

BEST BOOKS
for woodworkers

Make a mountain
DULCIMER



WOODCRAFT[®]

Projects, Techniques, and Products

magazine

SPECIAL HOLIDAY ISSUE!

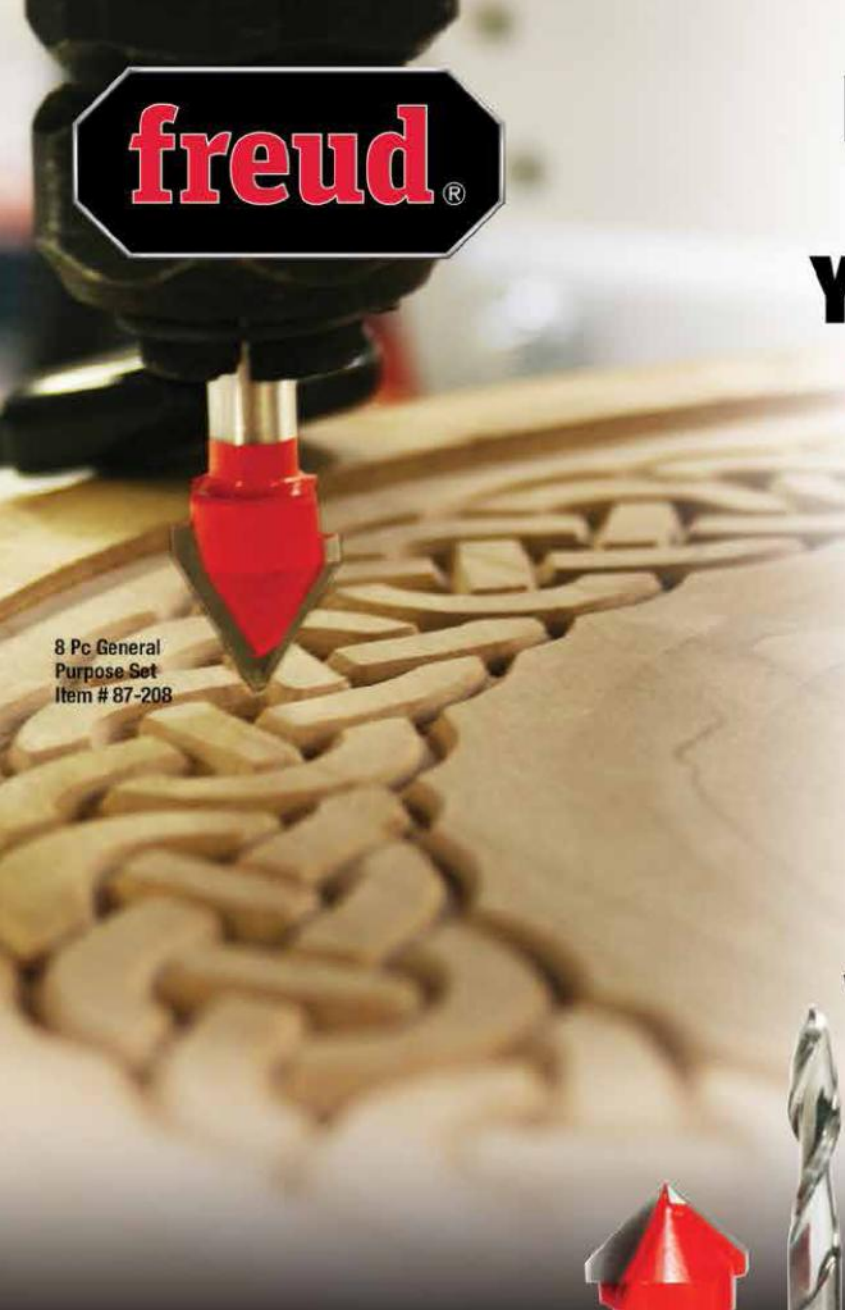
Projects:

- Cutting board with dovetailed feet
- Stylish wooden bow ties
- Tiny turned boxes with lids
- Transforming table

Plus:

- Hand sanding secrets
- Turning tool upgrade





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Projects

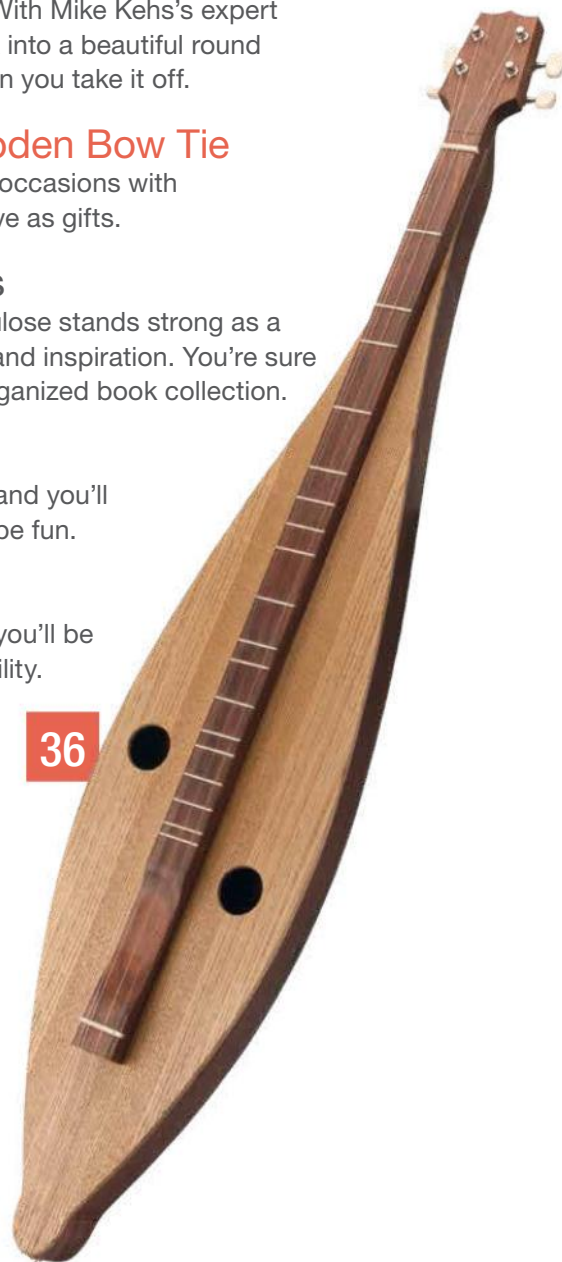
- 21 Have Fun with Transforming Tables!**
1x12 pine and dowels never looked so good. Build a few of these compact tables, and you'll also be able to use them as stools, benches, or stacking shelves.
- 33 Board Feat!**
Why not treat your next cutting board to a pair of dovetailed cleats? This extra step makes lots of difference—in visual appeal and warp resistance.
- 36 Make a Mountain Dulcimer**
Here's the perfect project to try out your skills as a luthier and prove that music sounds sweeter on a handmade instrument.
- 51 Quick-Spun Box**
Don't throw away that tiny piece of wood! With Mike Kehs's expert advice, you can turn this nondescript blank into a beautiful round box with a snug-fitting top that "pops" when you take it off.
- 61 Celebrate in Style with a Wooden Bow Tie**
Bring some workshop whimsy to dress-up occasions with bow ties that are fun to make, wear, and give as gifts.

Tools & Techniques

- 26 Best Books for Woodworkers**
Step aside, YouTube. This selection of cellulose stands strong as a major source of woodworking information and inspiration. You're sure to find a few must-have titles in this well-organized book collection.
- 44 6 Hand Sanding Secrets**
Put these abrasive tips and tricks to work, and you'll discover the big secret: hand sanding can be fun.
- 58 Souped-Up Spindle Gouge**
Add a side grind to this roughing tool, and you'll be pleasantly surprised at its increased versatility.



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Contributors



Dave Boyt is a freelance technical writer and part-time sawmill operator. He has twelve years experience running various sawmills, specializing in milling lumber from unusual native trees, cut from sustainably grown timber, and salvaged urban trees. An avid folk music enthusiast, Dave enjoys getting together with friends and making music. His love for music and woodworking has led him to make several stringed instruments, including the mountain dulcimer on page 36. Dave lives in southwest Missouri with his wife, Becky.



“I’ve lost count of the cutting boards I’ve made for presents or charity auctions,” says **George Snyder**, whose “Board Feat” story begins on page 33. Encouraged by a hobbyist dad, George took up woodworking at an early age. He claims that his first project was a paddle he made so his parents could discipline his younger brother. Following college and 8 years as an officer in the Air Force, George joined Woodcraft Supply and worked in various positions throughout the organization for 22 years. He recently joined Woodpeckers as Director of Product Development.



Mark Neuenschwander (pronounced 9-shwander) is notorious in Joplin, Missouri. No, not for going into battle, but for requesting unusual props for photo shoots. Mark has taken on all kinds of photography assignments (quests?), but he especially enjoys working with artists—not surprising when you consider that his father was a professional woodcarver. Mark joined forces with Dave Boyt for “Make a Mountain Dulcimer” on page 36. When not slaying dragons, Mark spends time with his artist wife and two young children. See Mark’s work at marknphoto.com, or on Instagram @marknphoto. ■

On the Web



Dulcimer deluge! We’re busting at the seams with extra content for the Mountain Dulcimer story on page 36. In addition to all the necessary patterns you’ll need for the small but important parts, onlineEXTRAS for this article include tuning info, a fret chart, and even a fret

calculator that figures out fret placement for you. And there’s more: a bit of history regarding the instrument, tips on how to get started playing your dulcimer, plus a video that features the builder (an amateur folk singer) strumming a tune on one of his many dulcimers. It’s all on our website. Stop by for a foot-stompin’ good time.



Woodworking Podcast.

Dayton, OH Woodcraft store manager, Allen Ryan, has started an informative and entertaining podcast called *The Woodnut*. Allen conducts off-the-cuff interviews with movers and shakers in the woodworking industry. Visit woodnut.podbean.com to listen. ■



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- Feed rate: 26 FPM
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- Knife size: 12 1/2" x 1/4" x 1/4"
- Cutterhead speed: 8750 RPM
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- Impeller: 12 1/2" aluminum
- Portable base size: 21 1/4" x 33 1/2"
- Max. capacity: 5.7 cubic feet
- Height (with bags inflated): 78"
- Bag size: 19 1/2" x 33" (2)
- Airflow performance: 1550 CFM
- Max. static pressure: 11"
- Standard bag filtration: 2.5 Micron
- Approx. shipping weight: 122 lbs.

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- Prewired voltage: 110V
- Table size: 6 1/2" x 47 1/2"
- Number of knives: 3
- Cutterhead speed: 5000 RPM
- Cutterhead diameter: 2 1/2"
- Maximum depth of cut: 1/4"
- Maximum rabbeting depth: 1/2"
- Cuts per minute: 15,000
- Fence size: 29 1/2" long x 4" high
- Approximate shipping weight: 260 lbs.

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14" DELUXE BANDSAW 30TH ANNIVERSARY EDITION

- Motor: 1 HP, 110V/220V, single-phase, TEFC, 1725 RPM, prewired 110V
- Amps: 11A at 110V, 5.5A at 220V
- Table size: 14" x 14" x 1 1/2"
- Table tilt: 45° D right, 10° D left
- Floor to table height: 43"
- Cutting capacity/throat: 13 1/2"
- Maximum cutting height: 6"
- Blade size: 93 3/4" (1/4" to 3/4" wide)
- Blade speed: 1800, 3100 FPM
- Overall dimensions: 27" W x 67 1/2" H x 30" D
- Approximate shipping weight: 247 lbs.



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G0555LANV REG. ~~\$575.00~~ SALE **\$525.00**

12 SPEED HEAVY-DUTY BENCH-TOP DRILL PRESS

- Motor: 3/4 HP, 110V, single-phase, 9A
- Swing: 14"
- Drill chuck: 1/4"-3/4"
- Drilling capacity: 3/4" steel
- Spindle taper: MT#2
- Spindle travel: 3/4"
- Number of speeds: 12 (140, 260, 320, 380, 480, 540, 980, 1160, 1510, 1650, 2180, 3050 RPM)
- Quill flange/collar dia: 2.040"
- Precision-ground cast-iron table: 11 1/4" x 11 1/4" x 1 1/4"
- Footprint: 18" x 11"
- Approximate shipping weight: 148 lbs.

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- Floor to table height: 34 1/4"
- Table counterbore: 3" dia. x 3/4" D
- Spindle travel: 1/4"
- Spindle diameter: 1/2"
- Spindle length: 3"
- Spindle capacity under nut: 2 1/2"
- Spindle speed: 13,200 RPM
- Overall height (includes fence): 40 1/4"
- Overall depth: 23"
- Overall width: 27"
- Approximate shipping weight: 172 lbs.



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- Floor-to-table height: 35 1/2"
- Arbor: 3/4"
- Arbor speed: 3450 RPM
- Max. depth of cut: @ 90° 3 1/4", @ 45° 2 1/4"
- Rip capacity: 31" R, 16 1/4" L
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- Precision-ground cast-iron table size: 17" x 17"
- Table tilt: 10° left, 45° right
- Floor-to-table height: 37 1/2"
- Cutting capacity/throat: 16 1/4" left
- Maximum cutting height: 12 1/2"
- Blade size: 131 1/2" L
- Blade speeds: 1700 and 3500 FPM
- Overall size: 32" W x 73" H x 32" D
- Footprint: 27" L x 17 1/4" W
- Approx. shipping weight: 342 lbs.

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Gratitude for woodworking, and plenty of other stuff too

We've arrived at the time of year when woodworkers get busy. As days grow shorter, our to-do list grows longer. This is because we can't just buy gifts; we've got to make them. It's time to raid the scrap bin and work just the right magic to transform what might have been kindling into presents for friends and family members. Here at the magazine, our awareness of this special time of year begins many months earlier, because we want this holiday issue to be extra special. We hope you have fun making some of the small projects featured on the pages ahead.

The Holiday Season is also a confluence of circumstances that invite reflection: vacation time, social events, religious celebrations, and the end of another year. It's a good time for me to express my thanks to all the folks who make this magazine possible, beginning with our loyal subscribers. Actually, you guys don't just subscribe; you also send email and letters with questions, comments, article ideas and photos of projects you've built. We value this correspondence greatly, so please keep it coming.

I also want to thank the small group of magazine-makers I work with every day. This team never backs away from the challenge of making the magazine better. The huge amount of work that goes into every issue begins at the macro level (finding the right mix of project, technique, and tool content to fill an issue), and extends down to directing photo shoots, placing dimension lines on drawings, agonizing over nuanced descriptions, and plenty more. We're bound together by a common goal: providing better information, inspiration, and fun than you'll find in any other woodworking publication.

Finally, I'm thankful for the common ground that woodworking provides, during a time when issues outside the shop seem especially divisive. Every woodworker learns early on that there's more than one way to get something done. What unites us is our love for making things and our appreciation of good craftsmanship. So let's have fun together over the holidays, and in the months ahead! ■



WOODCRAFT[®] magazine

Dec/Jan 2018 Vol. 14, Issue 80

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(800) 542-9125
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Subscriptions: (U.S. and Canada)

One year: \$19.99

Single copy: \$6.99

customer_service@woodcraftmagazine.com
(800) 542-9125

Woodcraft Magazine (ISSN: 1553-2461, USPS 024-953) is published bimonthly (Dec/Jan, Feb/Mar, April/May, June/July, Aug/Sept, Oct/Nov) and printed in the United States. Periodicals postage paid at Parkersburg, WV, and at additional mailing offices.

POSTMASTER: Send address changes to
Woodcraft Magazine, P.O. Box 7020,
Parkersburg, WV 26102-7020.

Canada Post: Publications Mail Agreement #40612608
Canada Returns to be sent to Pitney Bowes,
P.O. Box 25542, London, ON N6C 6B2

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A flood of river tables

The cover project in our June/July issue has been a big hit. Readers have written in from all over the country with questions, comments, and snapshots of some pretty amazing river tables they've built. Our message: Keep the photos coming.

