25 GIFT IDEAS for your **ROUTER** p.25

WOODCRAFT® magazine

Projects, Techniques, and Products

Build this clever
BOOK TREE

Classic sturdy
FIRESIDE STOOL

Here comes Santa Claus
ADVENT CALENDAR

p.22

Treat-toting
SCROLLSAWN SLEIGH

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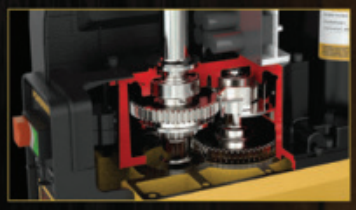

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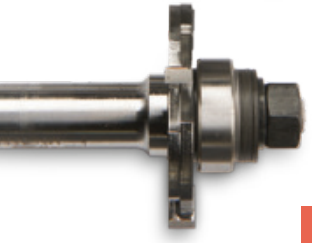

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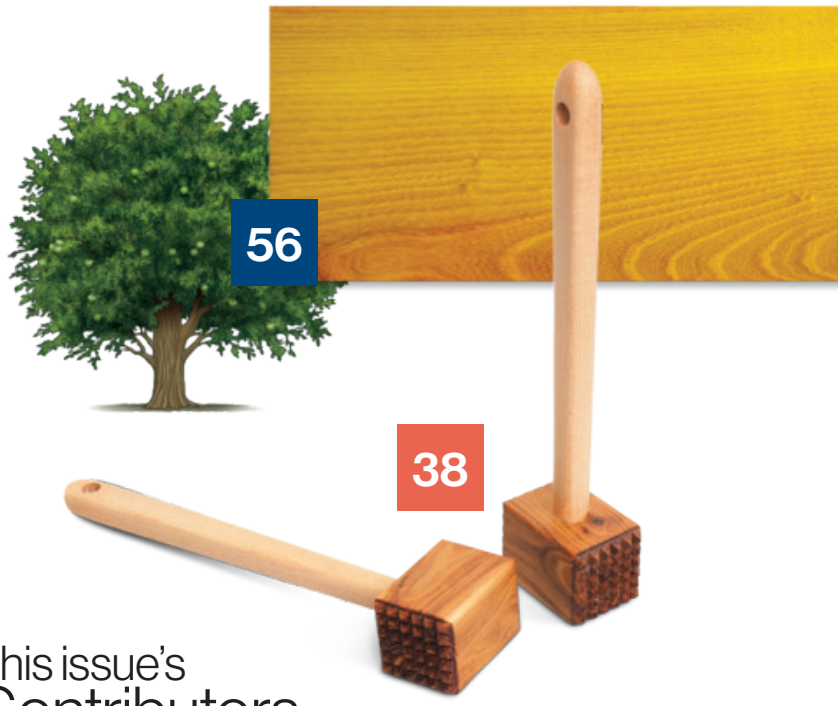
Features

Cover photo: Ken Burton



Departments

This issue's Contributors

LARRY OKREND is a Minneapolis-based woodworking writer, editor, and designer with more than 30 years of experience. He is the former chief editor of HANDY magazine, and senior editor at Workbench magazine. In his spare time, he's an active DIYer and a passionate woodworker. **Read Larry's article on page 38.**

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 article on page 56.**

Grow your community this year

Woodworking can be a solitary affair when you're deep in the midst of a project. And it may feel downright lonely at the end of a year when, despite your best efforts, you're juggling multiple gift projects with a close eye on the big day. But we don't get where we're going on our woodworking journey entirely by ourselves. Experienced craftspeople help us along the way. We may get this guidance from a family member, a class instructor, or a member of our local club. Wherever they turn up, they are part of a community of crafters that help us learn and grow to the point where, in turn, we can teach others. In addition to this shoulder-to-shoulder work, we can find fellowship in the many quality instructional videos available these days. We also have access to mounds of valuable information in the form of books and magazines.

As for this magazine, part of our new year's resolution is to better engage with readers and grow our community. We are embarking on another great year; we have planned much to be excited about. But this is your magazine, too, and we want to hear from you. Take this opportunity to be a part of the *Woodcraft Magazine* woodworking community. Share a tip or trick to help your fellow woodworker. Ask a question of the many experts among us. Send us photos of what you've been working on. Or, simply tell us what you think of this issue's contents.

Spark imagination and build excitement while helping Santa down the chimney, counting the days until Christmas (p. 48). The meat tenderizing mallet (p. 38) will no doubt satiate the cooks on your list. Give the gifts of comfort and warmth with the fireside stool on page 42. A fun and festive scrollsaw sled (p. 22) holds holiday treats. Or grow a loved one's interest in reading with the cleverly designed book tree on page 31. And, while you're at it, why not buy a little something nice for your hardworking router (p. 25)?

So get in touch. Check the list below for myriad ways to connect. Make it your resolution to grow our woodworking community. Join in to help the next generation of woodworkers start the year—and their woodworking journey—off right! ■

Chad McClung

Chad McClung, Chief Editor
Chad_McClung@woodcraftmagazine.com

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

Share a slick tip to win cash or a prize.
Here's your chance to help someone become a better woodworker and get rewarded for the effort. Published submissions become the property of *Woodcraft Magazine*.

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.

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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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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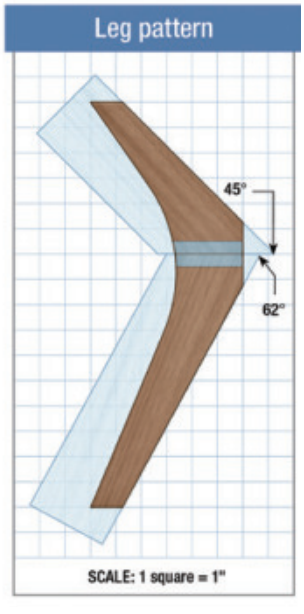
A major award

Sophie Glenn

Boston's Society of Arts + Crafts awarded the prestigious John D. Mineck Fellowship to Sophie Glenn. Glenn is a woodworker, furniture designer, sculptor, and metal worker based in Reading, Pennsylvania. Raised in New York City, she earned a BFA from SUNY Purchase and an MFA in Furniture Design and Woodworking from San Diego State University. In addition to residencies at Arrowmont School of Crafts and the Appalachian Center for Craft, Glenn has taught at Haystack Mountain School of Crafts, Mississippi State University, and A Workshop of Our Own, among others. The Mineck Fellowship is an unrestricted $25,000 prize awarded annually to an early-career furniture artist.

Drawing a blank



I'm building the glass-topped table (Oct/Nov 2022). The Leg Pattern on p. 33 shows the lower leg to be 10" and the upper leg to be 6" long. But the drawing on p. 32 shows a length of 13" for the lower leg and 10" for the upper. Did the table grow, or did something get left out?
—Stan Armes, via email

Associate Editor Derek Richmond replies:
The table legs are 16" long, as shown on p. 33, but the upper and lower portions begin as oversized blanks of 10 and 13", as you state. This gives length for the miter cuts and a little extra to be trimmed off when band sawing the assembled leg to shape before pattern routing. The blanks appear as ghosted rectangles in the Leg Pattern on p. 33.

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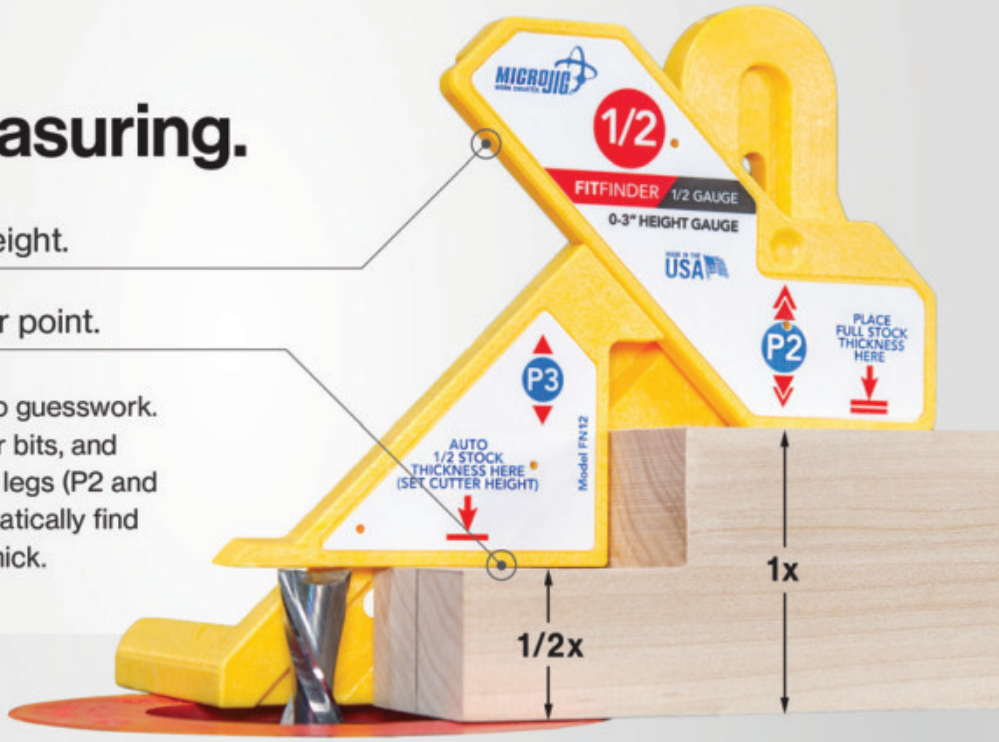
Create perfectly fitting joints with zero guesswork. Set fences for resawing, center router bits, and transfer cutting depths instantly. Two legs (P2 and P3) slide and move together to automatically find the center point of material up to 3" thick.



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Hiller's passing

Nancy Hiller

Renowned woodworker, Nancy Hiller, passed away on August 29 as a result of pancreatic cancer. After studying furniture making in England, she returned to the U.S., where she worked in cabinet shops in Vermont and Montana. In 1995, Hiller opened NR Hiller Design in Bloomington, Indiana. Inspired by the Arts & Crafts style and philosophy, her work emphasizes clean lines and minimal ornamentation, highlighting the beauty of the wood, which was usually locally sourced and sustainably grown. A prolific author, Hiller wrote a number of books, blogs, and articles for *Fine Woodworking* and *Lost Art Press*. She held a certificate from the City and Guilds of London Institute and was a member of the Society of American Period Furniture Makers. Hiller was 63.

Rise to the challenge

The 2022 International Woodworking Fair awarded the Challengers Distinguished Achievement Awards to seven products in recognition of technological innovations. Among the winners were Bacci America's T4MO 4-spindle CNC lathe, Felder Group USA's Preventive Contact System, which utilizes magnets to lower the blade when contact with human skin is detected, and Northtech Machine's iDovetail 3-axis CNC machine which cuts fixed-pitch dovetails, mitered mortise and tenon joinery, and other profiles.

Have a seat

Simon Pengelly
For New Design Group

The Center for Furniture Craftsmanship in Rockport, Maine, is hosting "Successful Seating," a survey of wood chair designs. The exhibition features 16 chairs by 14 designers from seven countries, all of which are currently in production. The show, curated by the Center's founder, Peter Korn, is open to the public through January 7, 2023, in CFC's Messler Gallery. ■

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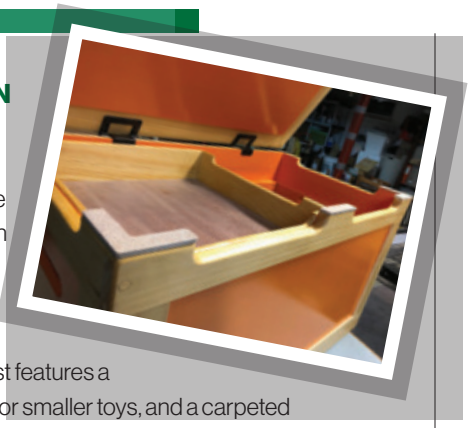

RUSS SVENDSEN
OLEAN, NY

Orange you glad it's Christmas? Longtime reader Russ Svendsen built this toybox as a Christmas gift for his great-grandson. The frame-and-panel chest features a half-width sliding tray for smaller toys, and a carpeted bottom to cut down on noise. Cutouts on the front and sides, and a pair of torsion hinges, prevent smashed fingers. Svendsen painted the panels orange, but opted to finish the pine framing in tung oil. Then he added his great-grandson's name in a scrollsawn script. Most importantly, this gift provides plenty of space for Isaac's other Christmas presents!

JOHN GONDEK
PLAINVILLE, CT

Hole-y Matrimony. Longtime reader John Gondek created this cribbage board for his wife for their 56th wedding anniversary. Measuring 3 × 4½ × 18" the rosewood case is topped with a marblewood gameboard. A full-length drawer stashes the cards and game pegs. Gondek hand-drilled all 241 holes for the pegs—which he turned from pen blanks—then colored their paths using paint markers. He finished the game box with six coats of polyurethane. Like the Gondeks' marriage, this game is built to stand the test of time.

GARY STOH
BEAUMONT, CA

Jewelry store. Inspired by a vintage version in an antique shop, Stoh crafted this upright jewelry box for his wife. The piece stands 50" tall and features a cherry case with leopardwood side panels and drawer fronts. Both sides open to allow necklaces and chains to hang straight and tangle-free. Stoh finished the cabinet with polyurethane varnish.

