

CELEBRATING OUR 50<sup>TH</sup> ISSUE!

**FREE!**  
QUILT STAND  
DOWNLOAD! p.2

# WOODCRAFT<sup>®</sup>

Projects, Techniques, and Products

magazine

**Easy-To-Build Pie Safe** p.50

**BEST TOOLS  
OF 2012** p.23

## MORE PROJECTS

- Turned Pepper & Salt Mills
- Tablesaw Miter Sled

## PLUS...

- Resawing Basics
- 6 Woodturning Finishes
- Panel-Cutting Guides

VOL. 9/NO. 50 DEC/JAN 13

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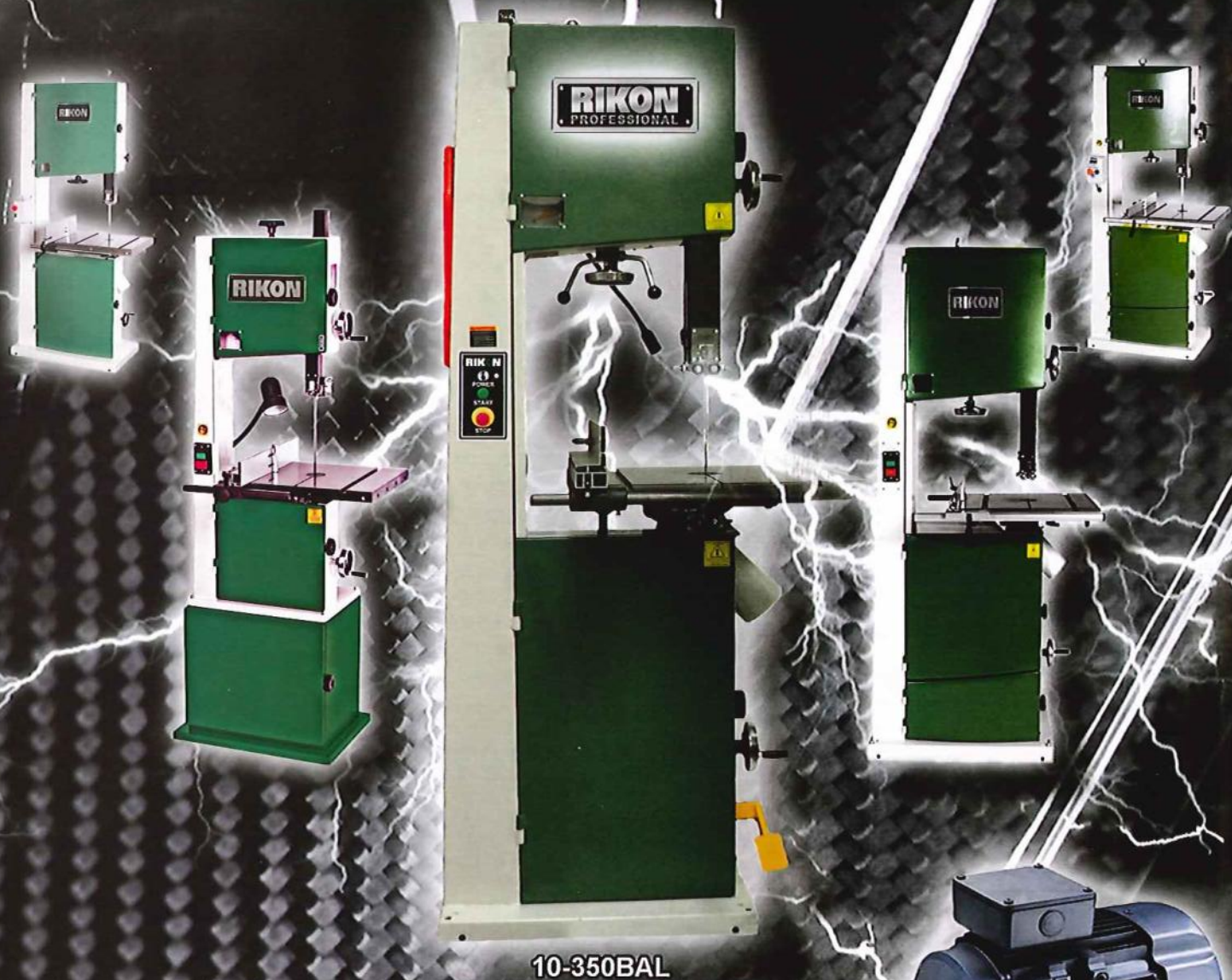
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RIKON  
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The NEW 10-350BAL 14" Professional Bandsaw boasts a powerful 3HP BALDOR Motor made in Fort Smith, Arkansas. Our competition wants you to believe that the motor on their bandaw is made in the U.S. If the motor on their saw has a blue label like the one pictured here then ask "WHERE WAS YOUR MOTOR MADE???" You'll be surprised!

RIKON also offers the 10-350 with a standard factory 2-1/2HP motor. Both saws are protected by a 5-Year Warranty.

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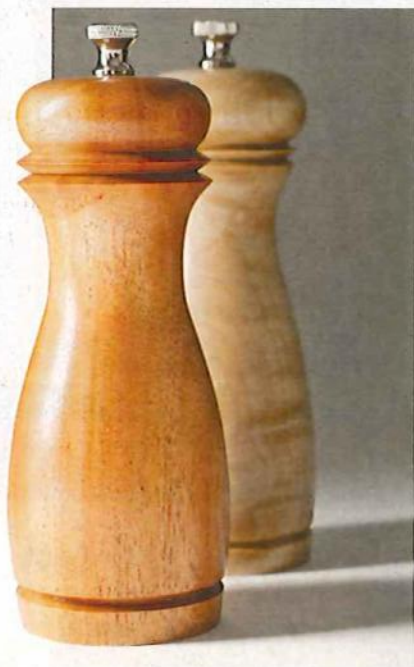
Red router bits are a registered trademark of Freud America, Inc. (US) 1-800-472-7307



## Contents: Projects

### 50 All-American Pie Safe

Add a classic to your casual home furnishings with this painted poplar cabinet. Standing 41½" wide × 17" deep × 55½" high, this case offers convenient storage for much more than freshly baked pies and cakes. Although it looks like an antique, modern joinery makes building this project as easy as pie. Buy pre-punched panels or punch your own tin.



### 38 Graceful Pepper and Salt Mills

Create a complementary pair of tableware turnings using the detailed drawings and template inside. The sourced mechanisms let you shape 6"-high mills in woods of your own choosing.

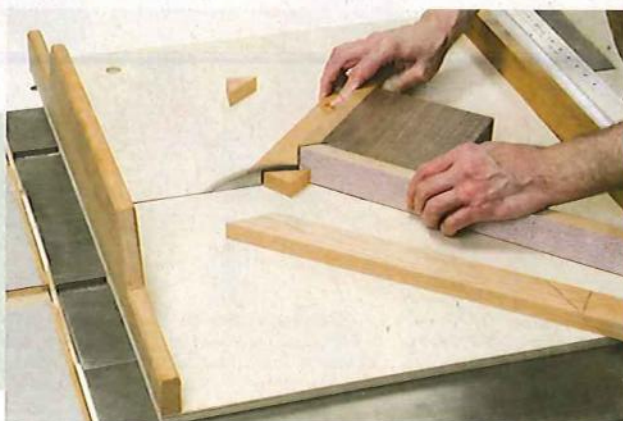


### Free Download!

To celebrate our 50<sup>th</sup> Issue, we're offering a free download of our ever-popular "Heirloom Quilt Stand" plan. Visit: [www.woodcraft.com/QuiltPlan](http://www.woodcraft.com/QuiltPlan)

### 29 Tablesaw Miter Sled

Tired of fighting miters? Stop all the fussing and fitting, and get 'em perfect the first time around using this low-cost, shop-made sled. You'll wish you made it years ago.





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starting from  
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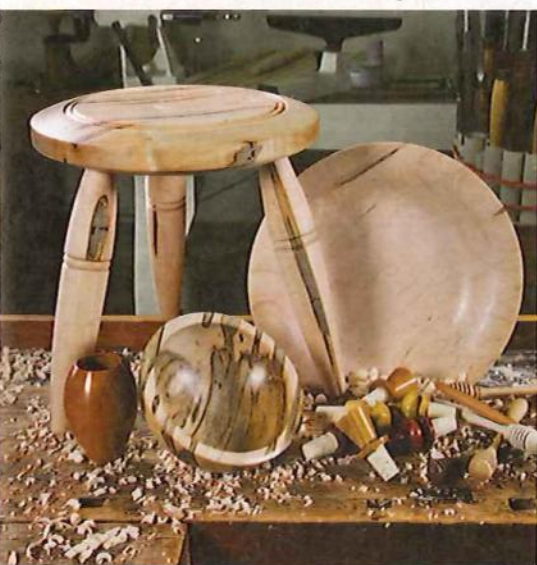


For more information or to find a dealer near you, please visit [www.findmultimaster.com](http://www.findmultimaster.com).

\* MSRP



# Contents: Tools & Techniques



## 45 Six Finishes for Woodturners

Match the finish with your project as pro turner Nick Cook covers CA, lacquer, oil, wax, friction, and water-based finishes, providing application information and best product use.



## 23 Best Woodcraft Tools of 2012

Expect to find a holiday gift or two as you check out the 18 top tools and accessories from this year's editors' roundup of new woodworking products.

## Timeline of Success

See our magazine's success over the last 50 issues, page 12.

## 32 Resawing Basics

If you're not using your bandsaw to slab small logs, create beautiful book-matched panels, or slice veneer, you're wasting some of the machine's best talents. Here's how to get started.



## 60 Plywood-Cutting Guides

Breaking down sheet goods needn't be a back breaker. Discover four different fixtures that can help you cut your next sheet down to size.

## 70 Well-Stocked Shop: Masks & Respirators

Protect yourself from dust and fumes with one of the appropriate products found in this safety category.



## Departments

06 Cutting In 16 Tips & Tricks

08 Mailbox 66 WoodSense: Holly







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**ROCKWELL®**





Celebrating our 50<sup>th</sup> issue

**B**ack in January of 2005, the very first issue of *Woodcraft Magazine* rolled off the press. And while the parent company, Woodcraft Supply, LLC, took a gamble with its new launch, the publication was seen as a means of spreading the company's good name, while providing the at-large woodworking community with great projects to build, valuable techniques, and pertinent product information. In short, it was to be a lifeblood for active woodworkers, and an all-around good read. Timing-wise, well, that's another story. The woodworking magazine field boasted a glut of long-established titles. Add to this gale-force headwind, the hurricane-force wind of an economy in free fall beginning in 2006. If *Woodcraft Magazine* were to weather the storm, it would need to be a lean, well-constructed ship, equipped with a top-notch crew and content.

With two rock-solid performers already in place when I arrived in 2007, namely, business production manager Linda Rowe and advertising/circulation staffer Miranda Springer, I immediately set out to stock the roster with editorial talent. I remember when I ask Joe Hurst-Wajszczuk, an insightful, seasoned woodworking writer to help guide the ship as senior editor. When he agreed, little did he (or I) know of the long weekends and evenings, tubs of coffee, weeks of travel, and mountains of sawdust that lie before him. Joe, I hope your wife forgives me.

Soon after, highly experienced graphic designer Chad McClung joined the staff and quickly ascended to art director, having poured himself into the magazine's redesign. No stranger to long hours, Chad fit right in, developing the same dark circles under the eyes to match those of his co-workers. Shayne Hiles, for reasons that defy nature, signed on a year later as graphic designer. (Did Chad not tell him?)

Finally, with a world of coaxing (and maybe a few half-lies thrown in), I was able to cajole Paul Anthony, woodworking book author, photographer, writer, and proven woodworker, to join the staff as our other senior editor, resulting in instant quality improvements across the board. Paul, you have my apologies for the long, fretful days. May your wife also forgive me.

Today, because of the impressive contributions of those above, and of our nationwide pool of freelance craftsmen and experts, the good ship *Woodcraft Magazine* rides high in the water, on a brisk, steady course. As we pause to celebrate our 50<sup>th</sup> issue, I would like to thank you, our readers, for your support. In appreciation, I would like to offer you a **free download** of the "Heirloom Quilt Stand," our most popular woodworking plan, available for three months at [www.woodcraft.com/QuiltPlan](http://www.woodcraft.com/QuiltPlan). From the entire staff, a heartfelt thanks.