You don't have to build the River Table to share with us. Even if it's a simple shop jig or a helpful tip, we want to see what you're up to. The box below shows how to get in touch with us. Who knows? Your work just might inspire fellow woodworkers. ■



Lou Stately, Ijamsville, Maryland



Nancy Stratton, via email



Terry Fleetwood, Clair, Illinois

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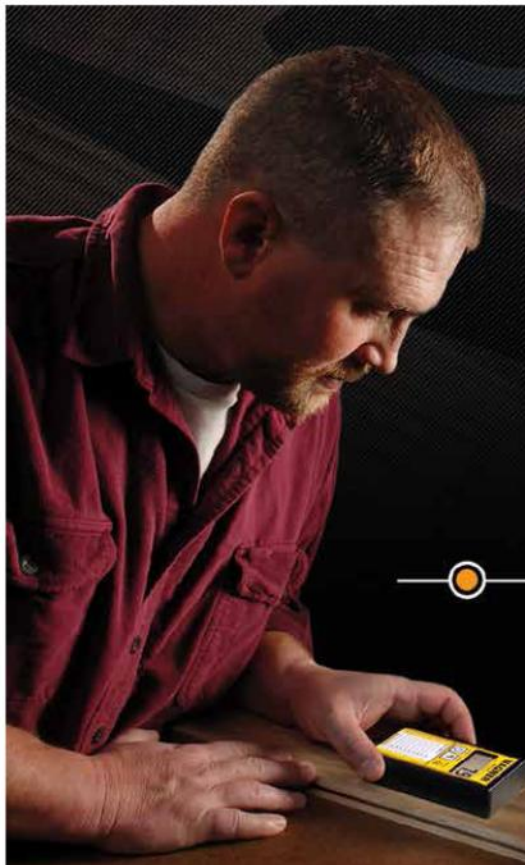


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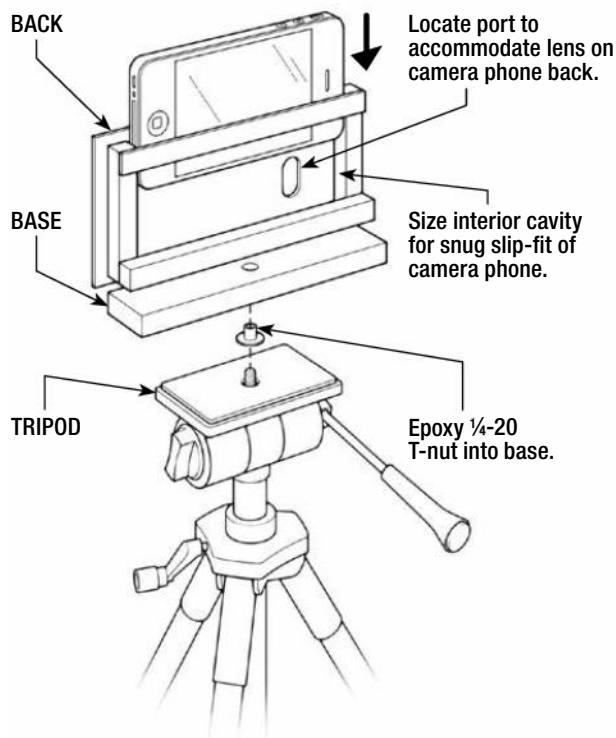
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TOP TIP

Camera phone tripod mount

A camera phone makes it easy to photograph your completed projects before they slip the shop and your memory. It also allows you to record videos of complicated jig setups and hard-to-remember procedures, making the job easier the next time. I find that using a tripod helps enormously, especially when including hands-at-work to help demonstrate a technique. To mount my phone, I cobbled together the unit shown. To make one yourself, size the pieces and locate the lens port to suit your particular model. Epoxy a ¼-20 T-nut in the bottom piece to connect to a typical tripod head.

—Lee Wimbs, Greensboro, North Carolina



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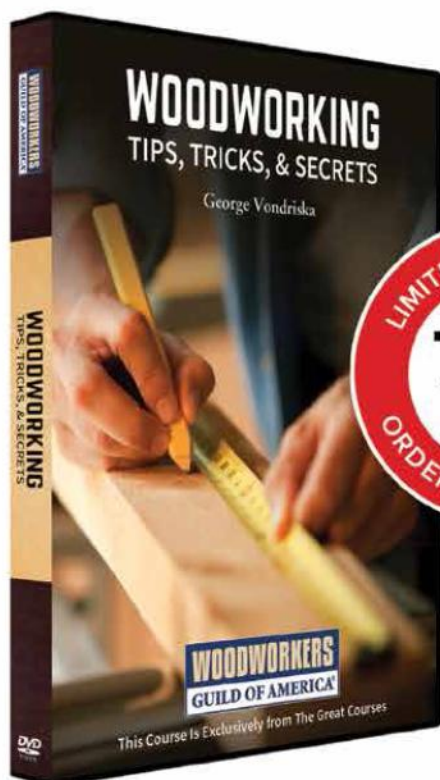
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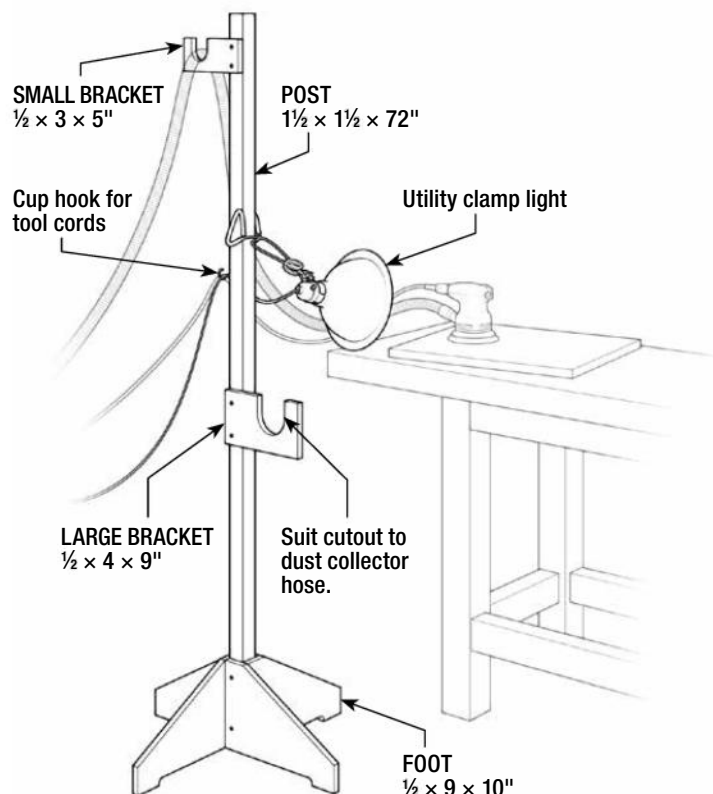
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A helper post

When working wood, task lighting is indispensable for really seeing what you're doing, especially with older eyes. Strong, well-positioned light is critical for peering into a router base opening, seeing cutlines, and taking accurate measurements, among other things. I also find that a strong light raking across a work surface in a dimmed shop makes defects really pop out for effective smoothing. To allow perfect positioning of a lamp, I use a simple free-standing post to which I can fix a clamp light at any height. It's just a 2x2 with a base made of scrap plywood panels. I also outfitted it with cup hooks and plywood brackets to support cords and dust collection hoses.

—Paul Anthony, senior editor



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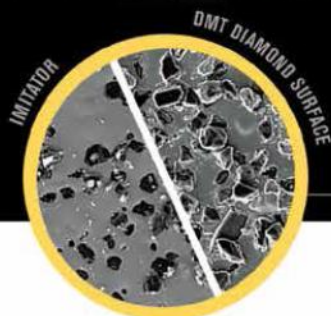
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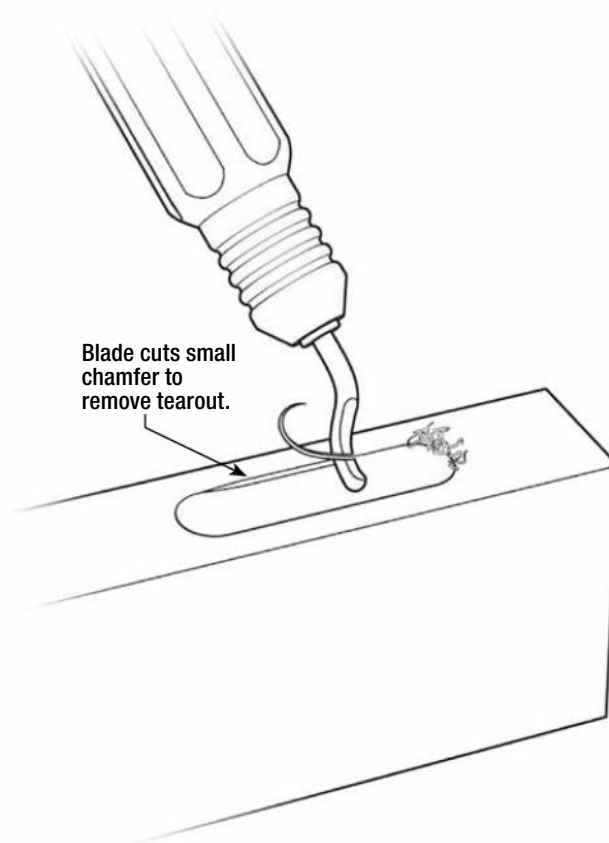
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Deburring tool

Sometimes a tool from one craft works well for another. I've found that a hand deburring tool, used to clean up rough edges in metalwork, has great applications in the woodshop. The tool's sharp cutter rotates freely in its handle and cuts a small chamfer on edges and corners. In metalworking, it's used to remove burrs caused by the cutting tool, and can serve essentially the same purpose in woodworking, removing exit tearout from mortises or holes, and quickly scraping away rough edges on shop plastics and metals. Hand deburring tools can be purchased online from places like mscdirect.com or amazon.com. ■

—Dan Martin, Galena, Ohio



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But *Ultra-Shear* goes even further, delivering a spectacular surface finish with a technique called **shear scraping**. Roll the tool right or left on your tool rest and you will feel it land solidly on a secondary bearing surface. This sets your cutting edge at 45° to the stock. Coming into the work at this angle, the wood fibers slice cleanly, virtually eliminating sanding. The exclusive shape of the *Ultra-Shear* shaft allows you to switch from aggressive stock removal to super-fine finishing in the blink of an eye.

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The alloy steel shaft undergoes a two-step hardening process giving you a tool that floats smoothly across your tool rest and resists vibration, even when extended well over the tool rest. The tool pocket machined into the shaft supports the insert with three-point contact, not just the clamping force of the screw. You get a tool that feels and responds even better than most conventional tools.



Keep the tool flat on the tool rest and level to the ground for fast stock removal and basic shaping cuts.

For ultra-fine finishing cuts, roll the tool until it lands on the 45° bearing surface and take a light cut. You'll be amazed at the smooth finish.

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Have Fun with TRANSFORMING TABLES!

Put dowel joinery to work, and make a project that can serve as a stool, a bench, or a bookcase.

By Asa Christiana



This Bauhaus-inspired, transforming table is my favorite example of elegant meets easy. It's a nice weekend project for experienced woodworkers and a fun challenge for beginners, with a variety of skill-building lessons. A single table can also function as a stool or small workbench. But by stacking multiple units together, you can create an attractive set of shelves.

I designed the piece to match the width of the 1 × 12" pine boards available at home centers (actual width: 11¼"). Feel free to shorten the sides to make the table or stool a more comfortable height. And if you want to replace the dowel joints with dovetails or finger joints, or trade out the clear pine for hardwood, go for it.

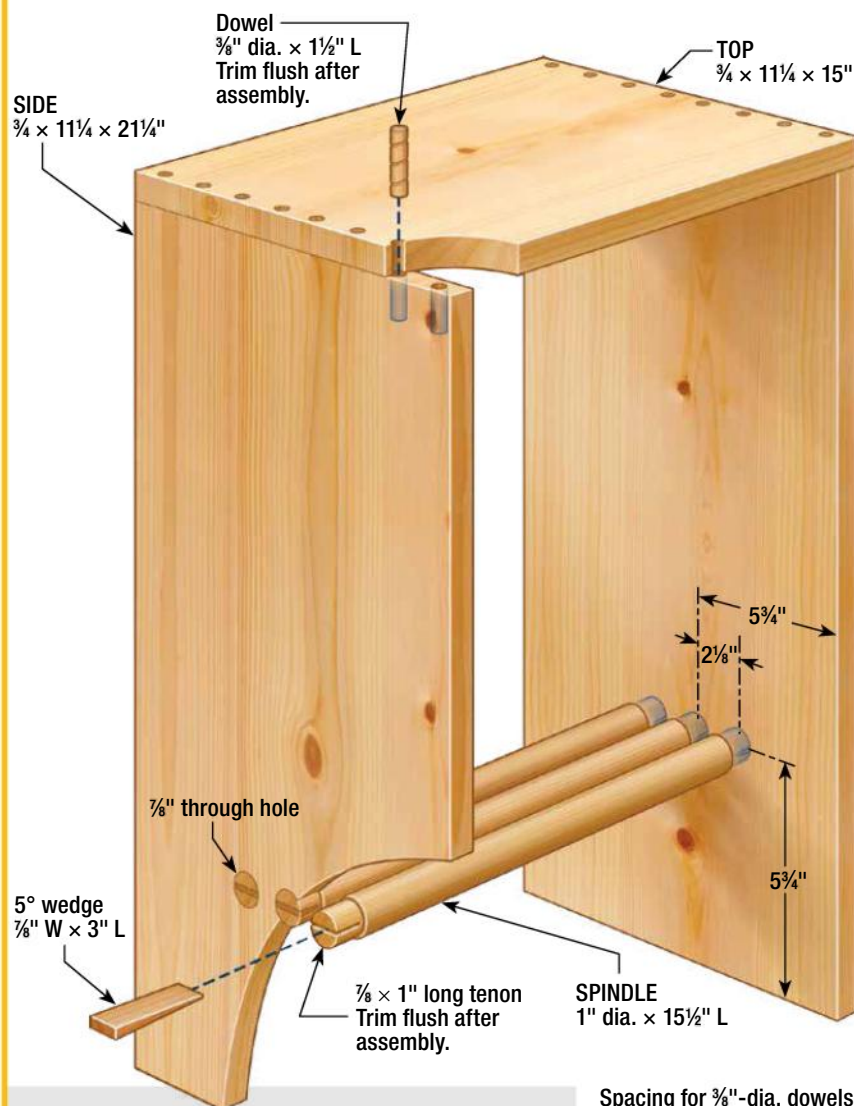


Transform it.
Build several units and stack them to create a stylish set of shelves.

Square cuts, round reinforcements. This weekend project proves that dowel joinery can be attractive and functional. The larger dowels are installed with wedged through tenons.

Flat boards, joined by dowels in 2 diameters

A 6 ft. 1 × 12" will yield the table's sides and top, with a little left over. Take your time selecting your wood, because it's important to start with stock that's clear and flat. As shown in the drawing, table sides are secured to the top with $\frac{3}{8}$ "-dia., 1½"-long dowel pins. Three 1"-dia. dowels (spindles) strengthen the assembly, joining sides with round through-tenons that are glued and wedged in place.



Order of Work

- Cut sides and top to finished size.
- Drill the large holes in the sides.
- Make and slot the tenons on the spindles.
- Make and use the drill guide for dowelling.
- Make and insert the wedges.
- Assemble, and apply the finish.

Spacing for $\frac{3}{8}$ "-dia. dowels: Locate outermost dowels $\frac{11}{16}$ " from outside edges. Space remaining dowels $\frac{17}{16}$ " apart. Adjust spacing if sides and top are not exactly 11¼" wide.

Round tenons on the router table

With the sides and top cut to size, it's time to begin your joinery work. I carefully lay out the centers for $\frac{3}{8}$ "-dia. holes in the sides, so that the spindles that hold the sides apart will be parallel and secure. The technique I use for creating round tenons on the router table is not difficult, but make sure you have some extra 1"-dia. dowel stock to test your setup. Cut your 1" dowels to a length of 15½", and position the fence so that your tenon length will be 1". You'll trim the tenons flush after the table is fully assembled.

8 dowels for strong corner joints

While the spindles stabilize the sides, I use smaller dowels to join the sides to the top. A good doweling jig is necessary for this step. You can use a store-bought version, or make your own on a drill press, as I've done here. To make my jig, I first cut a piece of $\frac{3}{4}$ "-thick plywood to the same width as the table parts, to use as a guide block. I laid out the outside dowel holes $\frac{11}{16}$ " from the edges, and spaced the rest $\frac{17}{16}$ " from each other.

Set up a fence on the drill press that is $\frac{3}{8}$ " away from the center of the bit. Use the same $\frac{3}{8}$ " brad-point bit you'll use to drill the dowel holes. Place a backer board under the guide block for clean exit. Hold the guide block against the fence as you drill each hole. Then glue a fence to the guide board; it should be the same length as the guide strip and at least double its width. When drilling the table sides, register the jig's fence on the outer face; for the top, set the guide block against the outside face, as shown at right.



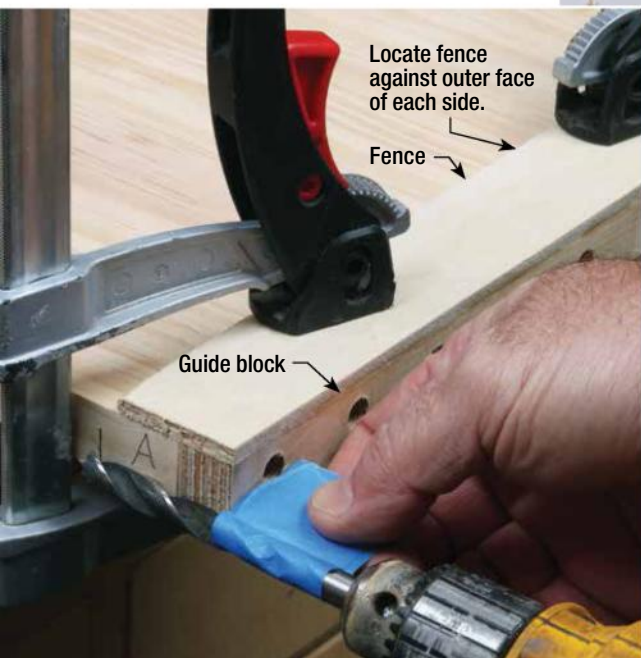
Drill the sides for the spindles. The 1" spindles will have $\frac{7}{8}$ "-dia. tenons on their ends. Use a Forstner bit to drill holes for those tenons, with a backer board below to prevent tearout.



Make a V-groove guide block. With the miter saw tilted for a 45° bevel, make a pair of cuts to create a V-groove in a 2 × 6" board. A groove depth of around $\frac{3}{4}$ " will give you plenty of leverage for routing your tenons. You can also create your V-groove guide block by making two bevel cuts on the table saw.