DICK DYE
COLORADO SPRINGS, CO

Santa only had nine! Woodworker Dye converted the Rudolph and Olive reindeer pattern (Dec/Jan 2022) into a CNC cutting file and made a whole herd of sleigh-pullers. In all, Dye says he's cut, painted, and assembled about 25 reindeer, giving many to friends and family. Still, he'll have plenty of deer to pull the sleigh on page 22. We just wonder what he named them all! ■

SHOW OFF YOUR WORK!

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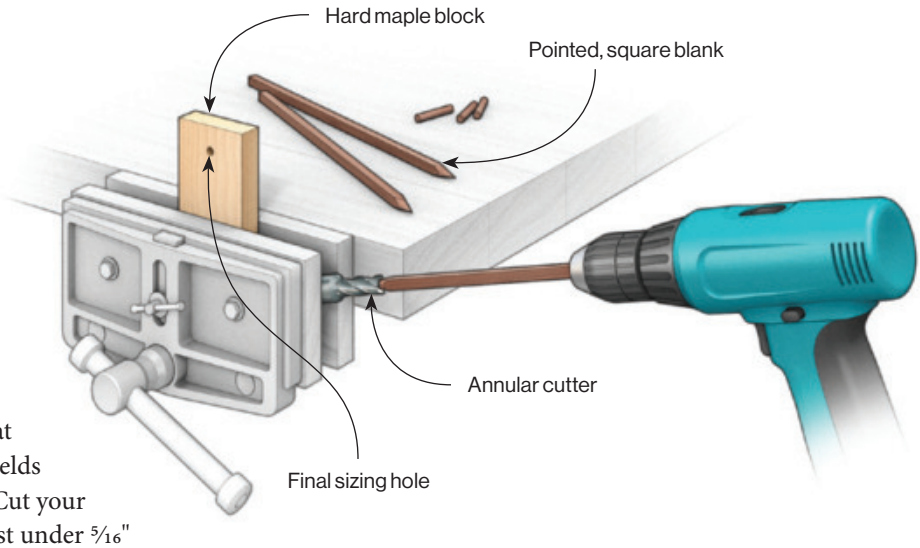
TOP TIP

Shop-made dowels

I use a lot of ¼" cherry, walnut, and oak dowels with my students both for joinery as well as decorative accents. Rather than purchase expensive pre-made dowels, I make my own in a two-step process. This quickly yields polished dowels that fit perfectly in their intended holes. The first step uses an annular cutter—a type of end mill (See Buyer's Guide on page 60.) with a hole through its center. It's this hole that sizes the dowel. The cutter I use yields a dowel just over ¼" in diameter. Cut your dowel stock about 12" long and just under 5/16" square on the table saw and point one end in a pencil sharpener. Clamp the cutter in a vise and chuck the blank in a hand drill. Spin the blank through the cutter to rough cut the dowel to size. Measure the diameter of the resulting dowel and drill a hole 1/64" smaller through a block of hard maple. Spin the dowel through the maple block to bring it to its final diameter and polish it. It will now be a perfect match for whatever size drill bit you used to make the hole in the maple block.

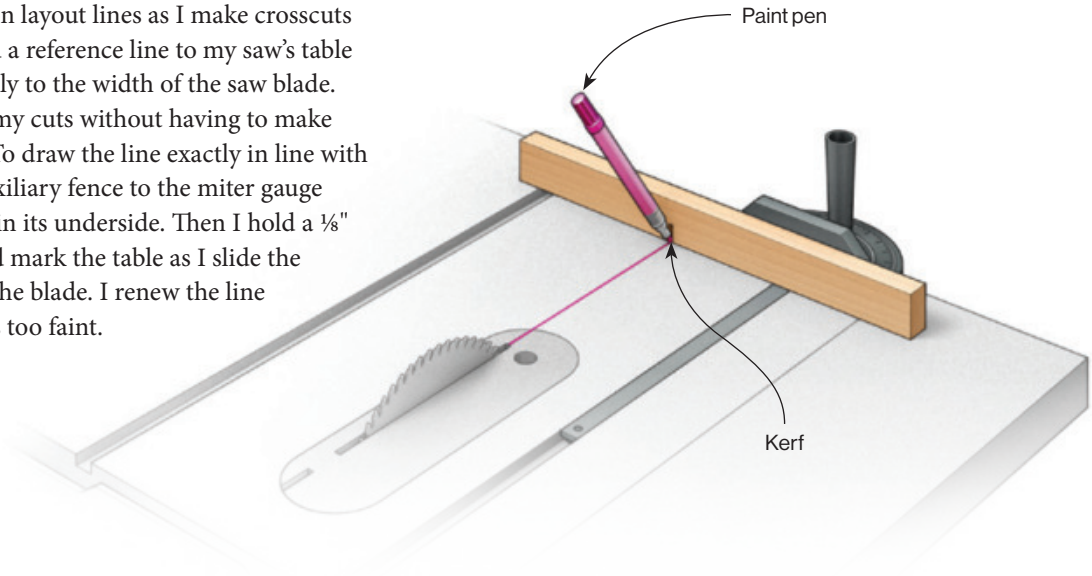


—Ben Hudson,
Two Harbors, Minnesota

Precision reference line

Instead of sneaking up on layout lines as I make crosscuts on my table saw, I added a reference line to my saw's table that corresponds precisely to the width of the saw blade. This allows me to align my cuts without having to make contact with the blade. To draw the line exactly in line with the blade, I attach an auxiliary fence to the miter gauge and make a shallow cut in its underside. Then I hold a ⅛" paint pen in the kerf and mark the table as I slide the miter gauge away from the blade. I renew the line periodically when it gets too faint.

—Bill Wells,
Olympia, Washington

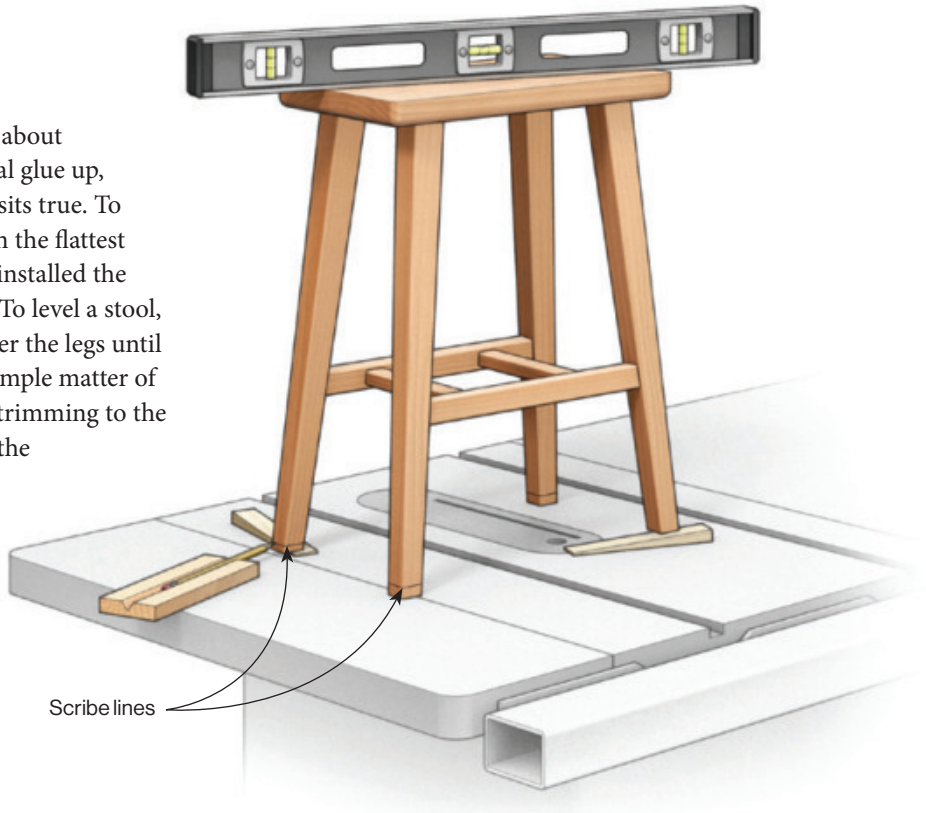


Illustrations: Christopher Mills

Scribing to level

When I make stools, I always leave the legs about ½" overlong for leveling. Then, after the final glue up, I trim all of the legs to make sure the piece sits true. To mark the legs accurately, I place the stool on the flattest surface in my shop: my table saw. (When I installed the saw, I shimmed it so it was perfectly level.) To level a stool, I place a 24" level on the seat and shim under the legs until the bubble stays in the center. Then it is a simple matter of scribing around each leg with a pencil and trimming to the line. To aid with this, I cut a v-notch along the center of a 7" length of 1 × 2 and lay my pencil in it. Then I slide the 1 × 2 around each leg keeping the pencil's tip in contact with the leg to draw the scribe line. Once I've drawn my lines, I trim each leg with a hand saw.

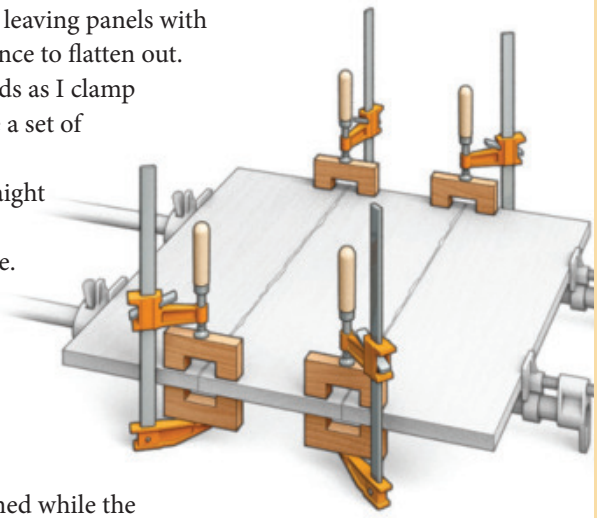
—Jeff Peters,
Redgranite, Wisconsin



Taming edge-to-edge joints

Oftentimes it seems like edge gluing gives the boards a mind of their own. They slip and slide out of alignment leaving panels with ridges that are a nuisance to flatten out. To help tame my boards as I clamp them together, I made a set of C-shaped cauls from 1¾ × 4" lengths of straight stock with a ¾ × 1¾" notch cut in each piece. To use them, clamp opposing pairs over the joints at both ends of a glue-up as shown. The "feet" on each pair of cauls will keep the surfaces aligned while the notches avoid any glue squeeze-out. ■

—William Purcell,
Laurinburg, North Carolina



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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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Scrollsaw SLEIGH

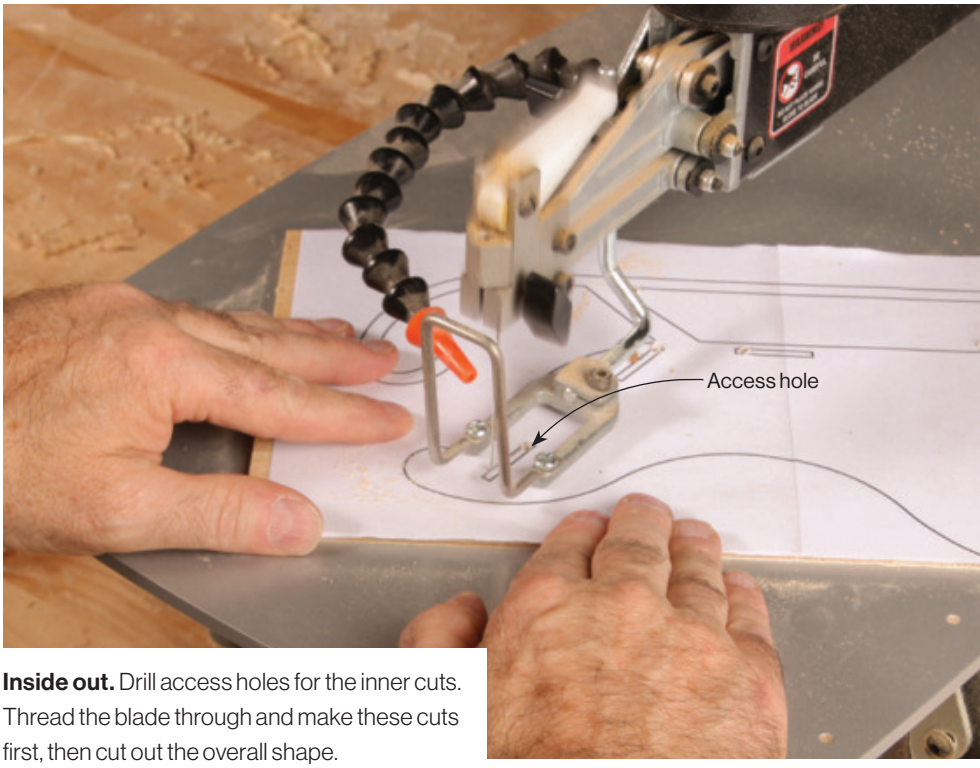
A yuletide vessel for tasty sweets

By Yukon Cornelius

T'is the season to break out the holiday décor and lay in a supply of holiday treats. This year, why not add to your celebrations with a classic: a miniature sleigh sized to deliver a party's worth of chocolates? Made from ⅛" plywood and scroll-sawn to shape, this conveyance is an easy build over a few evenings or a weekend in the shop. While the cutting is straightforward, you'll want to take your time with the notches in the sleigh sides to ensure a good fit with the tabs sawn in the edges of the ends and bottom. The applied side scrollwork presents an opportunity to add both depth and detail to your sleigh as well as making it easier to achieve the two-tone paint job. Make one for yourself, or an entire convoy to share with others as you await the arrival of you-know-who.