Dec/Jan 2013  
Volume 9, Issue 50

Editor-In-Chief  
Senior Editors

Jim Harrold  
Paul Anthony  
Joe Hurst-Wajszczuk

Art Director  
Graphic Designer

Chad McClung  
Shayne Hiles

Copy Editor  
Sharon Hambrick

Contributing Consultants/  
Craftsmen/Project Designers  
Craig Bentzley, Nick Cook,  
Dave Munkittrick, Byron Young

Shop Manager  
Shawn Staats

Publisher

Jody Garrett

Business/  
Production Manager

Linda Rowe

Advertising Sales Manager

Vic Lombard

Advertising/  
Circulation Support

Miranda Springer

Circulation  
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[customer\\_service@woodcraftmagazine.com](mailto:customer_service@woodcraftmagazine.com)  
(800) 542-9125

Contact Us  
Woodcraft Magazine  
4420 Emerson Avenue, Suite A  
P.O. Box 7020  
Parkersburg, WV 26102-7020  
1-800-542-9125 Fax: (304) 420-9840  
Email: [editor@woodcraftmagazine.com](mailto:editor@woodcraftmagazine.com)  
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**Safety First!** Working wood can be dangerous. Always make shop safety your first priority by reading and following the recommendations of your owner's manuals, using appropriate guards and safety devices, and maintaining all your tools properly. Use adequate sight and hearing protection. Please note that for purposes of illustrative clarity, guards and other safety devices may be removed from tools shown in photographs and illustrations in this publication and others.



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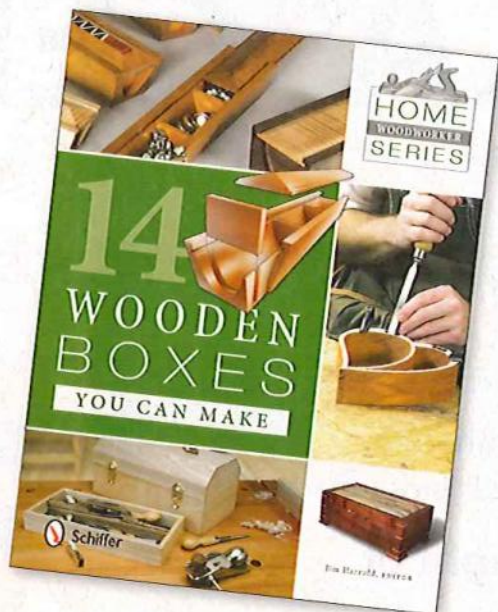
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## Introducing 14 Boxes You Can Make

Looking for a project that doesn't eat up a lot of stock, serves as a great gift, and teaches woodworking during the making? Build a box, or several boxes, using the designs in *Woodcraft Magazine's* first book entitled *14 Boxes You Can Make*.

The first book in the *Home Woodworker Series*, this hot-off-the-press publication features a wide selection from past issues of the magazine, from a collector's box to a heart-shaped music box, to jewelry boxes, to clever box banks. Representing craftsmen from across the country, all the boxes include step-by-step



building instructions, dimensioned drawings, how-to photos, and cut lists to guarantee your building success. At \$19.95, you can purchase *14 Boxes You Can Make* (#154656) at Woodcraft stores, [woodcraft.com](http://woodcraft.com), or by calling (800) 225-1153.

—Jim Harrold

## Chime In

Have comments about the magazine, questions about an article, or something to share with your fellow *Woodcraft Magazine* readers? Send an email to [editor@woodcraftmagazine.com](mailto:editor@woodcraftmagazine.com) or a letter to *Woodcraft Magazine*, PO Box 7020, Parkersburg, WV 26102.

## Possible New Acquisition

As of the close of this issue, we have learned that Woodcraft Supply, LLC has signed a letter of intent to purchase Japan Woodworker®, a multichannel provider of high-end woodworking tools and accessories. Stay tuned for an update and a more detailed explanation.

—Jim Harrold

## Highlights from the 2012 AAW Symposium

The American Association of Woodturners (AAW) held its 26th annual International Symposium June 8-10 at the San Jose McEnery Convention Center. With over 14,500 members, this nonprofit organization promotes excellence in woodturning by offering education, inspiration, and general guidance to those interested in traditional woodturning. For attendees, the show provided the chance to learn new techniques and improve skills via workshops with the world's top turners. In addition, the symposium

included a gallery featuring an impressive collection of turnings.

A highlight this year was the Youth Program where sponsored children were mentored by volunteer instructors in turning seven different projects. Twenty-five of the young turners were selected to take home a Jet mini lathe and stand, a set of five Crown turning tools, a Teknatool lathe chuck, safety shields, sandpaper, and glue, all donated by Woodcraft.

Mark your calendar for the 28th annual AAW Symposium at the Tampa, Florida, Convention Center from June 28-30, 2013.



For the breaking news, check out Woodcraft's Woodworking Adventures at [blog.woodcraft.com](http://blog.woodcraft.com).  
—Frank Byers, Woodcraft social media specialist



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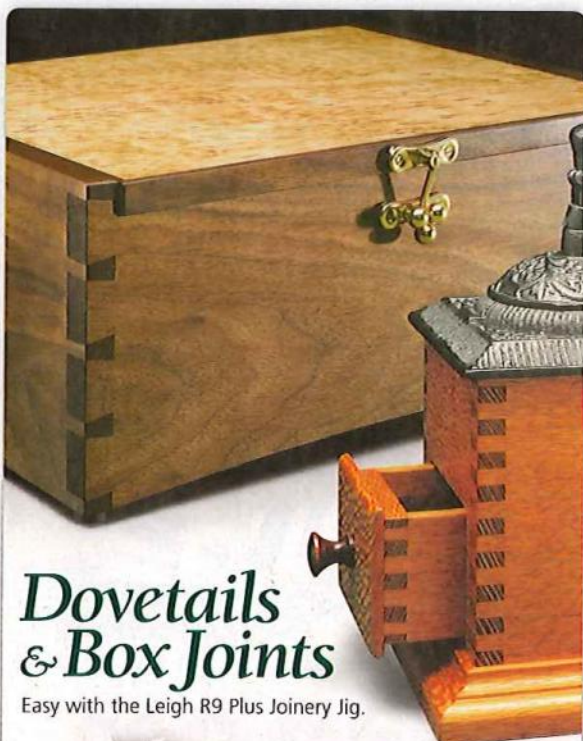


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### My favorite guitar to play

I built my 000 about three years ago. It never fails to amaze me how great this instrument sounds. I use it to perform with and I always get compliments on its tone. I highly recommend taking the plunge and build your own.

W.K., Illinois



★★★★★

### Number 30

I have built 29 Instruments from scratch. I wish I had built from the kit first. I learned a lot. Especially when it came to adjusting and setting the neck. I'm well pleased with the completed guitar. My grandson is too.

B.D., Texas



★★★★★

### Love it

Great quality wood in this kit. Fits together well and produces a great sounding guitar with all the power and tone you'd expect from a high end instrument. My son-in-law likes it better than his Martin D-16.

B.S., Texas



★★★★★

### My 2nd StewMac Dreadnought kit

The first one was for my daughter. She's still amazed that I made it—it's her pride and joy. Materials are first rate and technical support is exceptional. I am very proud of both guitars and look forward to building another.

D.S., Texas

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Everything for building and repairing stringed instruments!





# Timeline of Success

At the start of 2005, parent company Woodcraft Supply, LLC launched *Woodcraft Magazine* to help support its large customer base of active woodworkers. Thanks to a talented staff, the magazine has grown significantly over its short life. This timeline captures its success story in a nutshell.

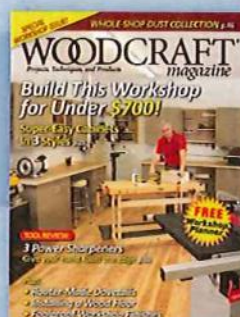


## New Editorial Approach

Oct/Nov 2007 issue emphasizes projects and techniques.

## Shop Issue

June/July 2009 themed issue helps readers build a great home workshop.



2005



**First Issue**  
*Woodcraft Magazine*  
Dec/Jan 2005 issue hits newsstands.



**Project Plans**  
April 2008 sees the unveiling of the ancillary Classic Project Plans (paper plan) business.

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issue hits a  
circulation  
milestone.



First Zinio  
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issue Woodcraft  
Magazine  
goes digital.



Where do we  
go from here?  
With circulation now at  
120,000 and growing,  
the future looks bright.  
As readers, you can  
look forward to more  
well-designed projects,  
skill-building techniques,  
and dedicated shop issues,  
all aimed at making you a  
truly happy woodworker.

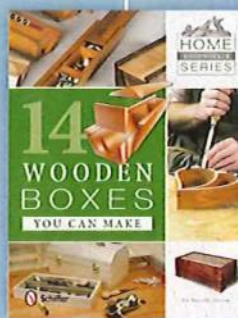
2013



Shop Plans  
April 2010 sees  
the launch of  
the Classic Shop  
Plans (paper  
plan) business.



Garage Shop  
Oct/Nov 2011  
marks second  
themed issue  
on building a  
great home  
workshop.



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\*Patent pending

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the tool with the vision to educate and inspire

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154275 (A) Flush Trim  
154276 (B) Pattern/Plunge  
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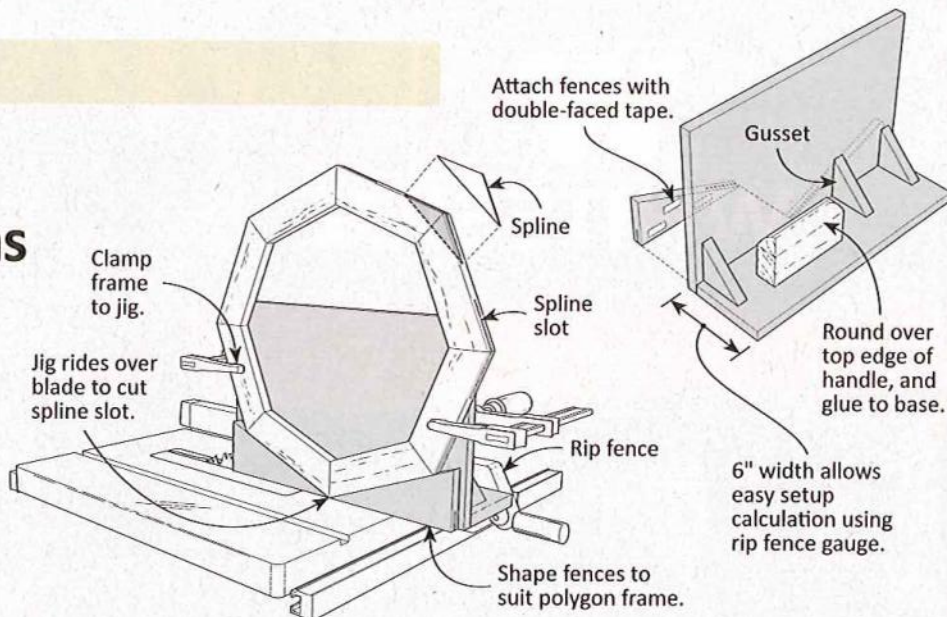
## Tips & Tricks

### TOP TIP

### Splining polygons

Sometimes I make 6- or 8-sided frames, reinforcing the otherwise weak joints with splines. As when splining square frames, these polygons are first glued together, and then the frame is held vertically in a jig and fed across the tablesaw to cut the spline slots.

The trick is in the jig. Many woodworkers have a dedicated jig for spline-slotting square frames. It's typically constructed somewhat like a tenoning jig, except it has two fences—perpendicular to each other and at 45° to the saw table. These are usually screwed to the jig face. Instead, I attach my fences



with double-faced tape rather than screws. This gives me the flexibility to attach or rearrange any type or number of fences to suit a frame of any shape. (I can also use the jig for tenoning by attaching a single vertical fence.)

