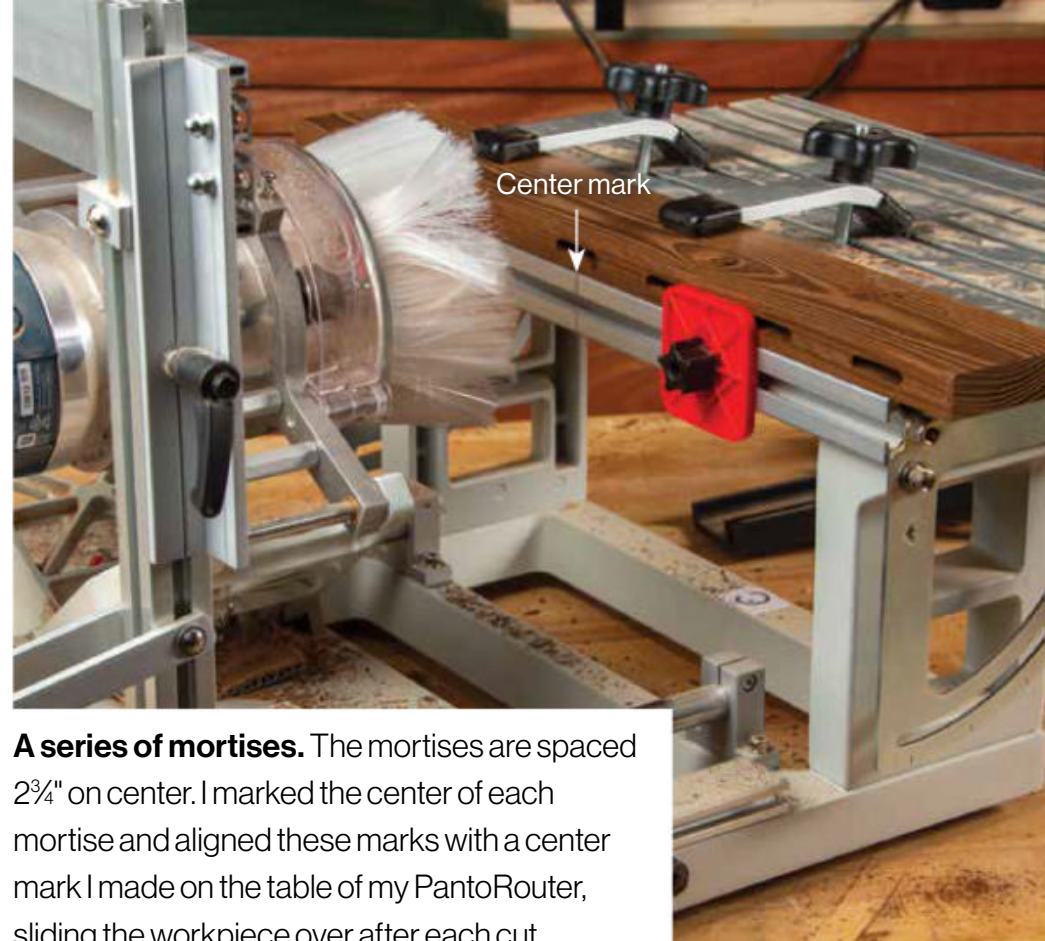
Lubricate the soft, stainless steel screws with paraffin to avoid stripping the heads.

$\frac{5}{32}$ " bit for pilot holes

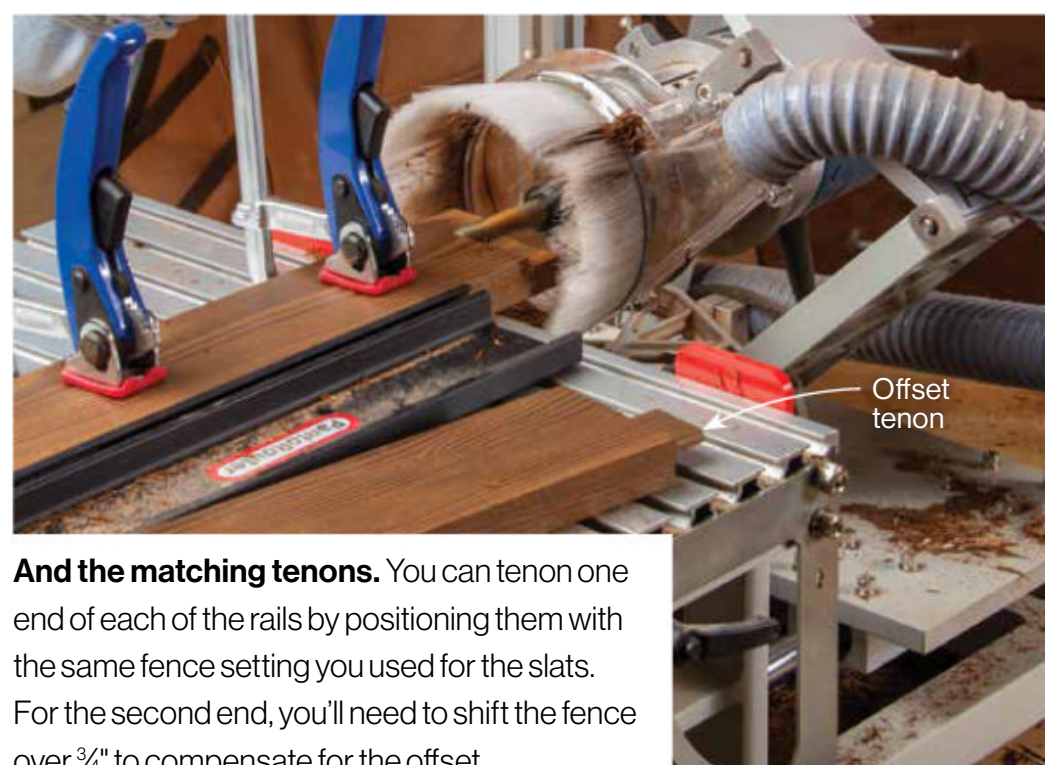
$\frac{7}{32}$ " bit for leg clearance holes

Make the top and finish up

Mill the stock for the top rails, stiles, and slats to size. Note that the stated lengths of the rails and slats on p. 26 include the tenons. Lay out and cut the mortises in the stiles spacing them as shown in the Top Detail. I used my PantoRouter for these joints, but feel free to use whatever method you're set up for. Cut the matching tenons on the ends of the rails and slats. The tenons are centered on the slats, but are offset towards the inside edge of the rails. Glue up the top. Then lay out and cut the gentle curves around its perimeter at the bandsaw. Sand the edges and fair the curves before rounding over the top edges and chamfering the bottom edges at the router table. Sand everything before centering the top on the base and screwing it in place. If desired, coat with a weather resistant finish. I used Osmo UV-Protection Oil. ■



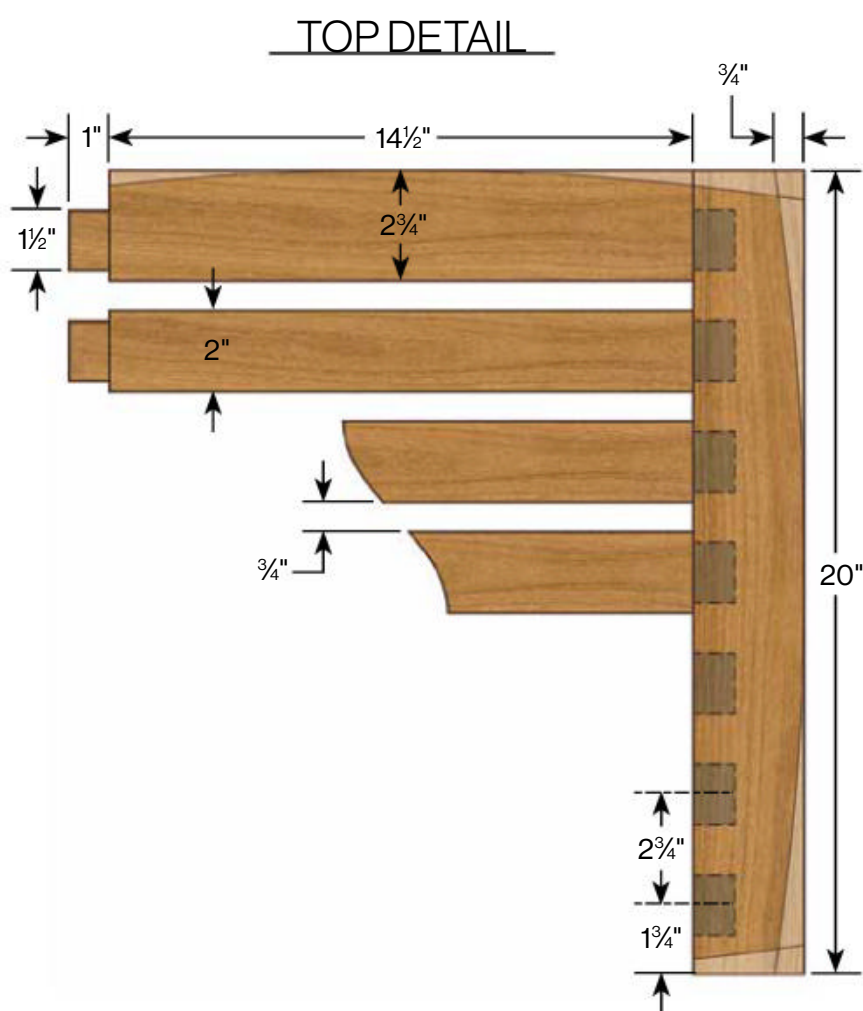
A series of mortises. The mortises are spaced $2\frac{3}{4}$ " on center. I marked the center of each mortise and aligned these marks with a center mark I made on the table of my PantoRouter, sliding the workpiece over after each cut.



And the matching tenons. You can tenon one end of each of the rails by positioning them with the same fence setting you used for the slats. For the second end, you'll need to shift the fence over $\frac{3}{4}$ " to compensate for the offset.



Mark the final shape. The edges of the top are gently curved to soften the shape and add a touch of style. Mark the ends of the curves $\frac{3}{4}$ " in from the corners then use a drawing spline flexed to connect the dots.



Panto-action. Scan the code to see the PantoRouter in action.

Modern SIDEBOARD

*A counter-height cabinet with
wraparound charm*

By Sarah Marriage



OVERALL DIMENSIONS:
44" wide × 35" tall × 24" deep



I love a tambour cabinet. Whether it takes the form of a sideboard, a roll-top desk, or even a humble bread box, there's something magical about a case piece with a door that disappears around a corner, stowing itself within the cabinet walls. This clever mechanical structure (see p. 39 for Larissa Huff's Tambour Technique) allows a seemingly flat door to travel through a tight radius. And the tambour door, like its siblings—the sliding door and the cylinder fall—looks tidy whether it's open or closed.

That's why tambours were the perfect choice for this sideboard, which I designed to serve as a formal dining room espresso bar with elements of kitchen utility. A butcher block top of curly cherry provides a counter-height work surface for prepping your daily grind while the tambour doors below enclose spacious storage compartments. The shorter upper compartments allow quick access to dishware and tools, with the lower compartments offering ample storage for larger items and back stock. Leave the doors open while you work, then slide them closed for a formal look.



Functional elegance. This sleek, counter-height design opens up to a variety of storage compartments below a durable butcher block worktop.



Four-doored storage

The top, bottom, and side panels of the cabinet are dominoed together, creating a large box, encasing the interior components. A fixed shelf sits in dados in the sides, with its forward corners protruding through notches at the front. More dominoes connect the false sides and center partitions to the shelf, top, and bottom. Canvas-backed tambour doors slide in from the back guided by matching grooves routed in the top, shelf, and bottom. A removable plywood back panel is screwed into rabbets in the tops and sides, and serves as a stop for the doors when they are open. The solid cherry cabinet sits atop a simple cherry stand featuring round legs joined to the aprons with sliding dovetail joinery. For speed and accuracy, I used a Festool Domino in this build, but you could achieve similar results with a doweling jig and dowels.