Cut, finish and assemble

Copy the patterns from page 24 and enlarge them as indicated. You'll need four sides—two for the actual sides and two for the trim. You'll also need two ends and a single bottom. Use spray adhesive to adhere the patterns to pieces of ⅛" plywood. Cut the pieces to shape at the scrollsaw. Sand the edges to remove any fuzzies and splinters. Mask the sides as shown and spray the runners black. Now mask the runners, and spray the upper part of the sides, as well as the ends and bottom red. Also spray the trim gold. Glue the trim in place then glue the tabs on the ends and bottom into the slots in the sides. Fill with your favorite treats and let the festivities begin.



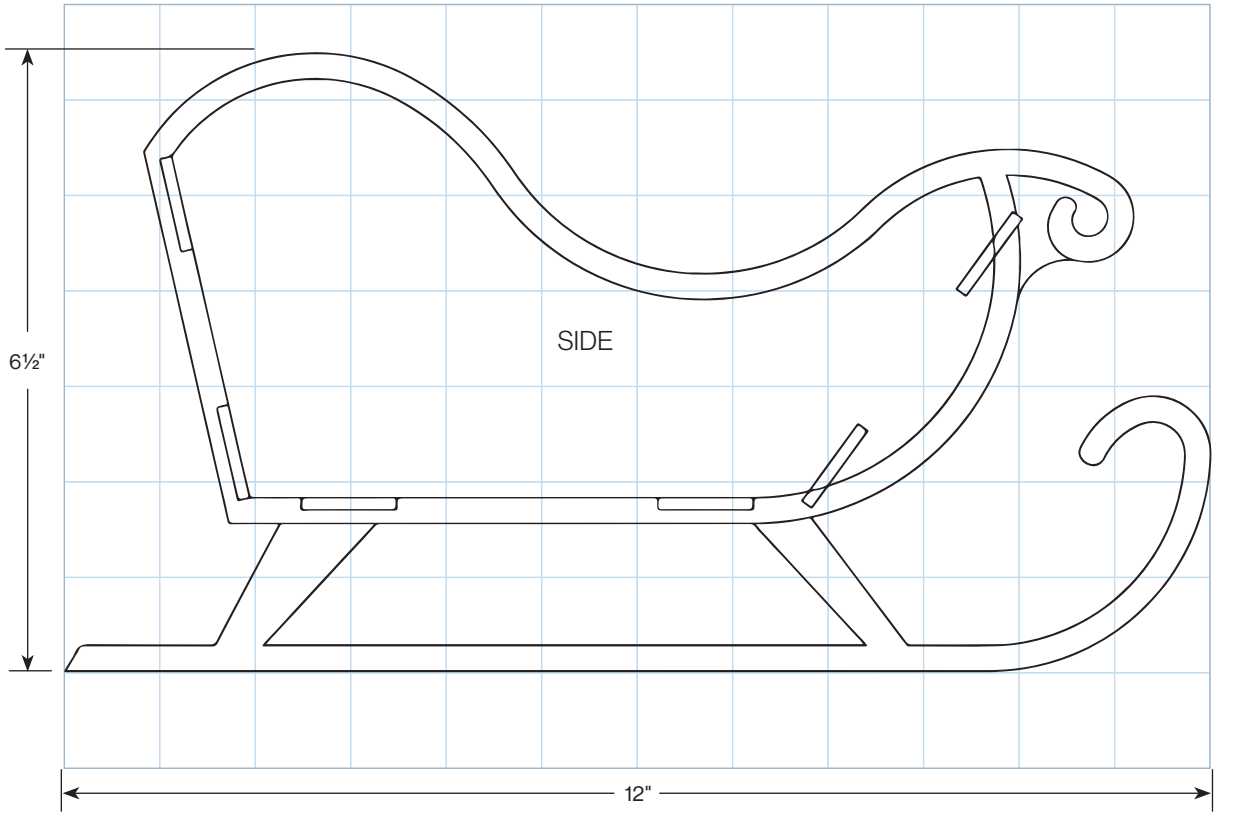
Inside out. Drill access holes for the inner cuts. Thread the blade through and make these cuts first, then cut out the overall shape.

Mask and peel. When painting the outside faces of the sides, leave a band of masking tape around the perimeter. This will leave an unpainted glue surface for attaching the trim.

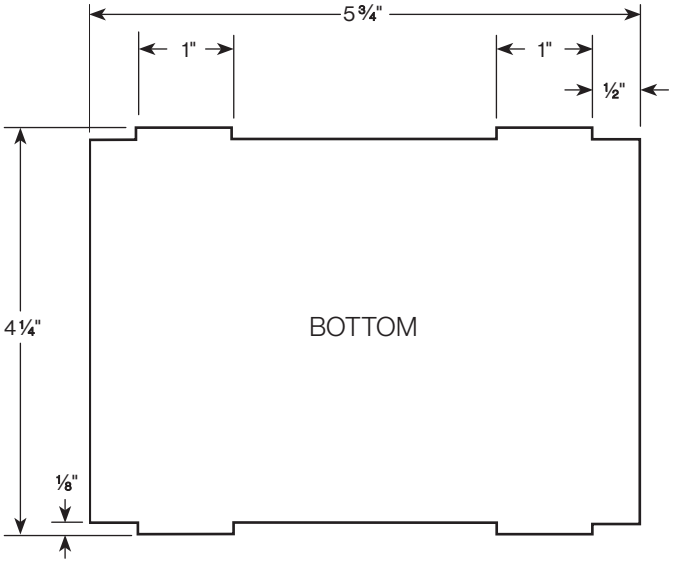
Improvised clamps. After applying glue (I used medium viscosity CA glue) to the trim, clamp it in place with binder clips (available from any office supply store).

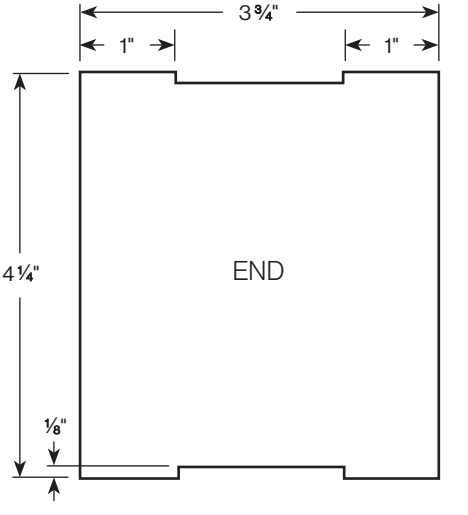
Photos and Illustrations: Ken Burton

Sleigh Patterns



1 square = 1"





Enlarge 200%

Order of Work

- ✓ Adhere patterns to plywood
- ✓ Cut to shape
- ✓ Sand
- ✓ Finish and assemble

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25 ROUTER Stocking Stuffers

Make your most capable power tool even more versatile

By Chad McClung

Be sure to include your router on your gift-giving list this year. It does a lot of hard work for you, so reward it with… well, more work. But with these accessories, you can make it work smarter, not harder.

I'll admit that you'll need a pretty big stocking in order to stuff some of these fine products. But your router or routers have been good all year and deserve special attention.

1 Imagine Woodworking Ultimate Router Base System
This complete router base system provides control, safety, and accuracy for curved joinery, inlay, and many other exacting routing operations.
$179.99 | #175290

2 Whiteside Inlay Set
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$65.99 | #09116

3 Jasper Butterfly Inlay Template
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4 WoodRiver Router Corners
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5 WoodRiver Jig Making template
It's a jig for making jigs. Use this template for routing slots and keyholes for ¼" T-bolts and handles in two styles. All your fixtures will look and work great.
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7 WoodRiver Rechargeable Desiccant Bag
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Items are not to scale. Photos: Doug Loyer

8 WoodRiver Nonslip Pads
A nonslip pad keeps your work where you want it while you rout, without the use of clamps or vises. Plus, it's easy to clean. Your router will love it.
$17.49 | #123633

9 Trend Router Pod
When you're done routing, sit the king of the shop on its throne to power down while you move to the next task. Simple, safe, effective.
$12.99 | #171903

10 Oneida Dust Hood
The dustiest tool in the shop has met its match. This universal base for handheld routing catches dust at the source while you work. Molded from clear, polycarbonate plastic.
$37.99 | #163363

11 Mighty Bright Sewing Light
A hacker's way of shining a little light on the subject. This LED light designed to work on sewing machines sticks just as nicely to your router and shines light where you need it.
$13.59 | MB-SML64602, *allstitch.com*

12 EdgeKote
This dry lubricating film bonds to metal, creating a slick surface that keeps your bits cutting cleaner for longer, and inhibits corrosion.
$24.99 | #175038

13 Boeshield Bit Cleaner
But when the build-up of resin, gum, and pitch on cutting edges makes your router bits seem duller than they actually are, spritz this simple solution to restore their clean-cutting profiles.
$14.99 | #128479

14 Grip Wire Brushes
Help keep your bits clean with these wire brushes. Their contoured grip and ergonomic design help you clear the grime from hard-to-reach corners.
$5.99 | #167199

15 Freud Adjustable Tongue-and-Groove Bit Set
Pair your router with a table to use these edge formers. The bit set produces perfectly fitting tongue & groove joints for myriad projects in myriad sizes and styles.
$94.99 | #825745

16 Whiteside Flush Trim Spiral Combination
This is a pricey bit, no doubt, but its impeccably machined spiral cutters will deliver smooth templated-routed surfaces that require very little sanding.
$229.99 | #154274

17 Whiteside Spoilboard Surfacing Bit
Designed to surface spoilboards on CNC machines, this monster bit with its four carbide cutters is also great for flattening live edge boards too wide for your planer.
$94.99 | #868312

18 Freud Keyhole bit
This clever cutter is designed to cut slots to completely conceal fasteners in the back of picture frames, plaques, and shelves.
$21.97 | #828749

19 Freud Rabbet Bit Set
One bit to rout them all. All the rabbets, that is. With three interchangeable bearings for routing various widths, this set will earn its spot in your bit collection.
$47.97 | #828851

20 Kreg Router Setup Bars
These bars make setting bit depth simple, fast, and accurate. Plus, they're made from soft aluminum to prevent knicking your bits' cutting edge.
$79.99, #150664

21 Wixey Digital Height Gauge
A crafty gadget that exactly gauges bit height with digital precision. Its clear, crisp display can show fractions and decimals, and setups are repeatable. What's not to like?
$67.99 | #148380

All items are available at Woodcraft except where indicated. Prices are subject to change.

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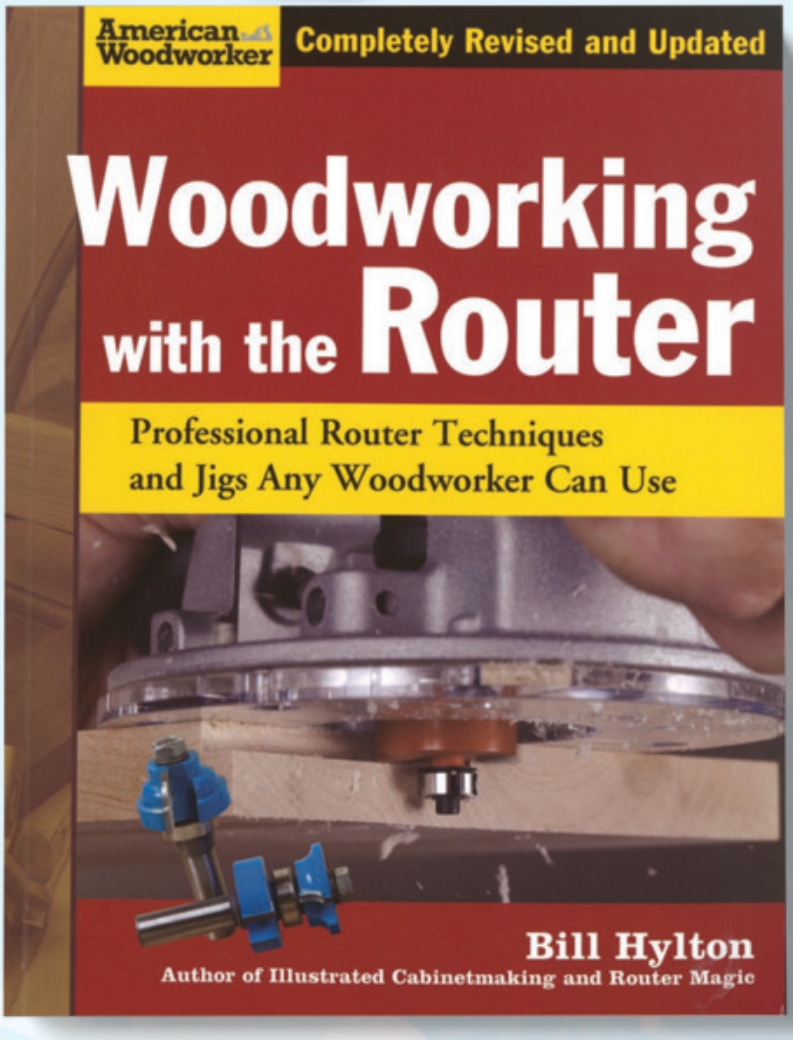

25

22 WoodRiver Router Bushings
Beautiful brass bushings to increase the capability of your router. This set provides various sizes to handle all the work you do.
$58.99 | #144625

23 CMT Router Collet Extension
Give your router reach. Sometimes your work requires a little more depth than your router can accommodate. This handy extension adds up to 2½"
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24 Whiteside Steel Collet Reducer, ⅜"
Don't limit yourself or your router. This reducer grants you more bit options beyond the standard ¼" and ½" shanks.
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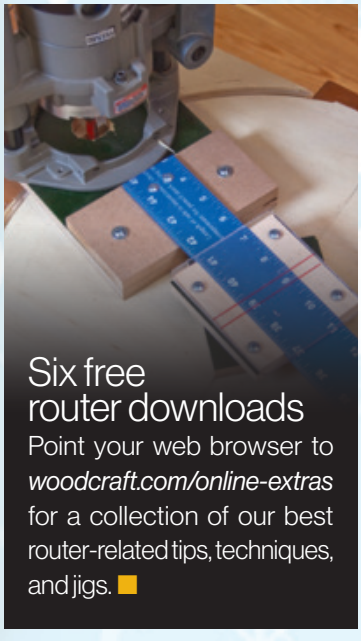
25 Woodworking with the Router
Many woodworkers consider this complete tome to be the router bible. The book bursts with valuable information; the essential techniques and jigs held within will improve your routing.
$24.95 | #150694



Six free router downloads

Point your web browser to *woodcraft.com/online-extras* for a collection of our best router-related tips, techniques, and jigs. ■

Items are not to scale.