Straight bit cuts a round tenon. Position the fence to act as a stop, 1" from the far edge of the bit. Clamp the guide block in place, and raise the bit to remove just shy of $\frac{1}{8}$ " from the spindle. Turn on the router, seat a test spindle in the V-groove, and slide it forward until it bottoms out against the fence. Rotate and repeat until the round tenon is complete. Test-fit your tenon in the holes you drilled, and fine-tune bit height until the fit is right.



Flag the depth. These holes should only be 1" deep, so make a mark on the workpiece and use it to attach a tape flag to the drill bit to act as a stop. To keep the drill bit aligned with the workpiece and guide, drop to one knee and sight along the bit. Stop when the tape flag reaches the jig.



Drill through the top. Note the different orientation of the guide here. The holes in the top go all the way through, so clamp a scrap board underneath to prevent chipout on the bottom. The "A" registration mark on the top should meet its match when the side is attached, ensuring proper joint orientation.

Assembly: Install the big dowels first

It's smart to have a dry "dress rehearsal" to make sure all parts fit together properly before you start spreading glue. If everything checks out, you can make wedges for all your through-tenons, and get started. Begin the assembly by gluing kerfed $\frac{7}{8}$ "-dia. through-tenons in their holes, clamping the sides together, and installing wedges to lock these joints together. Keep the



Slot the tenons. Use a handsaw to make a kerf in each tenon. Just divide the tenon by eye, and cut perpendicular to the grain lines. Stop just before the shoulder.

sides aligned by inserting a couple of $\frac{3}{8}$ "-dia. dowels through the top and into the sides without glue.

Cut wedges at the bandsaw to the size shown in the drawing on page 22.



Whack the wedges. Orient the wedge kerfs perpendicular to the grain. Otherwise, the wedging action could split the boards. Brush glue onto the wedges and bang 'em in. A dull thud signals that the wedges are in place.



Glue on the top. Apply glue in the holes in the sides first. Then insert the dowels, twisting them to spread the glue, and then brush glue onto the ends of the dowels that are sticking up. Fit the top onto the tips of the dowels, and use a rubber mallet to knock it down into place.



Pull it together. Place clamps as close to the dowels as possible without hitting them. Put clamps near the edges of the top, and then add a couple near the middle of the joints to be sure the top won't bow upward. Wait overnight for the glue to fully dry.

Finishing touches

You're in the home stretch. Unclamp the piece, and remove any exposed dried glue with a scraper. The dowels, tenons, and wedges are all sticking out at this point, and the corner joints might require some minor alterations. Trim everything flush, and prep for a perfect finish.



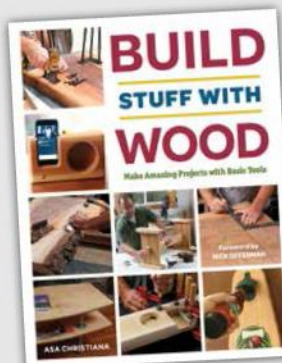
Offset your saw. Put a large refrigerator magnet on the inside face of the saw. That will keep it off the surface so you can saw off the protruding joinery without damaging the wood below.



Sand for a smooth surface. Use a block plane to trim what's left, and a sanding block to smooth it out. Flip the table on its back to saw off the excess dowels, and sand them flush and smooth. Now sand every surface through 220 grit and add a light chamfer on all the edges.



Finish it up. I like the rustic feel of a simple wipe-on oil finish on pine. Apply each coat liberally, wipe off the excess, and let it dry. Then sand lightly with 320-grit paper and repeat. Stop when you like the look. A three-coat application is usually the ticket.



Asa Christiana is the former editor of *Fine Woodworking* magazine, now living and working in Portland, Oregon. This article is adapted from his new book, *Build Stuff with Wood* (Taunton Press, fall 2017), which is packed with fun, easy projects like this one.



Best Books FOR WOODWORKERS

Looking to take your skills to the next level? Just turn the page...

By Joe Hurst-Wajszczuk

The person who coined the saying, “The more things change, the more they stay the same,” just might have been a woodworker. Admittedly, new tools and materials have made certain operations faster, safer, and easier, but if a woodworker from the 1900s could visit your workshop, he’d have a tougher time with the K-cup coffeemaker than the table saw. That’s because the basic tenets and tools of woodworking are almost timeless.

If you’ve doubted the possibility of crossing paths with time-travelling woodworkers, think again. Thanks to books, these experts can still share their advice on every aspect of woodworking, from outfitting your shop, to applying the final coat of finish.

To compile a short stack of must-have titles, we asked the staff to share their favorites, and then divided the list into categories. Whether you’re looking for gift ideas or buying books for yourself, you’re sure to find a few valuable additions to any library.

In addition to current titles, we’ve included a few classics that are worth the hunt. If you don’t mind a few dog-eared pages, you’ll discover that great information can be had for pennies on the dollar.

For ordering information, check out the Buyer’s Guide on p. 64 or go to woodcraftmagazine.com and click on onlineEXTRAS.

Just starting out

One of the biggest challenges with woodworking is making sense of the plethora of tools and techniques you need to start and finish your first project. The books shown here can start you off on the right foot.

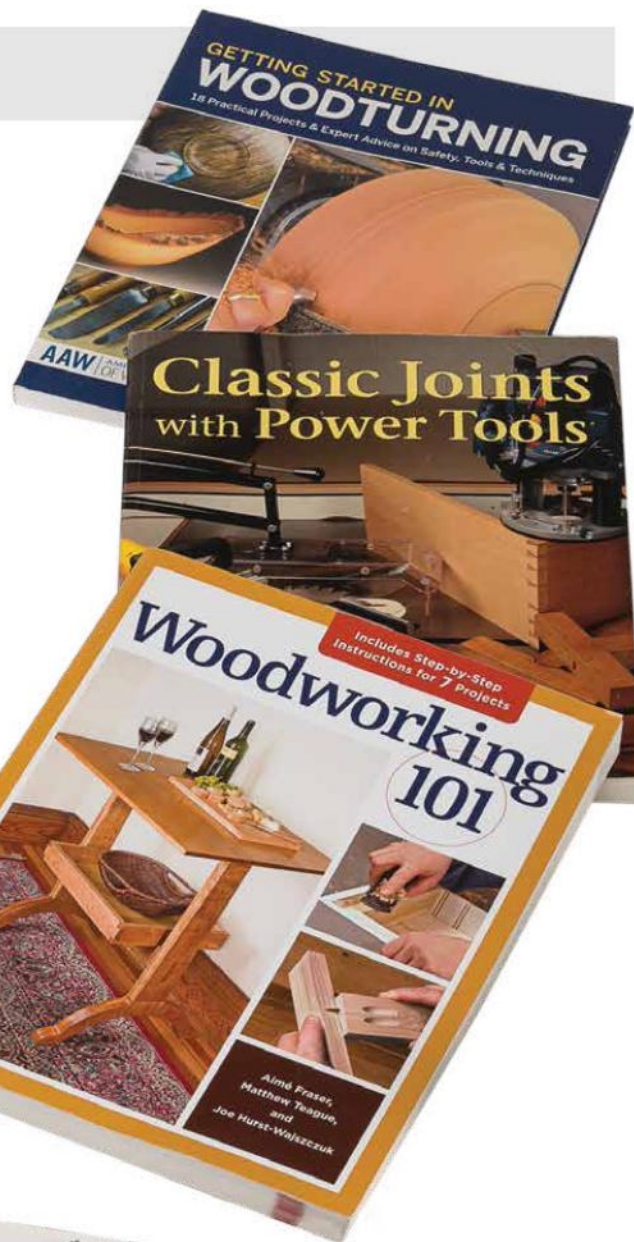
Just bought a lathe? Treat yourself to a copy of *Getting Started in Woodturning* (and while you're at it, join the American Association of Woodturners). Written by turners for turners, the book offers expert advice on safety, tools, and techniques, plus a few projects.

For new woodworkers, we recommend *Woodworking 101*. Written in textbook format, this book covers the basics of setting up a shop, selecting and using a basic assortment of hand and power tools, jigs, and a few projects designed to help you build your skills.

All of us dream of perfect hand-cut dovetails. Until then, *Classic Joints with Power Tools* can help you get projects out the door. This easy-to-follow guide will help you understand and successfully complete all types of joinery.

Worth the Hunt:

Woodworking: The Right Technique, Bob Moran (1996). This gem starts with a wink that's explained further down on the cover: "Three Practical Ways to Do Every Job—and how to choose the one that's right for you." Bob introduces the main woodworking processes from dimensioning stock, to cutting dovetails, and then offers a variety of ways to get the job done using traditional hand tools, modern machinery, and an assortment of slick jigs.

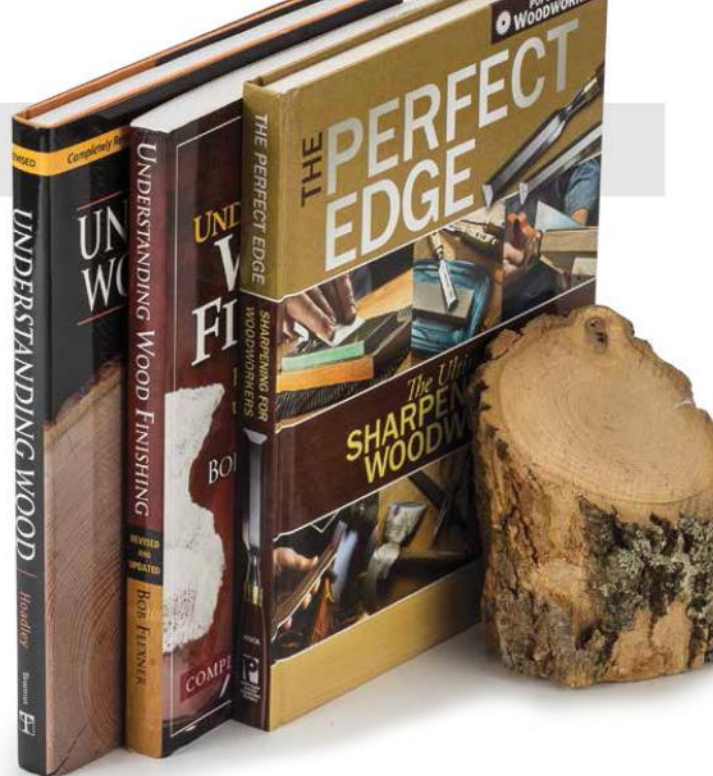


Go-to reference books

The good news is that you don't need a lot of shelf space to house a comprehensive collection of basic woodworking knowledge. Get started with *Understanding Wood*. In this comprehensive bible, professor Bruce Hoadley delves into the nature of wood and how its structure affects strength, workability, and other characteristics. He then shines a light on fundamentals like drying, machining, bending, joining, sanding, gluing, often accompanied by stunning macro photographs that zoom you in to the meat of the matter.

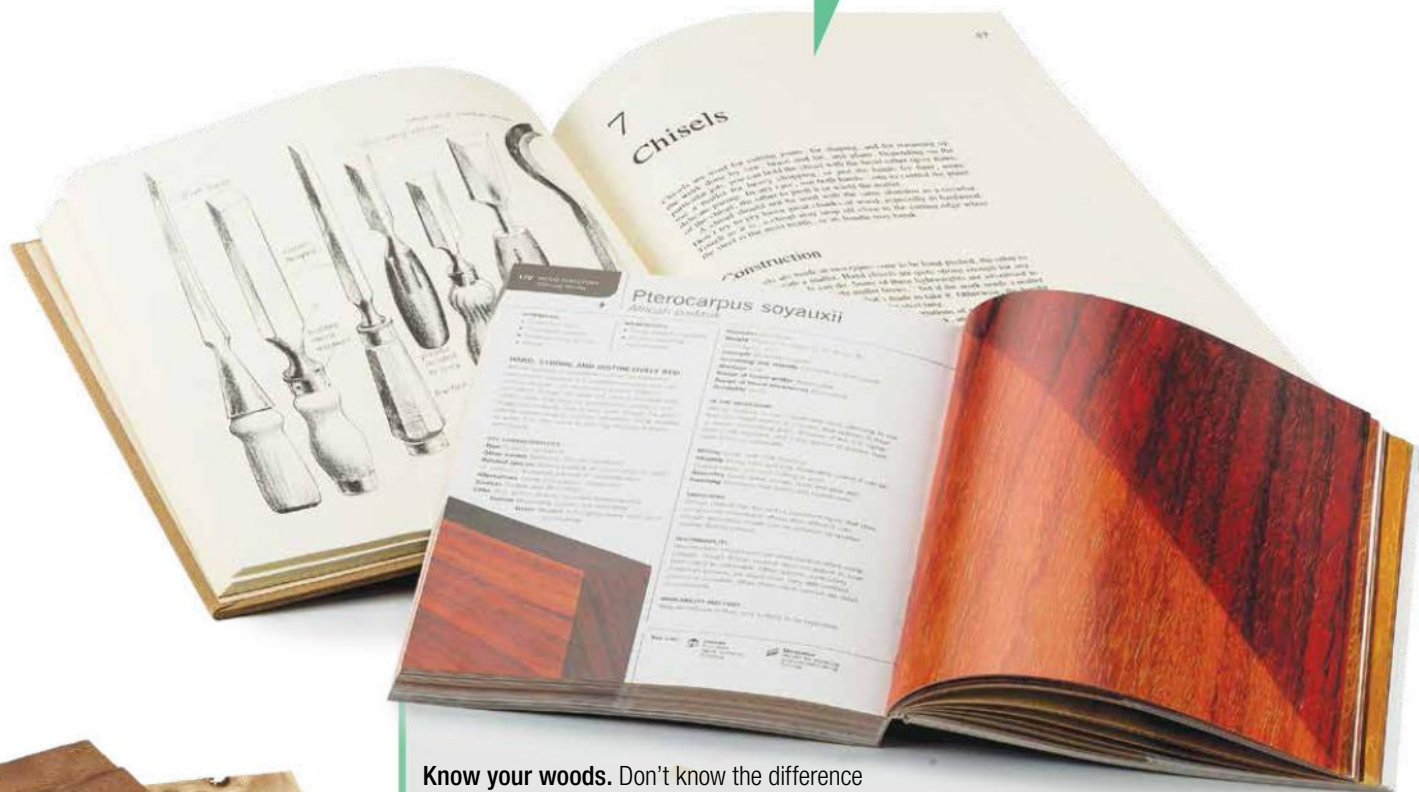
Finishing comes last, but in terms of frustration, it often ranks at the top of the list. In *Understanding Wood Finishing*, professional finisher Bob Flexner demystifies the art by explaining the “hows” and “whys.” After busting many long-standing myths, Bob offers instructions on selecting and applying a wide variety of finishes.

Sharpening is another topic that can vex woodworkers. Ron Hock's *The Perfect Edge* cuts through the mysteries so that you can improve your edges and enjoy the pleasure and efficiency that comes from a really sharp tool.



Worth the Hunt

Hand Tools: Their Ways and Workings, by Aldren Watson (1982). Here's one of the best collections of hand tool information. The author blends 450 hand-drawn illustrations with clear and concise writing that combines interesting historical details with basic techniques in 30 different tool categories.



Know your woods. Don't know the difference between sapele and sassafras? Don't worry. In his pocket-sized book, *The Real Wood Bible*, Nick Gibbs packs a ton of useful information about the woods you might find at the mill or lumberyard. We really like the large photos (including face, edge, and end grain).

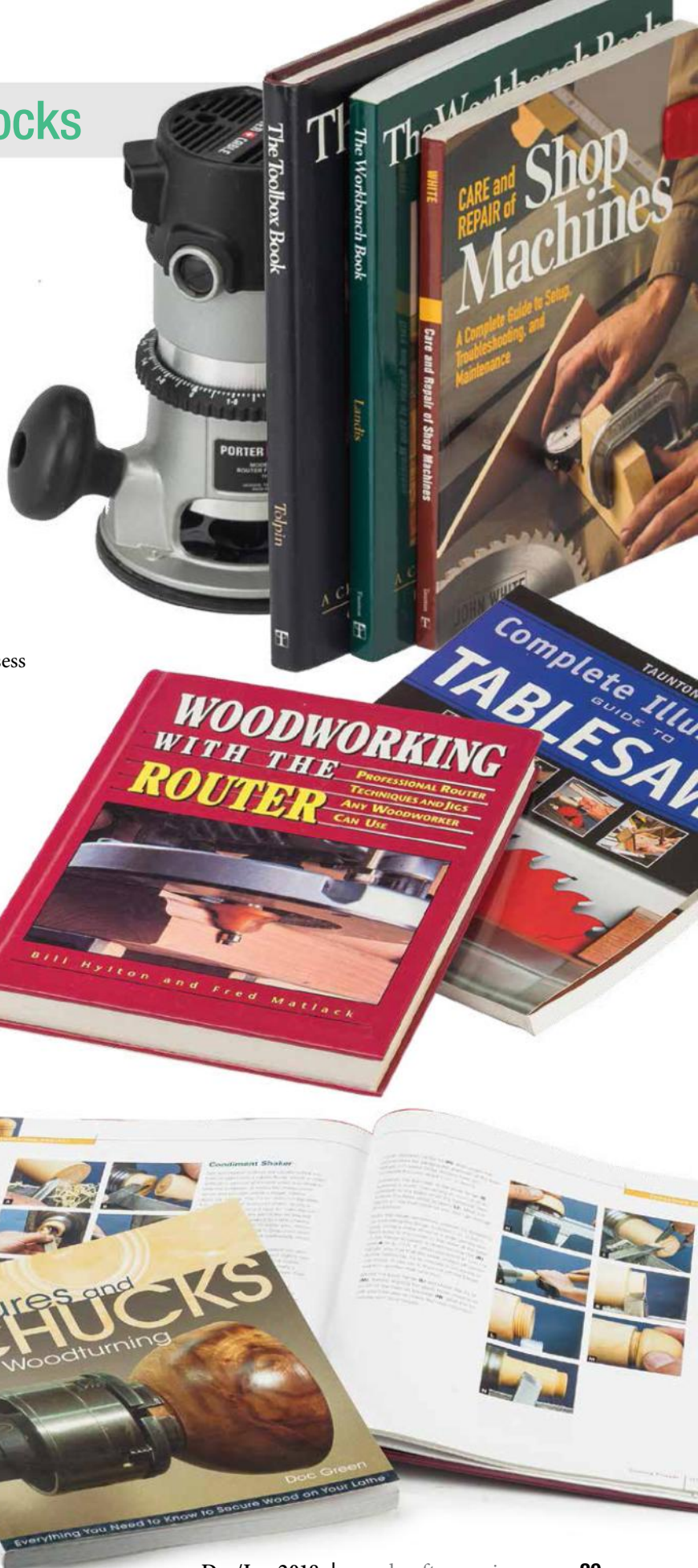
Workshop building blocks

The secrets to safe and efficient woodworking are a workspace that's tailored to suit the woodworking you do, and machines that run like tops. Woodworkers quickly discover that this concept is a journey rather than a destination. These books can help you find answers along the way.