Order of Work

- ✓ Make and assemble case
- ✓ Make and assemble stand
- ✓ Make and assemble doors
- ✓ Sand and finish
- ✓ Attach stand
- ✓ Install doors
- ✓ Attach back panel

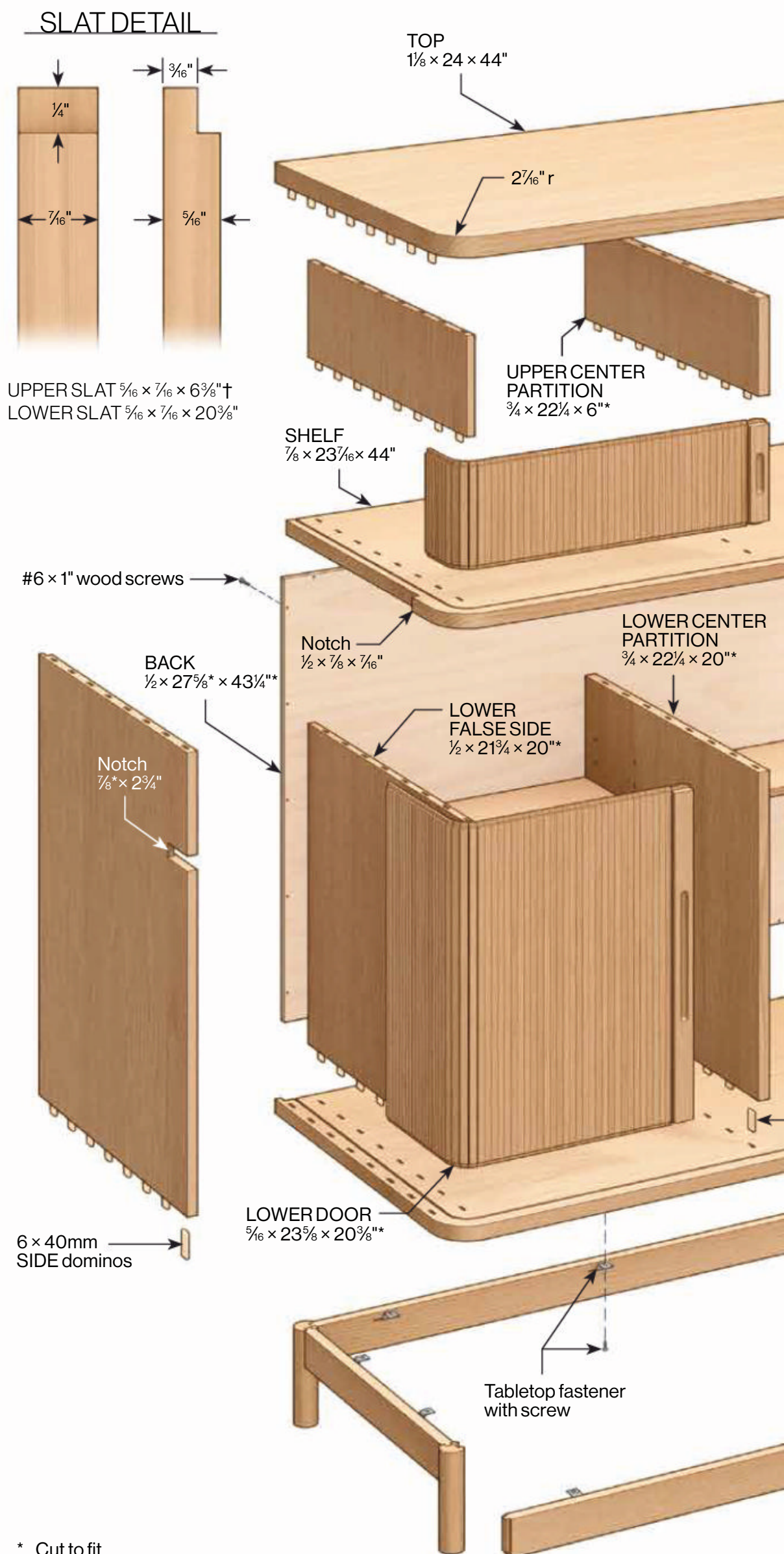


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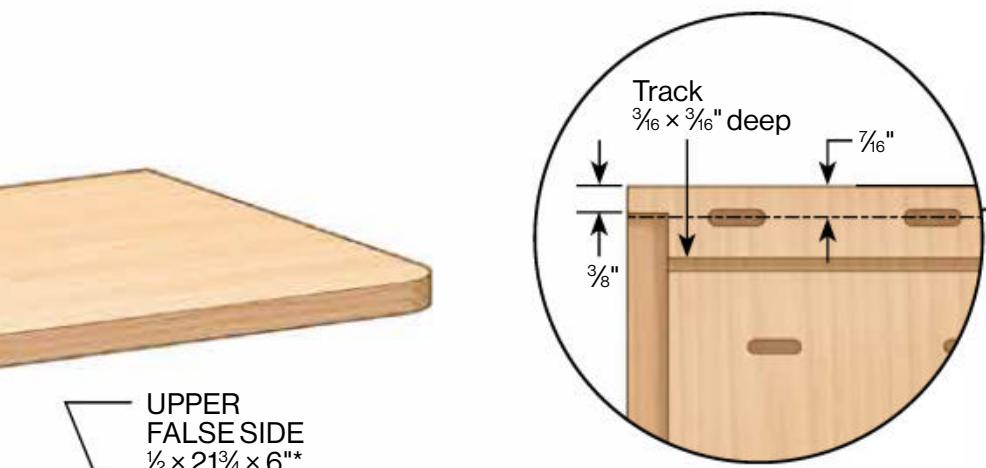
Visit our site for the Cut List and Materials plus a free article on using Tabletop Fasteners to attach the stand.



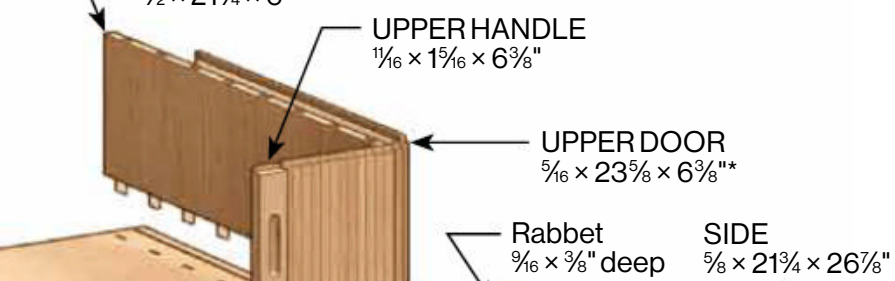
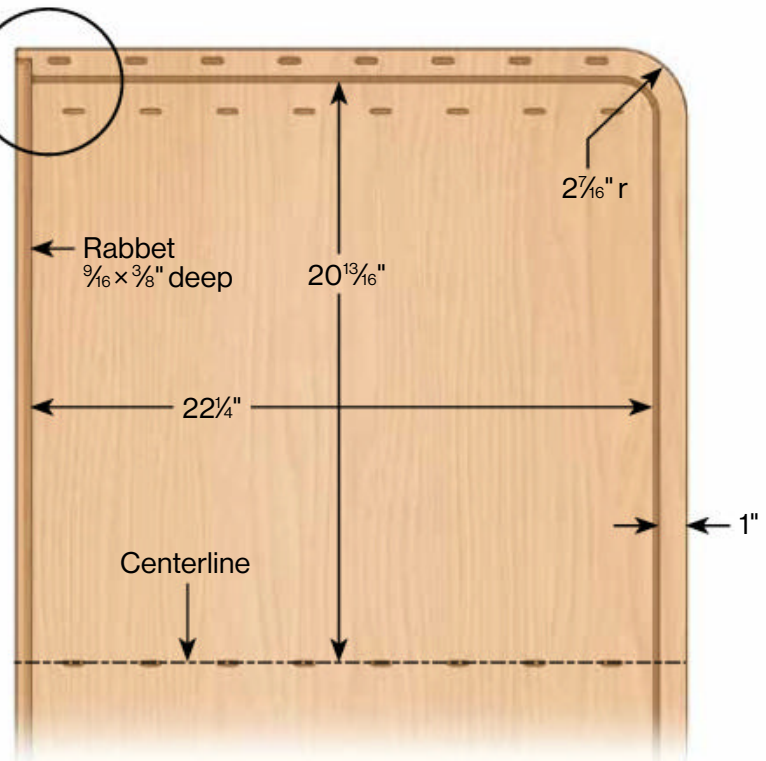
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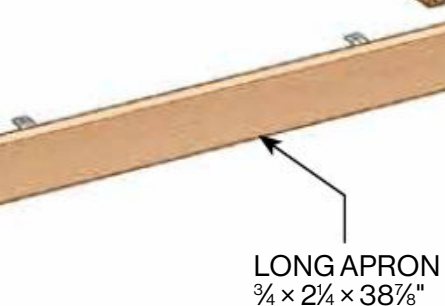
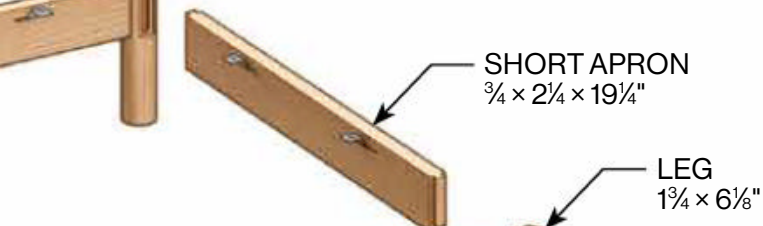
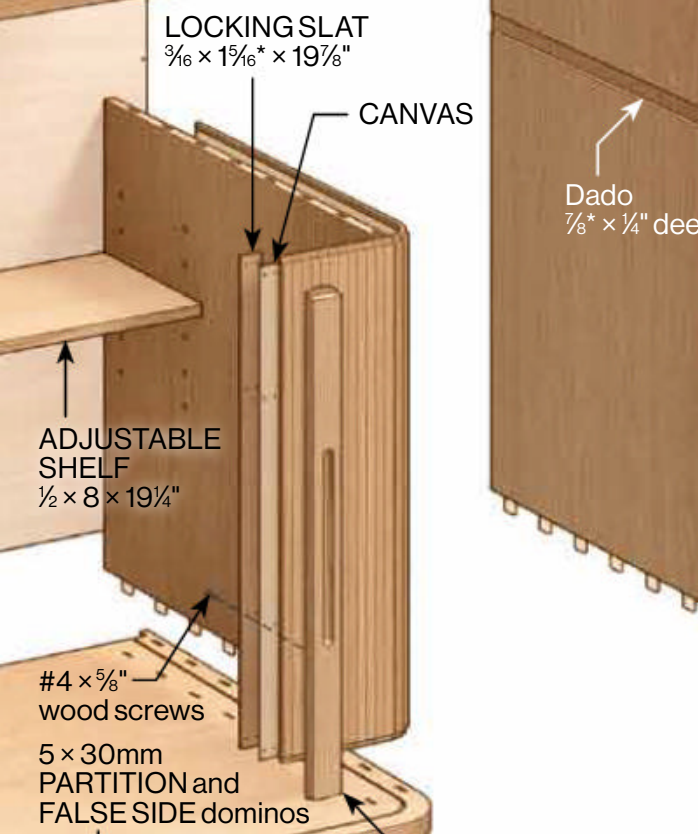
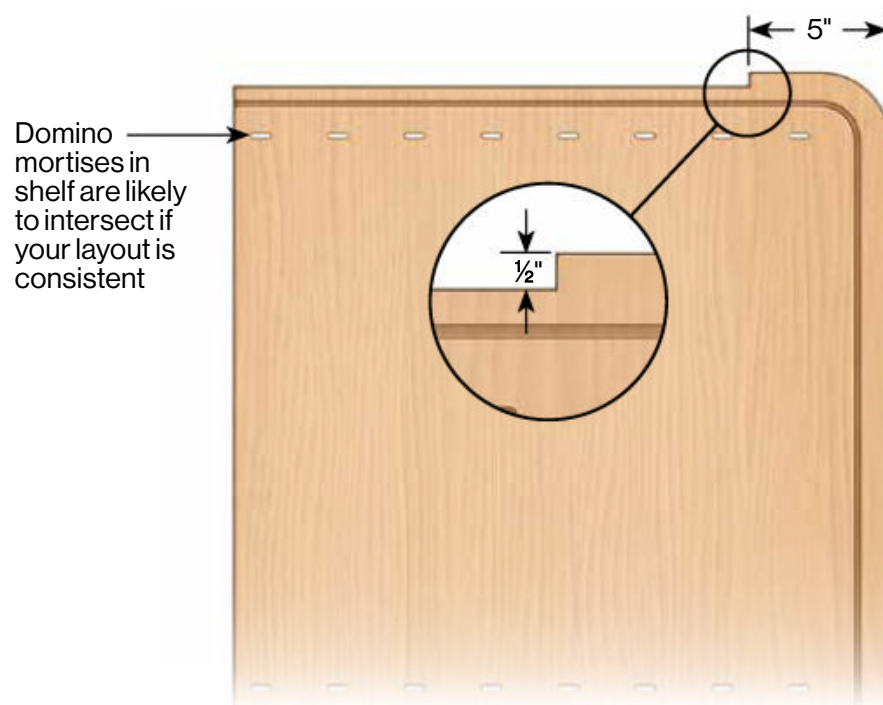
* Cut to fit
† There are 52 slats per upper and lower door.