Book TREE

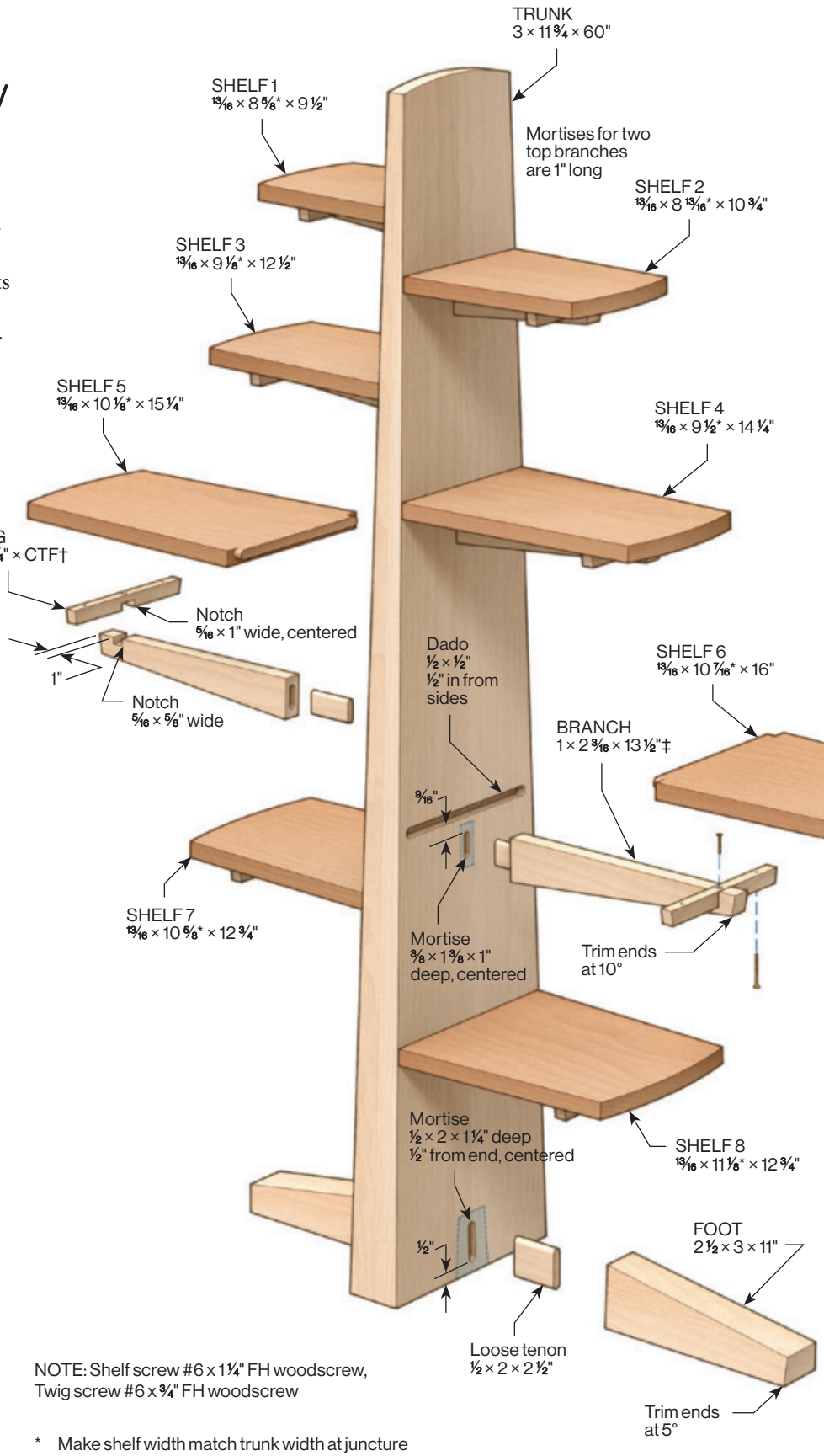
Grow a home for your book and magazine collection

By Ken Burton

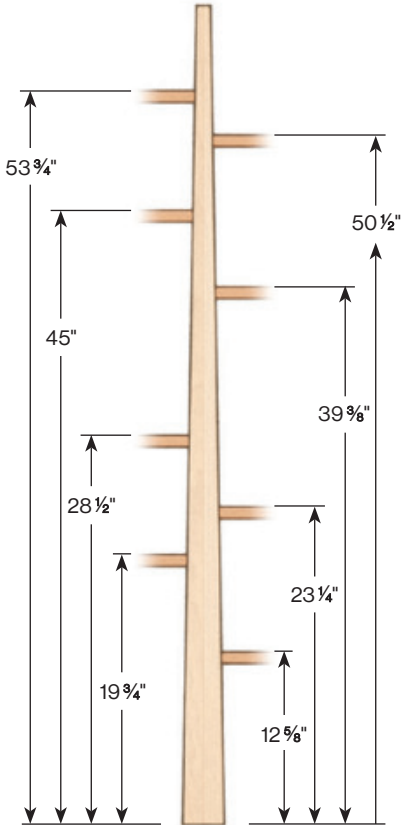
To me, no room is complete without at least a few books at hand. But not every room needs or has the wall space for an actual bookcase. After seeing a free-standing book "tree" used as a promotional display in a bookshop, I set about designing one that would look good in a residential setting. After making a series of sketches and models, I arrived at the design presented here. Its various widths and lengths of shelves allow it to display a nice array of printed matter as well as three-dimensional art work. The unit is well-balanced and looks good from all sides, so it doesn't have to be against a wall. There are enough subtle angles involved to make the build suitably challenging without it becoming a real headache. Because of the size and weight of the trunk and the need to clamp things to it, I found it easier to do most of the work atop saw horses instead on my bench. I made my book tree from ash with cherry shelves, but feel free to vary the wood selection to suit your decor.

A stout trunk supports sturdy branches

The tapered center trunk is laminated from two pieces of resawn 8/4 stock. The main branches have half-lap joints at their outer ends where the "twigs" attach, and loose tenons at their inner ends to join them to the trunk. The shelves fit in dadoes cut across the trunk and are attached to the twigs with screws. The feet are also joined to the trunk with loose tenons.



Shelf Layout



NOTE: Shelf screw #6 x 1¼" FH woodscrew, Twig screw #6 x ¾" FH woodscrew

* Make shelf width match trunk width at juncture
† Twig length is 1" less than shelf width at twig location
‡ Cut all eight branches to this size then cut to fit after tapering and notching

Order of Work

- ✓ Make the trunk
- ✓ Cut the branch joinery
- ✓ Make the shelves
- ✓ Assemble and finish

Layout is a snap. A carpenter's chalk line will make quick work of laying out the resaw cut running from corner to corner of the blank. After resawing, you'll cut away the pointy end of each piece.

From thick to thin. After resawing the pieces, clean up the sawn faces on the jointer, running the thicker end first. Face glue the resulting wedges to make the trunk halves.

onlineEXTRA

Plans for mortising fixture. *(Issue 77, pg. 26)*
Plans for Saw Horses. *(Issue 105, pg. 40)*
woodcraft.com/online-extras

Make the trunk

Mill two pieces of 8/4 stock to 6¼" × 93", leaving them as thick as possible. Snap a diagonal chalk line on one edge of each piece to serve as a guide for resawing. Bandsaw both boards along the chalk lines to make four matching wedges. Cut the points ends off, leaving the wedges 61" long and clean up the sawn faces on the jointer before face-gluing them in pairs into two trunk halves. This should leave you with two wedges that are about 3" thick at the bottom and 1" thick at the top. Edge-glue the laminated wedges together to form the trunk. Clean up the center glue line with a hand plane or belt sander. Also rip the trunk to its full 11¾" width. Measure the taper angle as shown and base all subsequent operations on this reading. Crosscut the bottom of the trunk with the blade on your table saw tilted to match the angle you just measured. Set the T-bevel aside to use throughout the build. Finally, mark the layout lines for the cuts that will taper the trunk in width, but leave the piece rectangular until after you rout the shelf dados.

Find the angle. Set a T-bevel to the approximate taper angle. Draw intersecting lines from both sides. Adjust the T-bevel until the lines coincide. Preserve this setting—you'll have an ongoing need for it.

Photos: Ken Burton; Illustrations: Christopher Mills

Rout the dados

To make the shelves meet the trunk at the proper angle, their dados must be cut at a non-90° angle to the trunk's faces. To accomplish this, attach an 8" × 11" auxiliary base to your plunge router. Then adhere a 3/16" thick foot at one end of the base with double-faced tape to tilt the router to the proper angle. Adjust the foot's thickness with a block plane until a square held on the base matches the taper angle on your T-bevel. Then lay out the dado locations on both faces. Rout the dados, guiding the router along a T-square fence. Clamp blocks in place to stop the dados ½" inside the taper layout lines.

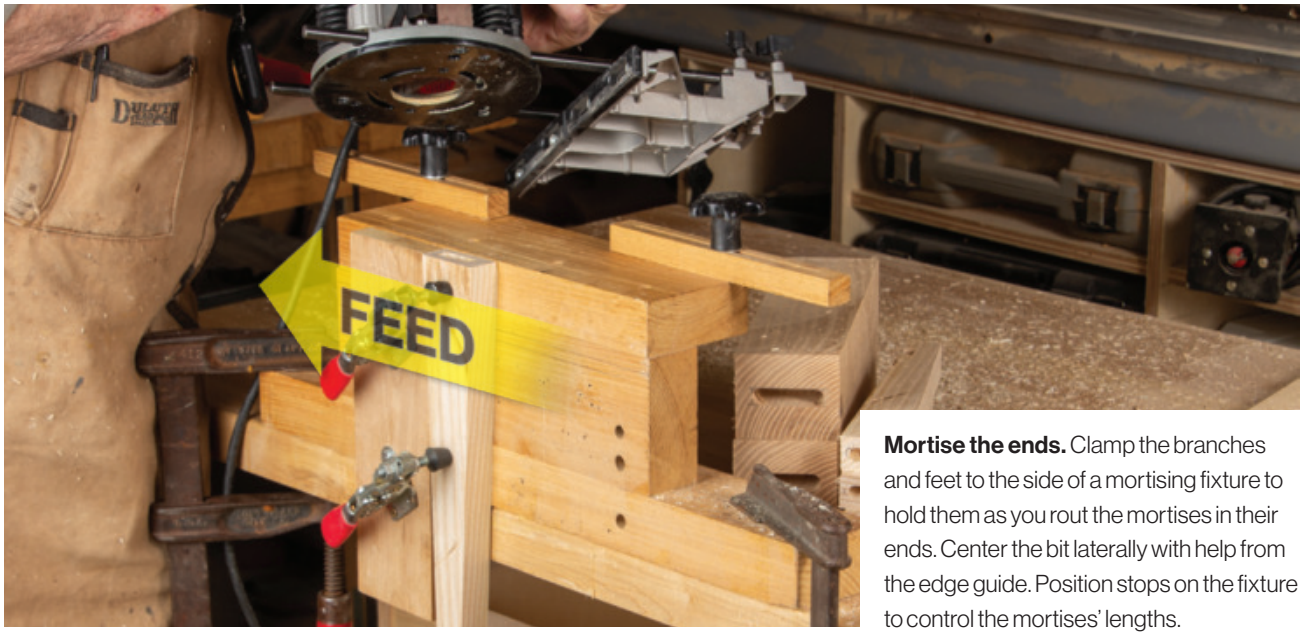
Branch joinery

Mill the branches, twigs, and feet to the sizes specified on p. 32. You'll be cutting the branches and twigs shorter later. (Yes, this wastes a little material, but it is worth it to be able to cut the joinery and tapers with the same setups.) Set up a ½" wide dado blade on the table saw and cut the notches for the lap joints in the branches and twigs. Switch back to a regular blade and taper the branches. Next, cut the branches to length by crosscutting the wider end with the miter gauge set to match the angle on your T-bevel. Each branch should be 2½" shorter than its corresponding shelf. Also, cut one end of each foot at this slight angle. Then rout the branch and foot mortises in the trunk. Finally, rout the corresponding mortises in the ends of the branches and feet.