The jig itself is nothing fancy—just a couple of  $\frac{3}{4}$ "-thick

MDF or hardwood plywood panels attached and gusseted at a perfect 90° angle with a handle on the base for keeping the jig against the rip fence when in use. For safety, always clamp the workpiece to the body of the jig when sawing.  
—Bill Sands, Lubeck, West Virginia

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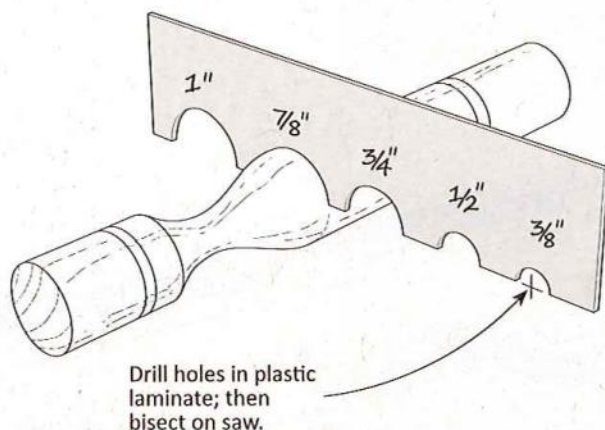


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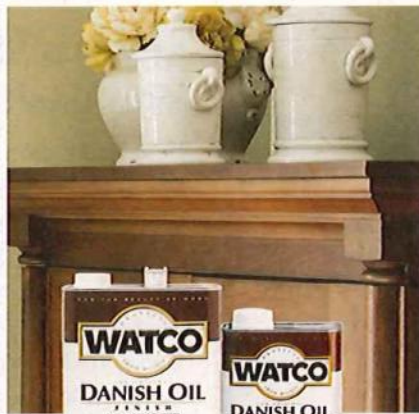
Drill holes in plastic laminate; then bisect on saw.

## A shop-made lathe gauge

I do a lot of spindle-turning at the lathe, and find myself turning sections and details to the same common diameters time and again. Rather than constantly resetting my calipers, I devised a gauge for these diameters, making it from plastic laminate, which is thin enough to slip into parted areas and in between beads.

Making a gauge like this is easy. Begin with an oversized scrap of plastic laminate for safe handling. Lay out the centers for the desired diameters along a line drawn parallel to one edge. Bore out the holes on the drill press, and then saw through the centerline. Finish up by trimming the gauge to a convenient size.

—Mark Pilsner, Milwaukee, Wisconsin



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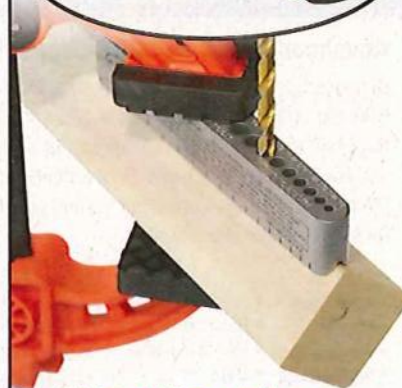
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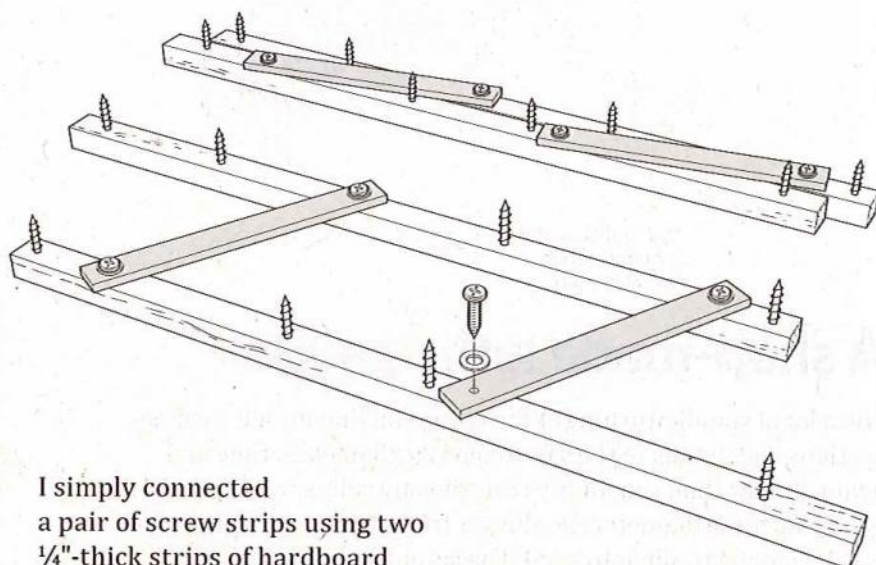




## Parallelogram screw strips

Like many woodworkers, I often use "screw strips" to support panels and other project parts when finishing them. With flathead screws driven through them, these screw strips essentially hold the inverted screws upright so "wet" work can rest on the tips without damage, allowing you to finish to both faces of a piece in immediate succession.

The problem I've found with most screw strips is that they're prone to tipping. To solve the problem, I took inspiration from the concept of parallel rulers.



I simply connected a pair of screw strips using two 1/4"-thick strips of hardboard and a couple 3/4" panhead screws with washers, as shown. When spread apart, the parallelogram unit has firm footing for supporting workpieces. When not in use, a unit can be

folded shut and safely stacked together against another unit with the screws facing inward toward each other.  
—Mark Dean, Dade City, Florida

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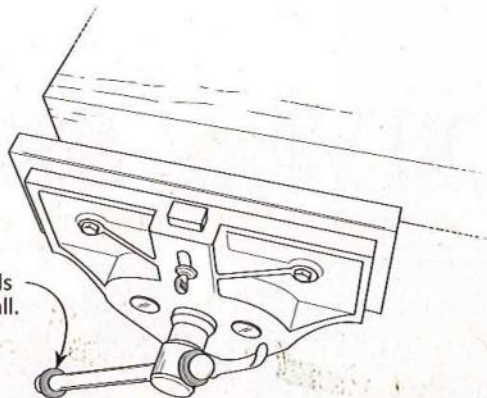
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Next issue's Top Tip will receive a 6-piece ZHEN Premium Damascus Kitchen Knife Set, for a total value of \$249.99. Runners-up will receive \$125 for an illustrated tip; \$75 for an unillustrated one. Winning entries become the property of Woodcraft Magazine. Send your original ideas to: Tips & Tricks, Woodcraft® Magazine, P.O. Box 7020, Parkersburg, WV 26102-7020 or email [editor@woodcraftmagazine.com](mailto:editor@woodcraftmagazine.com). Important: Please include your phone number, as an editor will need to call you if your tip or trick is considered for publication.





Fit rubber washers on ends of bar below ball.



## Stop feeling the pinch

It happened again. I was adjusting my metal bench vise to put the squeeze on a workpiece when the handle bar suddenly slid full force through its hole, slamming my fingertip between the ball-end of the bar and the head of the vise screw. (A bunch of you out there know exactly what I'm talking about.) I finally decided I had had quite enough of *that* smooth move and rifled through my collection of rubber washers and O-rings looking for a fix. I found a couple of thick rubber washers that fit nicely onto the ends of the handle just below each ball. No more blood blisters.

—Willard Knight, Bellingham, Washington

Grind end of putty knife to match curve of biscuit.



## Biscuit slot glue spreader

The quickest way to spread glue in biscuit slots is using a tool tailored for the job. I made my own by grinding the end of a putty knife to match the contour of a biscuit. Squeeze glue into the slot, smear it against the sides of the slot with the knife, and you're done. Putty knives are cheap enough that I've actually made several of these spreaders to suit different sized biscuit slots.

—Alice Wallace, San Mateo, California

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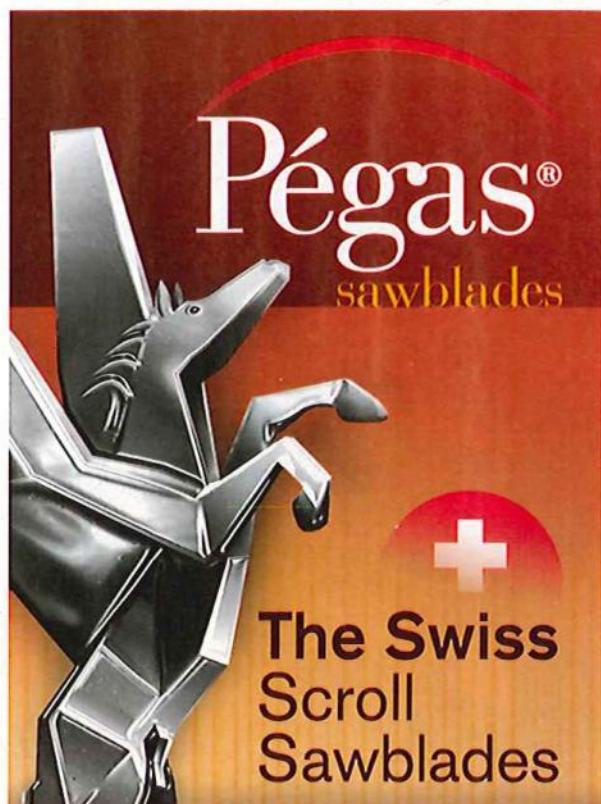


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# Woodcraft's Best Tools of 2012

**W**hile some years have only offered slim pickings in the way of shop-worthy products, 2012 has given us a bumper crop of great new woodworking tools and accessories. You may have seen a few of these items, but even if you merit a monogrammed mug at your local Woodcraft store, you'll probably find a few surprises on our list.

Asking editors to rank this year's offering in terms of quality, convenience, and cost is downright impossible. However, when we compared notes, the same items placed at the top of our lists. Here's the best of what we found, and a few reasons why you'll want to add these items to your shop arsenal.

## WoodRiver Revolution

Woodcraft's WoodRiver and Pinnacle brands continue to expand their hand-tool offerings and turn heads. Careful machining, thick blades, and ductile iron bodies combine to create tools that are easier to use and perform equally as well as much higher-priced equivalents.

### WoodRiver No. 92 Medium Shoulder Plane

Based on the Stanley No. 92, the 7"-long WoodRiver is a formidable competitor in the shoulder plane arena. The mid-sized body is comfortable to hold and control, and the 3/4"-wide body is perfect for correcting ill-fitting tenons, rabbets, dados, and other flat-faced joints.



WoodRiver No. 92 Medium Shoulder Plane, #154032, \$149.99

### WoodRiver No. 7 Jointer Plane

With a 21 1/2"-long sole to bridge long valleys and a 2 3/8"-wide blade, the WoodRiver No. 7 is the go-to plane for flattening wide boards, tabletops, and workbenches, as well as jointing the edges of long boards.



WoodRiver No. 7 Jointer Plane, #153104, \$304.99

Pinnacle No. 151 Flat Spokeshave, #152803, \$99.99



Pinnacle No. 151 1/2 Radius Spokeshave, #153105, \$99.99



### Pinnacle No. 151 Flat Spokeshave and 151 1/2 Radius Spokeshave

For shaping curved parts, such as chair spindles, seats, panel edges, and tool handles, it's hard to get by without a spokeshave or two. Their solid, stainless steel bodies and 1/8"-thick A2 blades work together to ensure smooth, chatter-free cuts.

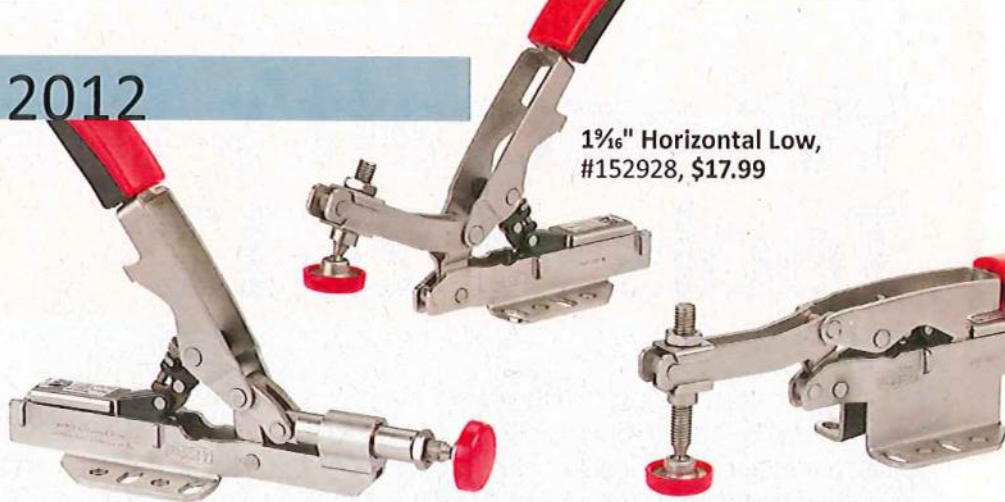


# Best Tools of 2012

## Lever and Leave it

### Bessey Auto-Adjust Toggle Clamps

Toggle clamps secure stock on jigs and fixtures where fingers fear to tread. Bessey's auto-adjust toggles keep stock even more secure by automatically adjusting to provide consistent pressure against material ranging in thickness from veneer stock up to 1½"-thick material. And a few quick turns of a screw can



1½" In-Line, #152930, \$19.99

adjust the clamping pressure from 25 up to 550 pounds.