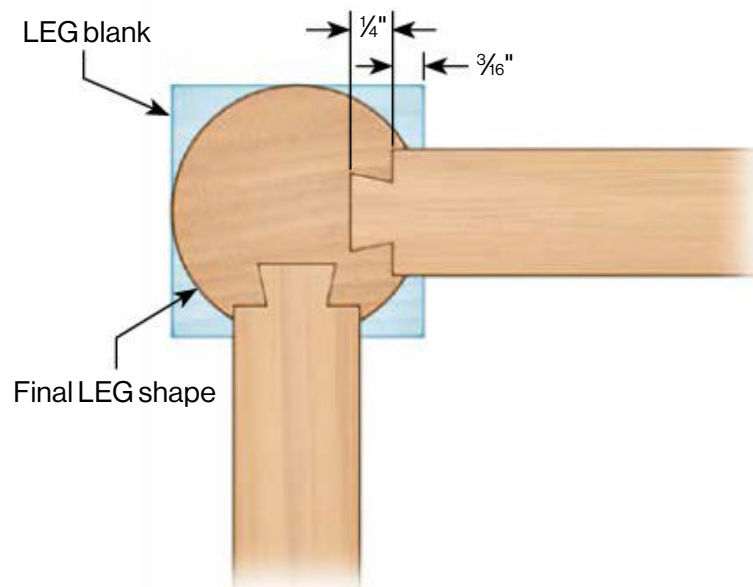
TOP AND BOTTOM DETAIL



SHELF DETAIL



LEG DETAIL



Making a case for tambours

Mill stock for all the solid wood cabinet panels. Glue up the top, bottom, and sides and cut them to final size. Make the center partitions and false side panels overlong, and glue up the fixed shelf in two stages as shown. Lay out centerlines for the domino mortises on the outside faces of the sides and on the ends of the top and bottom. Cut the mortises, offsetting those on the top and bottom to create the slight reveal at the corners. Sand the fixed shelf to final grit before routing a $\frac{1}{4}$ "-deep dado across the side panels. To match the width of the dado to the thickness of your sanded shelf, rout it in two passes, the first with the router against the upper fence as shown and second with it against the lower fence. Deepen the dado to create the through notches and square the corners with a chisel. Rout the rabbets on the back edges of the top, bottom, and sides with a $\frac{5}{16}$ " rabbeting bit.

Make a template for the tambour track (see Tambour Technique p.39), and rout the tracks in the underside of the top, the topside of the bottom, and both sides of the shelf. Dry fit the case assembly, and use a spacer to layout the centerlines of all four false sides on the top, bottom, and shelf. Saw the center partitions and false sides to final height, fitting them to the assembly, before laying out the domino mortises on these vertical panels. Cut 20mm-deep mortises in the vertical panels, and then use the panels as mortising guides to lay out and cut 12mm-deep mortises in the top, bottom, and shelf as shown. Drill holes for adjustable shelves in the lower false sides and center partition. Finally, make a template for the rounded corners on the horizontal panels, and lay out the arcs. Cut close to the line with a jig saw before clamping the template in place and cleaning up with a router and flush trim bit.



Gluing up a notch. For the fixed shelf, make a $\frac{7}{8} \times 18\frac{7}{16} \times 43$ " panel and edge join a longer $\frac{7}{8} \times 5$ "-wide strip to the front edge. After gluing, trim the front strip to 44", creating a $\frac{1}{2}$ " overhang on either side.



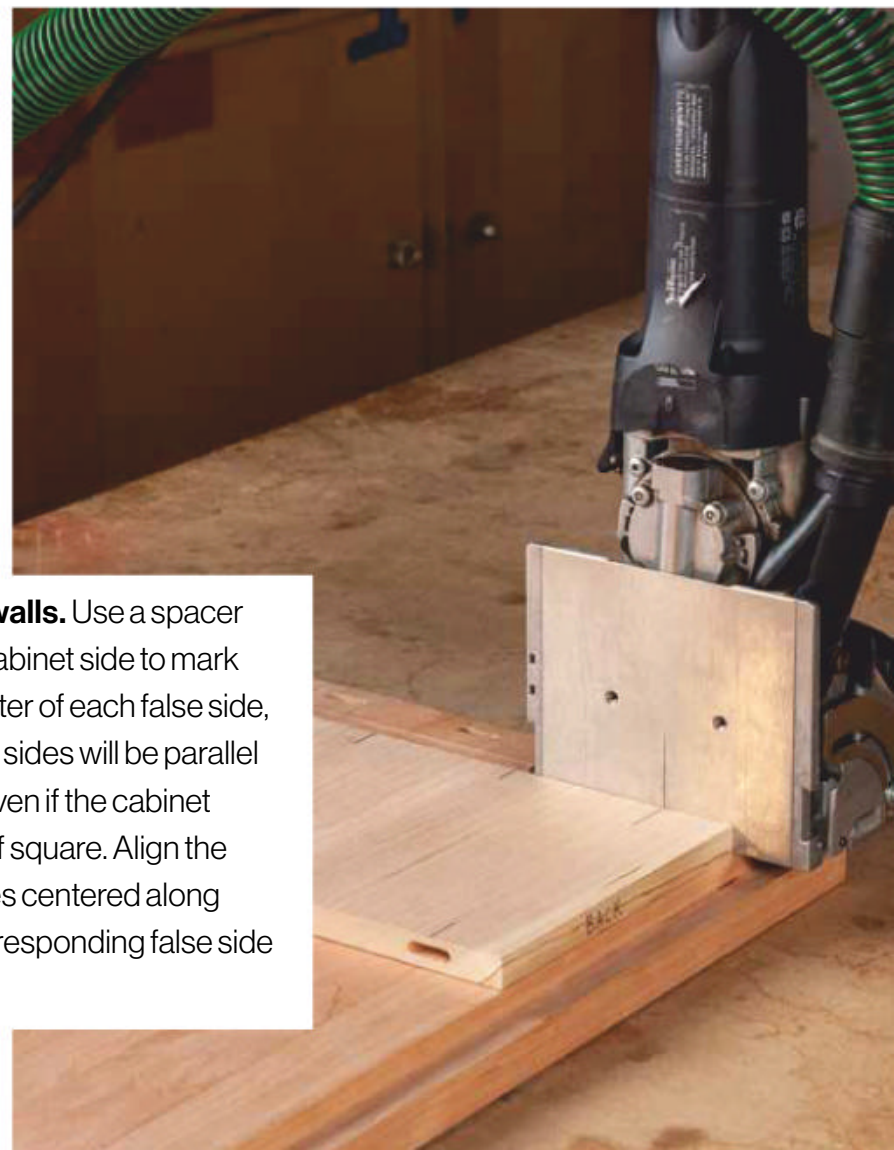
Routing the track. Mark your template's centerline, left, right, and back edges. Use these marks to align the template to the cabinet parts and rout the tracks. Note: for the top and bottom panels, align the back edge of the template to the rabbet edge; for the shelf, align to its back edge.



Dado and notch the sides. Place the sides on a spoil board, inside faces up, and front edges abutting. Tape two fences in place to guide the router. Make test cuts in set up stock to dial in the fence locations. After plowing full-length grooves, add stops and rout the notches, plunging through to the spoil board.



Lay out the interior walls. Use a spacer pressed against the cabinet side to mark the location of the center of each false side, ensuring that the false sides will be parallel to the cabinet sides, even if the cabinet sides are slightly out of square. Align the Domino to cut mortises centered along each line, using its corresponding false side as a fence as shown.



Adjust the direction of clamp pressure as needed to bring the cabinet square.

Getting clamp pressure across the center of a deep cabinet can be tricky without specialty clamps. One solution is to criss-cross a 2nd caul over the main caul aligned with the joint and clamp the ends.

Mixing epoxy in a thin layer in a wide pot (in this case a take-out container lid) will extend its pot life, giving you precious extra minutes of glue spreading time.

The center partitions sit flush to the edge of the track and serve as a door stop in combination with the handle locking slat.

Clamp the sides to the shelf while loading this assembly onto the bottom and lower interior panels. Remove this clamp after the top panel is in place.

A multi-layered glue-up

Before adding glue, make a sample portion of upper and lower tambour doors (see page 39) to test out your tracks while the assembly is dry fit. Make adjustments to the track and sample doors as needed, until the test doors run smoothly. Sand everything but the shelf and

prefinish any parts you won't be able to reach after glue-up. I used West System epoxy for its long open time and its strength in joints with end grain. I did this glue up alone, but I recommend having helpers if you can find some.

Make the stand

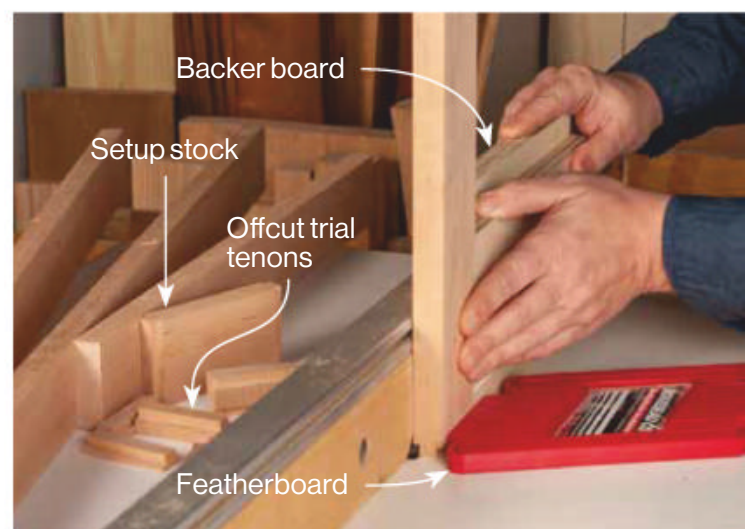
Mill the apron stock to final size and prepare two leg blanks at $1\frac{1}{2} \times 1\frac{1}{2} \times 20$ " plus an extra setup blank or two. Position the router table fence to center a $\frac{3}{4}$ " straight bit on the leg stock. Set a stop block to cut a $2\frac{1}{4}$ " long groove. Raise the bit to $\frac{3}{16}$ " and cut grooves on two adjacent faces on each end of the leg blanks. Swap in a $\frac{3}{8}$ " straight bit and take a couple passes to cut a $\frac{7}{16}$ "-deep groove on each of the same faces, and then make one final pass with a $\frac{1}{2}$ " dovetail bit set to a height of $\frac{7}{16}$ ". Lower the dovetail bit to $\frac{1}{4}$ " height and adjust the fence to cut sliding dovetails on the ends of each apron. Square the corners of the $\frac{3}{4}$ "-wide grooves with a chisel before rounding the leg stock with a $\frac{3}{4}$ " roundover bit. Crosscut the legs to length at the tablesaw. Handsaw a shoulder at the bottom edge of each dovetail tenon and clean up with a chisel. Sand and glue up.



Mortise the square stock. Safely and accurately rout all the leg joinery while the stock is square.



Rout round. Set a $\frac{3}{4}$ " roundover bit into a router fence and round the ends of the leg stock into 7" long, $1\frac{1}{2}$ " dowels, leaving a square section in the middle for safety.



Make the tenons. Stabilize the long, narrow aprons with a backer and feather board as you cut the dovetail tenons at the router table.



Trim the shoulders. Handsaw a $\frac{1}{4}$ " shoulder at the bottom of each dovetail tenon and pare clean with a chisel. Continue to widen the shoulder until the apron sits flush with top of the leg when the base is assembled.