Cut the laps. Set the dado blade height to ⅜" and guide the pieces with the miter gauge. Make the notches in two passes: the first against a stop on the miter gauge and the second against a stand-off block against the fence.

Taper the branches. Attach a fence and an end stop block to a carrier board to make a tapering sled. Taper each branch from 1" wide at the notched end to full width at the other end. Hold the pieces in place with a toggle clamp for added safety.

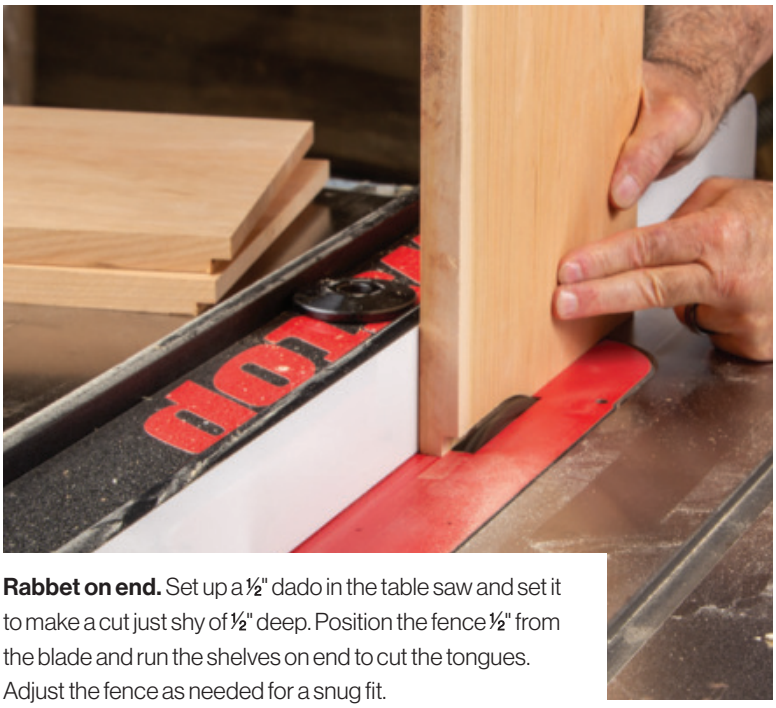
Mortise the trunk. Rout the branches' mortises below the shelf dados, using an edge guide to center the bit across the trunk. Clamp scraps of plywood to the trunk to serve as stops. Also rout the wider mortises for the feet.



Mortise the ends. Clamp the branches and feet to the side of a mortising fixture to hold them as you rout the mortises in their ends. Center the bit laterally with help from the edge guide. Position stops on the fixture to control the mortises' lengths.

Make the shelves

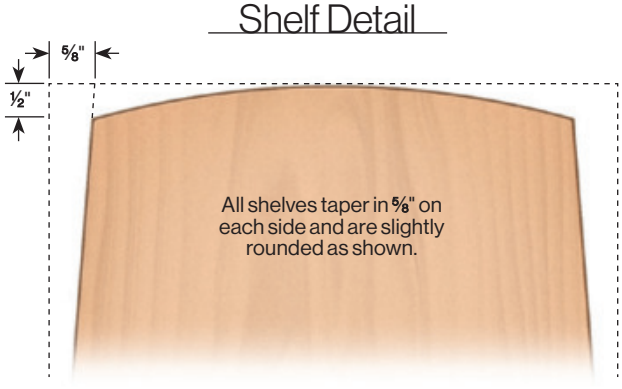
Mill the shelves to size and sand what will become the upper face of each. It is important to sand these surfaces first as they will be the reference for the tongues that will fit in the dados you cut earlier in the trunk. If you sand after cutting the tongues, you're likely to have a sloppy fit. To create the tongues, rabbet the underside of one end of each shelf. Then recut the shoulder with the blade tilted to match the trunk's taper. Trim the ends of the tongues to fit in their mating dados paring the shoulders carefully to match the taper angle. If necessary, adjust the tongues' thickness with a shoulder plane. Lay out the tapers on the shelf sides and the curves at their ends as shown in the Shelf detail (below) before cutting them to shape at the bandsaw. Sand away the saw marks to clean up the edges.



Rabbet on end. Set up a ½" dado in the table saw and set it to make a cut just shy of ½" deep. Position the fence ½" from the blade and run the shelves on end to cut the tongues. Adjust the fence as needed for a snug fit.

Fix the shoulder. Switch to a regular blade and tilt it to match the trunk taper angle. Recut the shelves' shoulders at this slight angle, positioning the cut with the fence. On my left-tilt saw, I had to put the fence to the left of the blade.

Lay out the final shape. Lay out the tapers on each shelf. At their widest, they should be ⅛" inside the taper lines on the trunk. Then draw the end curves with help from a flexible drawing spline. I used the same curve for all eight shelves.



Assemble & finish

Make the final taper cuts on the trunk at the bandsaw and clean up the sawn edges at the jointer. Lay out and cut the top curve. Sand the trunk before gluing the branches in place. Drill screw holes through the twigs then glue and screw the twigs into the notches at the ends of the branches. Check the fit of the shelves in their dados then glue them in place. Finish as desired, I used a wiping varnish.

Shape the top. After laying out the gentle curve at the top of the trunk, cut it with a jigsaw. The piece is so long and heavy, cutting it at the bandsaw would be nearly impossible. Fair the curve with a block plane before sanding.

Add the branches. Trace the end of a branch to make notched clamping blocks to protect the ends of the pieces as you glue them in place. You'll need at least one relatively deep-throated F-clamp to apply pressure where needed.

And finally, the shelves. Tighten two F-clamps at the edges to squeeze the shelves into place. Then add the screws through the twigs to finish assembly. A little paraffin on the threads helps lubricate the screws as you drive them home.

Tenderizing MALLET

Contrasting woods pair for a striking striker

By Larry Okrend

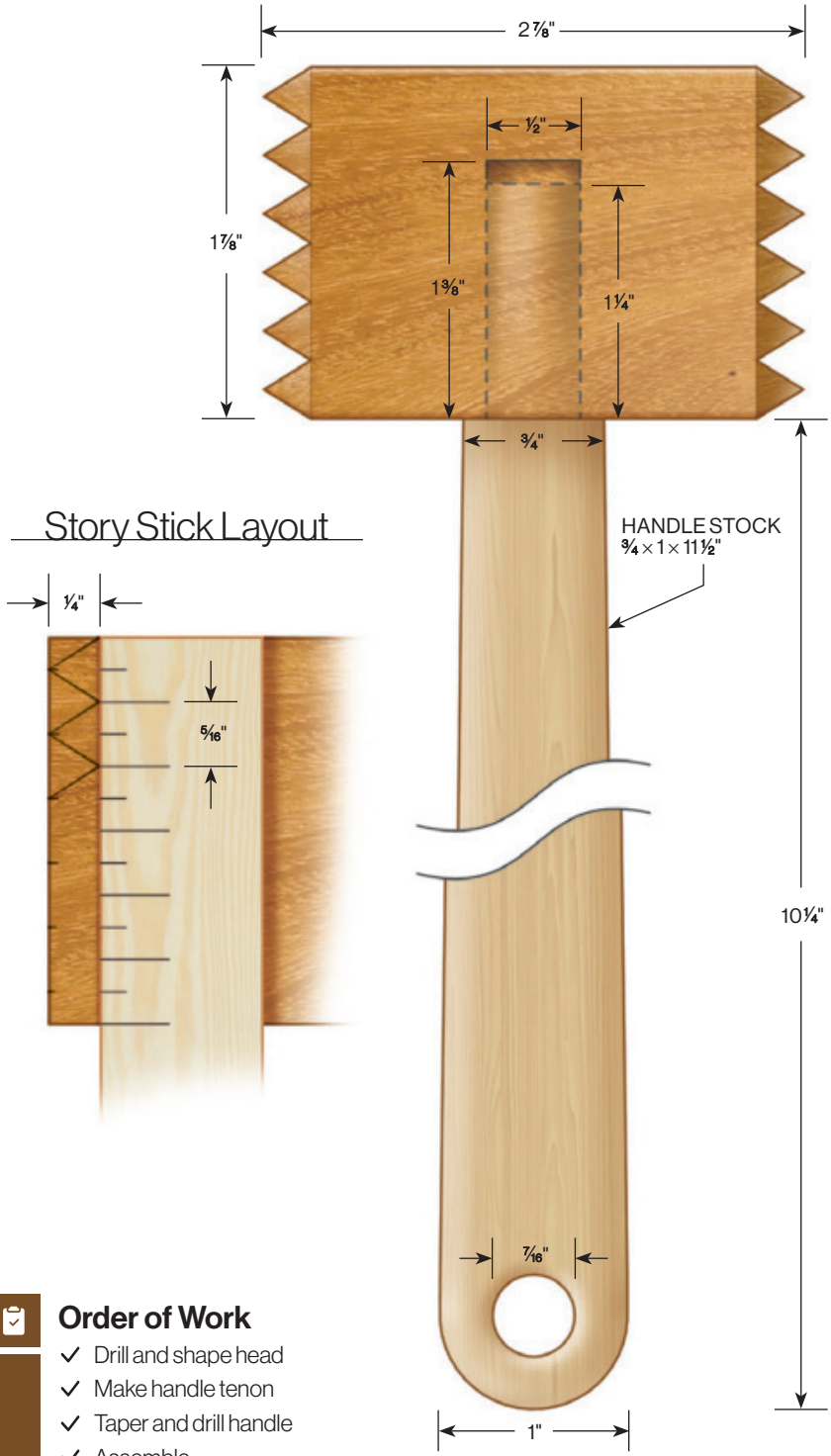
Photos: Larry Okrend; Illustrations: Greg Maxson

You may not realize you need a tenderizing mallet until you're faced with transforming tough cuts of meat into something more palatable. This handy kitchen utensil is also useful for crushing nuts, garlic cloves, and other vegetables. The mallet head is made of Osage orange because it's hard, heavy, closed-grain, and rot-resistant. The wood can be tough to cut on a table saw and is prone to splinter when run through a jointer or planer, so use caution. (See Woodsense on p. 56 for more on this species.) Other woods with similar characteristics, such as teak and pear, would also work. The handle is made of maple for its stiffness, durability, and contrasting color. Depending on your needs, you can texture both faces of the head or leave one flat. While this mallet can take a lot of abuse, remember that there's no need to use it with the force you would to drive nails.

This is a simple project, but it takes patience to pull off some of the details: the textured faces, in particular. The tool requirements are minimal: You'll need a tape measure and pencil, a drill press with a ½" brad point bit, a bandsaw, a file, a small spindle sander and/or a rasp. Likewise, the necessary supplies are basic: 60-, 80-, 120-, and 180-grit sandpaper; epoxy adhesive; some clean rags; painter's tape; and a food-safe finish. Don't keep the cooks in your life waiting; let's build.

An attractive yet durable pounder

The hefty mallet head, made from resilient Osage orange, features textured ends cut at the bandsaw. The shaped maple handle with its hanging hole tapers toward a round tenon that epoxies into a stopped hole drilled into the head.

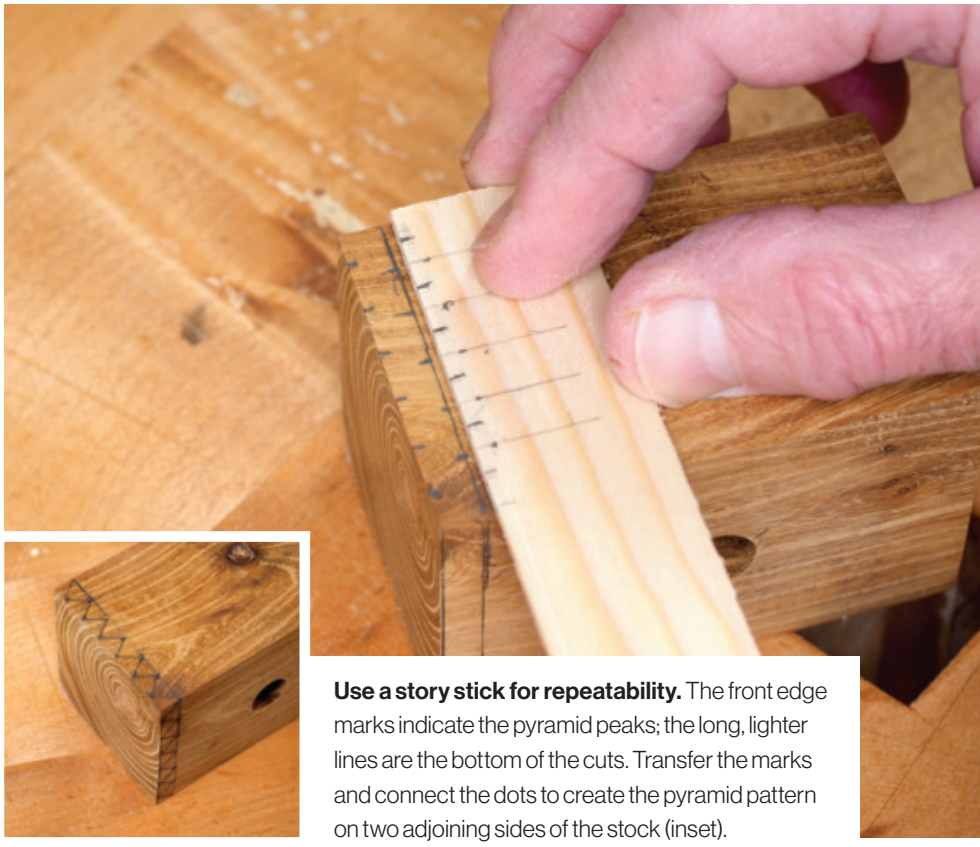


Order of Work

- ✓ Drill and shape head
- ✓ Make handle tenon
- ✓ Taper and drill handle
- ✓ Assemble

Making, drilling, and shaping the head

First, cut the mallet head to size. (A 2 × 2 × 12" turning blank yields four mallet heads, see Buyer's Guide, p. 63.) The striking faces are on the end grain because it's harder and resists compression. Next, mark and bore the hole for the handle joint. To lay out the cuts on the mallet head for the raised pyramid pattern, use a combination square to draw lines ¼" from the striking surfaces. Story sticks make layouts much faster and reduce the chance of errors. Use the Story Stick Layout (p. 39) to create a story stick, and mark the head as shown. Saw the striking surface at the bandsaw. When sawing the first face, avoid cutting off the layout marks on the uncut side. Once you've finished making the second (perpendicular) set of cuts, you can go back to finish the previous side. Use a small wire brush to clean up the sawn faces, and ease all the sharp edges with sandpaper.