Tapping the knowledge of dozens of top-shelf woodworkers, Scott Landis's *The Workbench Book*, and Jim Tolpin's *The Toolbox Book* are filled with inspirational photos and drawings that you can use to enhance your workbench and tool storage needs. John White's *Care and Repair of Shop Machines* completes the workshop triumvirate. The author's straightforward advice for repairing and setting machinery will help you make the most of every machine in your shop.

Of all the machines in a workshop, we think two deserve their own books, not just because they possess the greatest potential, but when used incorrectly, are most likely to bite back. Bill Hylton and Fred Matlack's *Woodworking with the Router* comes close to being the Router Bible. This tome provides an excellent overview of routers and bits while also explaining how to build and use jigs for router tables and handheld routing. Similarly, Paul Anthony's *Complete Illustrated Guide to Tablesaws* gives entry-level and experienced woodworkers the information they need to safely use this workshop workhorse and accomplish more with their saws. Both books have excellent photos and great illustrations.

Two for turners. Turners often develop needs and interests that are different than other woodworkers. Richard Raffan's *Complete Illustrated Guide to Turning* offers one of the best overviews of the craft, as taught by a skilled artisan. As turners explore new ways to get a grip on different projects, they'll appreciate Doc Green's *Fixtures and Chucks*. This book explains how to get the most from commercial chucks, centers and faceplates and how to make your own.



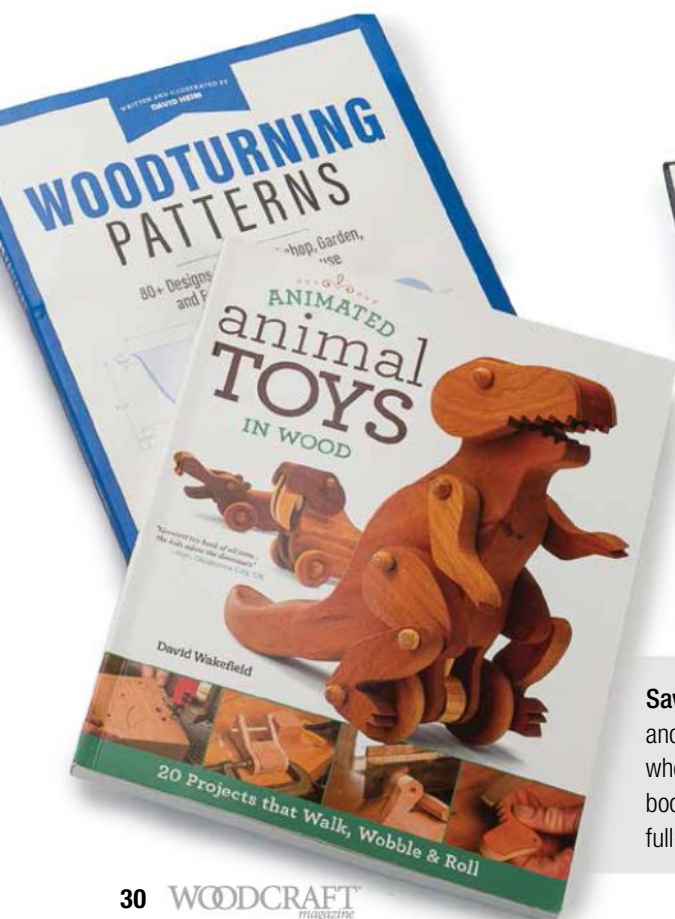
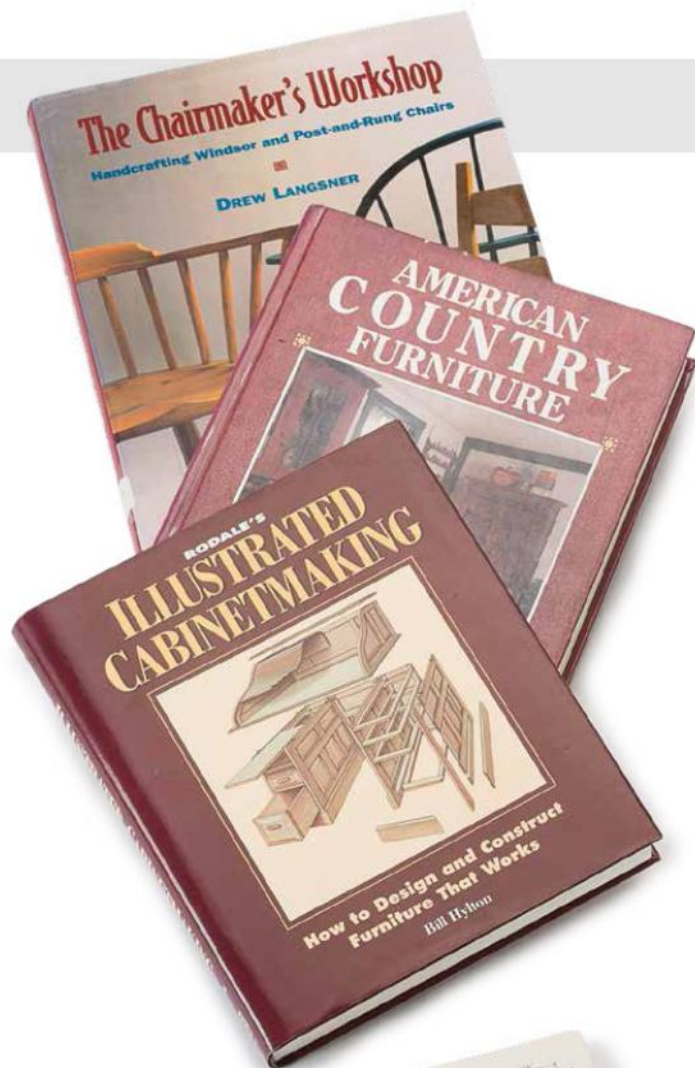
Project books

Magazines offer a buffet of interesting topics, but they lack the pages to explore specific interests in greater detail. This selection of books provides everything a woodworker needs to tackle challenging projects, like Windsor chairs, or a houseful of well-designed furniture.

Few woodworking areas are as challenging as chairmaking, even for accomplished woodworkers. If you are interested in making a seat, Drew Langsner's *The Chairmaker's Workshop* offers to-scale plans for 11 different chairs and 5 must-have chairmaking fixtures.

In *American Country Furniture*, David T. Smith shares 50 furniture designs, accompanied by Nick Engler's friendly step text, cut lists, and detailed exploded drawings. Although it does not provide step text and photos, Thomas Moser's *Measured Shop Drawings* offers detailed illustrations of 50+ pieces. Even if you can't build them yet, the drawings offer valuable insights on design and construction, providing useful reference for other projects.

Hylton's *Illustrated Cabinetmaking* fits neatly between Smith and Moser. By providing excellent exploded views and thorough presentations of 100 classic designs, this book can be used not only as a project book, but also as a complete encyclopedia of traditional furniture design and construction.



Sawdust starters. David Wakefield's *Animated Animal Toys* and David Heim's *Woodturning Patterns* are books for folks who want to start making sawdust. As the titles suggest, the books focus on completely different topics, but both provide full-sized patterns and instruction that ensure success.

Fun and inspiration

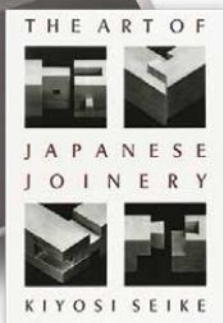
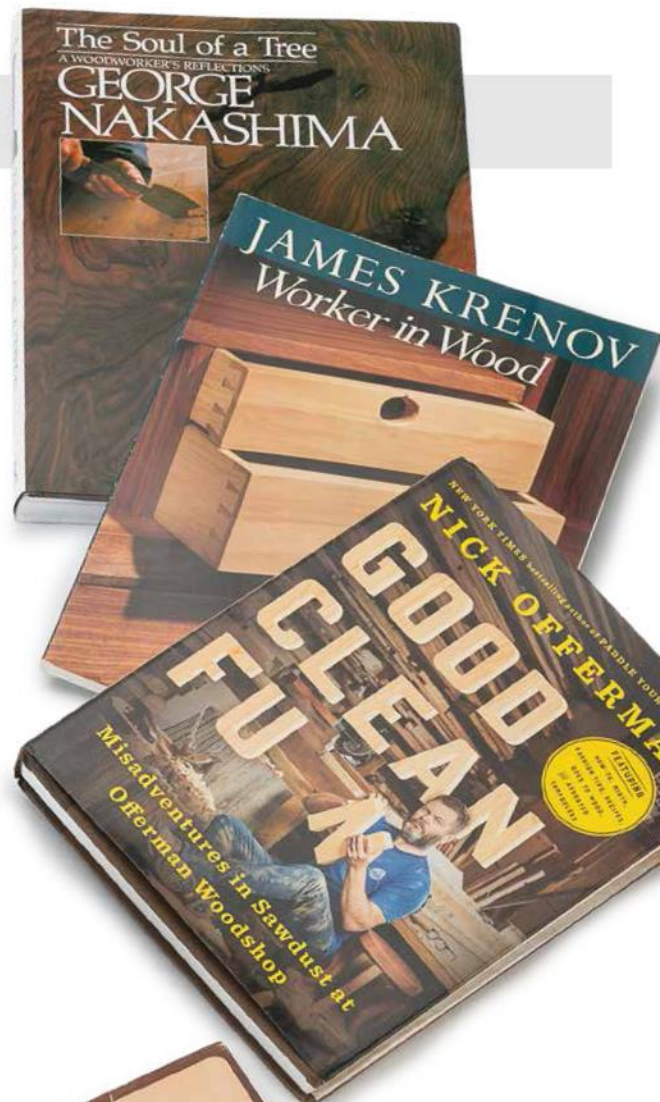
Not all woodworking happens in the shop. These books offer some practical advice, but they're more about process and personalities than product. Putting a few of these titles alongside your favorite reading chair or nightstand might provide you with inspiration for your next masterpiece.

Grouping George Nakashima's *The Soul of a Tree* and Jim Krenov's *Worker in Wood* with Nick Offerman's *Good Clean Fun* might seem sacrilegious, but we like how the trio's perspectives encompass the diverse spirit of woodworking. The older books combine photos of exceptional work with serious reflections on the nature of craftsmanship. Nick is equally passionate about wood and woodworking, but he's more willing to admit that he's enjoying himself—a good example for all of us to follow.

For an entertaining read (and proof that woodworkers lead interesting lives), treat yourself to Nancy Hiller's *Making Things Work: Tales from a Cabinetmaker's Life*, and George Frank's *Adventures in Wood Finishing*. These two biographical books are beautifully written and offer similarly lively accounts of the adventures that come from making a living as a woodworker. As you spend time with Nancy and George, we think you'll enjoy the stories that come with the sawdust.

Worth the Hunt:

The Art of Japanese Joinery (1977). Kiyosi Seike's book employs photos and just enough text to reveal some of the secrets of Japanese joinery. These joints can be applied to projects, but until then, this picture book deserves a place on your coffee table.



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BUILDING A LEGACY ... OUR STORY

In 2002, David Sapp had worked 20 years with Square D, an electrical supply manufacturer, and held a high level management position with the company. He enjoyed the work, and the people he worked with, but after 9/11 David began to think about other opportunities due to the extensive business travel, new challenges in air travel, and more importantly, the birth of a new grandson. He began to ask himself, "Is there a better way?" It was then that David, along with his wife Lee Ann, decided a change from this "Corporate America" lifestyle was needed.

Approximately four or five years earlier, David had investigated the Woodcraft Franchise opportunity. With his hobby being woodworking and his desire to "be his own boss," it all seemed to fit. However, the timing just wasn't right. With kids to put through college and other financial demands, the "dream" had to be put on hold, at least for a few years. David and Lee Ann worked hard to rework their finances, sold their home, and reopened discussions with Woodcraft in late 2002, and by mid-2003 had signed a Franchise Agreement with Woodcraft for rights to the Nashville, Tennessee, market.

At the same time, David and Lee Ann's son, Aaron, was a sophomore at the University of Tennessee in Knoxville and working part time in the Woodcraft store there. Discussions had taken place within the family, and it was agreed that if this was going to happen it was going to be done as a family. Aaron moved back to Nashville to help open a Woodcraft store there. He planned to continue his education at a local college and work at the store.

On October 10, 2003, the Nashville store opened with David and Aaron working side by side, and it has been operating ever since.

Aaron smiles as he says, "The best business teacher I could have ever had was also my life teacher as well." Aaron completed his undergraduate degree in 2007.

Business was going so well that in 2013 another family decision was made to expand and open a second Woodcraft store in Chattanooga, Tennessee. On September 6, 2014, the store opened its doors. It is a slightly smaller store, as compared to the Nashville location, due to the size of the market, but it still provides an extensive inventory and the same quality service as the original location.

In 2015, David decided it was time to slow down, so he and Lee Ann could enjoy life a little more spending time with the grandchildren. By then, Aaron had grown into a real leadership role at the store and was the natural choice to succeed David. An agreement was reached on January 1, 2016, in which Aaron purchased the business from David and Lee Ann. The business has continued to grow under Aaron's leadership. As David observed, "While the business has always grown year to year, Aaron brought, and still brings, a new youthful energy and new ideas to Woodcraft."

Although Aaron is in charge, David is still involved at the store, but now he concentrates on the classroom and the educational programs and enjoys it very much. He also acts as an in-house consultant that Aaron uses from time to time...with no consulting fee!

Much like in woodworking, where the craft is passed on from generation to generation with a mentor leading the way, the same concept applies to the Woodcraft Franchise business...it can transcend generations!

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Board FEAT!

Dovetail cleats make ideal feet for your next cutting board.

By George Snyder

A step up. The board below is made from curly maple, with wenge feet. The light-toned boards at right are curly maple with ebony feet. The tawny-toned board is osage orange with yellowheart feet.



onlineEXTRA

Go to our website and click onlineEXTRAS for 5 tips for making better cutting boards.

It's a good bet that cutting boards are among the most popular gifts for woodworkers to make. A finished board shows off our favorite material, and if there's a simpler way to utilize scrap pieces of beautiful wood, I certainly haven't discovered it. To make a cutting board extra special, I like to add a pair of dovetailed cleats to the underside of the board. These distinctive feet give the board a proud and practical stance on the countertop. And the sliding dovetail joint is an effective strategy to prevent warping.

After making quite a few cleated cutting boards, I've come to rely on some design details that make the most of this feature. To highlight the feet, make them from a contrasting wood species. I sometimes like to make the dovetails a little taller than the depth of their dadoes because this creates a nice visual effect. Beveling the edges of the cutting board also draws attention to the dovetails, as shown above. Since a board will expand and contract based on how much moisture it absorbs, I make the feet slightly longer (about $\frac{1}{4}$ ") than the full width of the board.

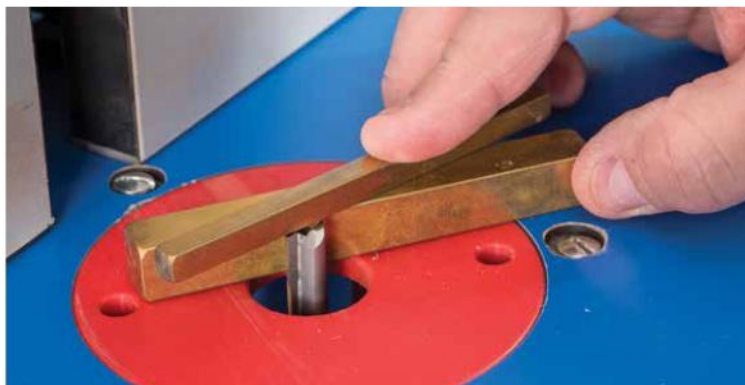
Dovetailed dados begin with a straight bit

Before you begin routing dovetailed dados, make sure your board is dead flat. Even a slight bow will result in an uneven dado. Cut the board to its final length, but let it run about $\frac{1}{4}$ " beyond its finished width. This will enable you to cut away any exit tearout afterward. Plan to make the finished dado depth between half and two-thirds of

the board's thickness. The board I'm routing here is 1" thick. Get started by removing a good amount of waste with a straight bit that matches up well with the finished dimensions of your dovetailed dados. I like to position the fence about 2" from the bit, but you can use a different spacing, depending on the overall size of the cutting board.