As these are priced on par with standard toggle clamps,

1½" Horizontal Low, #152928, \$17.99

2½" Horizontal High, #152929, \$18.99

you may want to upgrade your most used jigs or add a few new Besseys to your tool chest for future jig and fixture applications.

## A Cut Above (4, Actually)

### Freud Quadra-Cut ¼"-Shank Router Bits

A few years ago, Freud managed to squeeze four cutters onto a ½"-shank bit. The larger two cutters efficiently shape the profile with an up-shear cutting angle, while the smaller down-shear cutters clean up the surface, resulting in fast, super-smooth cuts. Now, Freud has finally downsized the four-cutter technology onto a ¼"-diameter shank to accommodate routers that don't accept ½"-diameter collets. Additional profiles will be released in the months ahead and will cost about 10% more than comparable two-wing cutters.



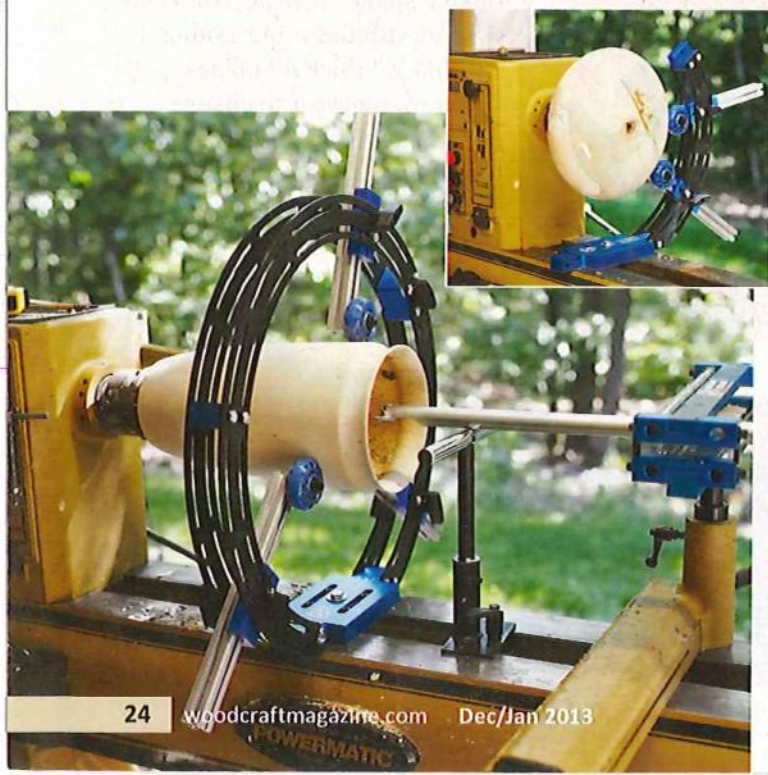
Freud Quadra-Cut  
¼"-Shank Router Bits  
(new profiles coming soon)

## Rest Easy

### Carter MultiRest

A one-size-fits-all solution, the Carter MultiRest fits lathes ranging from mini models up to those with a 20" swing. Once attached to your lathe bed, the base adjusts to steady spindle work, hollow vessels, and flat turnings at any position on the bed. The urethane wheels can be positioned and rotated to provide support wherever it's needed most. Unlike other steady-rest setups, the MultiRest's two-piece support ring can be opened or completely removed from the lathe bed without dismounting your workpiece.

Carter MultiRest, #154325, \$359

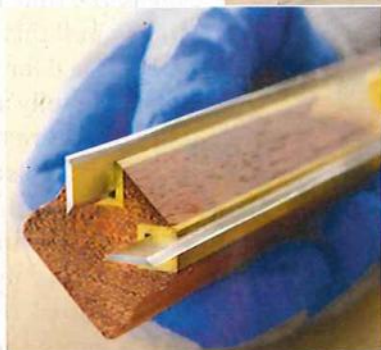




## Shaver Saver

### Deulen 12" Jointer/Planer Knife Sharpening Jig

This jig makes honing planer and jointer knives almost as easy as honing any other blade in your shop. To use, set two blades in the jig, and then run the edges against sandpaper affixed to glass. After honing a set of dull jointer knives on sandpaper, ranging from 150 to 400 grit, the resulting micro-bevels were sharp enough to shave with. This jig earns its keep not only by preventing tear-out and reducing sharpening costs, but also by doubling the life of so-called "disposable" planer blades.



Deulen 12" Jointer/Planer  
Knife Sharpening Jig,  
#152868, 12", \$89.99

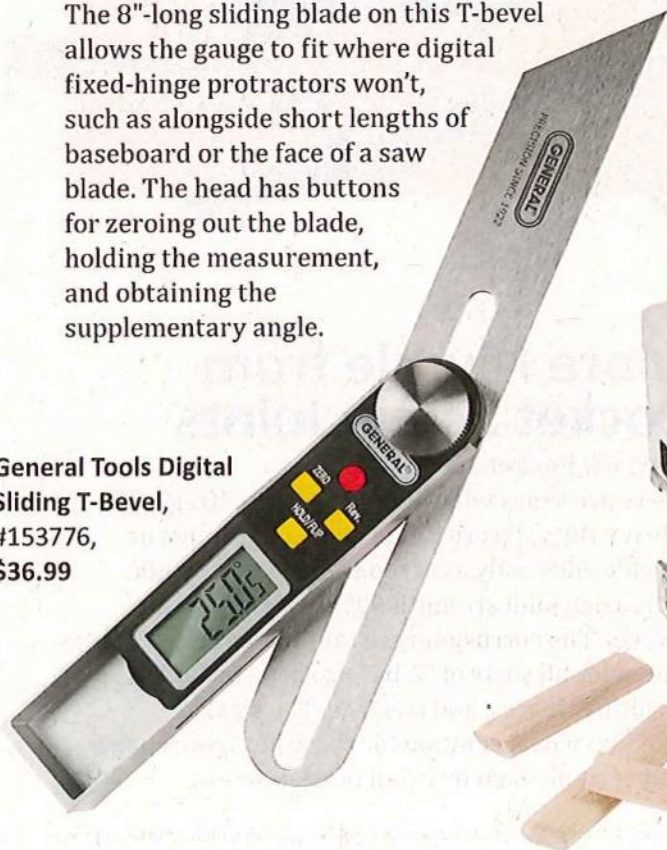


## Playing the Angles

### General Tools Digital Sliding T-Bevel

By incorporating a digital protractor in the head of a sliding T-bevel, General Tools has created a tool that works for both old- and new-school woodworkers. With this tool, you can either use the blade to physically transfer angles, or press a button and read the angle on the head of the tool. The 8"-long sliding blade on this T-bevel allows the gauge to fit where digital fixed-hinge protractors won't, such as alongside short lengths of baseboard or the face of a saw blade. The head has buttons for zeroing out the blade, holding the measurement, and obtaining the supplementary angle.

General Tools Digital  
Sliding T-Bevel,  
#153776,  
\$36.99

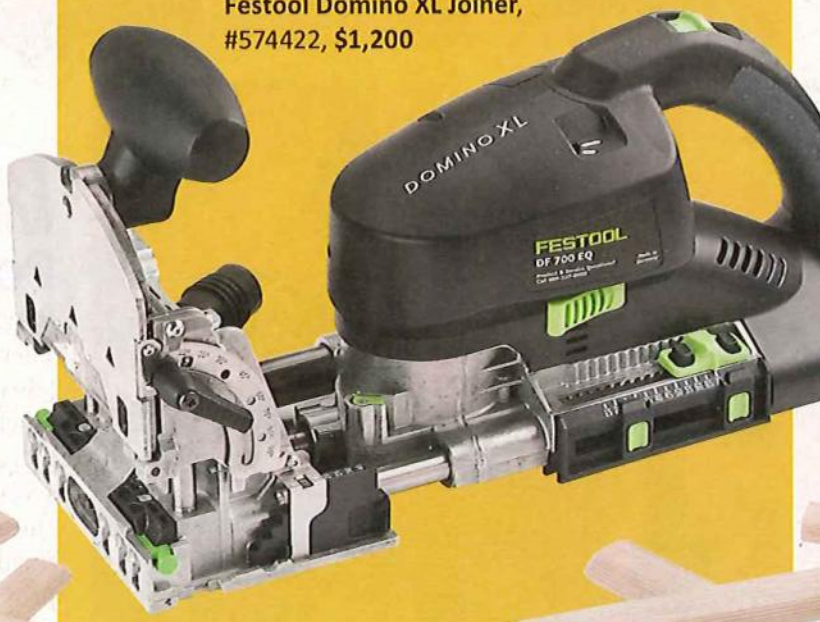


## Masterful Mortiser

### Festool Domino XL Joiner

A few years ago, Festool's Domino joiner made woodworkers rethink the way they approach mortise-and-tenon joinery by making mortises (for loose tenons) as easy to cut as biscuit slots. Now, the Domino XL takes things up a notch. Compared to the original machine that could cut mortises to fit tenons as large as  $\frac{3}{8}$ " thick by  $\frac{7}{8}$ " wide by 2" long, the XL cuts mortises to fit tenons as large as  $\frac{9}{16}$ " thick by 1" wide by  $5\frac{1}{2}$ " long. Rivaling the capacity of stationary horizontal mortisers, this portable machine makes joints suitable for full-sized doors, gates, and large tables.

Festool Domino XL Joiner,  
#574422, \$1,200





## Incra-dible Box Joints

### Incra I-Box Jig

Making box joints requires a jig. You can either spend the time to make your own, or you can simply pull this jig out of the box and get right to it. Designed for use on either a tablesaw or router table, the fully adjustable jig has expandable miter bars to ensure that it won't shift in use, spoiling the joints. It also features a pair of fingers to set the pin width and a dual-pitch lead screw that enables users to dial in perfectly-fitting joints.

The I-Box can cut pins ranging in width from  $\frac{1}{8}$ " to  $\frac{3}{4}$ " in stock that is  $\frac{1}{8}$ " to  $1\frac{1}{4}$ " thick. In addition to box joints, the jig can also be used to cut keyed (slip-feather) joints and dentil moldings. Setup and operation are explained in the included DVD.

Incra I-Box Jig, #854034, \$169.99

## Penned to Perfection

### Whiteside Pen Maker's Bits

For those aspiring to turn perfect pens, Whiteside has come up with blank-drilling bits that are designed to create a "hand-in-glove" bushing fit. Don't be put off by the bit's diameter dimensions (measured to the third decimal point). All you need to know is that the bits produce a clean hole that's just a few thousandths of an inch larger than the brass insert, providing just enough clearance for CA glue or epoxy to form a strong, virtually seamless bond.



Whiteside Pen Maker's Bits, #154023-31, (\$15.99-\$23.99)

## More Muscle from Pocket Screw Joints

### Kreg HD Pocket Screw Jig

There are times when bigger is better. Kreg's HD (Heavy Duty) jig creates pocket screw joints as quickly and easily as standard-sized jigs, while increasing joint strength 50% by using larger screws. The corrosion-resistant HD screws are suited for all sorts of "2-by" projects, including furniture, fences, and trellises. The jig also provides a neat solution for those outdoor repairs that can't be fixed by a nail or deck screw.

Kreg HD Pocket Screw Jig, #154345, \$59.99



# Nonstop Dovetails

## Leigh R9 Plus Joinery System

Most template-style dovetail jigs max out where the metal ends. In contrast, Leigh's latest jig can relocate from one pair of registration plates to the next, enabling you to rout dovetails or box joints in any width. With the three plates that come with the kit, you can join boards up to about 18" wide. Additional plates are available for wider joints.