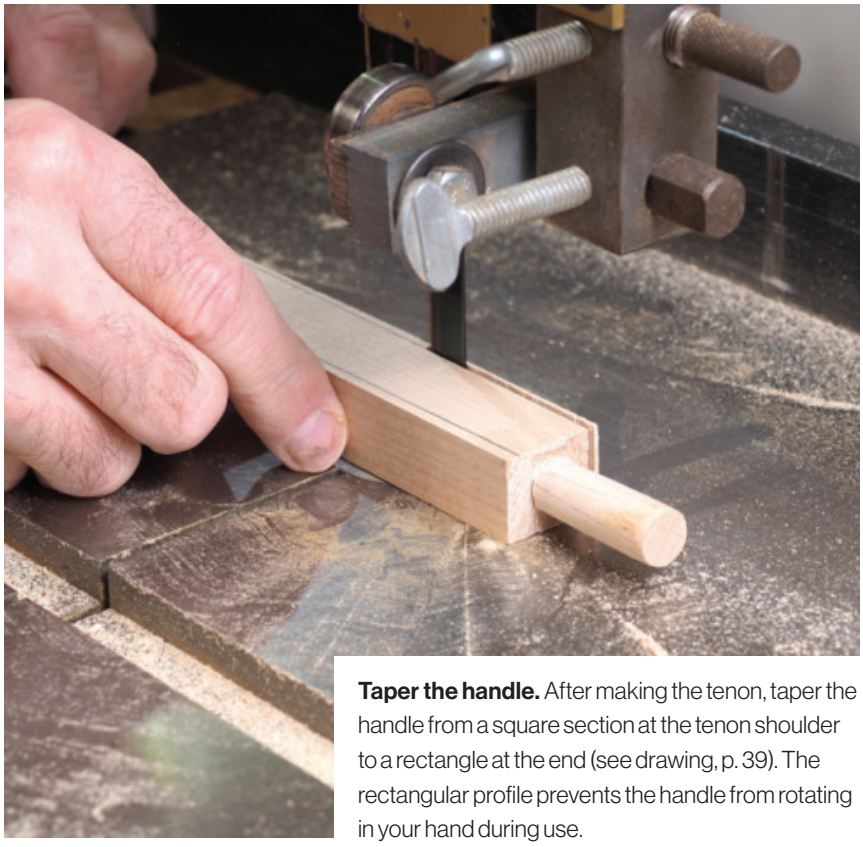
Use a story stick for repeatability. The front edge marks indicate the pyramid peaks; the long, lighter lines are the bottom of the cuts. Transfer the marks and connect the dots to create the pyramid pattern on two adjoining sides of the stock (inset).

Bore the handle hole. Secure the cut-to-size head in a handscrew and clamp it to the drill press table. Drill the 1⅜" deep hole at the center point with a ½"-dia. brad point bit. Painter's tape wrapped around the bit acts as a depth gauge.

Saw the striking surface. Bandsaw just outside the layout lines without going past the bottom points. On the first side, be sure not to cut off the mating layout lines on the adjoining edge. Saw that edge after completing the other cuts.

Rounding a tenon, shaping the handle, and assembly

Cut the handle to size, and lay out the tenon and taper as shown in the drawing on page 39. At the bandsaw, cut the tenon's shoulders. Clamp the workpiece in a vise and use a file to round the tenon, frequently checking its fit in the mallet head. It should be snug but not so tight that it's difficult to remove. Next, bore the hanging hole. Then taper the handle at the bandsaw. Now, use a rasp or sander (shown) to shape the handle. When the handle is comfortable to hold, use progressively finer sandpaper grits to remove tool marks and smooth the surface. Recheck the head-to-handle fit, then join them with epoxy. Let it cure for at least 24 hours before applying a generous coat of food-safe finish, I used Howard Butcher Block Conditioner. After use, clean the mallet using a mild detergent and a nylon brush. Reapply finish as necessary.



Taper the handle. After making the tenon, taper the handle from a square section at the tenon shoulder to a rectangle at the end (see drawing, p. 39). The rectangular profile prevents the handle from rotating in your hand during use.

Shape the handle. Round over the corners with an inverted, handheld oscillating-spindle sander clamped in a bench vise. Work until the handle's attractive and comfortable to hold, then switch to hand sanding.

Join the head and handle. Apply enough fast-setting two-part epoxy to get squeeze-out, and don't wipe off the excess. This will provide a watertight seal over the joint. Twist the handle to evenly distribute the adhesive.

Fireside STOOL

Concealed wedged-tenons add behind-the-scenes strength

By Sarah Marriage

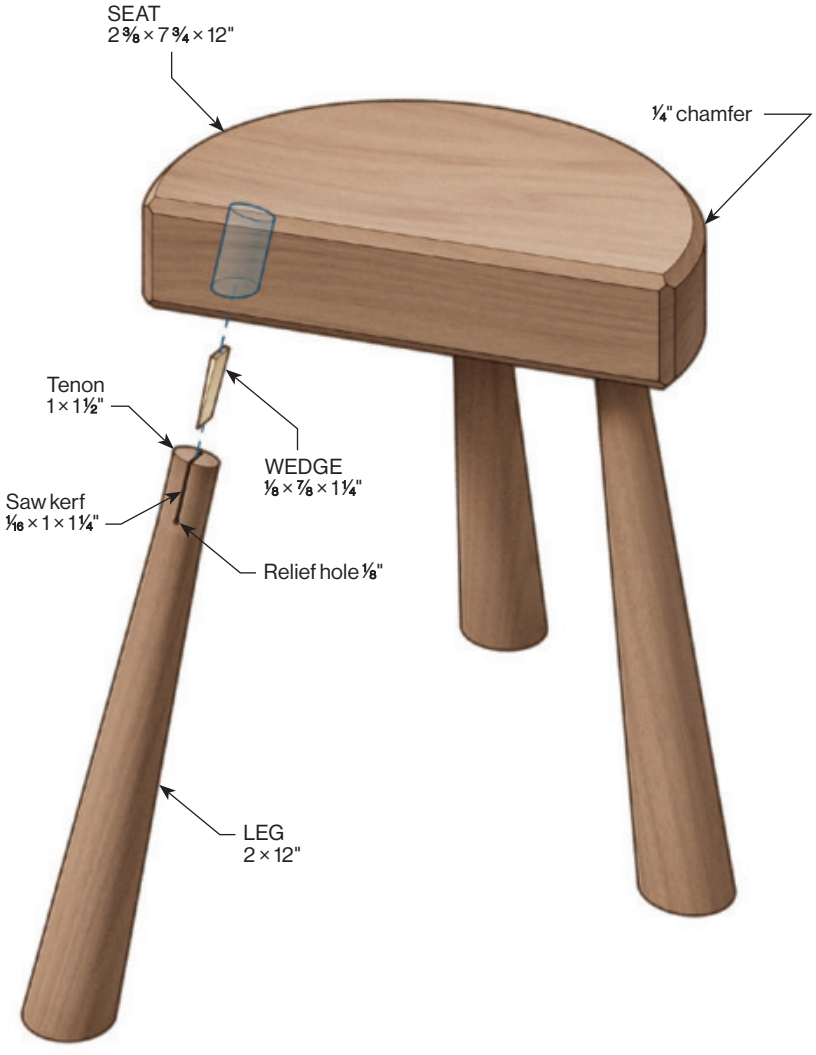
Historical, utilitarian furniture is one of my favorite sources for design inspiration, and the vernacular fireside stools of Northern Europe are especially appealing for their dainty yet sturdy stances. Traditionally used as a perch for creeping close to the warmth of a hearth or tending to a fire, these simple stools' short stature and splayed legs pack a lot of character and woodworking skills into a quick project.

My take on these fireside stools features a thick seat with chunky legs attached via fox-wedge joints. I wanted to use a connection that would be as strong as a classic through wedged tenon joint, but with a clean look that doesn't call attention to itself. The fox wedge is a blind joint with a wedge hidden inside. During final assembly, you gently pre-load the wedge into the tenon part-way, and then drive the tenon into the mortise. As the wedge hits the bottom of the mortise, it is driven further into the tenon, causing the tenon to flare and lock the joint. But beware. If the wedge is too large, or if it breaks inside the joint as you hammer it in, the tenon will get stuck and never fully seat. Exciting, right?

Fox-wedge joints can be intimidating, particularly if they are part of a larger project that you've put months of time into. This quick little stool is a low-risk, high reward setting for learning and practicing a powerful, hidden joint.

A simple seat with hidden complexity

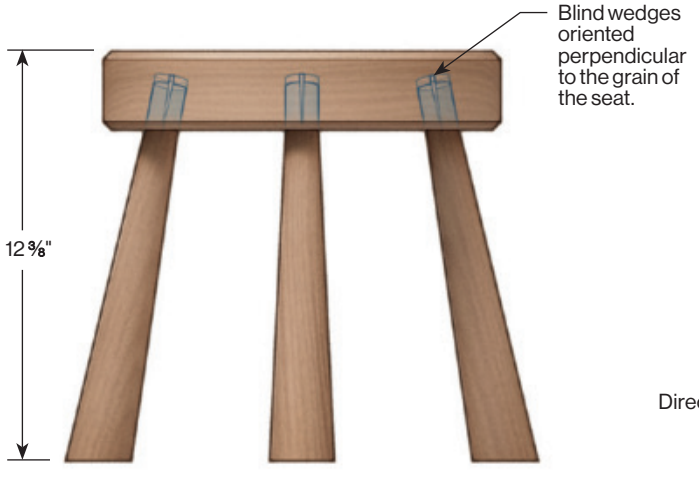
Three short, stout legs support a thick demilune seat to create this sturdy stool. Wide legs taper to round tenons, which fit into deep, angled mortises in the seat. At the time of final assembly, the tenons are secured with blind wedges inside the joint. These "fox-wedge" joints provide a strong, hidden structure. I used orchard-sourced Claro walnut for the legs and seat, and white ash for the wedges.



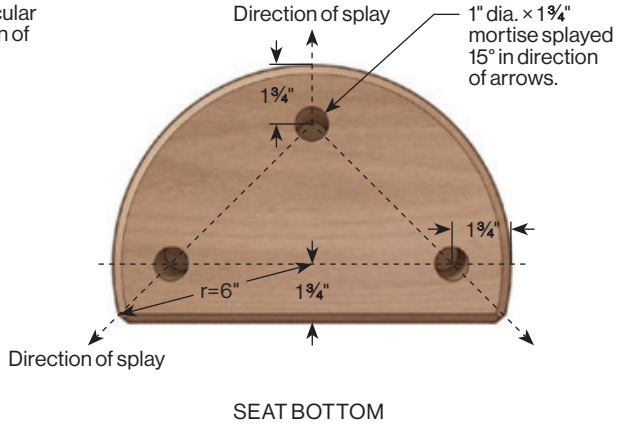
Order of Work

- ✓ Make the legs
- ✓ Make the seat and wedges
- ✓ Assemble and finish

Stool Elevation



Seat Plan



Photos: Sarah Marriage; Illustrations: Christopher Mills

Make the legs

Prepare three 2 × 2 × 12" blanks for leg stock, plus additional blanks for set-up. Mark the center on one end of your set-up stock. Using a compass, place the needle at one corner of the blank and the pencil at the center, then draw an arc from edge to adjacent edge. Repeat at all four corners to lay out the points of an octagon. With your table saw blade tilted to 45°, use these layout marks to set your fence, and then rip the leg stock into octagons.

At one end of each leg, use a combination square to mark lines offset ½" from each of the eight edges, generating a smaller octagon. Taper the legs to these marks with a hand plane. Cut 1½" long tenons at the narrow ends, and then use a spokeshave to round each leg and fair the transition between leg and tenon. After laying out the fox-wedge joint kerf line and drilling a relief hole for each leg, saw the kerfs as shown.

1 **One setting, four cuts, eight sides.** With the table saw blade tilted to 45°, use setup stock to dial in the fence location for ripping the legs into octagons. Rip all four corners of each blank to create octagonal stock.

4 **Cut the tenons.** Use a wedge to level the leg and clamp it in place. Chuck a tenon cutter in your handheld drill and then size the tenon of each leg in turn.

2 **Taper the octagons.** Work all eight sides evenly, frequently rotating the stock as you plane to the layout lines. I like to use a white chalk pencil to make layout marks when working with a dark wood like walnut.