Two bit technique. The straight bit used to rout the initial dado in the cutting board should be close in diameter to the narrowest part of the dovetailed dados you plan to rout.



Setup bars ensure foolproof height adjustment. The lower bar is exactly $\frac{1}{2}$ " thick—the planned depth of the finished dovetail dado. By extending a second bar over the first, I create a stop to use when adjusting bit height for the final pass. Use the same bit height for straight and dovetailed cuts.

Rout the feet, then finish the job

The stock I use for the feet is $\frac{7}{8}$ " thick and $1\frac{3}{4}$ " wide. I usually set bit height to rout the dovetails about $\frac{3}{16}$ " taller than the depth of the dovetailed dado. But you can set bit height to match dado depth if that's the look you prefer. Make sure to prepare some extra material for test cuts to

fine-tune your router table setup. Keep adjusting the fence position until you can rout a dovetail that slides snugly into your dovetailed dados. Don't aim for a tight fit that forces you to hammer the dovetails in their dados. The next steps will ensure that the feet stay locked in place.



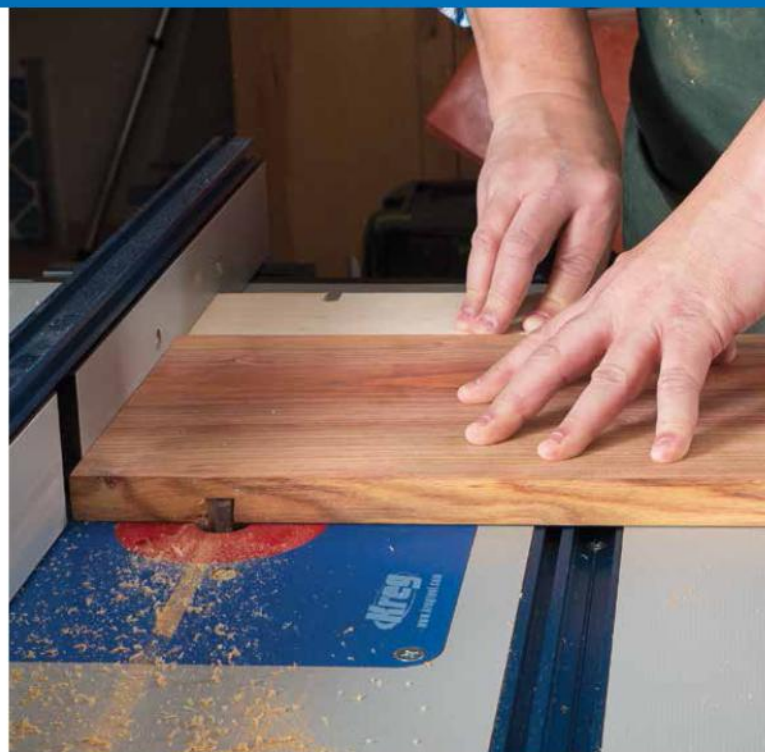
Creep up on the perfect fit. Most of the dovetail bit remains buried in the fence when routing the feet. For safe, accurate routing, set up a featherboard to press the workpiece down against the table. Then use a pushstick to exert pressure against the fence as you advance the foot through the bit.



Snug but not forced. Aim for a fit that's snug but not forced. Since I make the feet about $\frac{1}{4}$ " longer than the width of the board, I make sure the feet protrude an even amount on opposite edges.



Rout parallel dados. A straight bit will remove most of the waste. Press downward and against the fence as you push the board through the bit. Although I'm relying on hand pressure alone, it's a good idea to attach a featherboard to the fence to help with the downward pressure.



Now for the dovetailed dados. Depending on the dados' finished dimensions, you'll be able to complete each dado with one or two passes. Don't change bit height if you're routing a wider dado with two passes.



Pin the tail. Wrap tape around a $\frac{1}{4}$ " bit as a depth stop to drill through the center of each foot and about $\frac{1}{8}$ " into the board. Then glue a dowel in each hole with epoxy. Trim your pins flush, and give the board a final sanding.



Time to take a bath. An inexpensive aluminum baking tray enables you to fully saturate a cutting board with mineral oil without making a mess. Let it soak overnight—the more oil your board absorbs, the better.



Make a MOUNTAIN DULCIMER

Music sounds better on a handmade instrument.

By Dave Boyt

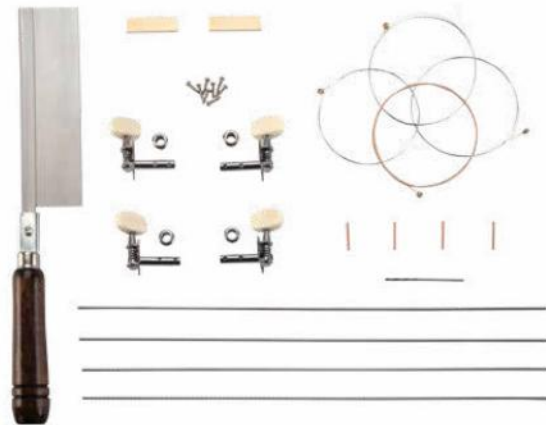
The earliest mountain dulcimers were made by Scotch-Irish immigrants who began to settle in Appalachia as early as 1680. It's no accident that the drone strings of the mountain dulcimer are reminiscent of the resonating drone of bagpipes.

Part of this instrument's appeal is that it can be built from locally available materials, using basic hand tools. A mountain dulcimer is also one of the easiest stringed instruments to learn to play. It doesn't take long to master different strumming techniques and bar chords. Before you know it, you're a folk singer.

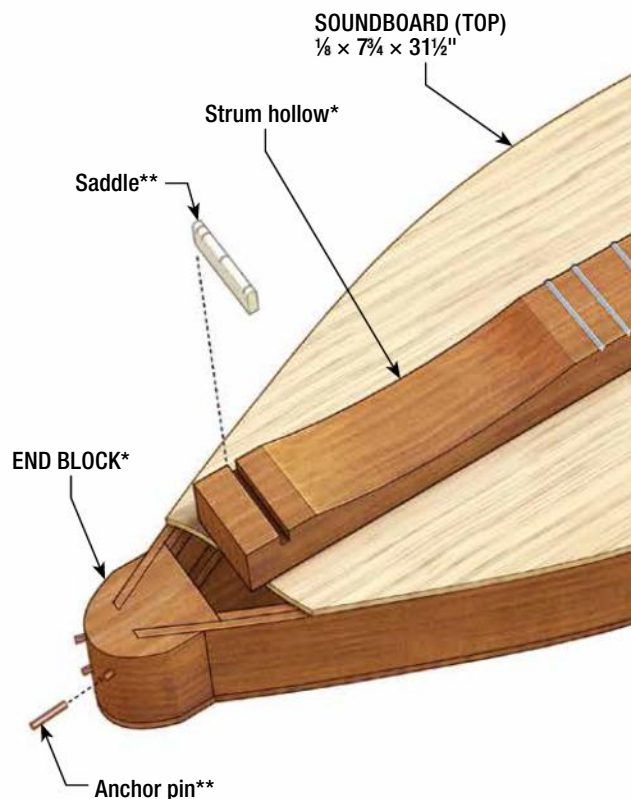
The simplest traditional designs feature a rectangular sound box and frets made from bailing wire. At the opposite end of the spectrum, you can find intricately curved dulcimers with carved and inlaid details like you'd see on an expensive guitar. The dulcimer I'm building here—and the one shown above—occupy the middle ground. Just ahead, I'll show you how to make an heirloom-quality dulcimer that's fun to play on your own or to give as a gift to any aspiring musician. Let's play.

Book-matched top and

Like many stringed instruments, a mountain dulcimer's curved sides improve sound reflection. Those curves can form a teardrop or an hourglass. The teardrop dulcimer shown here is easier to build because you don't need steam or a bending iron to make the sides. The pleasing shape produces a full, mellow sound. The depth of the sound box (back and sides) provides a good balance between low and high notes.



Hardware kit. The dulcimer in this article was built with a kit from FolkCraft (see p. 64). Consider adding a fretsaw to your order, and the special bit used to drill holes for the anchor pins that hold the strings at the bottom of the dulcimer.



back, guitar-style head, and simple sound holes

This four-string dulcimer has a guitar-type peg head that's easier to make than the traditional scroll-type.

Clear quartersawn wood like cypress or sycamore offer stability and good acoustics to the soundboard (top). Use clear, flatsawn hardwood such as cherry or maple for the sound box and fret board. Kiln-dried stock will be less

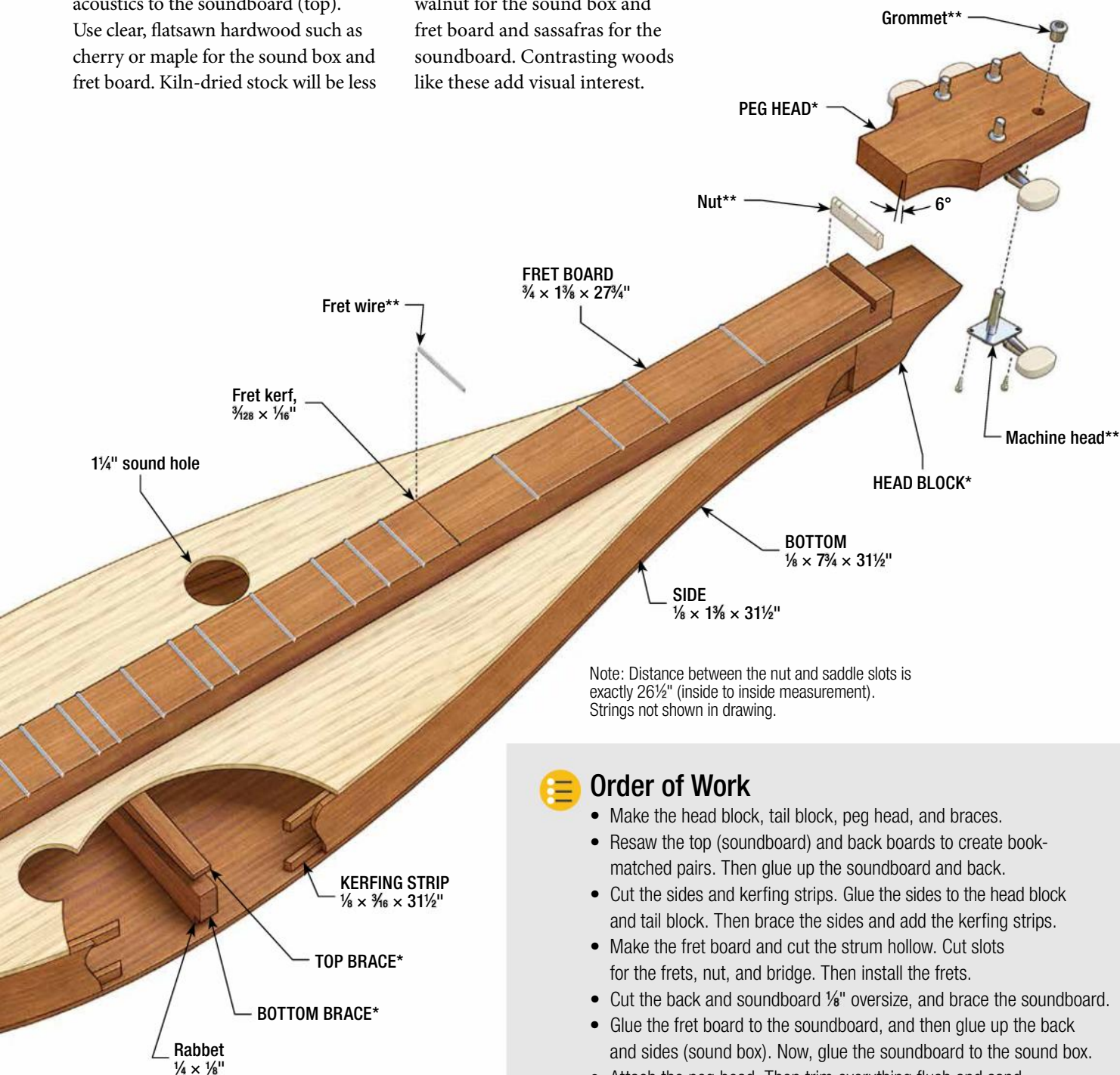
likely to warp or crack. Straight grain for the sides makes for easier bending. I avoid wood with defects or wild grain patterns that are difficult to work.

For this dulcimer, I chose walnut for the sound box and fret board and sassafras for the soundboard. Contrasting woods like these add visual interest.



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Visit our website for bonus material.



Note: Distance between the nut and saddle slots is exactly $26\frac{1}{2}$ " (inside to inside measurement). Strings not shown in drawing.



Order of Work

- Make the head block, tail block, peg head, and braces.
- Resaw the top (soundboard) and back boards to create book-matched pairs. Then glue up the soundboard and back.
- Cut the sides and kerfing strips. Glue the sides to the head block and tail block. Then brace the sides and add the kerfing strips.
- Make the fret board and cut the strum hollow. Cut slots for the frets, nut, and bridge. Then install the frets.
- Cut the back and soundboard $\frac{1}{8}$ " oversize, and brace the soundboard.
- Glue the fret board to the soundboard, and then glue up the back and sides (sound box). Now, glue the soundboard to the sound box.
- Attach the peg head. Then trim everything flush and sand.
- Apply finish, then insert the nut, saddle, pins, and pegs.
- Now string it up and start playing.

*Download patterns from woodcraftmagazine.com.

**Parts available in hardware kit.

Cut blocks and braces from patterns

Start by making the small but important parts that hold the dulcimer together. All the parts listed below can be cut from a single 1 × 4 × 36"-long blank. Download full-sized patterns for head and tail blocks, braces, and peg head from our website. Affix the patterns to your blank, and bandsaw to size (see box below). Before cutting the peg head to shape, drill holes for the tuning pins and cut the 6° angle where the peg head meets the nut. Finish-sand all these parts to 220 grit.

Starting Blocks

Here are the blank sizes to prepare:

- **Head block:** $1\frac{1}{2} \times 1\frac{1}{2} \times 4$ "
- **Tail block:** $1\frac{3}{8} \times 1\frac{1}{2} \times 2\frac{1}{2}$ "
- **Peg head:** $\frac{3}{4} \times 2\frac{1}{2} \times 5$ "
- **Braces:** $\frac{3}{4} \times 1\frac{1}{8} \times 7$ "
This yields two braces—one for the back and sides and one for the soundboard.

Go to woodcraftmagazine.com to download the patterns.



Cutting the head stock. Before cutting to shape, drill the holes for the peg heads. Use a drill bit the same diameter as the tuning pin grommets. In this case, $\frac{9}{32}$ ".

Make the top and back from book-matched boards

A fine stringed instrument is sure to have a book-matched soundboard and back, which you make by resawing thicker stock into matching halves that are glued together. Make sure you have a good resaw blade in your bandsaw for best results.

Surface and edge joint three 1 × 4 × 36" blanks: one

for the soundboard's book-matched halves, one for the back halves and sides, and one for the fret board.

Resaw the back and soundboard to a thickness of $\frac{3}{16}$ ", and then use a hand plane or a thickness sander to surface the back and soundboard to $\frac{1}{8}$ " thick.



Joint book-matched pieces on a shooting board.

Clamp each pair of surfaced book-matched pieces together on a shooting board, so their joining edges can be planed straight at the same time. Run the side of the plane flat on the workbench to take a series of light jointing cuts. Periodically test the joint. When gaps between pieces disappear, you're ready for glue-up.

Glue book-matched boards together between stationary blocks.

Gluing up thin stock like this requires a special technique. Set up blocks (or wood handscrew clamps, as shown at left) so that joining edges form a "tent" about $\frac{1}{4}$ " high. Place paper under the glue joint. Apply glue to joining edges, and press the two halves down flat onto the work surface. Set weights on the wood to hold it flat until the glue has cured. Repeat the process for the soundboard.



Shape and brace the sides

Here, you'll form the teardrop shape of your dulcimer. But first, make the sides and kerfing strips. Use the third piece resawn from the back, and rip two pieces $1\frac{3}{8}$ " wide. Cut them $31\frac{1}{2}$ " long, and surface to $\frac{1}{8}$ "

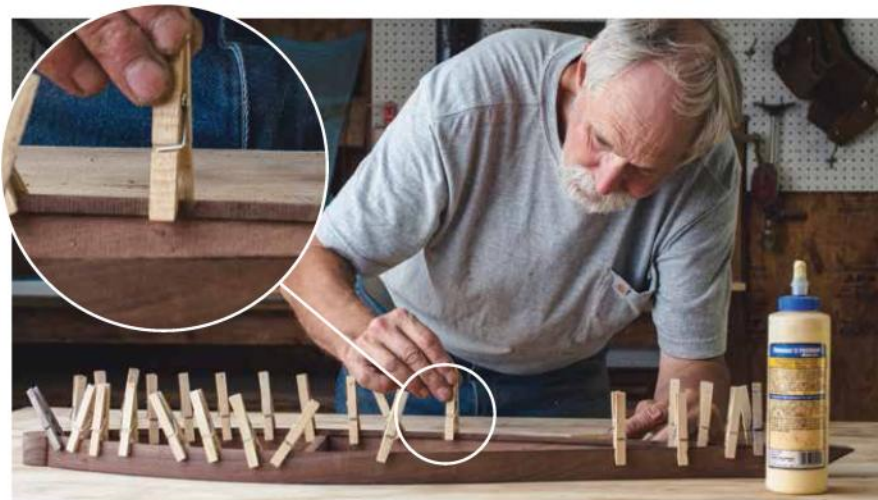
thick. Rip four pieces $\frac{1}{8}$ " wide from the remaining stock to make the kerfing strips. Before glue-up, dry-fit the sides to the head and tail blocks. Make sure you have a dead-flat surface for this assembly.