The R9 sets up for cutting through-dovetails and box joints more intuitively than Leigh's adjustable, fingered jigs. Although it does not do variable-width or half-blind dovetails, the R9 employs the same elliptically-shaped router bushing (E-bushing) that enables you to fine-tune a joint's fit with a simple twist.



Leigh R9 Plus Joinery System,  
#153668, \$159.00



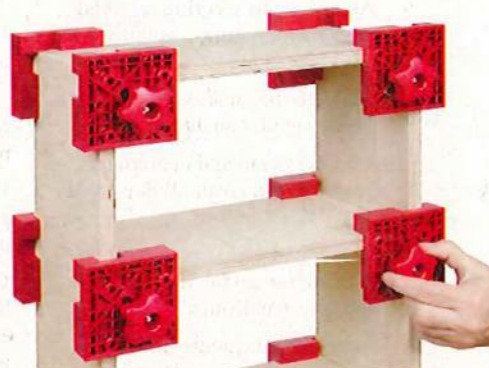
Woodpeckers BC4-M2 Box  
Clamps (Pair), #153667, \$36.99

# Two Ways to Spray

## Earlex SprayStation Gemini HVLP Sprayer

Like other HVLP guns, the Gemini's paint cup can serve as the fluid reservoir to finish furniture, cabinets, and various shop projects. But what makes this system special is the secondary pump that can deliver undoctored latex paint straight from the can to the gun. Simply replace the cup with the system's 13'-long feeder hose, set a gallon of latex paint in the base unit, and you're set to efficiently spray doors, trim, and other architectural work without stopping for constant refills. Compare the cost of the system with a professional painter, and this gun can pay for itself on Day One. After that, all your shop and home finishing chores are all gravy.

Earlex SprayStation  
Gemini HVLP Sprayer,  
#154515, \$269.99



# Corner Clincher

## Woodpeckers BC4-M2 Box Clamps

Capable of providing continuous, consistent clamping pressure in less space than an extra set of hands requires, Woodpeckers' 4" box clamps might be even better than a real-life workshop helper. The glass-reinforced polycarbonate clamp utilizes a tapered wedge clamping mechanism that simultaneously pushes the mating materials down and inward with just a few turns of the knob. The clamp can handle stock ranging from 1/4" to 1" thick. ■





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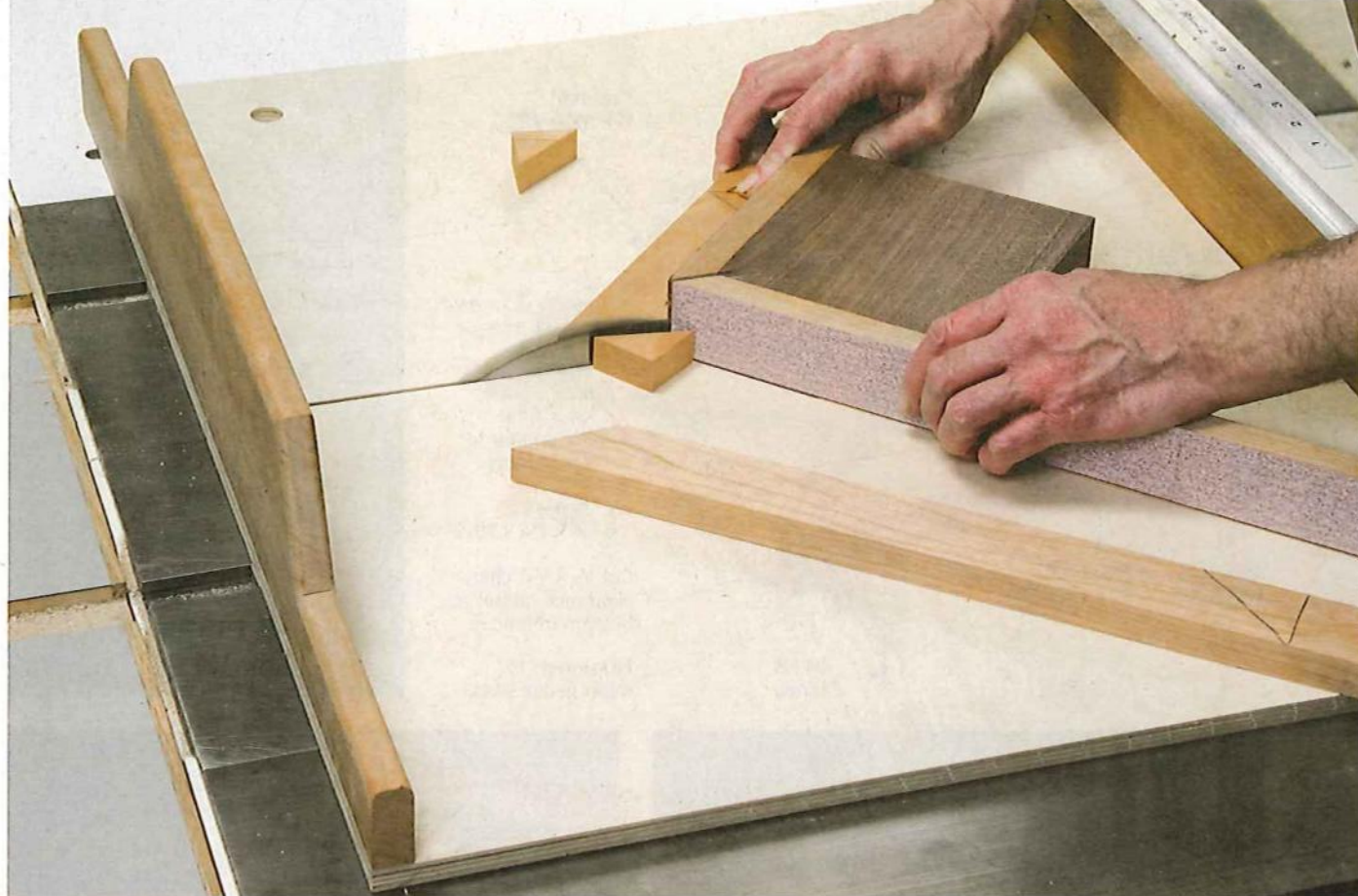
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# Tablesaw Miter Sled

*Cut perfect pairs that add up to square.*

By Paul Anthony

Overall dimensions: 28"w x 23½"d x 5"h

If you have ever tried cutting miters on the tablesaw using a stock miter gauge, you know how dicey it can be to get accurate 45° cuts. And if a cut is off by even a degree, the error doubles when the mitered piece is paired with its mate, creating a “square” corner that is anything but. Miters cut this way often have to be trued afterward, typically using a hand plane and shooting board.

Fortunately, there’s an easier way: using this dedicated miter sled. The jig is foolproof due to its two fixed fences which are set squarely to each other

and at 45° to the blade. Just position the mating workpieces against the adjacent fences in their assembled relationship for perfect 90° frame miter joints every time. The rails at the front and rear edges keep the sled panel flat, which is important to prevent twisted frames. I used 9-ply ½"-thick hardwood plywood for its stability.

If you’re willing to invest an hour or two building this sled, the time will be paid back in spades with no-fuss miter cuts that are ready to go right off the saw.

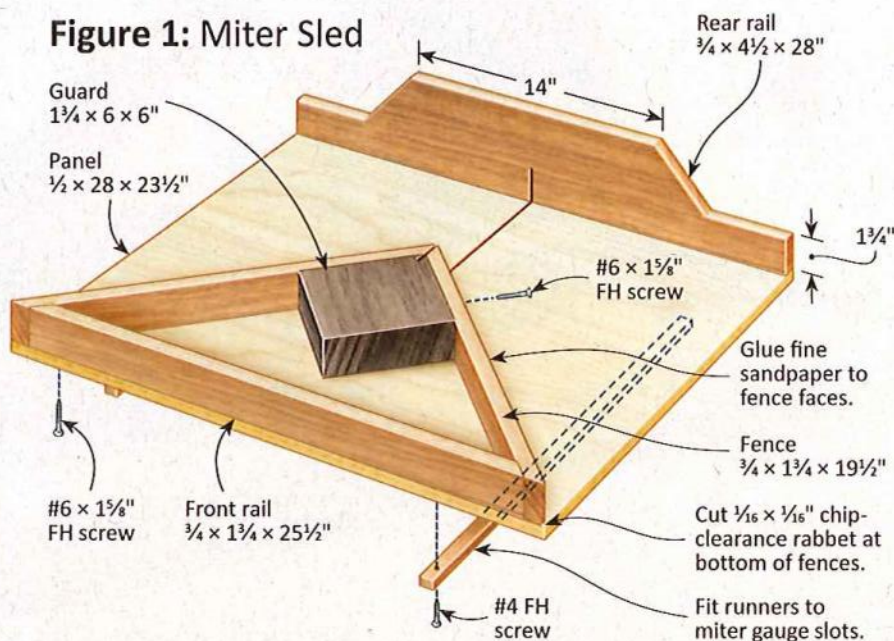
## Make the parts

**1** Cut the parts as shown in **Figure 1**, dressing everything straight, flat, and square. The runners should slide easily in your saw’s miter gauge slots, but with no side-to-side play. Make them ⅛" thinner than the slot depth so they won’t drag on the bottom. To reduce weight, shape the rear rail, rounding its top edges for comfort.

**2** Miter the ends of each fence at 45°, and then cut a ⅛" x ⅛" chip-clearance rabbet into the bottom edge of each face.

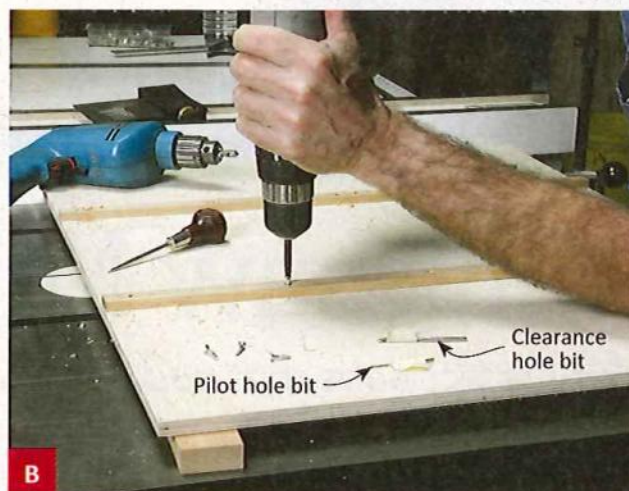


**Figure 1: Miter Sled**



## Using The Sled

This sled allows you to miter the ends of frame pieces as wide as 6". The beauty of the design is that as long as the fences are mounted at precisely 90° to each other, your miters will be perfect every time, even if the fences don't meet the blade at exactly 45°. Beginning with workpieces squarely cut to final length, orient them on the sled in their final assembly orientation, and then saw the miters.



**3** From solid stock, saw the guard block absolutely square to ensure that the fences will attach to it at exactly 90°.

## Fit the runners

**1** Place the runners in their slots, shimming them flush to the

tabletop. Mark for the saw kerf at the center of the panel. With your rip fence against the panel, align the cutline with the blade teeth, and lock the fence in place to register the panel's location.

**2** Mark the runner centerlines from rear to front across the panel, and then drive a few small nails through the panel into the runners, leaving the heads proud for easy removal later (**Photo A**).

**3** Overturn the panel, and attach the runners with countersunk flathead screws (**Photo B**). Then remove the nails.

**4** Test-fit the runners in their slots, trimming their

edges with a shoulder plane, cabinet scraper, or sandpaper as necessary until the sled slides easily without wobble.