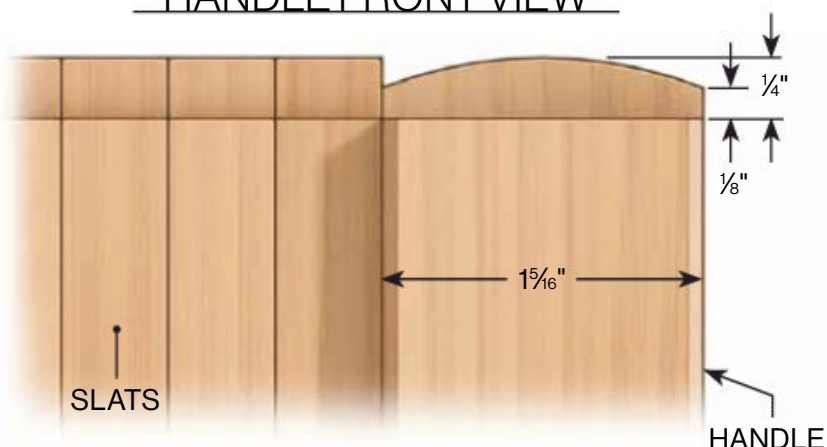
Closing the case

Sand and finish the glued-up cabinet and stand. I used Osmo Top Oil for countertops, in matte finish. Rout slots in the stand where indicated p. 32 and attach to the cabinet bottom with tabletop z-clips. Follow the procedures outlined in Tambour Technique at right to make and fit the tambour doors. Mill handle and locking slat stock to size and cut the handle tenons at the table saw before rounding their ends with a file. Rout pulls into the face of the handles with a $\frac{1}{2}$ " dia. core box bit. Drill pilot holes in the locking slat and handle. Cut the plywood back panel to fit into its rabbets. Mill adjustable shelves to size. Sand, finish, and install the doors, handles, shelves, and back panel. Then take a coffee break!

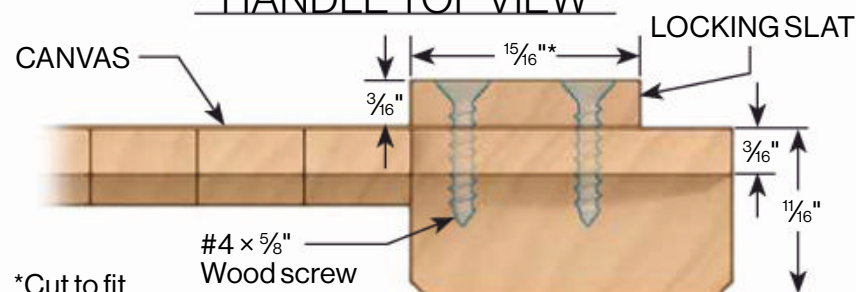


Load the handles from the front. Rotate each handle into the tambour tracks. They may need a little force, but if they won't budge, you have two options: widen the reveal at the top tenon on the handles and the doors to match, or plane the handles narrower.

HANDLE FRONT VIEW



HANDLE TOP VIEW



The LOCKING SLAT secures the handle to the fabric and stops the door from sliding past the center partition.

Lock in place. Pull the excess canvas at the leading edge of the door taut and tack to the back of the handle with hide glue. After it dries, poke holes through the canvas at the pilot holes with an awl before attaching the locking slat and trimming away excess fabric. ■



Tambour TECHNIQUE

Learn the basic steps to design and build your own rolling doors

By Larissa Huff

Tambour doors have been used in furniture making for hundreds of years, and like many forms and styles, their popularity has waxed and waned over time. At the moment, these clever sliding panels are experiencing a bit of a renaissance, and for good reason. They are incredibly versatile once you learn a few basic guidelines. While

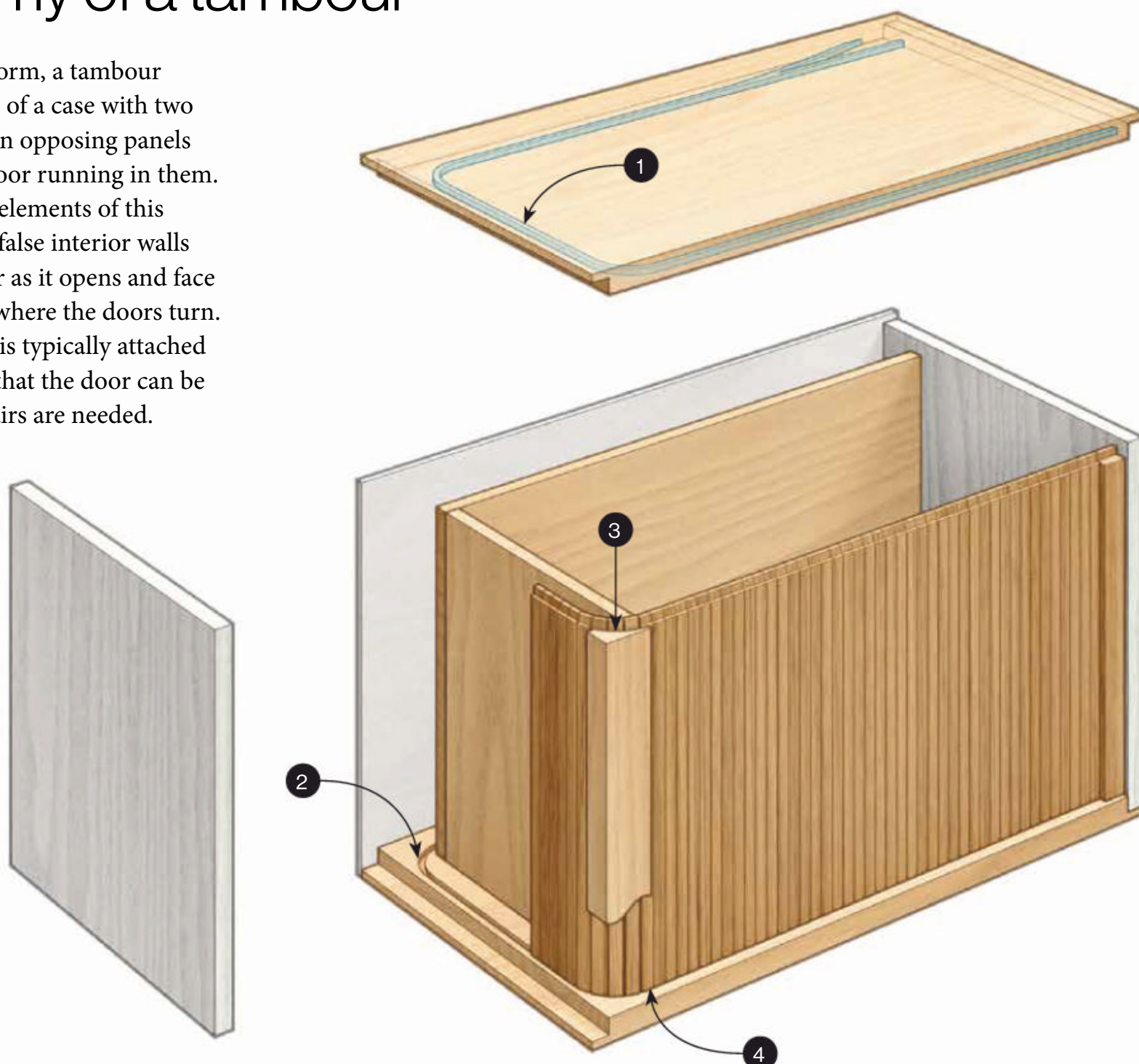
making tambour takes practice and skill, the techniques and rules I share here are actually much simpler than they might seem at first glance. And then there's the magic factor. Tambour doors move unlike any other kind of door, and they make a lovely sound as they disappear mysteriously into the depths of a cabinet.

While there are various methods for

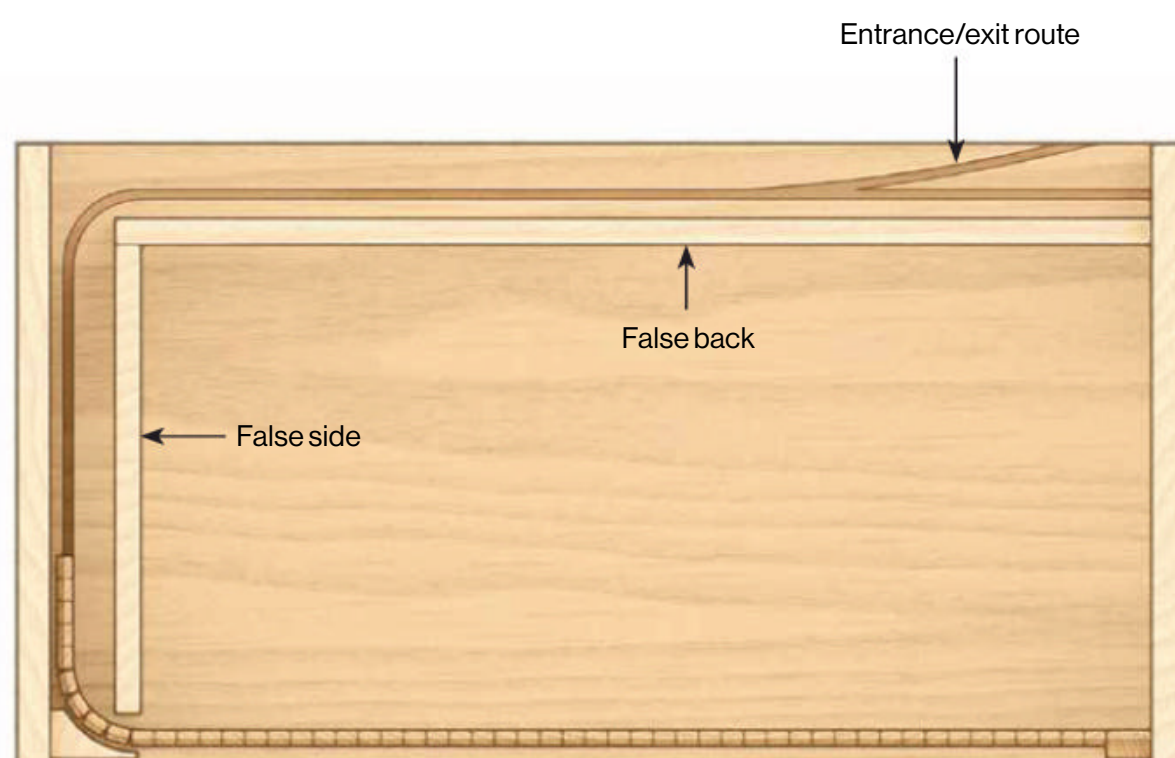
making tambour panels, this article focuses on canvas-backed tambour doors, their tracks, and the cabinet that houses them. For a project to build employing these techniques, see Sarah Marriage's Modern Sideboard (p. 30). I hope these guidelines inspire you to experiment with your own designs and see where the tambour takes you!

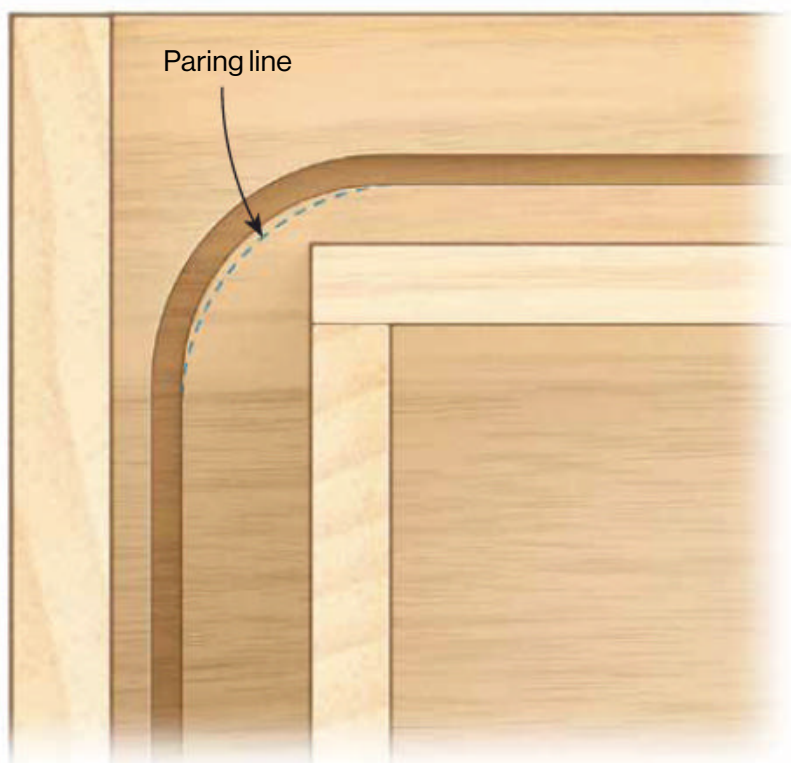
Anatomy of a tambour

In its simplest form, a tambour cabinet consists of a case with two curving tracks in opposing panels with a slatted door running in them. Other optional elements of this system include false interior walls to hide the door as it opens and face boards to hide where the doors turn. The back panel is typically attached with screws so that the door can be removed if repairs are needed.