Sides, head, and tail. Glue the sides to the head block, and clamp the joint fast. Then glue the sides into the slots in the tail block. You won't need clamps for this part.



A brace sets the shape. Glue the bottom brace to the sides about 7" from the tail block. Make sure the bottom of the brace is even with the bottom edges of the sides. The pressure of the wood will hold it in place without clamps.



Kerfing and clothes pins. Glue $\frac{1}{8} \times \frac{3}{16}$ " kerfing strips even with the top edges of the sides, using clothespins as clamps. After the glue cures, sand the top edges flat. Then flip the assembly over, and repeat the process to reinforce the bottom edges of the sides.

Make the fret board carefully

While most aspects of dulcimer building allow for variations, the fret board must be precisely built. Start by downloading the strum hollow pattern and fret scale on our website (see onlineEXTRAS). Then cut the fret board blank to its finished size of $\frac{3}{4} \times 1\frac{3}{8} \times 27\frac{3}{4}$ ", and cut $\frac{1}{8}$ "-wide slots for the nut and saddle on the table saw. The slots should be just wide enough for a snug fit, and deep enough for the nut to be about $\frac{3}{16}$ " above the fret board. Make sure the distance

between the nut and saddle is exactly $26\frac{1}{2}$ " (inside to inside measurement). Next comes the strum hollow, a dip in the fret board that enables you to strum without scraping against the fret board. Affix the strum hollow pattern to the edge of the fret board, cut it out on the bandsaw, then sand it smooth. Your last task before beginning on the frets is to give the fret board its final sanding. Go all the way through 400 grit so your fingers will glide effortlessly.



Mark frets precisely. Make a 90° marking and cutting jig like mine so you can precisely scribe and cut the slots where frets will be installed. Measure fret scale distances from the nut, and scribe fret locations with a sharp knife.



Cut kerfs to match frets. The luthier's fretsaw is designed to cut a kerf that holds the fret when the tang is tapped in place so the profile seats solidly against the fret board surface. If using any other type of saw, first make a test cut to be sure you get a good fit. Then clamp the marking and cutting guide in place to make a $\frac{1}{16}$ "-deep cut at each fret scribe line.



Set the frets. Stand the fret wire in the fret slot, and tap it into the slot with a small brass hammer. The brass is soft enough to seat the fret fully without damaging it.



Cut to length. Use wire cutters to cut the fret to length. Don't worry about cutting it flush to the fret board. That happens in the next step.



Trim ends flush. Use a rotary tool to trim the frets even with the fret board. Then use a fine metal file to remove any burrs, making fret ends smooth to the touch.

Assemble the dulcimer and cut the sound holes

Now your dulcimer will start taking shape. Center the back to the body, and trace the profile. Repeat for the soundboard, and then cut out the pieces on the bandsaw. Leave about $\frac{1}{8}$ " outside the cutline for a little "wiggle room" when gluing it up.

Start the assembly process by bracing the back of the soundboard and gluing and clamping the fret board. While that cures, glue the back to the sides.

Keep your best side facing out so the best book-match will be visible. Now glue on the peg head, making sure that everything is tight and square.

There are many traditional shapes for the sound holes cut into the soundboard. The simplest are round holes, which can be cut with a Forstener bit or hole saw. Just remember not to locate sound holes where you will be cutting through the brace.



Brace the soundboard. Glue the top brace to the underside of the widest place on the soundboard.



Attach the fret board to the soundboard. Set the soundboard in place on the sides, and center the fret board on the soundboard to ensure proper alignment. Use a pencil to lightly mark the fret board's location. Now remove the fret board and soundboard from the sides. Using the pencil marks as a guide, glue the fret board to the soundboard.



Glue up the sound box. Clamping the back to the sides is tricky. But special clamps made from $1\frac{1}{2}$ " schedule 40 PVC are just the fix. These handy helpers are about $\frac{1}{4}$ " wide with a $\frac{1}{2}$ " gap. You can make a couple dozen in just a few minutes, and they will prove useful in other woodworking projects. Make sure the dulcimer back overhangs the sides all the way around. After the glue has cured, repeat this process to attach the soundboard.



Glue the peg head to the head stock. It should be aligned with the fret board and fit tight against it. Trim, if necessary to get a good fit.

Get set for strings, then start strummin'!

The magic moment for any luthier is the first time an instrument gets its strings. In the photos shown below, you'll notice that I'm stringing up this dulcimer before flush-trimming the bottom and soundboard—an early test run that many instrument makers (including me)

can't resist. To truly finish the job, use a flush-trim bit in a router to trim the soundboard and bottom flush with the sides, then final-sand your dulcimer and apply your finish. My favorite treatment is to saturate the wood with boiled linseed oil, then apply several coats of satin wipe-on poly.



Fit the nut and saddle. These two parts hold the strings in place, and may need to be adjusted as described below if the strings set too high above the frets. The end with two slots close together goes toward you when the dulcimer is in playing position. NOTE: The FolkCraft nut shown here is pre-grooved for dulcimers that hold three or four strings, so there are more string grooves than you'll need.



Add the tuning pins. Tap in the grommets for the tuning pins, and then screw the tuning pins in place. Orient the hardware so that it points to the end of the peg head, as shown.



Set the anchor pins. Use a #49 wire gauge drill bit to drill four holes in the tail block for the anchor pins. Tap the anchor pins into the tail block, leaving about $\frac{1}{8}$ " exposed for the strings to hook onto.



String it up! The two lightest strings go in the pair of grooves closest together. The heaviest string slot is on the far side of the nut, and the middle string goes in the center groove. Tighten the strings with just enough tension to get a clear tone, and then clip off the excess string. Strings should sit $\frac{1}{8}$ " above the last fret (the one closest to the saddle), and $\frac{1}{16}$ " above the first fret. To lower the string height, remove the nut or saddle and file the bottom. Insert shims to raise the strings. Nice work! Now we're ready for a song.

Tuning your dulcimer

There are many tunings for the dulcimer, but let's start out with the "DAA" tuning, in which the lowest string is tuned to "D", and the other three strings are tuned to the "A" above that (they should have the same pitch as the low string at the fourth fret).

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6 HAND SANDING Secrets

Get the job done so you can get back to fun

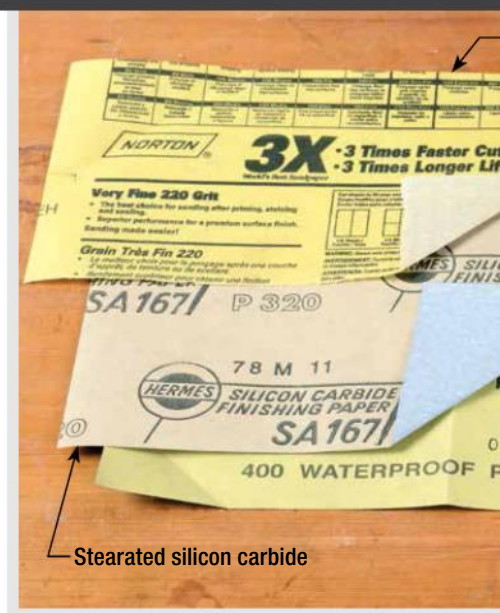
By Paul Anthony

If you survey any group of woodworkers as to the craft's pleasures, you won't find "sanding" on anyone's list. But this dusty, tedious task has a big payoff when it's done well, yielding the kind of smooth, clean, well finished surfaces that announce top-shelf work. On the other hand, sanding done poorly can make even a well-designed project look like you decided to let your helpful 8-year-old nephew pitch in after all because, well, you don't like sanding.

Power sanders have minimized the muscle required for preliminary sanding, but they stop short of the ability to finesse your work. That has to be done by hand, and that's what I'll talk about here. I'll let you in on a bunch of tricks for creating professional results as quickly as possible. I'll also introduce you to some great tools and supplies to get you down that dusty road fast (see Buyer's Guide, p. 64). I mean, sure, we want to do the job well, but we also want to minimize sanding suffering, and get back to the fun of sawing, making joints, and putting things together!

1 The right paper makes all the difference

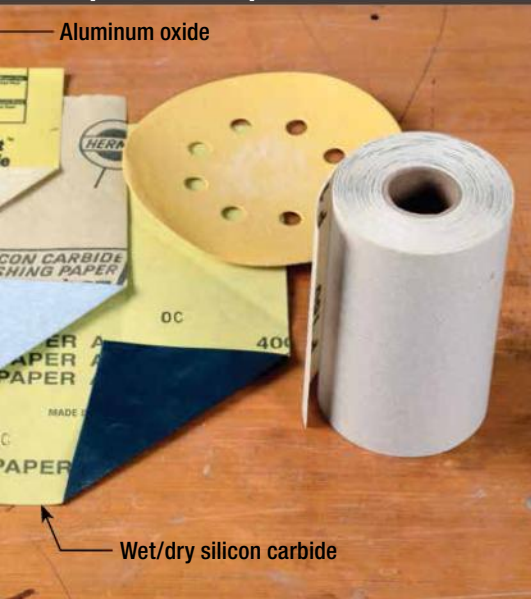
Fight your natural woodworker's frugality, and buy good quality sandpaper. Cheap paper only wastes time and produces poor results. Good paper costs more, but it works faster, lasts longer, and produces a more consistent surface. For raw wood, I typically use aluminum oxide paper, beginning with the finest grit that will do the job efficiently, then moving through successively finer grits, stopping with 220 grit. For smoothing finishes, I usually begin by dry-sanding the first coat with 320-grit stearated silicon carbide paper, which is designed to prevent loading. I wet-sand the next two coats respectively with 400-, then 600-grit waterproof (wet/dry) silicon carbide paper. Regardless of the type of paper you're using, pitch it when it stops cutting well. Trying to "get the most from your paper" by using it dull is definitely a false economy.





Important Papers

Aluminum oxide



Wet/dry silicon carbide

Many types of sandpaper for hand sanding are available in standard sheet form. You can also hand-sand with discs designed for random-orbit sanders if you prefer. Self-adhesive sandpaper (in rolled form here) is particularly handy for use with custom backers.

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Detect defects with the right light

Subtle surface flaws that lurk undetected in normal overhead light have a nasty way of announcing themselves when you apply a stain or finish. The best way to expose them during sanding is to work under a strong raking light in a semi-darkened shop. I mount a high-wattage clamp light on a portable helper post to do the job (see page 14). Before moving on to the next finer grit, make sure to scrutinize the surface from all angles.

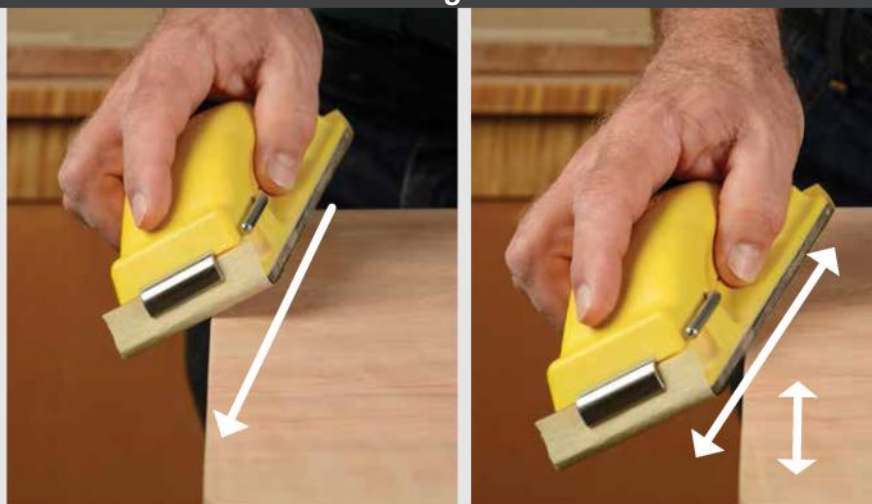
2

Flat panels need finesse

Hand-sanding panels? Isn't that what random-orbit sanders are for? Well, yeah, but they often leave swirl marks and aren't well suited to smoothing edges. I only power-sand panel faces, not edges, and I always follow up by hand-sanding in the direction of the grain, working in raking light. As for edges, I hand-sand them only, which is often quicker and which affords more control than a power sander. A well-finessed *arris* (the sharp edge created by the intersection of two surfaces) is the kind of detail that makes a piece noteworthy. Whether you decide to ease an arris only slightly or to round it more prominently, consistency matters, as does efficiency. Here are a few tricks for getting the job done well, and efficiently.

Preppin' Weapon

My favorite general-purpose sanding block, the Preppin' Weapon is comfortable to use, and has a rubber sole that's firm but forgiving. A quarter-sheet of standard 9 × 11" paper is easy to install, and virtually all of its surface is put to use.



To quickly knock down an arris, tilt the sanding block diagonally off the edge of the panel. Also orient it diagonally to the length of the arris to maximize abrasive contact in use. Then scrub back and forth in long, diagonal strokes as you move forward along the length of the arris. This makes fast work of stock removal, but creates a sort of chamfer that needs neat rounding over as a follow-up.

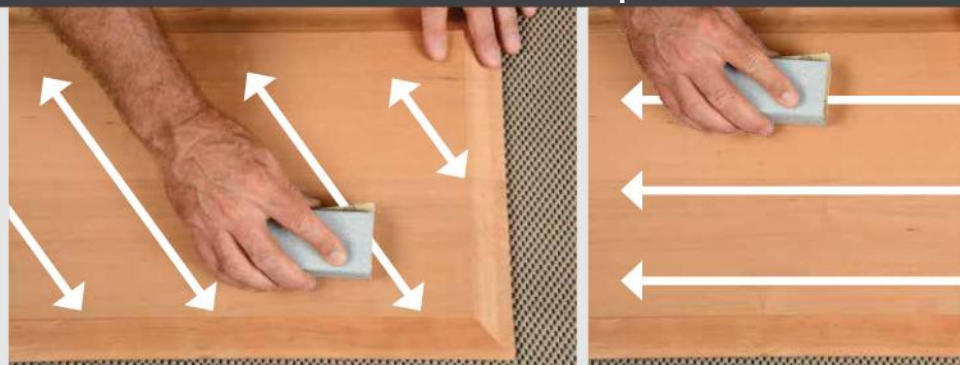


3

Know when to get wet

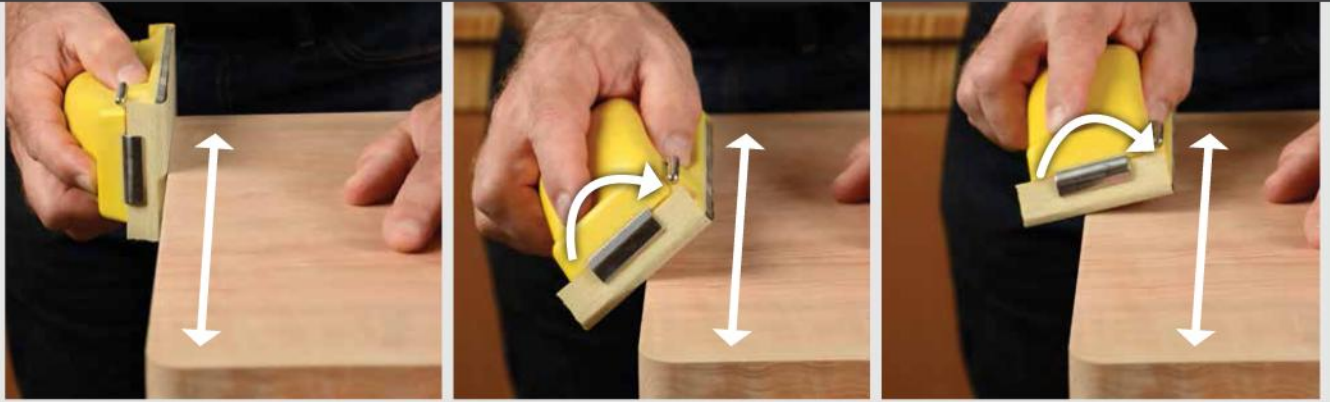
When finishing projects, you sometimes want to bring liquid into the picture. For example, before applying a water-based stain or finish, it's wise to "pre-raise" the grain on a finish-sanded surface, and then sand it once more to minimize grain-raising when you apply the finish. Also, many finishes need to be *scuff-sanded* between coats, often using water or mineral spirits as a lubricant. In this case, you'll need to use wet/ dry paper and a waterproof block.

Whisker lop



After wiping wood with water to pre-raise the grain in advance of applying a water-based finish, sand diagonally using very light pressure. This snaps the raised wood whiskers off to the side rather than simply pressing them back down into their pores only to have them rise again when the finish is applied. Finish up by sanding with the grain using the same amount of pressure. I use a felt block wrapped with 320-grit paper for the job.

Rounding rolover



To consistently ease an arris, perform a flat-to-flat rollover. Begin with the block contacting the edge, and take as many maximum-length strokes as necessary to remove any tool marks. Follow up with a series of 5 or 6 full-length back-and-forth strokes, tilting the block over gradually with each stroke until the paper contacts the face of the work in the case of long-grain sanding. When sanding cross-grain, stop just shy of the surface, as shown at right.

Corner pull



When easing a corner, begin on the long-grain edge, and take a series of uninterrupted pulls that fully round the corner and finish with the block in contact with the end-grain edge. Regulate your pressure and count the strokes to achieve the desired effect. Then treat any similar corners exactly the same way.

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Hand-sanding with discs

This hook-and-loop sanding block allows you to use 5" discs for hand-sanding. I consider it a good backup for when I run out of regular sheet paper.