## Attach the guard block, fences, and rails

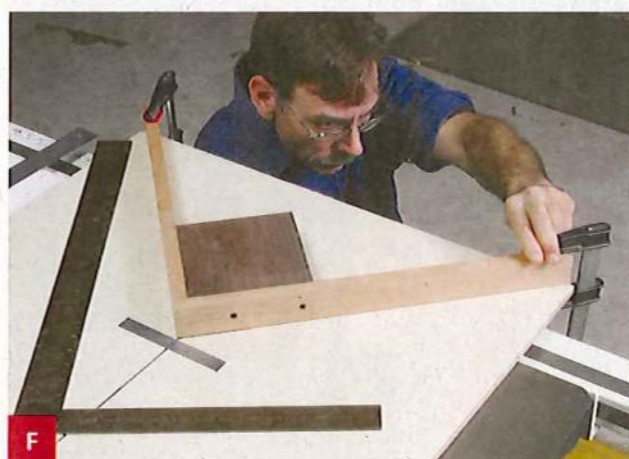
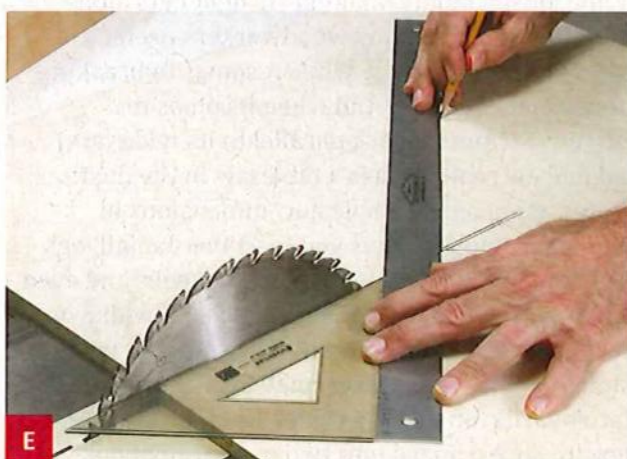
**1** Clamp the fences to the guard block on a flat surface and drill and countersink for #6 x 1 5/8" screws, avoiding the blade path (**Photo C**). Then glue and screw the parts together.

**2** Lay the fence/block assembly in place on the sled, and mark where its nose intersects the sled's center line. Then saw the panel to that point (**Photo D**).

## Tip Alert

To fit runners, first scrub the sides of your table slots with a carpenter's pencil, and then push the sled back and forth. The graphite will indicate any high spots on the runner edges.





**3** With the saw unplugged, raise the blade to full height and place a 45° triangle against the blade body. Extend an accurate straightedge from the triangle to your layout line, and continue the line outward (Photo E).

**4** Align the fence assembly to the extended lines with the nose centered on the panel kerf, and clamp the assembly in place (Photo F).

**5** Overturn the sled and attach the fence/block assembly with countersunk #6 × 1½" flathead screws, avoiding the blade path. Also fit the front rail, and screw it and the rear rail to the panel (Photo G).

**6** With the blade raised a couple inches, saw through the rear rail and into only the front ends of the fence. (It's okay if the blade doesn't perfectly



bisect the center of the fence miter.) Finish up by applying fine sandpaper to the fence faces to prevent workpiece slippage. Make sure to keep it above the chip clearance rabbet. I used spray adhesive, after masking off the surrounding areas. ■

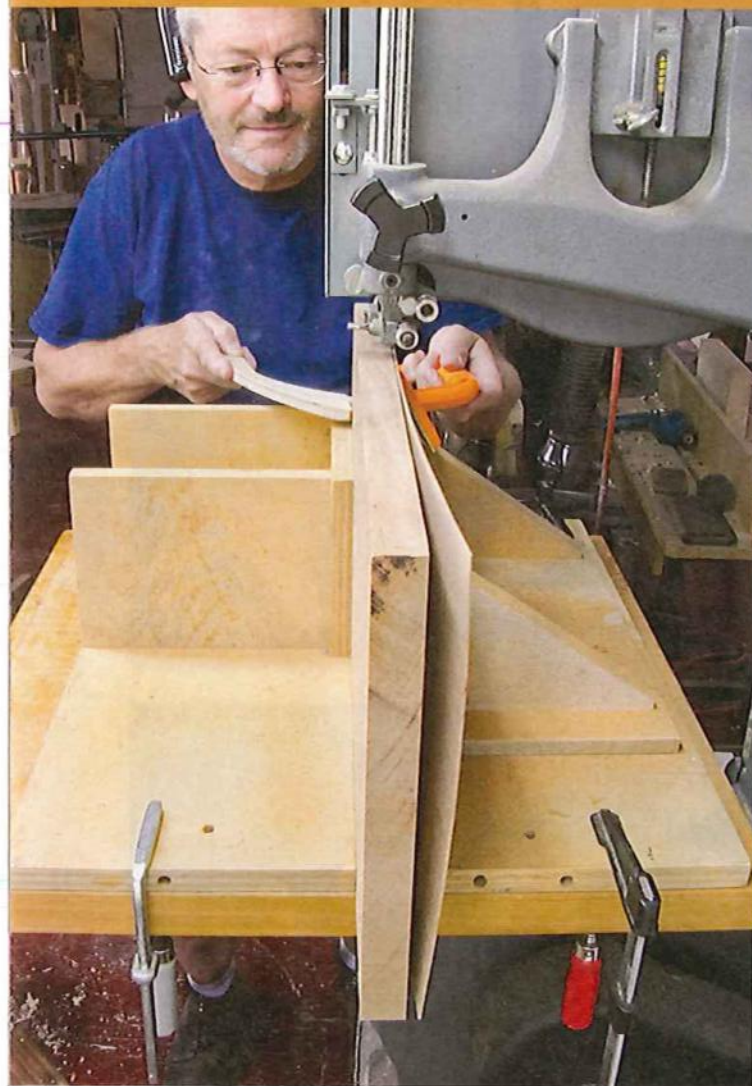
**About Our Author**  
Senior editor Paul Anthony is the author of *Taunton's Complete Illustrated Guide to Tablesaws*.



# Resawing Basics

*The thick and thin of slicing wood*

By David Munkittrick



**W**oodworkers who pigeonhole the bandsaw as a curve cutter are barely scratching the surface of what this machine can do. It also does a fine job of ripping—making straight cuts along the grain. In fact, many woodworkers prefer a bandsaw to a tablesaw when it comes to breaking down rough lumber. And when it comes to *resawing* (ripping stock parallel to its wide face) a bandsaw really leaves a tablesaw in the dust.

Resawing opens whole new dimensions in woodworking. It allows you to convert small logs into lumber, create book-matched panels, and even slice your own veneer. In this article I'll walk you through these basic operations, beginning with a simple way to rough-saw small logs and branches into boards for small projects. Next, I'll show you how to slice a board into two beautifully book-matched pieces for use as door panels or other symmetrically patterned stock. Finally, we'll climb to the pinnacle of resawing technique and see how to saw custom veneer. Along the way I'll show you how to tune your saw for peak performance and discuss what to look for in a resaw blade.

You don't need a large bandsaw for this work. I resaw on my 1983 vintage ½-HP Delta Rockwell 14" machine, which is equipped with an aftermarket riser kit to increase the cutting capacity from 6" to 12". I secure a plywood auxiliary table to the stock saw table to better support resawing of long pieces.

## Install the proper blade

It is critical to use a blade designed specifically for resawing. Look for a 3- or 4-TPI (teeth per inch) blade with a 5° to 10° positive hook tooth configuration. Its deep gullets clear sawdust from a wide ripcut, while the hooked teeth make for an aggressive cut.

Choose a wide blade—typically ½" to ¾" for a 14" saw. If your saw will accept a wider blade, use it. Blade thickness generally ranges from .022" to .035" for bandsaws 17" and less. Good resaw blades can cost \$40 or more. I treat mine like my best suit: that is, I bring it out only

for special occasions (resawing, not weddings). Always use a sharp blade and keep it clean, as built-up pitch can seriously downgrade its performance. A few squirts with a commercially available blade cleaner and a quick scrub with an old toothbrush will do the job.



# Setting up the saw

Before you make your first cut with that new blade, follow this basic four-step setup to get your saw in peak running condition.

## 1 Adjust the blade tension.

Instead of depending on your saw's tension gauge—which will only get you in the ballpark—use this “flutter test” to arrive at the proper blade tension. First, adjust the tracking to center the blade on the wheel, and then initially tension the blade using the saw's gauge. Close the doors, raise the upper guide post all the way, and retract all blade guides (including thrust bearings) completely clear of the blade. Turn the saw on and inspect the blade for flutter, or side-to-side movement. If none is apparent, gradually reduce the tension until flutter appears. Then increase tension until it disappears again. Finally, increase the tension by giving the knob an additional  $\frac{1}{4}$  turn.

## 2 Adjust the height of the guide post.

Adjust the guide post to position the upper guides within  $\frac{1}{2}$ " of the top of the workpiece. For logs and other stock of irregular height, make sure there's enough clearance at the highest point on the work. If your saw is outfitted with a riser kit like mine, make sure the aftermarket section of the guard completely covers its share of the blade.

## 3 Adjust the guides.

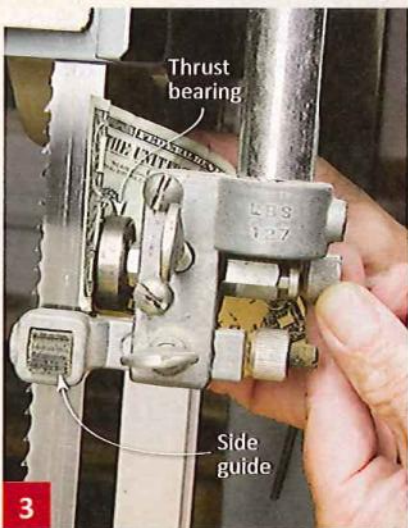
For proper blade control, the guides above and below the table need to be set directly against



Release tension until the running blade flutters. Then reintroduce tension until the flutter disappears.



For maximum blade stability and safety, adjust the upper guide post to within  $\frac{1}{2}$ " of the stock.



A dollar bill can be used as a spacer to set guides a few thousandths of an inch from the blade.

the blade or very close to it. First, set the thrust bearings about .004" behind the blade. As for the side guides, roller bearings should be pressed lightly against the blade, as should graphite impregnated guide blocks (Cool Blocks). Steel and ceramic guide blocks should be set about .004" from the blade. After setting the distance from the sides of the blade, adjust the edge of the guides to sit just aft of the blade gullets.



Check that the table is square to the blade and, if necessary, adjust the table angle.

## 4 Square the table to the blade.

Before every new operation, check that the table is square to the blade, and make sure that the table trunnions are solidly locked in place.

Now, armed with a new blade and a well-tuned saw, you're ready for some serious resawing. What follows are three basic resaw techniques from big and crude to fine and delicate.



# Logs to lumber

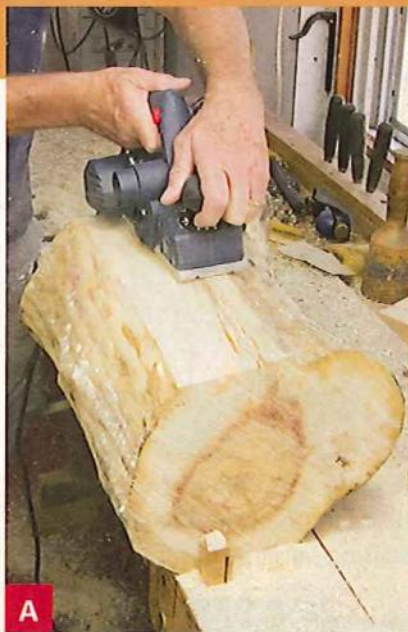
Milling a log into lumber starts by establishing a flat face to ride against the table. Never try to bandsaw a raw log freehand, as it can roll, twisting and possibly breaking the blade.

To create an initial bearing surface, I use a handheld planer. The flat needn't be perfect, just wide and flat enough to provide stable footing for planing a flat on the opposite edge. After you have established this first flat, flip the log over and cut the opposing flat approximately parallel to the first (**Photo A**). Don't worry about precision here. Just eyeball the parallelism. The aim is to plane the secondary flat wide enough that it doesn't rock, but sits flat on your bandsaw table for stable sawing.

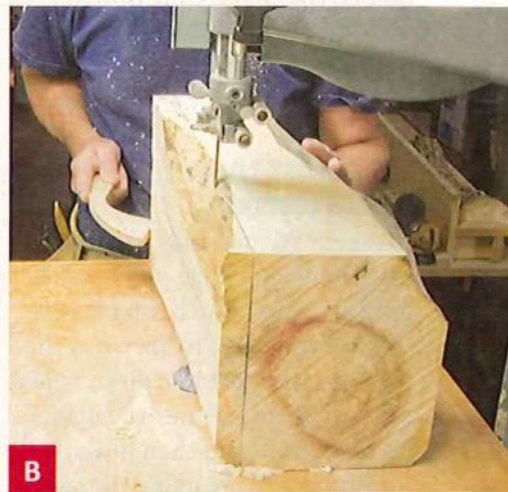
Load the log on your saw, and shape it into roughly square form by trimming the bark from the perimeter. Because this is just rough work, I don't bother with a fence or cutline here; I simply eyeball these cuts. However, you can temporarily tack a wide, straight-edged piece of plywood to the top of the log to serve as a guide if you want a straighter cut.