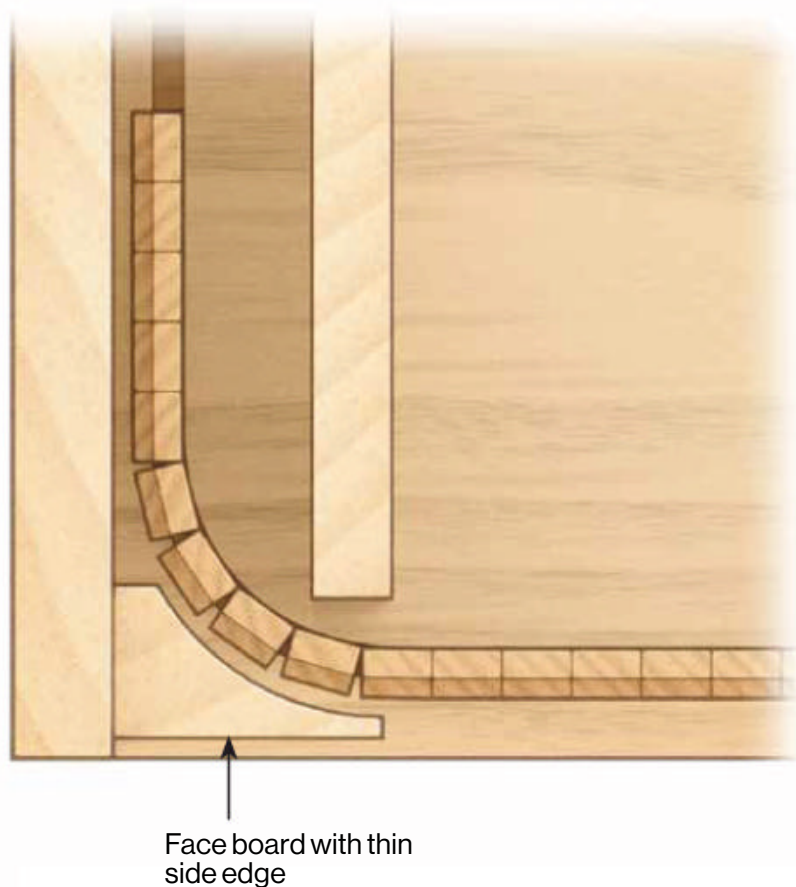
- 1 Laying out the track.** Determine the width of the opening of your cabinet. Your tambour door will need to be 2-3" wider than this opening. And the track will need to be long enough to accommodate the tambour when opened. The track shown here has two corner turns, to accommodate this needed length. The track should also include an 'entrance/exit route' at the back of the piece so the door can slide in after the case is assembled. See Modern Sideboard (p. 30) for a different example of track geometry and exit.



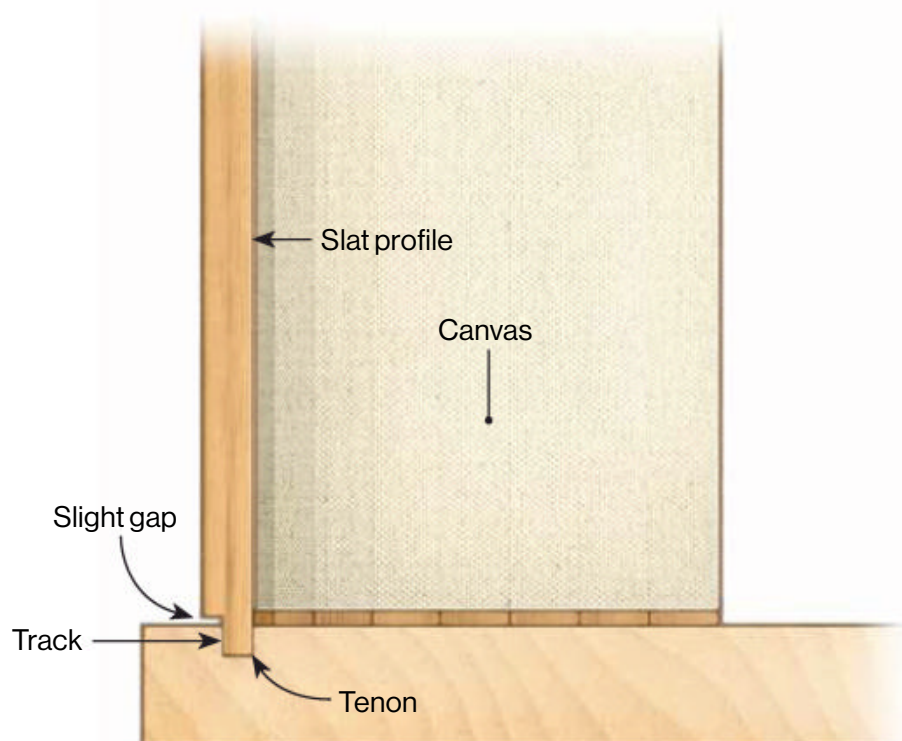


- 2 Turning the corner.** Tambour doors can travel around surprisingly tight curves. Adjusting the width of your slats and the thickness of the tenons at their ends will affect how sharp a turn the door can make. You can also adjust this limit by paring the track wider at the corners with a chisel.

- 3 Clearance and concealment.** The slats should be thick enough to cut a tenon with a small shoulder to fit into the width of the track. They should be a width that is visually in harmony with the rest of the piece, but not so wide that the door can't turn the corner. Optional face boards can hide the corner of the track. To maintain a sleek appearance, relieve the inside corner while leaving the rest of the piece thicker for joinery.



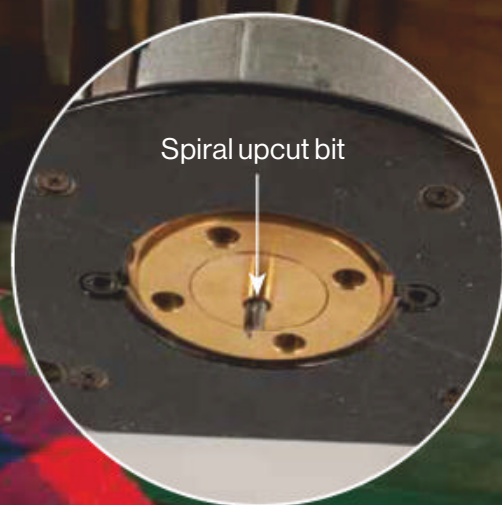
- 4 Tenons in the track.** The length of the slats is determined by the height of the case; measure the distance between the top and bottom of the case and add the depth of the track ($\times 2$). Cut the tenon cheeks from the front face of the tambour so the shoulder hides the track without touching the panel when it is put into the piece.



Making the track and slats

I use a spiral upcut bit running inside a guide bushing mounted to the base of my plunge router to cut the track. Make a template that is the size and shape of the interior space of the track layout, factoring in the offset between the router bit and the outer diameter of the guide bushing. Here, I'm using a $\frac{1}{4}$ " bit in a $\frac{3}{8}$ "-OD bushing, so I shrank the template by $\frac{1}{16}$ ". I have had good luck using MDF or melamine board for the template material. After the template is shaped, adhere it securely in place with double-faced tape before riding the guide bushing around it to cut the track.

Mill your door stock to length and thickness before ripping it into individual tambour slats at the table saw. Sand and pre-finish the show faces and edges of the slats before you glue them to the canvas (see Buyer's Guide, p. 61). The finish will help prevent the slats from sticking together after glue-up. Leave the back face unfinished.



Easing the track. To help the door glide around a tight radius, widen the track slightly by paring back the inside edge with a chisel.



Choosing a slat profile. For tracks that are largely straight with curves only at the corner turns, the slats can be left square and straight. If you're introducing an s-curve with concave and convex turns, the slats will need to be rounded to allow the panel to bend inward as well as outward.



Dial in the design with a trial run. Make a sample portion of your tambour and a section of the track with the same size corner turns as your final cabinet for testing. Adjust these test pieces until the test door runs smoothly, then adapt your final design accordingly.

Make the panels

Now to everyone's favorite part of woodworking: Make a jig! You'll need a fencing system that locks the tambour slats in tight and parallel for gluing. I make those fences the same (or slightly less than the) thickness of the tambour slats. Adhere the canvas to the slats with hide glue (the pre-bottled variety is fine) as shown, then apply pressure with a plywood caul and weights (books work well). Let the glue set for 20-30 minutes before checking for squeeze out between slats. Clean any excess glue, and let the tambour sit for at least two hours before cutting the tenons.



Build a door jig. Attach two perpendicular fences to a piece of flat plywood or MDF. Put your tambour slats into place with their back/glue faces up. Finally, attach the remaining end fence as shown. If the end fence isn't applying enough pressure (ie: if you can wiggle the slats around or see gaps), make two small wedges to tighten them up.



Attach the canvas backing. Tape off the top and bottom edges of the slats before applying a thin, even layer of glue. Cut a piece of canvas oversized in width and length and lay it onto the glue, keeping it flat and smooth. Once the glue is set, trim the excess fabric from the top and bottom of the door, but leave the width overlong.



Saw the tenons. Cut the tenons at the table saw with the tambour panel's show face down. Adjust the blade height and fence position so the resulting tenons fit the track. Walk the piece through the cut with push blocks for an even cut.

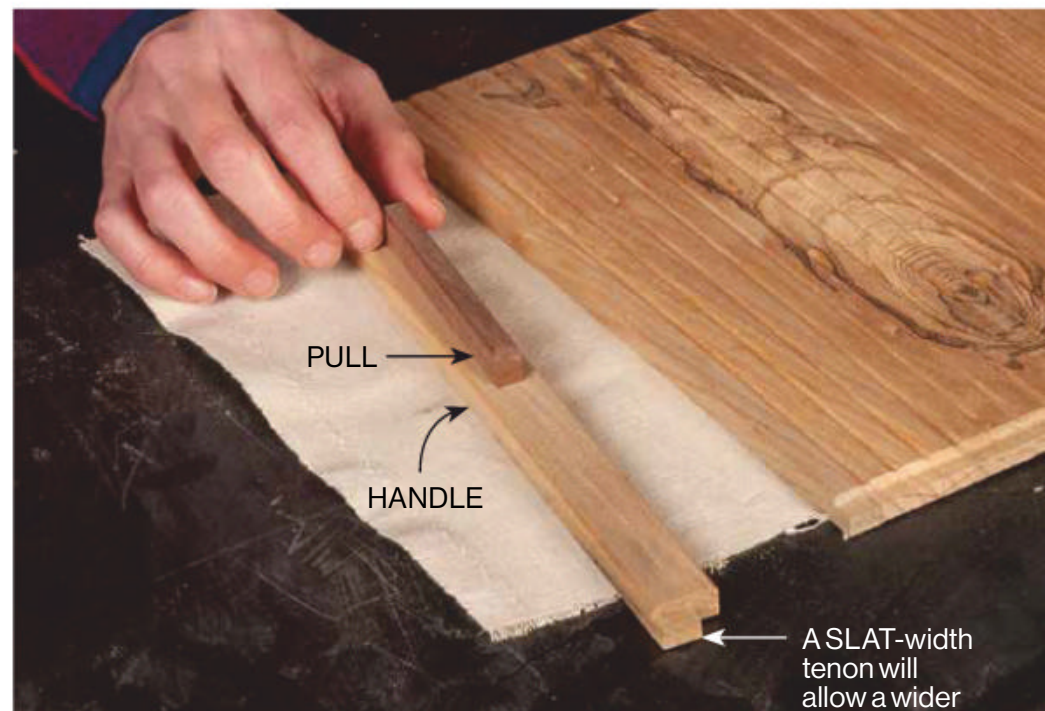


Fit the doors

Glue up the cabinet before proceeding with the final door fitting, as shown. It is likely you will have to trim the length of the tambour slats to fit as well as sneak up on the thickness of the tenon. Glue the handle slat to the canvas and trim excess fabric with a sharp blade. If your desired handle slat is too wide or thick to travel through the enclosed portion of the track, load it in from the front of the cabinet and attach. An applied pull may be attached with screws through the back of the handle slat after the door is installed. After finishing everything, rub a little paraffin in the track to help keep the door running freely.



Dial in the tenon thickness. I use a shoulder plane for that final tenon fit because it offers finer control than the table saw blade height. This step is much like fitting a standard mortise and tenon—it calls for some fine adjustments and fitting.



Handling the handle. Typically, the pull will be a slat added at the leading edge of the door. It can be wider, thicker, and/or have a fun shape to grip. See the Modern Sideboard (p. 30) for a specific pull design. ■

Bent-Lam GUITAR STAND

Sling your six-string safely and in style

By Derek Richmond

Buying a guitar leads to owning a plethora of other gear: strings, picks, (a second guitar,) straps, amps, (more guitars,) and of course those ubiquitous collapsible metal stands. They're great for the road, but at home where I want to keep my nicer six-string close at hand, I thought its stand should—well, stand up—to the guitar. And that meant a quality wooden structure that would safely support the instrument without overshadowing its elegant form and wooden beauty.