Wet rub

Felt rubbing block

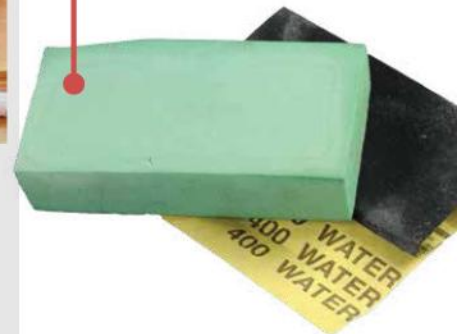
A hard felt block is typically used for rubbing out finishes. However, its size and relatively soft composition afford great control as a backer for light-pressure sanding.



Sanding between coats of finish is necessary to knock down dust nibs and level any drips or other imperfections. Lubricating the paper—using water for water-based finishes and mineral spirits for solvent-based products—keeps it from clogging. Use a soft, waterproof backer wrapped with wet/dry silicon carbide paper.

Foam block

This closed-cell foam block was cut from a garden kneeling pad. Pliable and waterproof, it's a great backer for wet-sanding.



4

Save time with custom backers

Often, the best approach to a particular task is to use a custom backer that is specifically designed to reach around or into the target surface. The two examples shown here—one commercially produced, and one shop-made—provide ideas for the sort of approach you can take to speed up your work.

Double-edge dub



A V-shaped sanding backer will ease both arrises of a panel edge at the same time. It's great for fast chamfering or for aggressive roughing over of edges before following up with the rounding roll-over technique shown in section #2.

5

Navigate curves with control

Coved moldings, profiled edges, and other curved shapes present a special challenge because they demand complementary backers for the most efficient sanding attack. In some cases, you can create shop-made backers from dowels or scraps of styrene (see sidebar). Manufacturers of sanding accessories also offer backers in a variety of shapes and sizes. Self-adhesive sandpaper is particularly useful for these curved backers.

Dowel scrub



To sand a cove, grab a dowel with a radius that matches. If you don't have self-adhesive sandpaper, just pinch the paper onto the dowel as you work. Don't make a dowel backer too long; cut it to a length that's easy to handle and that suits the paper size.

6

Detail sanders get into tight spots

When smoothing the interior edges of scrollsawn work or finessing a carved surface, you need a way to essentially poke stiffened abrasives into the openings. An emery board or paper-wrapped dowel will often do the trick, as will commercially available detail sanders.

Emery manicure



Emery boards, sold for filing fingernails, do a good job of cleaning up flat or convex edges of scrollwork. The best emery boards for woodworking have one face coated with medium grit abrasive, and the other with fine abrasive.

Spline slide



Fast Break

This commercial V-shaped backer, called a Fast Break, is designed to accept pre-packaged custom-fit paper in various grits.



A hardboard spline makes a great backer for reaching into grooves. You want easy movement, not a tight fit in the groove, so its thickness is important. For efficiency, press flat against one side of the groove, then the other. Then tilt the backer against the arris on each side in turn to remove any stray fibers. Tempered hardboard that's smooth on both sides and $\frac{1}{8}$ " to $\frac{3}{16}$ " thick makes a great backer for sanding $\frac{1}{4}$ "-wide grooves. The piece shown here was sawn from an office clipboard.

Curve complement



The fastest, cleanest sanding of profiles is achieved with a backer like this rubber contour sanding pad that presses the paper in full contact with the surface.



Contour sanding pads

These hard rubber profile backers are available in a variety of shapes and sizes for efficiently sanding moldings and profiled edges.

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Shop-made complementary sanding backer

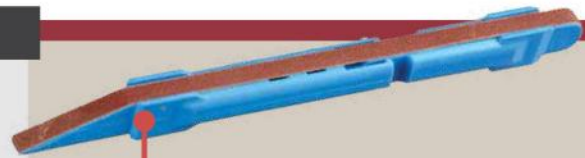
It's easy to make a sanding block that perfectly matches many molding contours. Just adhere fine sandpaper to the face of the target surface, and then rub a piece of packing styrene against the paper as shown. You now have a perfectly complementary styrene backer that you can wrap with sandpaper.



Taper-tip tuck



The tapered tips on these belt-wrapped detail sanders allow them to reach easily into and around carved features and other complex elements. The belts are available in various grits.



Detail sander

The narrow belt on this detail sander can be rotated to bring fresh grit into play when necessary, making the tool very efficient, while maximizing belt use.

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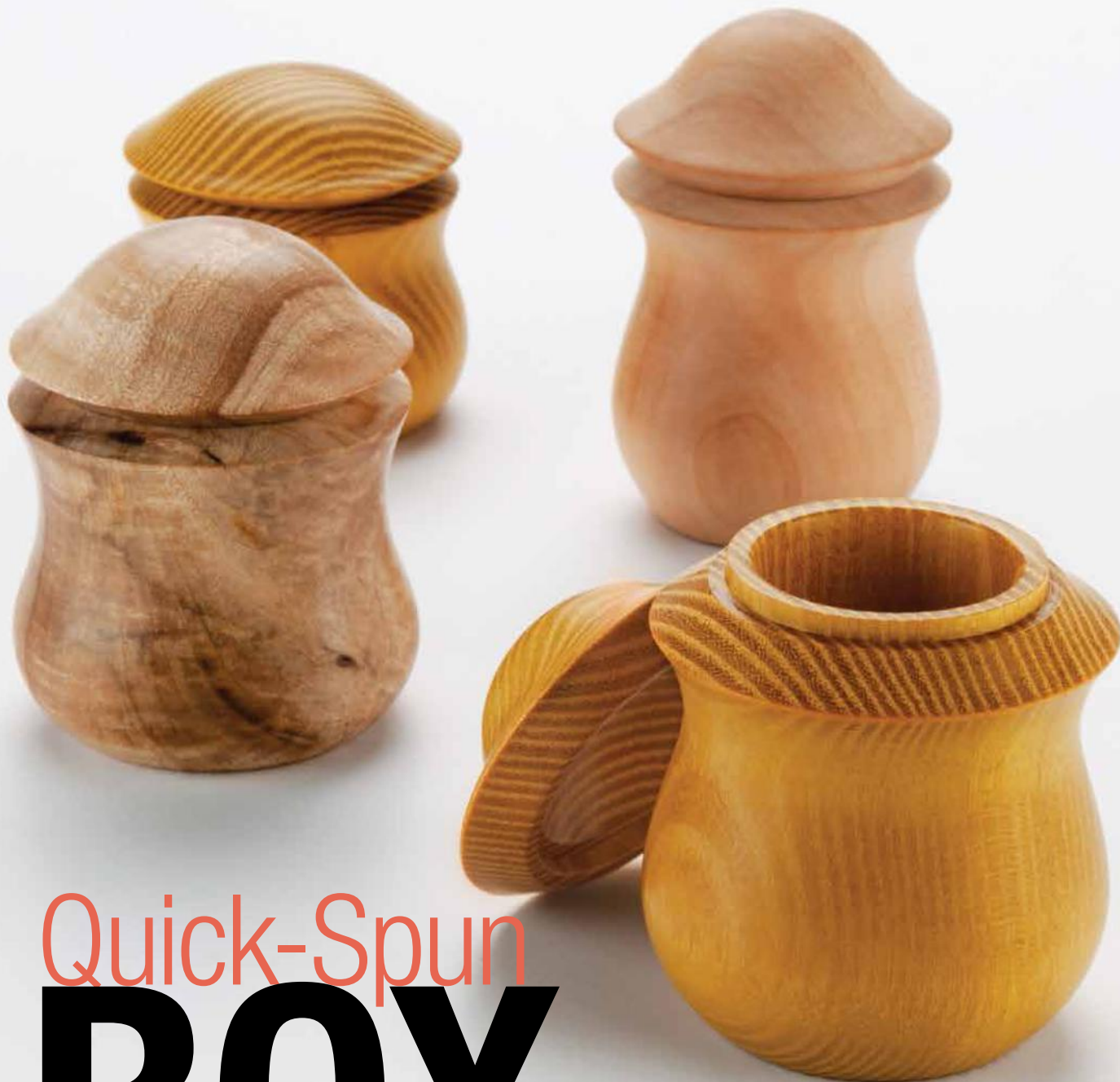
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Quick-Spun BOX

*Turn an hour at the lathe
into a sweet li'l container.*

By Michael Kehs

Making a small turned box is a great way to hone your spindle turning skills while producing a very nice little project from scraps or cutoffs of larger works. A wooden container like this makes an impressive presentation vessel for bestowing a ring, memento, or other gift to a loved one. Or, it's simply a great place to store tiny valuables. Boxes like this don't take long to make, but each one presents a worthy little challenge of making the lid fit so perfectly that it creates a delightful little suction "pop" upon removal. People just love that pop!

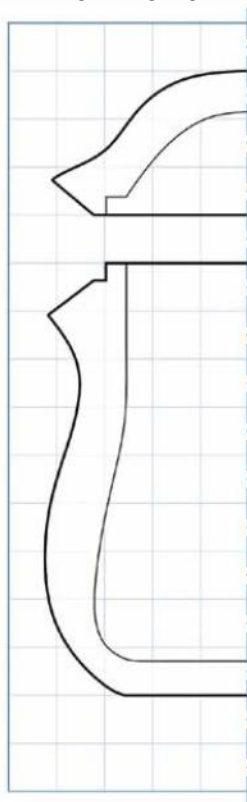
You can use any wood you like, although it should be well seasoned to prevent warping. You can also create just about any shape. I have provided specific measurements for the box shown in the process photos in case that helps get you started. However, don't be afraid to stretch out into other proportions or entirely different designs. Just make sure to carefully follow the lid fitting directions. Box size isn't particularly important either, although your blank should be a minimum of 1½" to 2" longer than your finished box height. The most important thing? Have fun!

Part away the body and turn the lid interior

Begin with a turning blank that's about 2½" square and 4" long, mounting it between centers. Turn it to a cylinder using a spindle roughing gouge (see p. 58 for my modified version). Then turn a tenon on one end, sizing it to mount securely in a 4-jaw chuck. Mount the tenon in the chuck, supporting the outward end with the tailstock center, and turn a similar tenon as shown. Part off the box body, and set it aside for now.

Begin shaping the underside of the lid section, which remains in your chuck. True the face flat, create the bevel and hollow as shown, and then cut the mortise. Use a straightedge to confirm that the bottom-most section of the lid is flat before sanding your newly cut surfaces. Finally, apply a coat of finish before removing the not-yet-complete lid from the chuck. I use Mylands High-build Friction Polish.

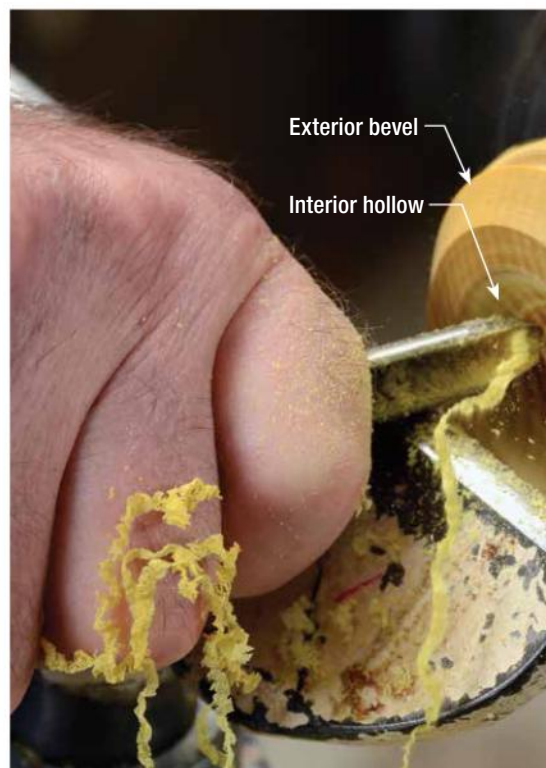
Box Profile



1 square = ¼"



Turn the 2nd tenon. Having secured the previously turned tenon in a 4-jaw chuck, turn a tenon on the opposite end of the blank using a ¼" parting tool.



Box-turning tool kit



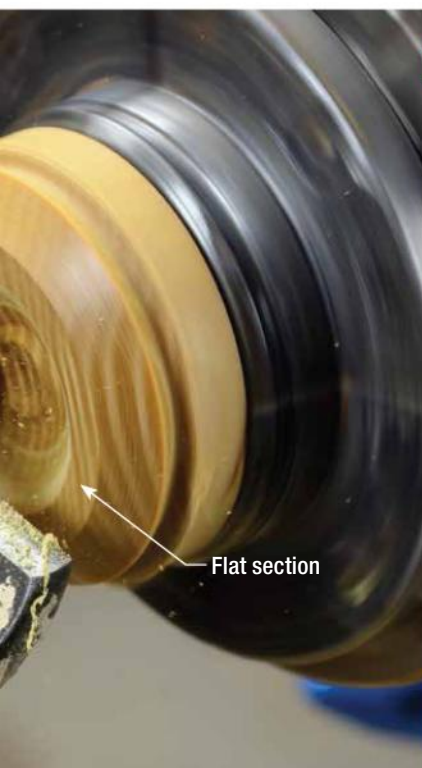
To make a box like this, I use (l to r) a ¼" parting tool, ⅛" parting tool, ¼" bowl gouge, ⅜" spindle gouge, ⅛" Forstner bit, and a ½" round nose scraper. A vernier caliper (front) does the measuring.





Part away the body blank.

With a $\frac{1}{16}$ " parting tool, part off what will be the body of the box, leaving the lid blank mounted in the chuck. Make a series of progressively deeper side-by-side plunges to prevent the tool from jamming in the slot. Cut down to a diameter of about $\frac{3}{16}$ ", then cut or twist off the bottom section.



Shape the lid underside.

Use a $\frac{1}{4}$ " bowl gouge to shape the exterior bevel and interior hollow. Leave a flat section at least $\frac{3}{32}$ " wide between the two. This is where you'll cut the mortise in the next step.



Cut the mortise. The $\frac{1}{4}$ " parting tool does a nice job of cutting the step that will serve as a mortise for the tenon you'll cut at the top of the box body.



Confirm the flat.

Make sure that the flat is, in fact, flat because it will affect the look and fit of the lid on the body.



Soft-sanding.

A small scrap of neoprene makes a great sandpaper backer when smoothing the hollow.

Fit and finish the lid

Now you're ready to turn the tenon on the body in order to use it as a sort of jam chuck to hold the lid while you shape its top side. Mount the body blank by securing its tenon in your 4-jaw chuck. Then true the outermost face with your $\frac{3}{8}$ " spindle gouge, and create a tiny divot at the center. Use a vernier caliper to measure the diameter of the lid mortise, set a compass to half that distance, and mark out the tenon on the blank. Cut the tenon to snugly fit the lid mortise, attach the lid to the body blank, and then complete the lid shaping. Finally, sand and apply finish to the freshly cut surfaces.



Measure the mortise. Spread the short jaws of a vernier caliper against the edges of the lid mortise to register the mortise diameter.



Measure for the tenon length. Insert an accurate ruler or depth gauge in the lid mortise to establish the necessary length for the tenon. Then mark that distance on your body blank.



Turn and test the tenon. Use a $\frac{1}{4}$ " parting tool to turn the tenon. As you approach your cutline, occasionally stop the lathe and test-fit the lid. Recut as necessary, taking tiny passes until the lid presses on with just a bit of pressure. Ideally, removing it will create a little suction pop. Also make sure that the underside of the lid neatly mates against the end of the body. If you turn the tenon diameter too small, take another stab at it, effectively lengthening the tenon in the process, but making the new section wider. Then turn away the original, errant section.

Flourishes

Augmenting a box with some paint or woodburning flourishes is a great way to dress it up, particularly if you want to personalize it for that special someone.





Mount the box body and mark the tenon. Having set a compass to the radius of the lid mortise, locate its pin leg in the tiny divot you cut, and swing the tool to approximately mark the tenon diameter.

Double-check the diameter. The proper tenon diameter is crucial to a perfect fit, so check your cutline against the previously set caliper jaws. Note if your cut needs to be perhaps a bit shy of the line.



Finish shaping the lid. With the lid attached to the body blank, and the tailstock center in play, finish shaping the lid as far as you can go, using the $\frac{3}{8}$ " spindle gouge. Then back the center off to complete the work. If you did your fitting well, the lid will stay in place for this cut. Sand and finish the lid now too.



A shapely body completes your box

All that's left is to shape the body and hollow it out. First, cut the top bevel as shown. Then shape the majority of the body and establish the bottom location while still leaving plenty of mass at the stem. Drill out the body, and then use a ½" round nose scraper to shape the interior. (See drawing p. 52.) The idea is to get rid of the drill bit imprint while shaping the interior to mimic the exterior. Next, sand and finish the still-mounted piece. (I use a long piece of neoprene-backed sandpaper stretched around my finger to sand the interior.) Part off the body, and turn the waste to create a jam chuck that allows you to finish off the bottom. Sand and apply finish to the bottom and you're done!



Cut the top bevel. Use your ⅜" spindle gouge to shape the top bevel. As you approach the tenon, stop and attach the lid to check the width of the shoulder, which should exactly match the width of the flat on the underside of the lid to create a neat intersection.