3 **Chamfer to fit.** Secure each tapered leg in your bench vise with auxiliary wedges. Using a file, chamfer the tenon end for an easy fit in the tenon cutter for the next step.

5 **Round them out.** A bench hook with a v-groove or trough, as shown, does a great job of stabilizing the legs for spokeshaving. Round each leg without removing too much material from the foot-ends and taking care not to cut into the tenons.

6 **Kerf the tenons.** Add v-grooves at the table saw to your auxiliary wedges to clamp around the now-round legs. Lay out the kerf line for the fox-wedge joint and drill a ⅛" hole at the bottom of kerf. Choose a saw that will create a fairly wide kerf, mine is 1/16", and saw down the line.

Angle the mortises. Start with the bit held vertically at the center of each mortise. As you drill downward, slowly pivot the drill along the direction line until it coincides with the 15° angle on a T-bevel and then plunge to full depth.

Shape the seat and cut the wedges

Refer to the Seat Plan diagram (p. 43) to lay out the seat shape and mortise geometry on a 2⅜"-thick blank. Using the layout lines and a bevel gauge as guides, drill the 1" dia. × 1¾" deep mortises into the seat bottom, as shown. Saw the curve of the seat shape at the bandsaw, clean up the saw marks with a low-angle block plane, and spokeshave a ¼" chamfer along every edge of the seat. Saw the wedges using straight-grained timber (I used ash). Use a chisel to smooth the faces of the wedges and trim to final length and width.

Chamfer the seat edges. Lay out the chamfer's bounding lines, and then trim away the material using a spokeshave in clean, angled strokes with the grain. On the curved edges, begin at the apex, shaving toward each end.

Saw the wedges. For speed, I prefer to saw wedges by eye and hand, making several more than would be necessary for the piece. From among these, I choose the wedges that most closely match the wedge thickness I'm aiming for and then trim to final size.

Assemble with confidence

Due to its geometry, the fox-wedge joint can be assembled only once. If this is your first attempt at this joint, mock up practice joints to get the hang of it. Once you have begun the stool's final assembly, proceed with precision and confidence. Apply glue to one mortise, tenon, and wedge at a time. Load the wedge into the tenon's kerf far enough to stay put but not widen the kerf. With the wedge oriented perpendicular to the grain of the seat, use a mallet to drive the tenon-wedge assembly into the mortise, until the leg is fully seated. Repeat this process with each leg. Wait at least a half hour before trimming the feet, using the technique described in this issue's Tips & Tricks (Scribing to level), p 18. Sand and finish. I used Osmo Polyx-Oil in clear satin. ■

The fox-wedge is a trickster! As you drive the tenon in, it may feel tight and seated before it it's truly home. Keep whacking until the kerf is fully hidden.

Shallow glazed dishes make great reuseable glue pots. Let the excess glue dry in place, and it will peel away in one satisfying piece.

Don't lose those wedges! I keep the wedges stowed in their kerfs while awaiting assembly. But don't add glue until just before driving home.

Chimney ADVENT CALENDAR

Interactive holiday fun from your shop

By Derek Richmond

There's a lot to be done in the weeks leading up to Christmas: decorating the tree, making sure the chimney is ready for Santa's visit, and of course, counting down the days till his arrival. This mantelpiece or tabletop decoration lets you handle all those festive tasks at once. Pull a dowel pin every day to hasten Santa on his journey down the chimney. Slip each pulled pin through the holes in the chimney-side Christmas tree, and its colorful ball end helps decorate the tree.

Photos: Derek Richmond; Illustrations: Dan Thornton

Order of Work

- ✓ Make chimney sides and back
- ✓ Cut out Santa and tree
- ✓ Create dowel pins
- ✓ Finish and assemble

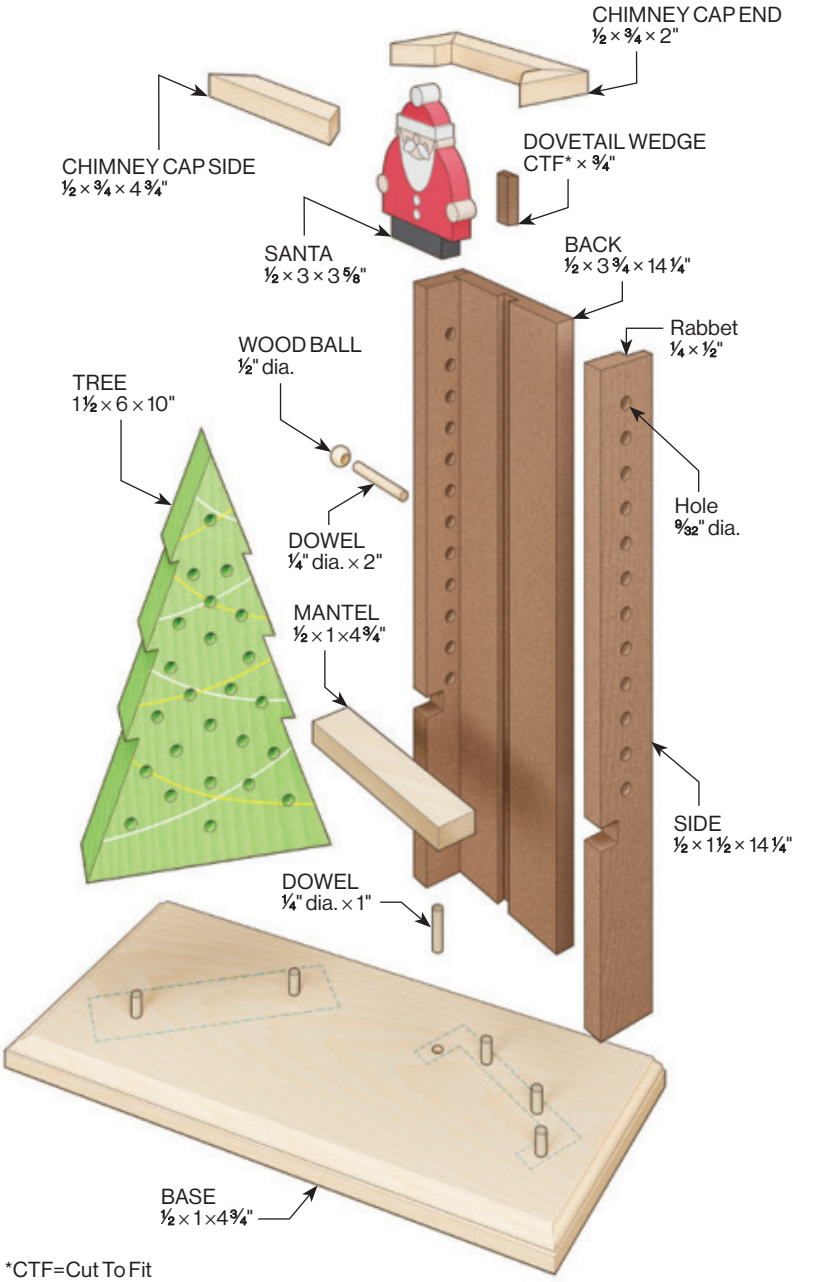
onlineEXTRAS

- Santa pattern
- Drilling template for tree

woodcraft.com/online-extras

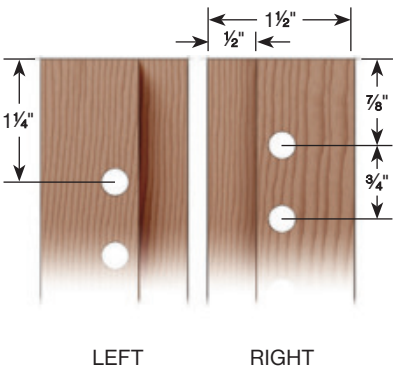
Santa slides down a dovetailed drop

The three-sided chimney is held together with the help of the chimney cap and mantel. A dovetail slot routed down its back forms a track for Santa, who descends day-by-day on a loose-fitting matching dovetail segment attached to his back. The tree and chimney are attached to the base with dowel segments, making for easy breakdown and storage after the holiday. I chose sapele for its brick red color, then added a mantel and chimney cap in figured maple for some contrast. The light-colored wood also provides an ideal base for Santa's paint job and the tree's green dye.

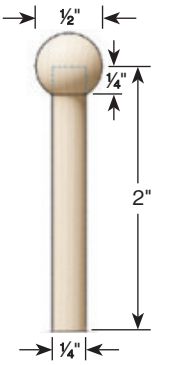


*CTF=Cut To Fit

Sides Detail



Ornament Detail



Make the chimney sides

Mill the chimney side blanks to size. At the drill press, set up a fence to center the holes on the width of the chimney sides. Drill 9/32"-dia. through holes 7/8" from the top of the left side and 1¼" from the top of the right side. After boring the topmost holes on each side, drill a ¼"-dia. hole into an auxiliary table and insert a dowel pin. Slide the auxiliary table ¾" down the fence and clamp it in place. Then use the pin to help evenly distribute the remaining holes as shown. After drilling the sides, notch them for the mantel and rabbet for the back panel at the table saw.

Slip and drill. After drilling the topmost hole in each side panel, slip it over an offset pin, and drill the next hole. Repeat the process for the remaining holes in each side.

Notch for the mantel. Stack the sides together with their front edges against the bed. Use a miter gauge and stop block to mill a 3/8" deep, ½" wide notch to receive the mantel.

Saw the rabbet. With a dado blade partially buried in a sacrificial fence, saw a ½" wide, ¼" deep rabbet in each side panel to accept the chimney's back.

Rout the dovetail slot. After removing the bulk of the slot with the straight bit, swap in a dovetail bit to form the sliding dovetail down the back.

Make the chimney back

Cut the back panel to size. Install a ¼"-dia. straight bit in your router table, raising it to ¼". Set up a fence to center a slot on the width of the back panel, and rout the slot. Then, switch to a dovetail bit, running both edges against the fence to center the slot. Keep the same bit and height, but adjust the fence to make a dovetail slightly smaller than the slot in the chimney back. Then run overlong stock on edge, face against the fence, past the bit. Crosscut a length to attach to Santa's back. Glue up the chimney back, sides, and mantel. Make and miter the chimney cap pieces, then glue them together. Install the cap as shown.

Get Santa's back. Saw a ¾" length of the dovetail wedge to attach to Santa's back later.

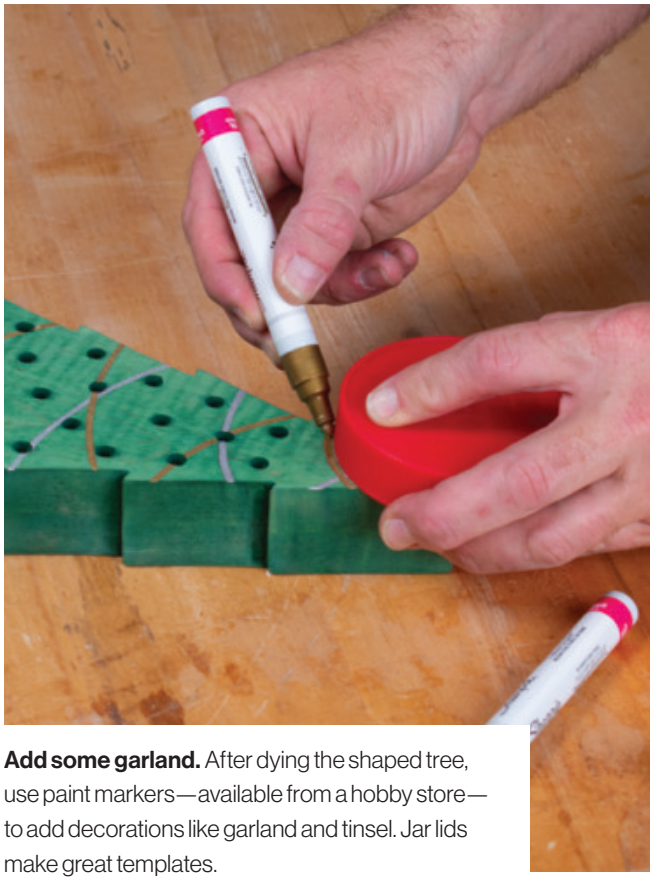
Cap the chimney. After gluing up the chimney cap, install it using glue and brads. A squared scrap block keeps the cap opening flush with the back so Santa can slide through.

Accessorize

Mill a ½ × 4 × 4" blank for Santa. For the tree blank, I laminated two pieces of ¾" thick curly maple, 6½ ×10½". Download and print the full-size patterns (see OnlineEXTRAS) and apply to the blanks using spray adhesive. Trim them to shape at the bandsaw, then drill 9/32" diameter holes through the tree where indicated. Clean up the edges with files and a sanding block. Drill (24) ½" spheres (see Buyers Guide, p. 63), then cut ¼"-dia. dowels into (24) 2" long segments, and glue one end into each sphere. Color the spheres with paint or paint markers. Paint Santa's likeness on the piece, or let the kids color the glued-on paper template. Then dye the tree and add garland.

I saw Santa. After spray-adhering the full-size pattern to the blank, trim Santa to shape at the bandsaw.

Drill the spheres. Use a shallow ⅜"-dia. hole in an auxiliary table to locate the sphere, and hold it with a small handscrew clamp. Bore a ¼" hole halfway through the spheres as shown.