Picking up on the sensuous curves and subtle angles of my Martin D-35, I designed this stand with both curved and straight elements joined with binding screws and shiny metal spacers (see Buyers Guide, p. 60). These spacers make me think of a guitar's tuning pegs, while the upright is reminiscent of the instrument's neck. I went with bent lamination to make the curved pieces, sawing thin strips of wood to bend for the shallow curve of the spine and purchasing veneer for the tighter curves of the base and supports. I chose to make my stand from maple because its simple grain doesn't detract from the spruce and rosewood components of the guitar; but any hardwood will do as long as you can get veneer strips at least 30" long.



Layers and layers of laminations

The U-shaped guitar supports and base are laminated from veneer strips shaped around forms. The spine consists of three $\frac{1}{8}$ "-thick hardwood laminations, also glued up on a form. The veneer is great for tight bends while the thicker hardwood strips makes the thin spine plenty sturdy. The upright is shaped from solid hardwood and attached to the base with a mortise and tenon joint, while binding screws and metal spacers connect the rest of the parts.



Order of Work

- ✓ Cut laminate and create forms
- ✓ Bend and glue laminates on forms
- ✓ Trim and shape U-bends
- ✓ Drill for hardware
- ✓ Create upright support
- ✓ Sand and finish
- ✓ Assemble
- ✓ Rock out!

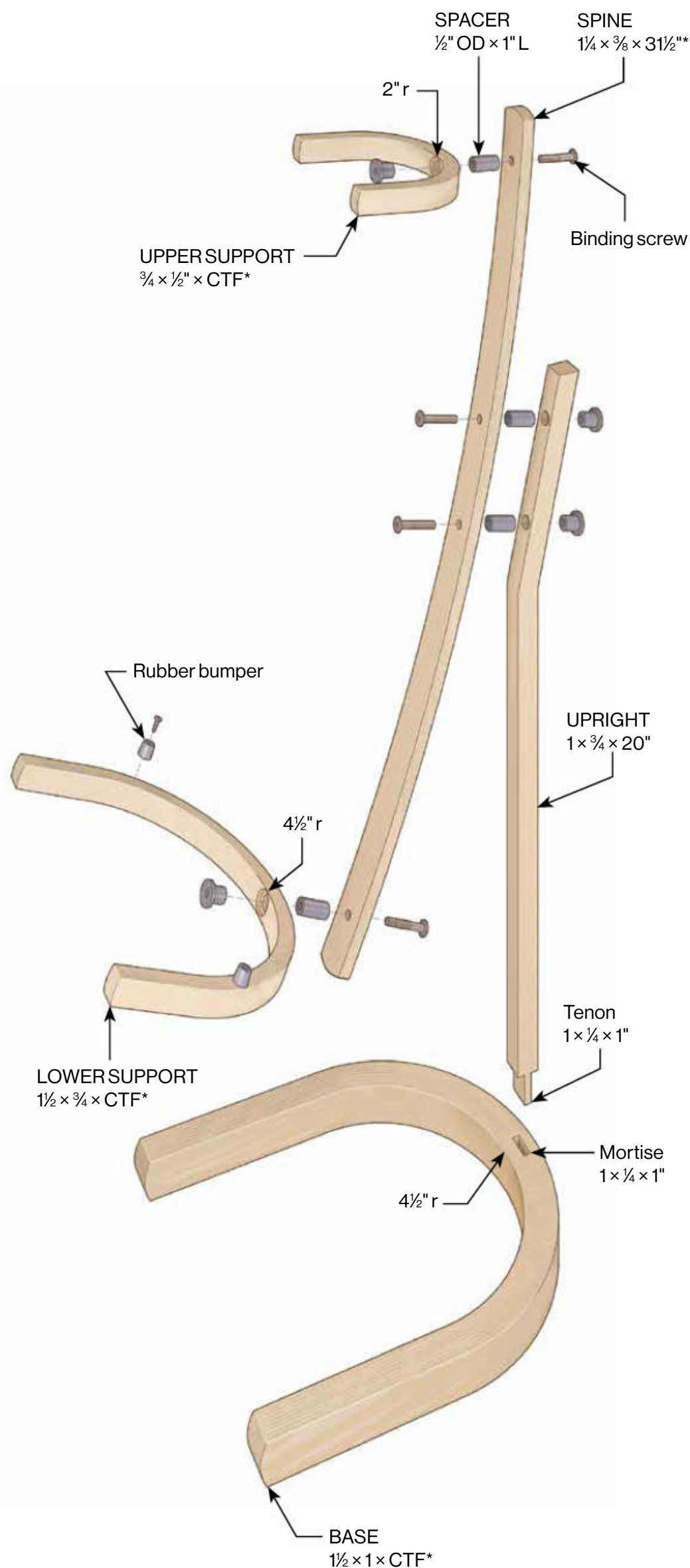


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* Cut to fit

Bending more than strings

At the table saw, rip three strips measuring $\frac{1}{8} \times 1\frac{1}{2} \times 33$ ", positioning each cut with a gauge block. Make the spine form from a double layer of $\frac{3}{4}$ " MDF. Then cut veneer strips at least $\frac{1}{4}$ " wider than the final width of the base and supports. The veneer strips should be at least 29" long for the base, 20" for the lower support, and 9" for the upper support. I found a hobby knife and straightedge the quickest way to make the cuts. Slice enough veneer layers to create the thickness of the base and each support.

Make the upper support form from two layers of $\frac{3}{4}$ " MDF, and the base/lower support form (both pieces use the same form) from three layers, screwed—not glued—together. Cut the forms and sand them to final shape (or download the files and have a CNC router cut the forms for you). Glue and clamp the strips around the forms. After bending all four pieces, trim to final width as shown.

Cutting the thin strips away from the fence eliminates the risk of kickback caused by the thin piece getting caught between the fence and blade.

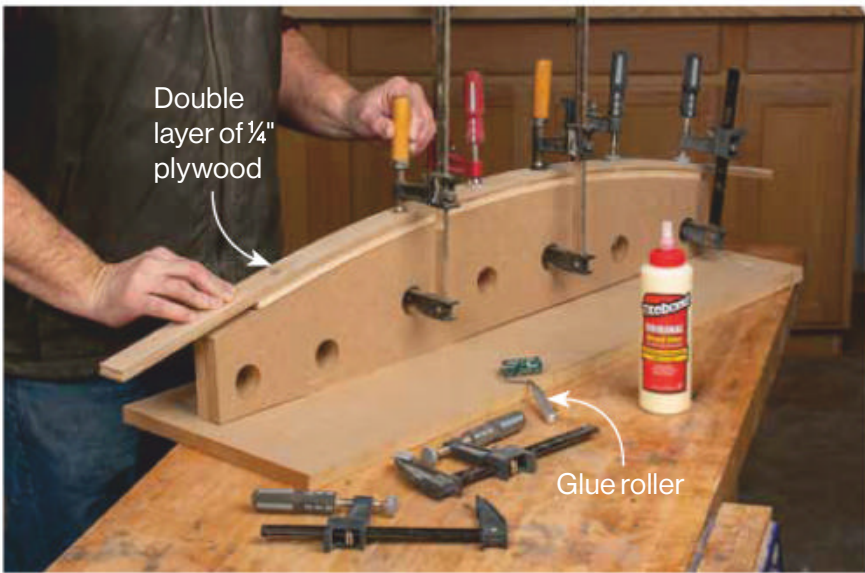
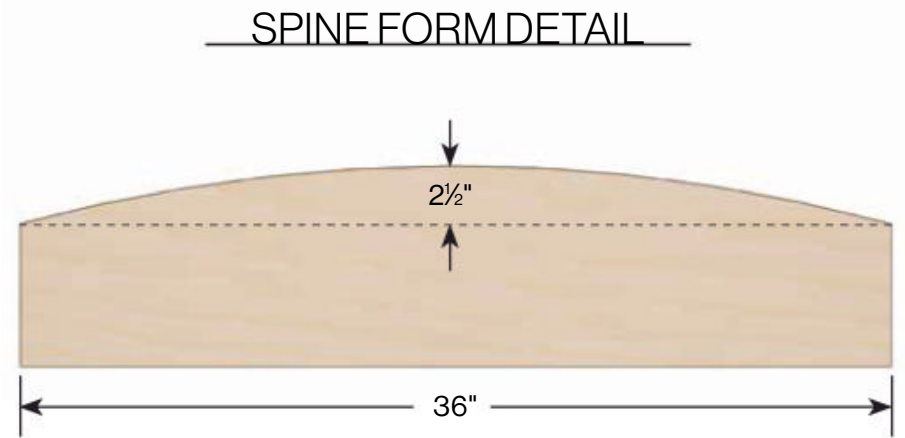
A gauge block keeps the cut width consistent. Round its end to provide a single touchpoint to locate your workpiece against. Attach the block to a miter slot runner (or clamp one to your table) ahead of the blade so its end is $\frac{1}{8}$ " from the outside of the blade.



Rip and reset. After ripping a $\frac{1}{8}$ " wide strip, slide the workpiece and fence over to just barely contact the gauge block, then repeat the cut.



Lay out laminating forms. Lay out the forms on MDF, using a compass to draw the base and support templates and a drawing spline to lay out the spine form. Then cut to shape at the bandsaw, screw the form layers together, and sand to refine the curves.



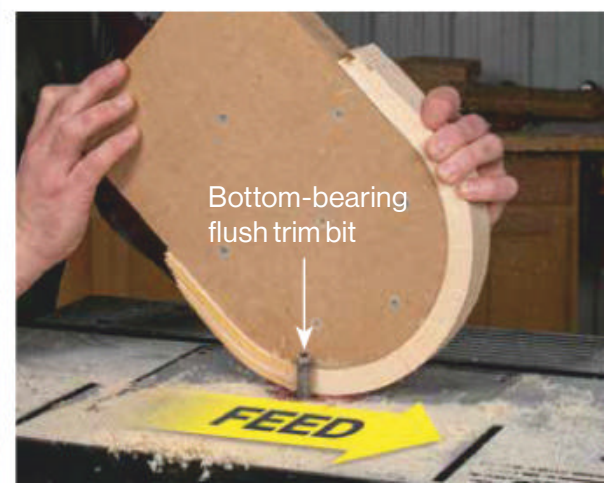
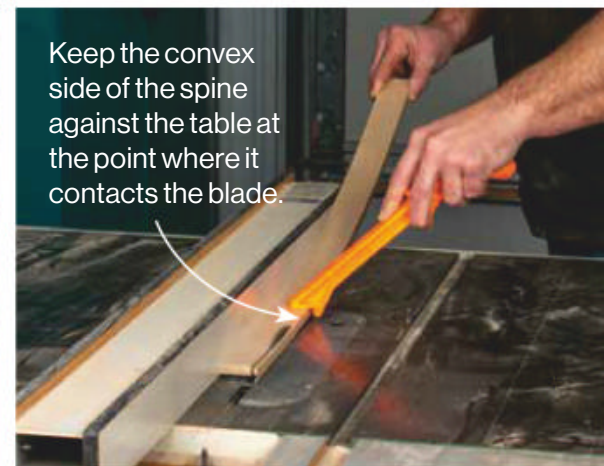
Glue up spine. Spread glue on one face of each spine strip, then stack and clamp to the form. Holes in the form ensure the clamps stay perpendicular to its surface, while a few strips of 1/4"-thick plywood protect the strips and help evenly distribute the clamp pressure.



Glue up U-shapes. A wide band provides excellent pressure around the curved portion of the form, but add two or three F-clamps and cauls on the straight portions to ensure good pressure here.



Clean up the laminations. For the spine, clean one edge at the jointer, then trim to final width at the table saw. For the U-shapes, remove one layer from each form and adhere the laminations to the form with double-faced tape. At the router table, trim the pieces to match thickness of the forms with a flush trim bit.