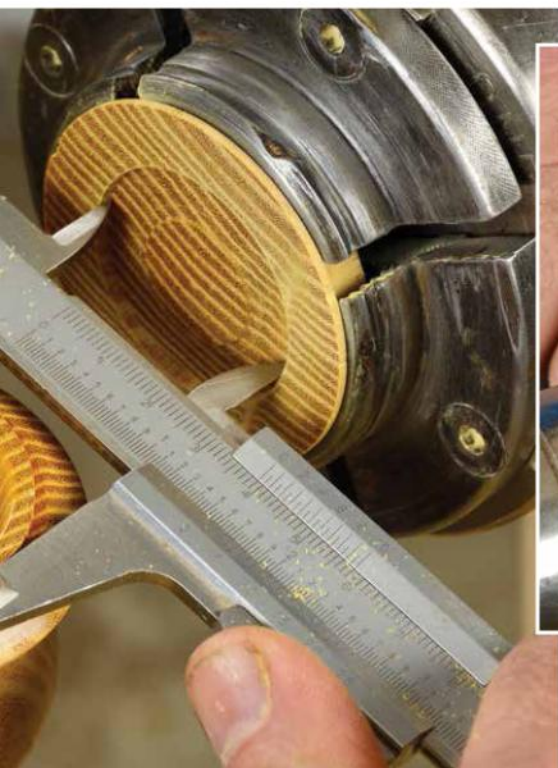


Drill out the interior. Chuck a Forstner bit in your tailstock, with masking tape wrapped around the shank as a depth gauge. Then bore a hole, making sure the bit's point is well clear of the box's bottom. Follow up by shaping the interior with a round nose scraper.





Shape the body and establish the bottom. Still using your spindle gouge, shape the main section of the body. Then part in at the base just far enough to establish the perimeter of what will be the box's flat bottom. Make a series of progressively deeper side-by-side plunge cuts to prevent jamming the tool.



Jam-chucked to finish up. Create a jam chuck by truing the face of the waste block, then turning a shallow mortise to snugly accept the tenon on the top of the box. After mounting the inverted box in the waste block, bring the tail center into play and finish off the bottom.



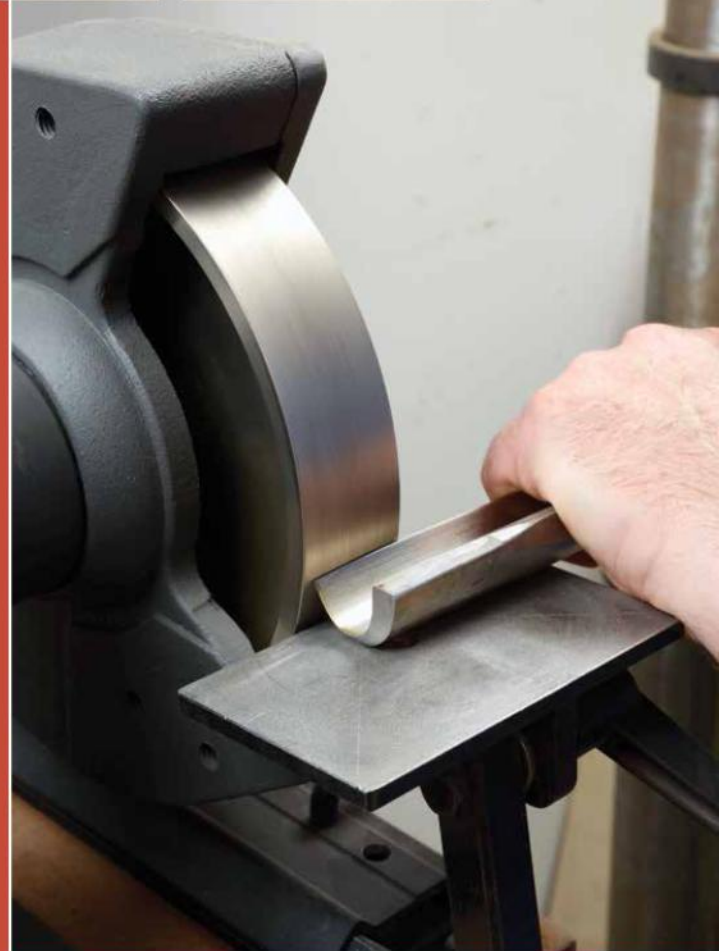
Souped-Up **SPINDLE GOUGE**

Adding a side grind makes this roughing tool twice as useful.

By Michael Kehs

I make a lot of turned boxes (see p. 51) and other work that requires turning a tenon on the end of a short spindle in order to mount the blank in a 4-jaw chuck. A while ago, when visiting the shop of a friend who does similar work, I spied an unusually sharpened spindle roughing gouge. Its sides were ground back at about 45° at the endmost 2" or so. My friend explained that the modified grind creates a multipurpose tool

that allows him to rough out a spindle from square stock, and then immediately turn a mounting tenon without switching tools. When he said that it was one of the best gouge configurations he's ever used, I decided to make my own. Having used it for some time now, I have to concur that it's a great modification. After all, the fewer tools needed for a particular project, the faster you can work, and the fewer tools you need to sharpen.



How it works

A standard spindle roughing gouge, with its U-shaped flute and 45° bevel, excels at spindle stock preparation. (It should never be used for faceplate work or bowl shaping.) The tool is primarily used to reduce a squared spindle stock blank to its rough final diameter. The side grind comes in when your next move is to create a jaw-mounting tenon. To cut the tenon, roll the tool over on its side as shown in the main photo, with the bevel riding the stock at the desired location of the tenon shoulder. Then lift the handle to engage the cutting edge, and peel away the wood. When cutting broad areas, take a series of successively deeper cuts to reach your desired diameter.

Photos: John Hamel

Creating the side grind

Shaping the sides isn't difficult, especially since you're not creating a cutting edge; you're merely removing excess metal that would otherwise impede the cutting action of the main bevel. To grind each side to the necessary 45° bevel, hold the gouge with the shank parallel to the face of the grinding wheel, and work the endmost 1½" or 2" of the gouge. You'll be removing a lot of metal, so take your time and keep the gouge cool by occasionally quenching it in water. Stop when you're just shy of a knife edge.

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Celebrate in style with a Wooden BOW TIE

Raid your scrap bin and create some dressy accessories that express what's beautiful and fun about woodworking.

By Tim Snyder

Like many of my woodworker friends, I'm a lot more comfortable in jeans and a t-shirt than I am in fancy clothes. Not long ago, I discovered a foolproof way to make formal occasions more enjoyable—with a dress-up item from my own workshop. Wooden ties are fun to make, fun to wear, and great to give as gifts. A quick pick through your scrap bin will probably yield enough material for several ties. The only other ingredients are some adjustable straps, double-stick tape, decorative fabric, and varnish (see Buyer's Guide, p. 64). So turn the page, and let's make some ties!



Bows to go. It just takes a little wood to make a lot of ties. Choose fabric or leather centers to complement the wood grain.

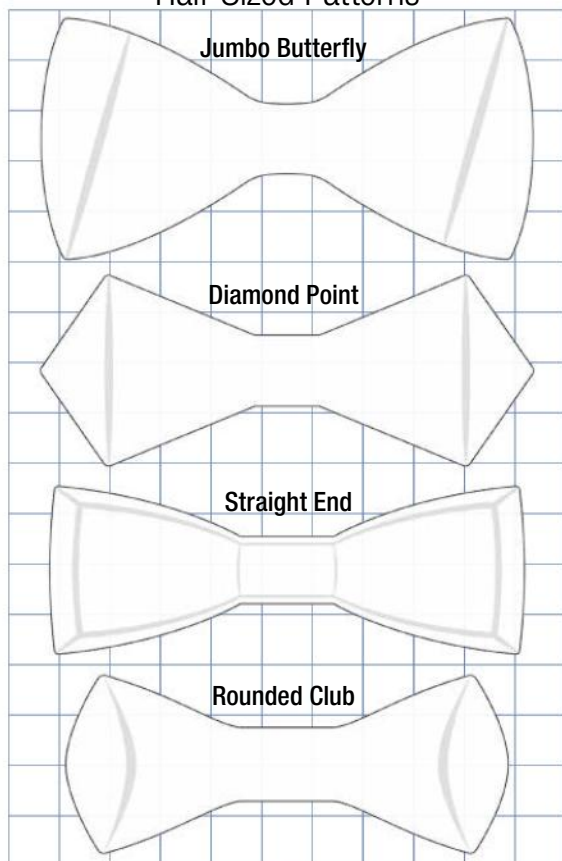
Create your ties in 5 steps

Some woodworking projects lend themselves to making multiples. This is one of those projects. It's easy to make every tie unique because you can vary the wood, the shape, and the center band treatment that holds the strap. The quickest way to make multiple ties is to cut a single tie shape in thick stock, and then slice thinner ties from this blank. I aim for a thickness of around $\frac{3}{8}$ ". This gives the tie some depth to allow for edge treatments that range from slightly sanded to deeply chamfered.

1 Pick your pattern

A little online research or a trip to a men's clothing store provides the first and most important lesson in bow tie design: There's a variety of sizes and styles. So the first step is to find a shape you like and transfer it to a piece of cardboard that will become your pattern. The center of the pattern (where the knot on a fabric tie is located) should be made thinner, as shown. This skinny section makes room for the decorative band that will hold the strap in place.

Half-Sized Patterns



1 square = $\frac{1}{2}$ "
Enlarge 200%



onlineEXTRA

Go to woodcraftmagazine.com
for full-sized patterns.

2 Cut out your ties

I traced my pattern onto some pieces of zebrawood, curly maple, and cherry. Then I cut out the tie shapes on the bandsaw. If your tie blank is thick enough, you can resaw the blank to create two or more ties. Use a pair of pushsticks as shown to keep your fingers well away from the blade.



4 Apply finish

Since the narrow center section of the tie will be covered by fabric or leather, I drill a hole in this area for a screw. This makes it easy to hold each tie as I apply finish; it also keeps the ties upright for drying. Here I'm using wiping varnish, but aerosol lacquer is also a good choice.





3 Have fun shaping & sanding —

Quite a few edge treatments are possible—from minimal round overs to broad bevels. Let the wood grain and your own sense of style determine the treatment you choose. I use my oscillating spindle sander to remove saw marks and to bevel edges, but you can also do this work by hand, using chisels and sandpaper. To prepare the tie for finish, sand all surfaces to 220 grit.



5 Add the center & strap —

The narrow center of the tie is finished off with several layers: double-stick tape, an adjustable strap used to hold the tie in place around your neck, and a decorative layer of fabric or leather. Craft stores stock narrow fabric trim in a wide variety of colors and patterns; they also have leather trim. Start by adhering the strap to the back of the tie's center section with double-stick tape. Then wrap one or more layers of trim around the center to cover the strap and build up a thicker center. Cut your wrapping material to end at the back of the tie, and adhere it with hot-melt glue or 5-minute epoxy.



Buyer's Guide

Have Fun with Transforming Tables! (p. 21)

1. Milescraft 30-count Fluted Dowel Pins, 3/8" (16 needed, per table)#153829, **\$2.50**
2. Cindoco Birch Dowel, 1" (2 needed).....#50D05, **\$6.39**
3. Freud Precision Shear Forstner Bit, 3/4" dia.#832876, **\$12.99**
4. Freud Double Flute Straight Router Bit, 1/2" D, 1 1/4" CL, 1/2" SH.....#828670, **\$18.47**

Best Books for Woodworkers (p. 26)

1. *Getting Started in Woodturning: 18 Project & Expert Advice on Safety, Tools & Techniques*, John Kelsey, Spring House Press, 2014
2. *Woodworking 101: Skill-Building Projects that Teach the Basics*, Taunton Press, 2014
3. *Classic Joints with Power Tools*, Yeung Chan, Lark Books, 2002
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27. *Making Things Work: Tales from a Cabinetmaker's Life*, Nancy Hiller, Putchamin Press, 2017
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Board Feet! (p. 33)

1. Whiteside Straight Cut, Double-Flute Router Bit, 1/2" D, 3/4" CL, 1/2" SH#24A31, **\$16.74**
2. Whiteside 14° Dovetail Router Bit, 1/2" D, 1/2" CL, 1/2" SH.....#24D42, **\$22.22**

Make a Mountain Dulcimer (p. 36)

3. Mountain Dulcimer Hardware Kit, including fretsaw & #49 drill bit.....www.folkcraft.com, #7112361, **\$55.33**

6 Hand Sanding Secrets (p. 44)

1. Time Shaver Tools Preppin Weapon Sanding Block#833902, **\$22.99**
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4. WoodRiver Large Contour Sanding Pads, 6-piece#145959, **\$9.50**
5. Porter-Cable Stikit Sandpaper Adhesive Back, 180 Grit.....#13W52, **\$22.99**
6. Lumberton Sanding Detailer Standard Kit, Coarser Grits, 24-piece#123283, **\$31.99**
7. Felt Rubbing Block is available from highlandwoodworking.com
8. No-load silicon carbide sandpaper is available from onlineindustrialsupply.com

Celebrate in Style with a Wooden Bow Tie (p. 61)

1. Adjustable straps available from UNSquaredDesigns at www.etsy.com\$1.80 per strap

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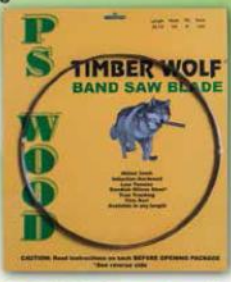
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Why buy a stationary drum sander?

Q Can you give me the short story on stationary drum sanders? They're kind of pricy, but sure offer a lot more capacity than my portable planer. What are their pros and cons, and can one replace my planer?

—Mark Sandberg, via email

A A stationary drum sander is a great tool for a smoothing everything from narrow strips to wide panels, while producing parts of consistent thickness. Drum-sanding is also an efficient way to smooth and level assembled frame-and-panel cabinet doors. Prices on machines vary widely, depending on capacity and type of build. Better units, like the SuperMax 16-32 shown here (with its 16"-wide drum, and open-end design), may cost more than a sander with a drum housed on both ends. However, you can surface panels up to 32" wide by feeding half the workpiece at a time.

Will a drum sander replace a thickness planer? Not really. It certainly will thickness stock, but way too slowly for general work, as it typically removes only about 1/64" per pass. That said, it is a worthy addition to the shop if you

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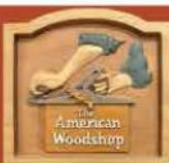
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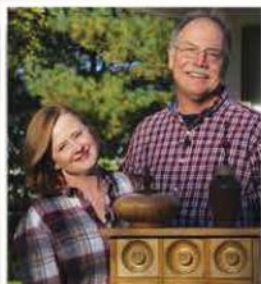
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Fire Palaces

Sacrificial scrap as an art form

By Ric Hanisch

Every woodworker knows how relentlessly “waste” piles up from rippings, end cuts, and bandsaw off-fall. You can use this scrap for stove kindling, sure, but why not have some real fun with it by creating a fire palace?

A fire palace offers a singular presentation in its burning, and invites fervent group involvement. In some Northwest Coast tribes, secret societies used to spend an entire season crafting elaborate wooden masks for just one performance that culminated in the ritual destruction of the masks. (I’m sure attendees focused on the show with unusual intensity. After all, you blink and you’ve missed it for good. No reprise. No reruns. No YouTube archive.)

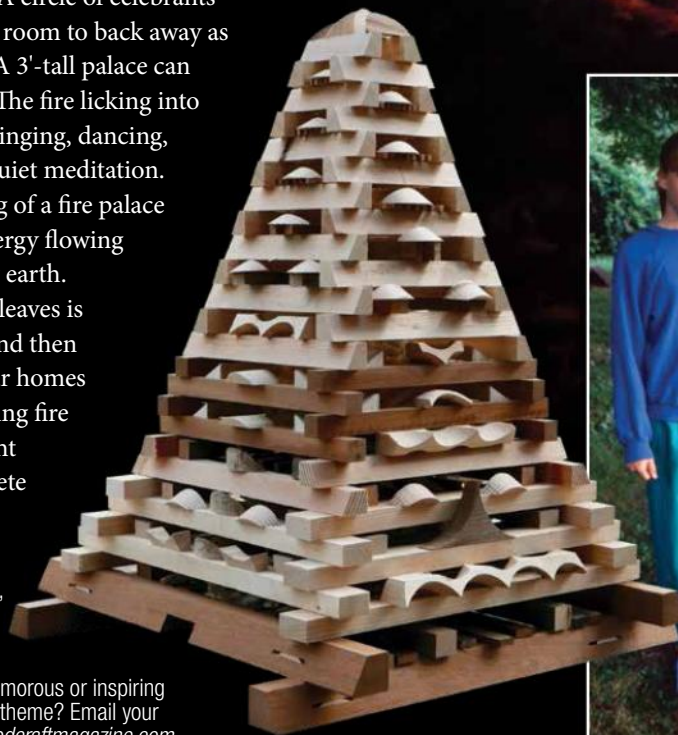
To make a fire palace, lop skinny rippings to length to serve as the basis for a tapered pyramid structure that provides plenty of fire-inducing draft. A dab of glue at each crossing holds it all together. You can then elaborate on the design by adding various shapely pieces. (A gang of kids with a bottle of glue and a box of parts will turn a rather staid structure into a work of flammable art right quick!)

Discover an excuse to celebrate. Fill the interior of your palace with shavings and splinters for quick ignition, and set up in an area with plenty of room. A circle of celebrants starts close but needs room to back away as the heat intensifies. (A 3'-tall palace can produce 12' flames!) The fire licking into the sky often incites singing, dancing, and sometimes just quiet meditation.

For me, the offering of a fire palace attests to the sun’s energy flowing throughout the living earth. Sunlight captured by leaves is stored in the wood, and then harvested to make our homes and furniture. A blazing fire palace returns the light into the sky to complete the cycle. Nice. ■

For more of Ric’s musings, visit ArtFarmAntics.com.

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