After roughly squaring the log, use a straightedge to lay out your first board near one of the edges. (With unseasoned logs, I usually aim for a rough-sawn thickness of about  $1\frac{1}{8}$ " in order to ultimately produce  $\frac{3}{4}$ "-thick finished boards. The difference allows enough extra material for drying and dressing.)

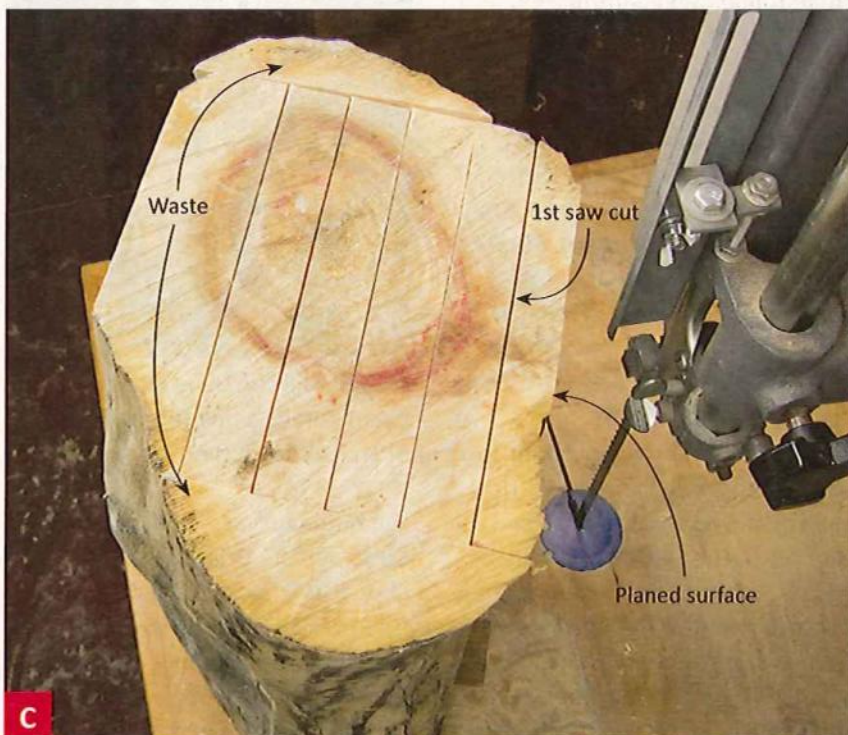
Saw to the cutline, as shown in **Photo B**. Feed the log steadily and as quickly as you can without bogging down the saw. As you



**A** Use a handheld planer to establish a flat bearing surface for stability on the saw table during cutting.



**B** Saw to the cutline for the first board, eyeballing any sections of the cut that include residual bark.



**C** The end view of this reconstituted log reveals that it yielded four very nice 8"-wide 4/4 boards.

near the end of a cut, either use a pushstick to keep your hand a safe distance from the blade, or else go around the saw and

pull the stock from the other end to complete the cut. Then keep cutting boards until you run out of log (**Photo C**).



# Book-Matching

*Book-matching* involves resawing a board and then opening the two pieces like a book to reveal a nearly symmetrical pattern, like the one shown in the photo below. This can create a spectacular mirrored appearance, especially when using a board with interesting grain patterns or unusual figure.

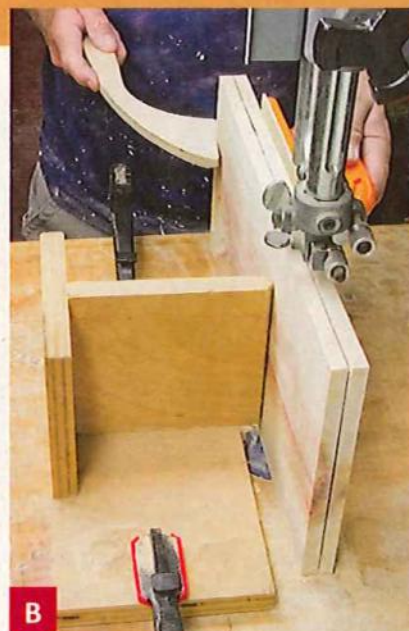
Prepare your stock by jointing and planing it to true up all four surfaces. Then mark your cutline. I typically use a shop-made marking gauge outfitted with a pencil, as shown in **Photo A**, but a pencil held against the end of a combination square blade works fine. Aim to resaw your stock at least  $\frac{1}{16}$ " thicker than the desired finished panel thickness to allow enough material to plane away the saw marks. Halving the  $\frac{3}{4}$ "-thick board shown here will yield two pieces comfortably thick enough to make a single  $\frac{1}{4}$ "-thick panel when edge-glued together and dressed to finished thickness.

Next, set your rip fence. I used a single-point fence here because it's easy to set up, and even if I veer off the cutline a bit, enough meat will remain on each resulting panel to dress it to  $\frac{1}{4}$ " thick. Use your marked stock to offset the nose of the



**A** A shop-made marking gauge outfitted with a pencil scribes a dark, clearly visible line.

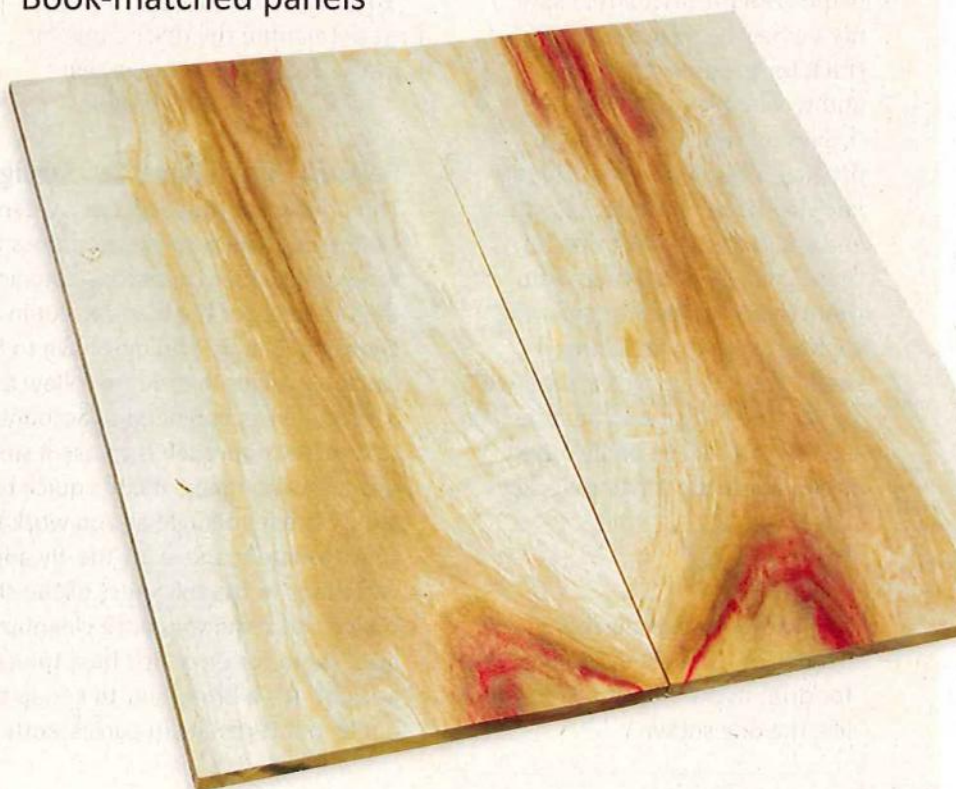
fence the desired distance from the blade. Locate the point of the nose slightly in front of



**B** This single-point fence allows pivoting the workpiece to stay on the cutline as you saw.

the teeth so you can pivot the stock ahead of the cut. Then saw to your line (**Photo B**).

## Book-matched panels

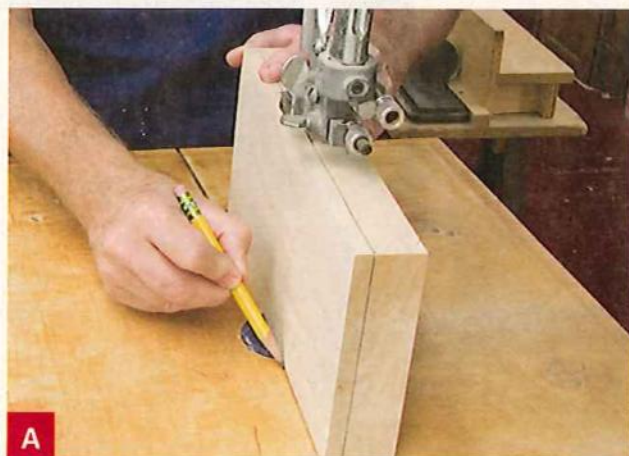


### Tip Alert

For accuracy and sure-footed feeding, always dress the fence-bearing face and the table-bearing edges of a workpiece straight and square to each other before resawing.



# Sawing veneer



After freehand sawing to a straight line on a test board, trace along the edge of the board onto the table to note the drift angle.



Use a bevel gauge and straightedge to position the primary fence for sawing to the desired veneer thickness with respect to the blade's drift angle.

I like sawing my own veneer because it enables me to make the most of special boards and, compared to the cost of solid wood, using veneer saves money. Because the paper-thin commercial stuff is too frail for my taste, I saw my veneer between  $\frac{1}{16}$ " to  $\frac{1}{8}$ " thick for greater durability and worry-free sanding.

Sawing veneer requires a precise setup. Use a fresh blade, and dress the workpiece straight and square in preparation for these cuts. Because there's no room in a thin slice for even the slightest blade wandering, a single point fence won't work well. You'll need to use a straight fence, setting it up to the blade's drift angle. While most woodworkers

use a single straight fence for sawing veneer, I employ a second fence to hold the board firmly against the primary fence. All that's left is for the operator to push the board through the chute between the two fences.

To set up your primary fence, first determine the drift angle by taking a freehand cut on a test

board marked with a straight line. When you've found the angle at which the blade tracks without wandering, hold the board in place while you stop the saw and mark the angle on the table (Photo A). Use a bevel gauge and straightedge to register this angle (Photo B). Set your primary fence at this drift angle

## Fences: Single Point vs. Straight

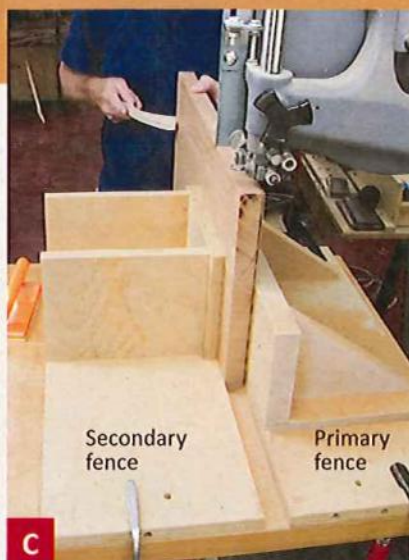
The primary purpose of a resaw fence is to keep the board vertical to ensure consistent thickness across the width of the piece. However, when resawing, you also need to account for *blade drift*, which is the tendency of the blade to cut in a particular direction of its own choosing. That is, you may have to feed your board at an angle to the table edges in order to follow a straight cutline. When setting up a resaw fence, you need to account for this particular *drift angle*.

Another approach is to use a single-point fence, like the one shown on page 35. It's quick to set up and allows you to adjust the feed angle as you work to keep the cut on track. Unfortunately, these on-the-fly adjustments can cause slight variations in the thickness of the slice, reducing yield from a board and requiring more cleanup of the pieces. When there's little room for error, it's best to use a straight fence as shown at right. It's a bit fussier to set up to accommodate the drift angle, but it results in consistently cleaner, straighter cuts.

## Tip Alert

If your stock bandsaw fence cannot be adequately adjusted for drift, use a shop-made fence like the one shown.





With the workpiece lightly squeezed between the fences, feed at a slow, steady rate.

and at the proper distance from the blade to achieve your desired thickness of cut. Clamp the fence solidly to the table.