Setting the stage

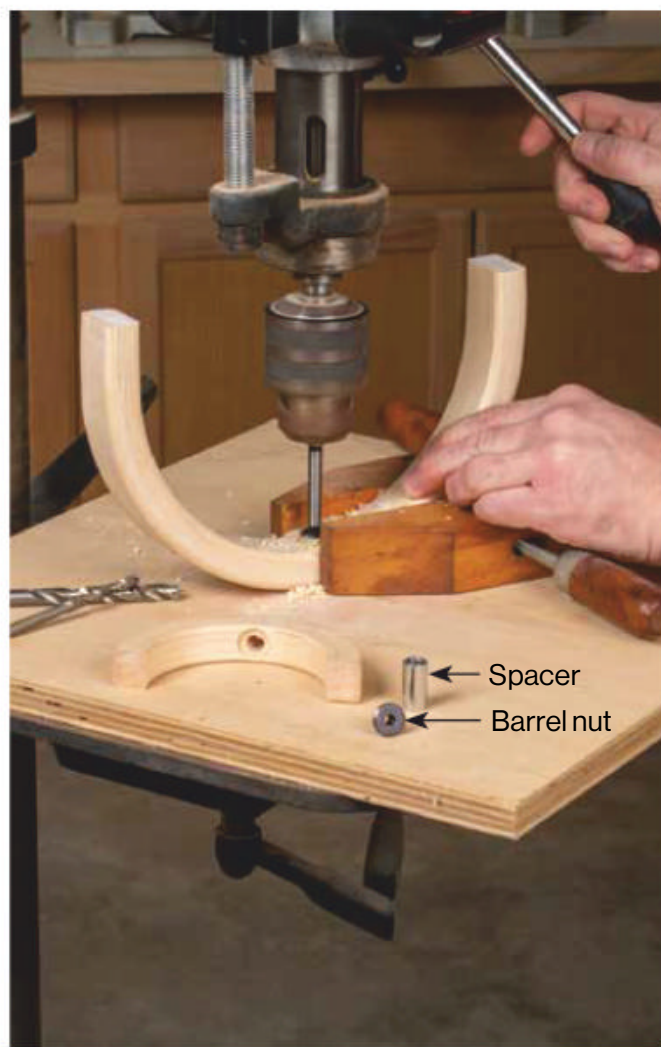
Bore holes in the spine to accept the hardware that will attach the guitar supports. Then round over the edges of the base and supports at the router table before bandsawing each veneer U-shape to length. Back at the drill press, secure each support in a wooden handscrew clamp as shown, making sure both ends are equidistant above the drill press table. Then bore a series of concentric holes, creating relief for the head and shaft of the nut.



This is Spinal Tap. At the drill press, align the centerpoint of the spine form under a $\frac{1}{4}$ "-dia. bit and clamp the form in place. Bore two holes through the spine, centered on its width and located $\frac{1}{2}$ " from each end.



Rounding the bends. Soften the edges of the U-bends at the router table. Give the upper support a $\frac{1}{8}$ "-radius roundover, switching to a $\frac{1}{4}$ "-radius bit for the base and lower support.



Counterbore the supports. Hold the workpiece with a handscrew clamp and bore an $\frac{1}{16}$ "-dia. hole $\frac{1}{8}$ " deep in the center of the concave side of each support. Using the same centerpoint, drill a $\frac{3}{8}$ "-dia. hole $\frac{1}{2}$ " deep, then finish boring through the U-bend with a $\frac{1}{4}$ " bit.

Upright base

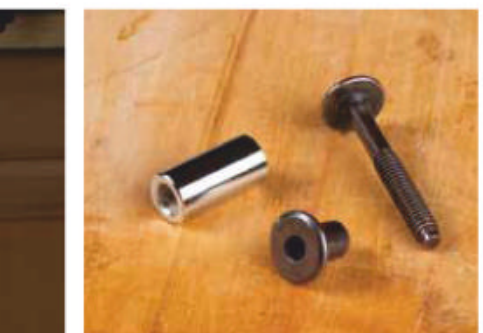
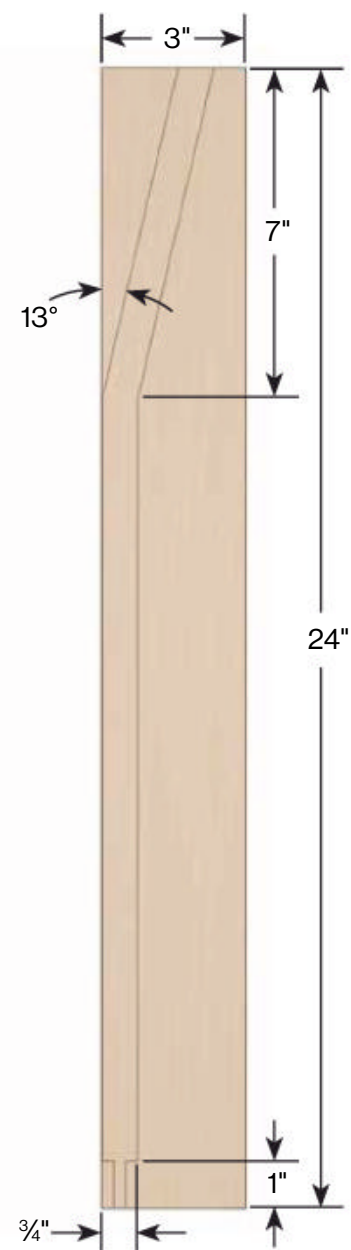
Cut the mortise for the upright at the apex of the base's curvature. Lay out the upright's profile (see the drawing at right) on straight-grained, milled stock. Saw and sand to shape. At the bottom of the upright, create a tenon at the router table by rabbeting both sides of the workpiece. I found it was easier to round the tenon's corners with a file than to square the mortise in the laminated veneer. To drill the holes for the bolts that will connect to the upright to the spine, place the angled section face-down on the drill press table and bore through from the back. Start with a $\frac{3}{8}$ "-dia. hole, $\frac{1}{2}$ " deep, then finish with a $\frac{1}{4}$ "-dia. through-hole. Clamp the upright and spine together with the spacers in between. Align the pieces with help from a square and $\frac{1}{8}$ "-thick spacer as shown. Then drill $\frac{1}{4}$ "-dia. holes through the spine. Glue the upright and base together. Add a slight countersink to the head side of every bolt hole for the small fillet under the bolt's head, allowing the head to seat firmly against the wood. Radius the ends of each laminated part for aesthetics and to safeguard your guitar. Predrill screw holes for the rubber bumpers on the lower support. Then sand and finish the pieces before assembling—I used water-based polyurethane that wouldn't yellow the maple.



Auxiliary fence
screwed to form

Mortise the base. Clamp the base onto its form and mark the apex for a 1"-long, ¼"-wide mortise. Screw a fence to the form parallel to the mortise layout. Cut the 1" deep mortise in several shallow passes with a ¼" straight bit in a plunge router.

UPRIGHT DETAIL



Drill for the barrel bolts.

With the bottom 3½" of the upright clamped in a bench vise, adhere spacers to the angled section with double-faced tape, locating them with bolts pushed through the upright. Clamp the spine in place with its lower end touching the bench, then drill through it using the existing holes and spacers as a guide.



⅛" thick offset
spacer accounts for
difference in spine
and upright width.

Square to align
upright and spine.



Glue the upright. Grip the upright with a handscrew clamp to create a clamping surface for putting downward pressure on the upright. After clamping the joint together, squeeze the base with a C-clamp (and cauls) to ensure good cheek-to-cheek glue contact inside the joint. ■



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Persimmon

Prepare for impact

By Robert J. Settich

Persimmon (*Diospyros virginiana*) is the only true member of the ebony family that grows in North America. But unlike its tropical counterpart and many other trees, the vast majority of persimmon lumber consists of cream-colored sapwood, with only a tiny portion of dark heartwood. Surprisingly, though, its sapwood is more highly prized and utilized. Persimmon trees can reach a height of 60 to 80 feet, with a diameter of up to two feet. The tree has a rating of 2300 on the Janka hardness scale, equal to Caribbean rosewood and far greater than hickory's score of 1820. Persimmon has a significant initial shrinkage rate, accounting for cracks in dried boards and blanks. In addition, the wood can exhibit substantial movement due to seasonal changes in moisture content, even in properly finished projects.

With its density, close grain, and small semi-ring-porous structure, persimmon is a good wood for kitchen utensils such as cutting and charcuterie boards, rolling pins, spatulas, spoons, and similar items. With its added virtue of shock resistance, it is a good candidate for mallets as well as handles for hammers and turning tools.

Persimmon's hardness made it ideal for weaving shuttles, billiard cues, and shoe lasts, which are the

forms for shaping footwear. Later in its history, persimmon gained probably its greatest popular fame as the head of golf drivers. As early as 1900, club manufacturers in golf's birthplace of Scotland began importing wood from America to make clubs with persimmon heads and hickory shafts.

Drum roll, please...

Another popular use for persimmon wood is for musicians' drumsticks, which are available in a positively mind-boggling variety. First, it depends on whether you play in a garage band, a symphony orchestra, or a musical style somewhere in between. Then you need to choose the material of the tip (wood or plastic) and the desired tonality of the sticks. Although turning drumsticks would seem to be an appealing home shop project, woodworking is only the first part of the process. Next, you need to roll out sophisticated electronic test gear to match each pair of sticks acoustically. In summary: turning is tempting, but tuning is tough.

Persimmon to the doorstep

To try my hand at persimmon, I placed an order for some 4/4 lumber with an online supplier. I initially wanted thicker stock, but that is much more difficult to find, and often only as undried but waxed turning squares or bowl blanks. My shipment had one unpleasant surprise—a significantly cupped board—but a rip cut gave me narrower pieces that flattened smoothly at the joiner and thickness planer. The wood is typically bland in figure and color, though occasional dark streaks add either interest or problems, depending on your viewpoint. Holes from boring insects, such as the powderpost beetle, are fairly common because the sapwood lacks tannin and other chemical extractives that



Striking striker.

This 11" laminated persimmon mallet has a 3" dia. head 4½" long. Overall, it weighs 16.3 ounces.

Stark contrast. Persimmon wood is mostly cream-colored sapwood with bland figuring, though dark streaks can add drama. Cracks and insect damage are fairly common but spalting, as seen here, is uncommon.



typically make heartwood less appetizing to invaders. But there weren't an undue number of holes, and they were mostly along the edges, so I easily avoided them.

One very pleasant surprise in the shipment was some spalting on several boards, forming patterns that mimic intricately penned designs. And while spalting in maple and other woods often produces punky areas, that wasn't the case with this batch. Although some suppliers charge a considerable premium for spalted persimmon, this seller included the boards at the base price.

The persimmon boards ripped cleanly and quickly at my 3 hp table saw, but at the mitersaw, I could feel the motor slow slightly because of the wood's density. Despite that, the cut was burn-free. When I glued up the blank for my mallet (left), I applied Titebond III to each pair of surfaces and rubbed the boards together until the joint grabbed. This step discourages the wood from excessive slippage when tightening the clamps. I always know when I've used enough clamps—when I can't fit another one on the assembly. And even though I used only moderate pressure on each clamp, the joints are virtually invisible.

I initially shaped the blank with a $\frac{1}{8}$ " blade at the bandsaw with zero problems.

Pass the persimmons, please. Most persimmon trees are raised for their tasty fruit instead of lumber. Humans in North America have enjoyed persimmon fruit—up to baseball-sized—long before either America or baseball was a thing.

On the lathe, the mallet responded well to both gouges and scrapers. After that, I cleaned up the spinning surface with progressive grits of sandpaper, using a hard rubber block to maintain flatness. The dust was no more problematic than usual, causing no respiratory or skin reactions. With no bulge in the handle's shape, I can easily choose a wide range of grips: "choking up" for control or moving toward the knob for more power.

I applied a coat of Watco natural oil finish over two successive days and am pleased with the low-luster sheen. By the way, I don't understand the slick finishes on many manufactured mallets, but that's a topic for another day. ■

Bet on this trifecta. Although most persimmon trees are tended in home gardens and small orchards, you may occasionally encounter them in the wild. Identification, in that case, is relatively easy because it is the only tree possessing this trifecta of characteristics: toothless leaves (smooth edges), dark buds, and regularly cracked bark that resembles alligator skin. Of course, the fruit with its tiny crown would seal the case.

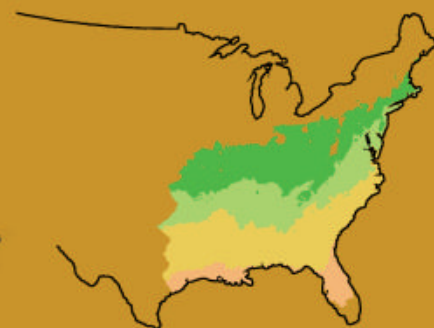
Hard-hitting facts

By many other names. Persimmon has as many nicknames as you'd find in a frat house. They include white ebony, American ebony, fruit of the gods, Jove's fire, bara-bara, boa wood, possum wood, and sugar plum.