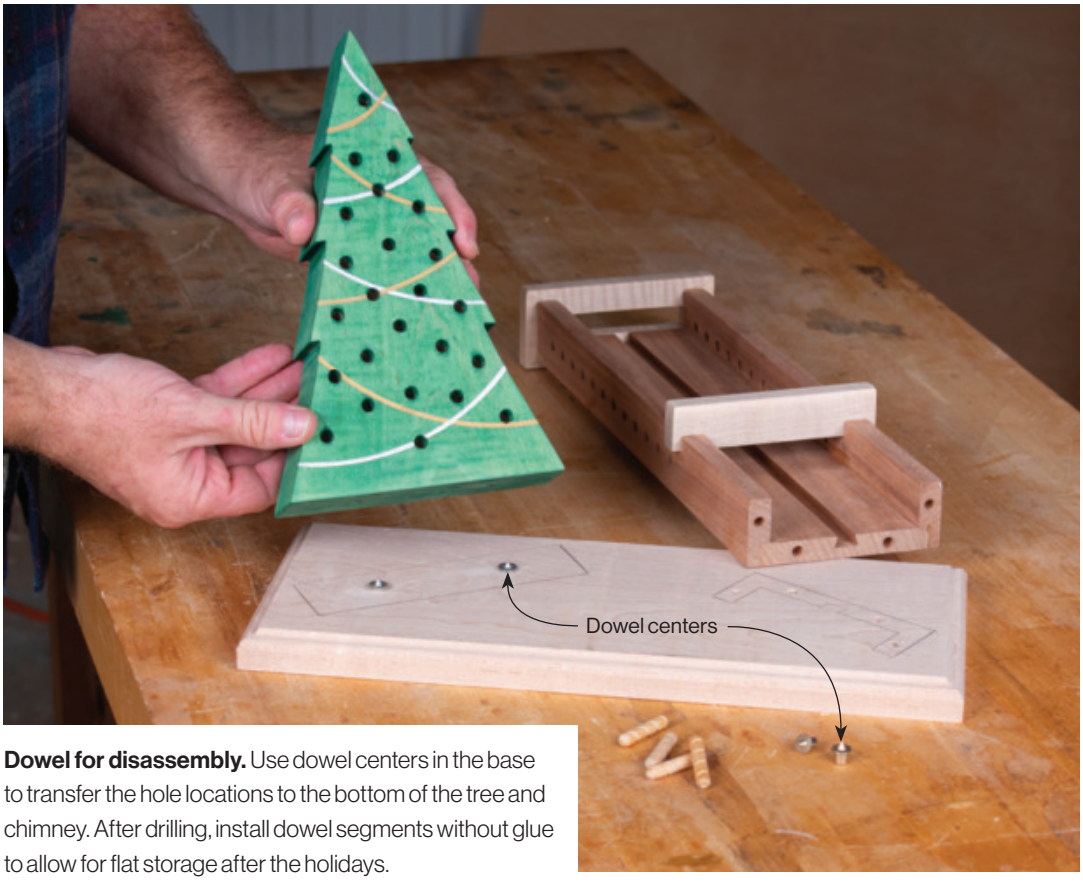


Add some garland. After dying the shaped tree, use paint markers—available from a hobby store—to add decorations like garland and tinsel. Jar lids make great templates.

Attach the dovetail. Screw the dovetail wedge to Santa's backside, aligning its bottom end with the bottom of Santa's "feet," countersinking the screws.

Assemble and finish up

Attach the dovetail wedge you made earlier, as shown. Make and profile the base. Then arrange the chimney and tree and trace their locations on the base. Drill ¼"-dia. holes, ½" deep into the base for the dowel joinery. Transfer the hole locations as shown, then drill the bottom of the tree and chimney. Finish all pieces, making sure your finish of choice plays nice with the tree's dye and Santa's paint job. I used satin spray lacquer. Slip Santa up the chimney and insert the dowels through the chimney sides. Then attach the tree and chimney to the base, and let the countdown to Christmas begin! ■



Dowel for disassembly. Use dowel centers in the base to transfer the hole locations to the bottom of the tree and chimney. After drilling, install dowel segments without glue to allow for flat storage after the holidays.

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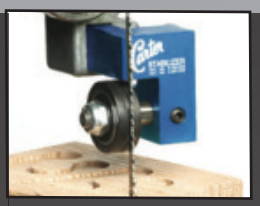

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Osage Orange

The colorful saga of an Ice Age survivor

By Robert J. Settich

Osage orange (Maclura pomifera) was on a huge winning streak in prehistoric North America, spanning from Florida to Ontario. It had evolved huge fruit to appeal to mastodons and giant ground sloths that expanded the tree's range by providing transport and fertilization. But then, about 125,000 years ago, the glaciers of the last Ice Age crept southward, killing both the trees and their planting partners. By the time the thaw finally began about 12,000 years ago, the last of the trees were mostly clustered in parts of present-day Arkansas, Oklahoma, and Texas.

Heartwood can range from hues of bright yellow to vivid orange.

Woodturner Bob Hawks made the sunny pepper mill and salt shaker.

Indigenous people recognized that the wood's unique combination of strength and flexibility made it ideal for archery bows powerful enough to send an arrow clear through a bison, and war clubs that wouldn't shatter. Archeological evidence indicates that these early woodworkers were creating bows with recurve tips at least as far back as 1050 AD and exporting finished weapons to tribes hundreds of miles away.

The secret is out

The tree was virtually unknown to white settlers until 1804 when Meriwether Lewis enthused about it in a letter to President Jefferson, and even enclosed planting slips.

As the westward expansion of the United States gathered momentum, Osage orange gained aggressive new planting partners. Settlers planted seedlings one foot apart along property lines, and as the trees grew, they used a technique called plashing to weave the limbs. Within three to four years, that work produced a nearly impenetrable hedge renowned as "horse high, bull strong, and pig tight."

Do fence me in

Hedge fever had started to cool when, in 1873, the first barbed wire patent sparked a huge national appetite for fence posts. Farmers discovered that their hedges were incredibly sustainable, providing a nearly endless supply of fence posts: whenever they cut down a tree, the stump quickly sent up multiple shoots.

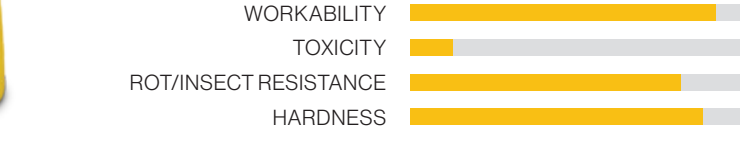
The Dust Bowl revived interest in planting Osage orange as windbreaks and shelterbelts. Depression-era federal agencies planted thousands of miles with hundreds of millions of trees.

The tree that lost its planting partners during the Ice Age plied its unique physical properties to recruit armies of eager human planters. Some researchers have speculated that Osage orange has been the most planted of any tree species in North America, making Johnny Appleseed look like a real underachiever.

Look on the bright side of Osage orange

It's not unusual for an Osage orange to sprawl wider than it is tall. As a result, most lumber is modest in both width and length. But instead of thinking about the wood's limitations, I suggest that you make the most of Osage orange's structural and visual strengths.

It is ideally suited for archery bows, as well as tools and handles subject to shock: mallets (See p. 38) for carving and assembly, handles for hammers, sledges, chisels, and turning tools. The wood's



extreme density and wear resistance make it perfect for plane soles, marking gauges, knife scales, clock wheels and gears, sheaves (pulley wheels), axles, and bearings.

Combine the wood's physical strength with its decorative quality by using it for exposed splines or dowels for drawbore tenons. Bowties and other inlays make eye-catching highlights. A tapered plug cutter lets you conceal counterbored screws with an attractive accent.

Osage orange retains crisp detail on lathe projects such as pens and bottle stoppers. Whatever you make, start with sharp tools and hone edges frequently. Screws hold well, but you'll need to drill pilot holes at least 1/64" oversized. The wood's density allows you to tap long-lasting threaded holes for machine screws. Use a water-borne finish to reduce the tinting effect of oil-based products. All the same, normal exposure to air and light will eventually oxidize the wood to a golden brown.

How to levitate a tree

My first experience with Osage orange began when my father-in-law bought a ten-acre site in Kansas for a new home. The front three acres had a center path wide enough for a tractor, but the rest of that portion was densely overgrown. The first Osage orange announced itself with thorns wicked enough to puncture thick leather gloves. After clearing enough limbs to finally reach a gnarled trunk, we planned the direction we wanted the tree to fall. I'm always ready to beat a hasty retreat after the final felling cut, but it wasn't necessary this time. Even though we had cut clean through the trunk, the tree didn't fall. Its upper branches had so thoroughly entwined with the surrounding trees that the Osage orange defiantly stood there. Well, not exactly standing—it was actually hovering over the stump.

Our new strategy involved three key elements: cursing, sawing, and praying. After we cut down the ring of trees around it, the Osage orange finally toppled without killing either of us. The stump was oozing a thick white sap reminiscent of a wounded alien bleeding in a sci-fi movie.

We continued the project with a newfound respect for an opponent nearly as stubborn as we were. Fortunately, the remaining Osage orange trees were smaller, and at the end, we even had a tidy pile of fence posts. ■

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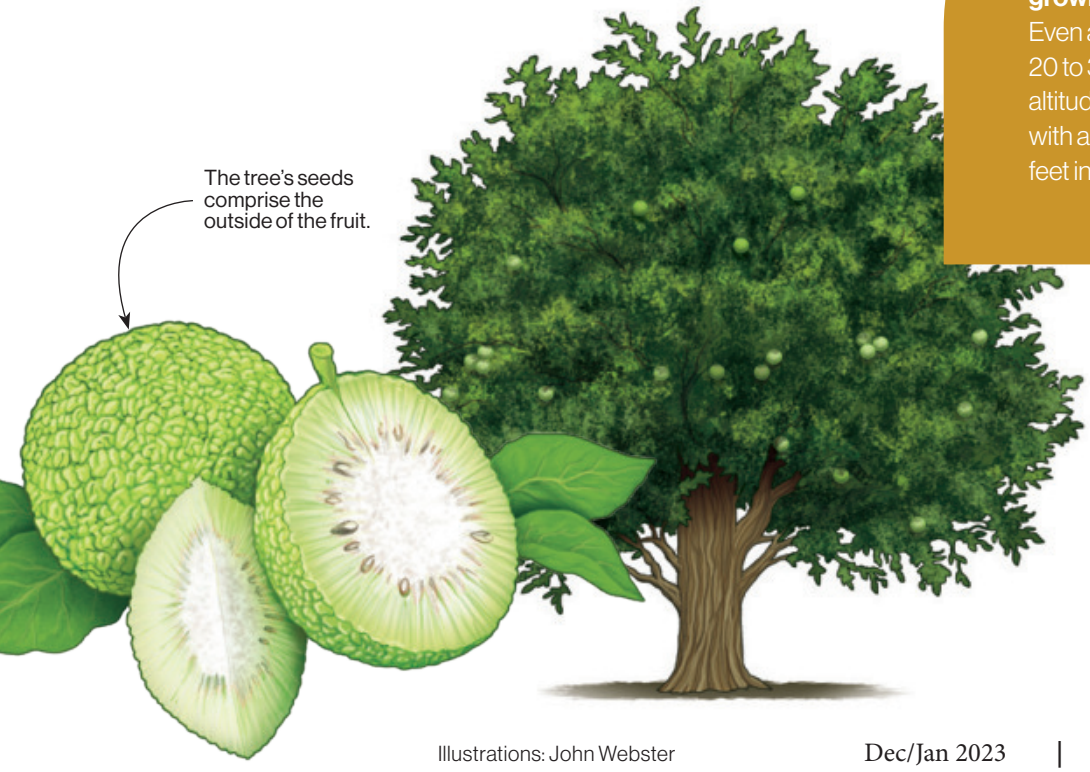
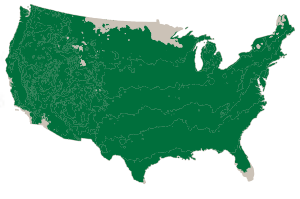
Big but not scary. "Hedge balls" are the largest fruit of any tree native to North America: the size of grapefruit. Despite folklore, they do not repel insects.

Osage orange doesn't have much interest in growing straight and tall. Even at its typical height of 20 to 30 feet, most of that altitude is in a ragged crown, with a short trunk about 1½ feet in diameter.





Once pushed to the brink of extinction, Osage orange made a nearly miraculous recovery, rebounding well beyond its prehistoric range.

Illustrations: John Webster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A rasp in name only

Shinto Saw Rasp - 9"

While technically not a rasp in looks or design, the Shinto Saw Rasp does the work of one. As with hand-stitched cabinetmaker's rasps, the Shinto's teeth aren't in rows, resulting in more uniform cutting. But unlike a rasp's punched teeth, the Shinto has double-sided hacksaw blades with big teeth for aggressive shaping on one side and small teeth for finer smoothing on the other. And it doesn't clog. Sawdust and shavings are removed on the push stroke as the tools cuts, and with its lattice design, there is virtually no place for debris to get trapped. Loved by luthiers, I've found it helpful in my work: shaping spoons and other contoured items and quickly rounding over edges and ends. The Shinto Saw Rasp may not be well-named, but it's well-built and relatively inexpensive for the great work it can do. ■

—Chad McClung

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Photos: Chad McClung

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f. Total Distribution (Sum of 15c. And 15e.): 63,921
g. Copies not Distributed: 7,439
h. Total (Sum of 15f. And 15g.): 71,360
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g. Copies not Distributed: 6,932
h. Total (Sum of 15f. And 15g.): 70,855
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Chad McClung

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