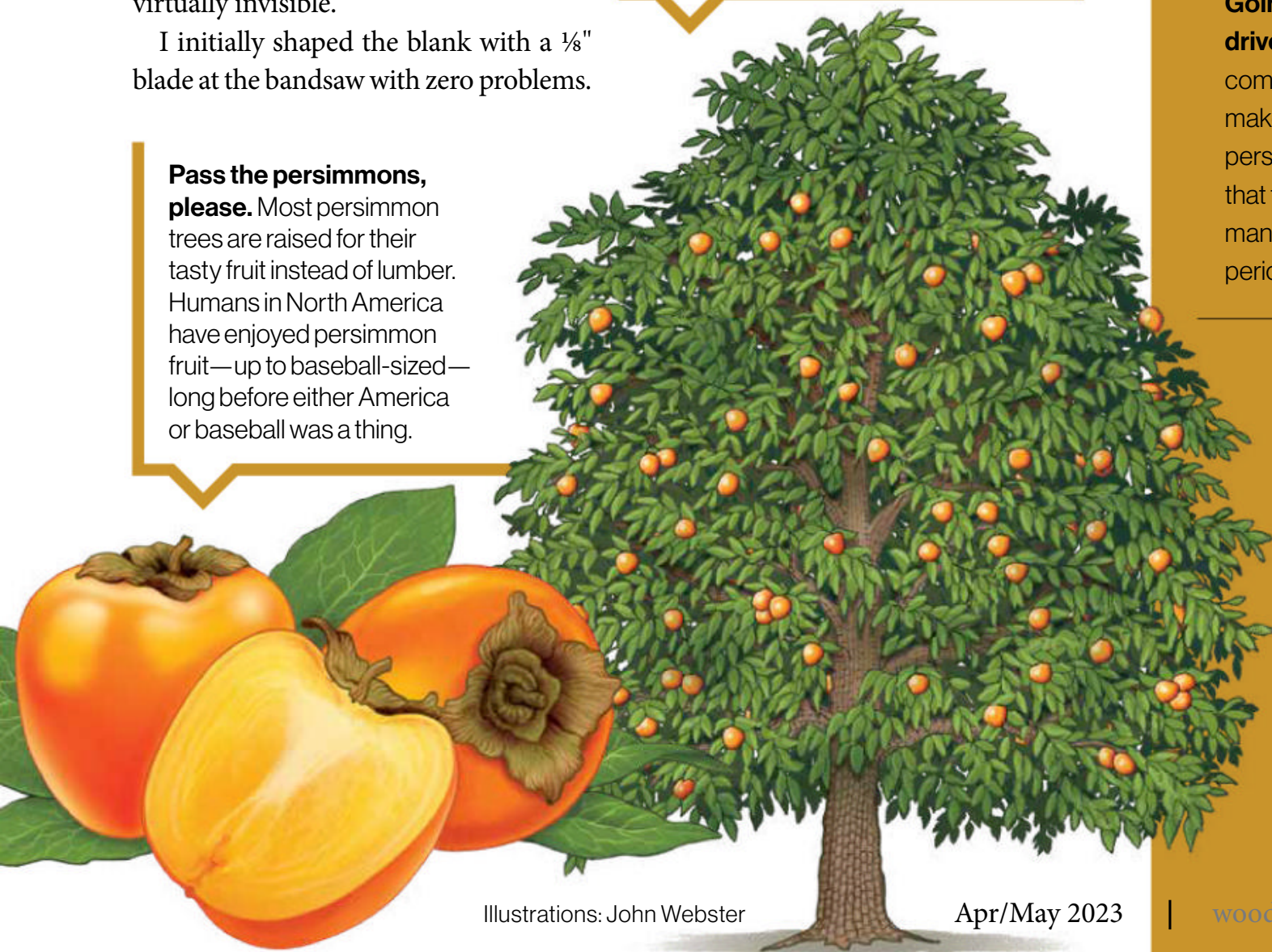
The story behind storied North American rays. Persimmon and yellow buckeye (*Aeschulus octandra*) are the only commercially used species grown in a temperate climate exhibiting storied rays, a rippled grain pattern. This feature is far more common in tropical hardwoods such as sapele, Honduras mahogany, and many rosewoods.

Driving ambition lands persimmon in the rough. In 1979, Gary Adams had the idea of completely replacing wood by making golf drivers from steel. He founded TaylorMade, initially offering only one product he named Pittsburgh Persimmon, combining the name of the Steel City with the traditional material.

Going for a vintage driver. There are a few companies that still make golf clubs from persimmon. One claims that the process requires over 200 manufacturing steps during a six-week period to make each club.



Southeast coverage. This species of persimmon lives in both moist valleys and dry uplands, spread by mammals and birds that enjoy the fruit.



A fresh guide for chip carving

Techniques for Sculpting Beautiful Patterns by Hand

Being employed at a woodworking magazine grants me access to lots of information. Plus, my office is right next door to a Woodcraft store. I'm lucky to have easy access to research and learn almost anything woodworking-related. But I wish that this book had been available when I first tried my hand at chip carving. In *Chip Carving, Techniques for Carving Beautiful Patterns by Hand* (Blue Hills Press), author Daniel Clay deftly walks you through the early stages of the craft: what tools you need, how to use them, and how to sharpen them. Text and photos make the craft accessible and grant confidence along the way. With clear photos and direct writing, each chapter cleverly builds on the one before as you work through different cuts to various patterns,



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designing your own patterns, and finally finishing. Plus, the foreword is by late master woodworker Nancy Hiller. If you are interested in chip carving, you'll want to read this book. Even if you aren't, it will change your mind when you see the cool things you could do. And, if you're a chip carving veteran, Clay's unique, original, and modern patterns and designs will breathe fresh inspiration into your art.

—Chad McClung

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A comfy shop perch

Vyper Robust Steel Max Quick Height Chair

For tasks such as carving and scrollsawing, there is nothing like having a stable seat to sit on while you're getting the job done. Vyper's shop chair provides just that. This beefy, U.S.-made shop accessory features a firm, cushioned seat atop a very surefooted, five-wheel base. It's height-adjustable, so you can fit it to the task at hand. The casters are large enough to easily roll over debris and even cords as you move the chair around and set widely enough apart that there is virtually no chance of turning the chair over. And the padded backrest provides good support when you need to lean back and stretch. I've found my Vyper to be a wonderful upgrade to the old metal stool I had previously. In addition to the aforementioned tasks, I also use it regularly when inputting information for my CNC machine and when working on small projects such as the dragonfly on page 22.

—Ken Burton



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Connecting a dust-collection hose to my miter saw caught only a fraction of the debris, with the majority of it spraying throughout my shop. To get enough airflow to completely conquer the problem, I would probably need to invest in a wind-tunnel turbine. Instead, I decided to try The Original Saw Hood from FastCap.

After some minor assembly, stout pins in the hood's frame dropped into accessory holes in the saw's chassis. The hood removes quickly and folds flat for storage or carrying to a job site. The top of the hood has a clear plastic panel to admit light, but I clip on a small lamp for improved visibility. The setup includes a front panel that prevents dust from ricocheting out of the hood. You easily attach it with the sewn-on hook-and-loop strips. The slick fabric of the hood helps most dust slide into a bucket on



the floor. And the hood is waterproof, so you can also use it with a wet tile saw. Paired with a shop vacuum, this is a worthy investment for quality dust control at the miter saw.

—Robert J. Settich

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Buyer's Guide

Tool Reviews (p. 12)

1. Revolution Rotary Axis CNC Router Kit.....*bobscnc.com*, **\$1,245.00**

Balanced Dragonfly Sculpture (p. 22)

1. Pfeil Swiss Made #11 Sweep Veiner 3mm
Palm Handled Carving Tool.....#05Y12, **\$34.99**
2. Pebeo High Viscosity Studio Acrylic Paints*dickblick.com*, **\$6.77**

Slatted Outdoor Table (p. 25)

1. Symmetric Drawing Bow*leevalley.com*, #05N5501, **\$43.50**
2. PantoRouter All-In Woodworking Machine.....*pantorouter.com*, **\$2,185.00**
3. Osmo UV Protection Oil, 410 Clear, Satin, .75 L.....#173740, **\$46.99**

Modern Sideboard (p. 30)

1. Whiteside Upcut Spiral Bit, 3/16" D, 3/4" CL, 1/4" SH..... #814915, **\$25.99**
2. Whiteside Deep Multi Rabbet Router Bit Set,
1 7/8" D x 1" CL, 1/2" SH, 1/4" D, 1" CL, 1/4" SH..... #405489, **\$80.99**
3. Kreg Shelf Pin Jig, 5mm.....#182806, **\$39.99**
4. Kreg Shelf Pins, 5mm.....#182807, **\$8.99**
5. Baltic Birch Plywood, 1/2 x 30 x 48".....#152977, **\$81.99**
6. Osmo Top Oil, 3065 Clear, Matte, Solvent Based, .5 L.....#175214, **\$41.99**
7. Festool Domino Tenons - 5 x 19 x 30 mm - Beech - 300 PC #494938, **\$31.00**
8. Festool Domino Tenons - 6 x 20 x 40 mm - Beech - 190 PC #494939, **\$31.00**
9. Highpoint Table Top Fasteners, 8 Piece.....#159301, **\$4.49**

Tambour Technique (p. 39)

1. Titebond Liquid Hide Glue, 8 oz.....#153818, **\$7.99**
2. Duck Canvas Fabric, per yd.....*joann.com*, **\$12.99**
3. WoodRiver Router Bushing Set.....#144625, **\$58.99**

Bent-Lam Guitar Stand (p. 46)

1. Sauers Maple Wood Veneer Pack, 12 sq. ft.....#131446, **\$21.99**
2. WoodRiver 1 1/8" High-Carbon Steel Forstner Bit.....#125930, **\$10.99**
3. Pony 10 ft. Band Clamp.....*lowes.com*, #4131486, **\$39.98**

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4. Binding Screws for Wood, Bronze, 1/4" x 20, 1.969"L.....#90835A108, **\$11.49**
5. Binding Bronze-Plated Steel Barrel, 1/4" x 20, .669"L.....#90835A310, **\$20.29**
6. Polished Unthreaded Spacers, 1/2" OD, 1" L.....#93320A350, **\$14.83**
7. Unthreaded Bumper, 1/2" OD, 1/2" High.....#9540K731, **\$10.38**

Great Gear (p. 56)

1. Chip Carving:
Techniques for Carving Beautiful Patterns by Hand.....#186098, **\$27.95**
2. Vyper Robust Steel Max Quick Height Chair.....*vyperindustrial.com*, **\$595.00**
3. FastCap Original Saw Hood.....*FastCap.com*, **\$217.20**

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Ad Index

ADVERTISER	PAGE
Amana - <i>amanatool.com</i>	57
The American Woodshop - <i>wbgu.org/americanwoodshop</i>	19
Bosch - <i>boschtools.com</i>	15
Carter - <i>carterproducts.com</i>	63
Connecticut Valley School of WW - <i>schoolofwoodworking.com</i>	62
E-Z LOK - <i>ezlok.com</i>	21
Festool - <i>festool.com</i>	7
Freud - <i>woodcraft.com/Freud</i>	IFC
Howard - <i>howardproducts.com</i>	62
JessEm - <i>jessem.com</i>	53
Kutzall - <i>kutzall.com</i>	17
Laguna - <i>lagunatools.com</i>	9
Lignomat - <i>lignomat.com</i>	60
Mercury Adhesives - <i>mercuryadhesives.com</i>	60
Milescraft - <i>milescraft.com</i>	21
Next Wave - <i>nextwaveautomation.com</i>	11
Oneida - <i>oneida-air.com</i>	19, 58
PS Wood - <i>pswood.com</i>	62
Rikon - <i>rikontools.com</i>	1
Rustoleum - <i>rustoleum.com</i>	56
Satellite City - <i>caglu.com</i>	62
Robert Sorby - <i>robert-sorby.co.uk</i>	6
System Three - <i>systemthree.com</i>	59
Titebond - <i>titebond.com</i>	OBC
Thomas Flinn & Co. - <i>flinn-garlick-saws.co.uk</i>	19
Whiteside Machine - <i>whitesiderouterbits.com</i>	IBC
Woodcraft Franchise - <i>woodcraftfranchise.com</i>	64
Woodcraft Magazine - <i>woodcraftmagazine.com</i>	8, 20, 62
Woodcraft Supply - <i>woodcraft.com</i>	14, 52

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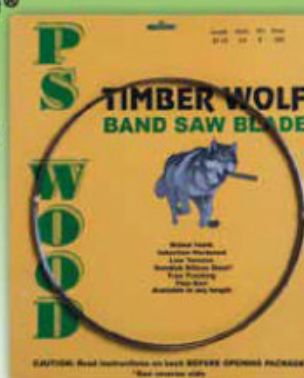
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