Now, here's my secret for perfect veneer: with the workpiece tight against the primary fence, clamp a secondary fence in place and squeeze the work lightly between the two. Don't overdo it; the board should slide through with just slight resistance. The leading end of the secondary fence should sit just forward of the blade teeth. Now, with both fences secured, make your first cut, as shown in **Photo C**.

Afterward, run the board (not the veneer) through your planer. Take a cut that's light enough to just remove the saw marks. (The planed surface allows easier feeding and produces a veneer slice with one smooth face.) Now reset the secondary fence, and then make your subsequent cut. Repeat the steps above until you have the veneer you need. ■

## Resawn veneer panels



## Safety Tips

Staying safe at the bandsaw primarily involves keeping your hands protected from the blade. Always follow these cardinal rules for working in the safety zone:

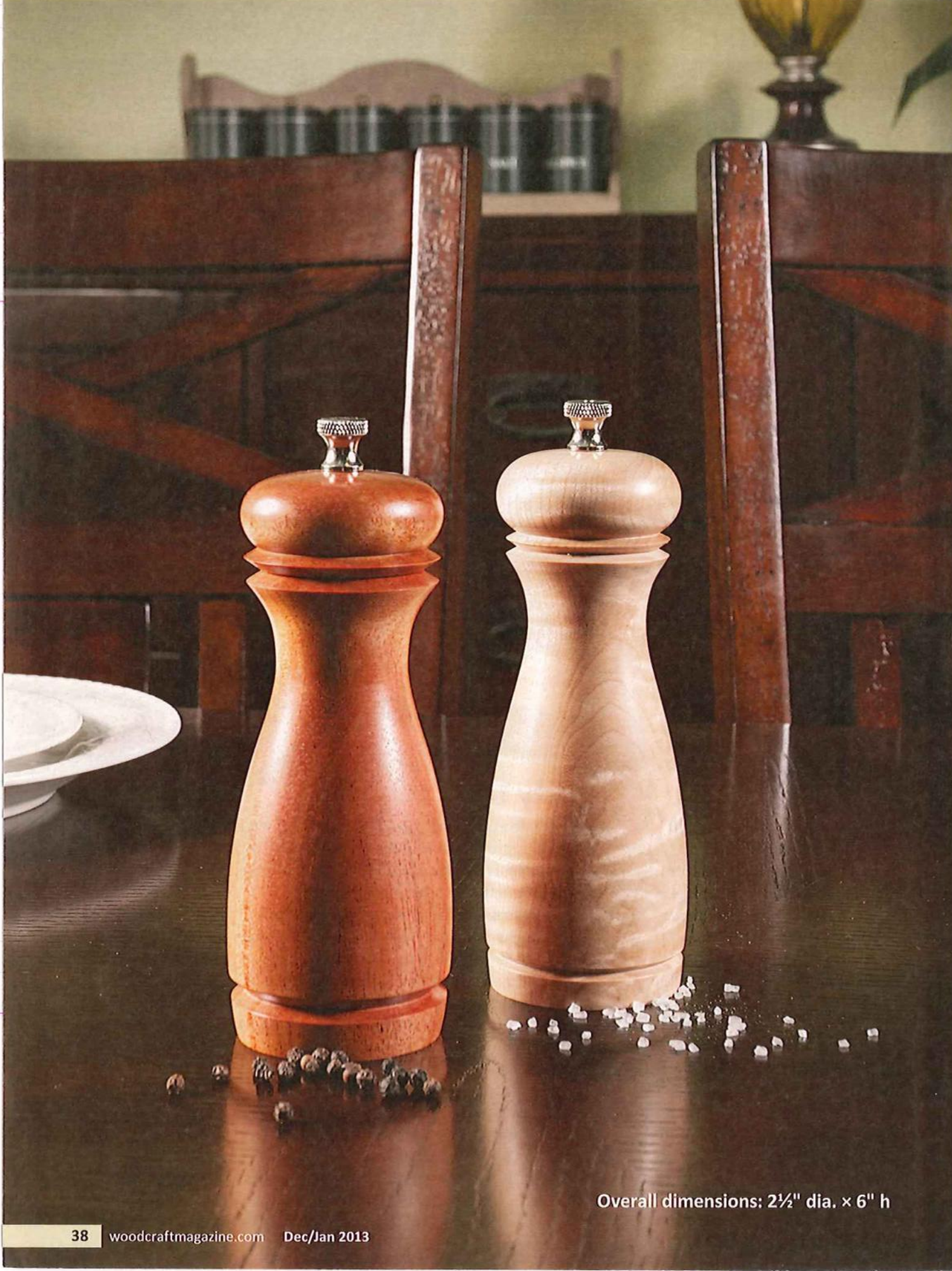
- Make sure the blade is well guarded.
- Avoid excessive feed pressure, which generally indicates a dull blade. Switching to a sharp blade offers safer control and produces better cuts.
- Always keep a pushstick at hand, and use it to complete your cuts.
- Use a pushblock to hold work against the fence. A wandering blade can bow and suddenly pop out the side of a board.



## About Our Author

David Munkittrick has been designing and building furniture for almost 30 years. He lives with his wife and three children on an old farmstead in western Wisconsin, where he has also set up his shop.





Overall dimensions: 2½" dia. x 6" h



# Graceful Pepper and Salt Mills

*Pleasing looks meet functionality in this tabletop duo.*

By Byron Young

**F**ew woodturnings see as much everyday use in the home as salt and pepper mills. Aesthetically, you want a pair that features graceful lines and feels good in the hand. My design incorporates smooth flowing curves, V-grooves that hide the base/top seam, and a rounded top that's easy to grasp and twist. Here, because the stainless steel mechanism for the pepper mill and the ceramic mechanism for the sea salt mills are similar, you can follow the same turning instructions and tapered design to shape both. To differentiate between the two, I chose contrasting woods:

African mahogany for the pepper mill and lighter colored figured maple for the salt mill.

While mill grinding mechanisms come in several sizes up to 14", I decided on the ones suited for 6"-high turnings. (See the **Convenience-Plus Buying Guide**.) You'll need a 3 × 3 × 6¾" blank for each mill. I advise ordering the mechanisms in advance to have on hand during the turning process. Consider ordering extras if you're in the gift-giving spirit. Now, gather up the needed tools below and boring bits and let's get turning. It should take three to four hours to make and finish one mill.

## Recommended Tools



1) 1" roughing gouge 2) ¼" deep-fluted bowl gouge 3) ⅜" spindle gouge 4) ⅜" parting tool 5) ⅛" parting tool 6) ½" skew

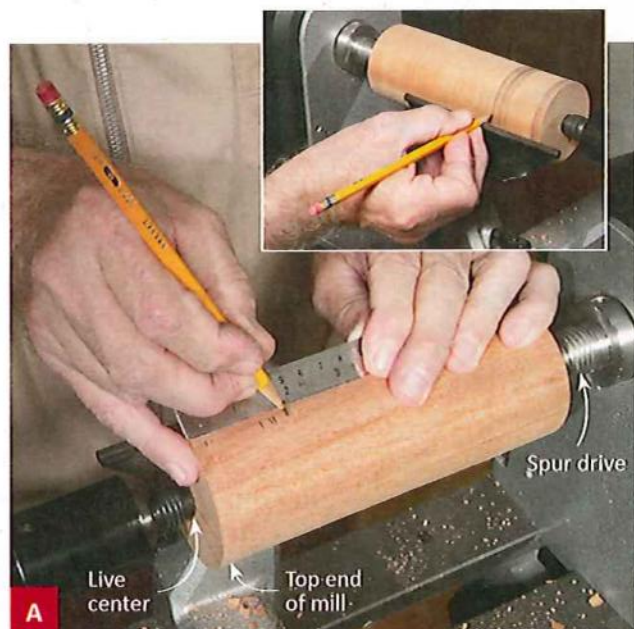
## Prepare the mill base and top

*Note: Unless otherwise indicated, run the lathe at 1,800 to 2,000 rpm for all turning operations.*

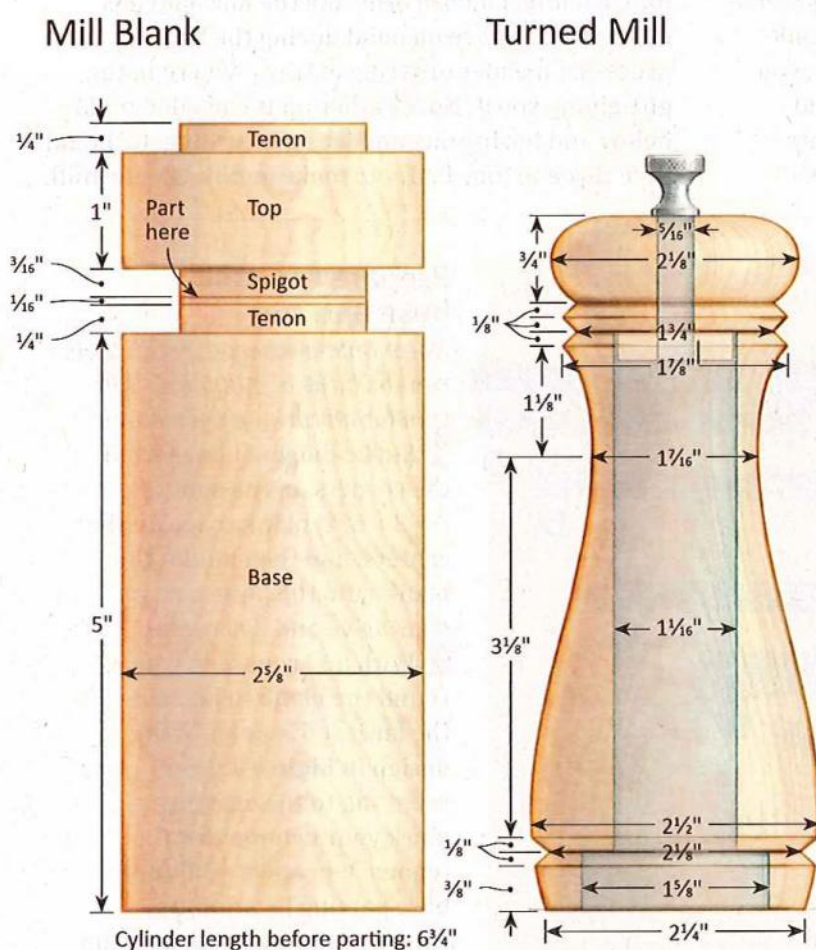
**1** Strike diagonal lines from the corners on the ends of a 3 × 3 × 6¾" blank to locate the centers, and then mount the blank onto the lathe using a spur drive and live center.

**2** With a 1" roughing gouge, round the blank to just over the largest diameter of the design in **Figure 1**. Now, referring to the drawing, mark your cylinder for the tenons, V-grooves, and top/base parting location, as shown in **Photo A**. Turn on the lathe, and continue the marks around the cylinder, as shown in **Photo A Inset**. I make the parting line wider and darker.





**Figure 1: Pepper and Salt Mill Elevations**



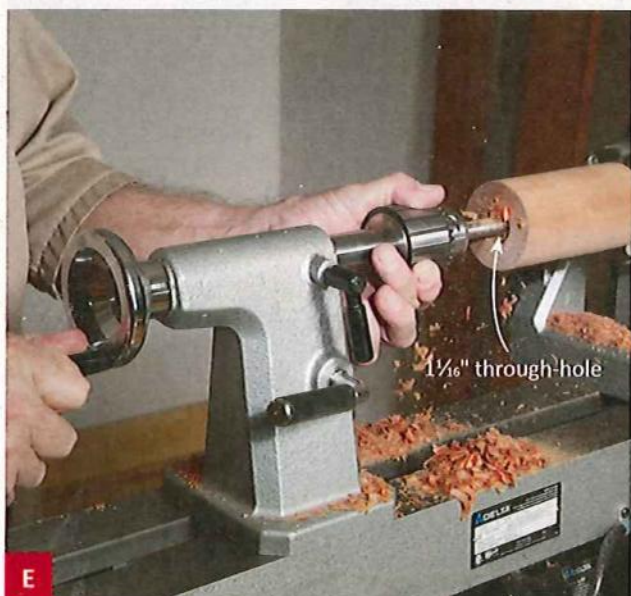
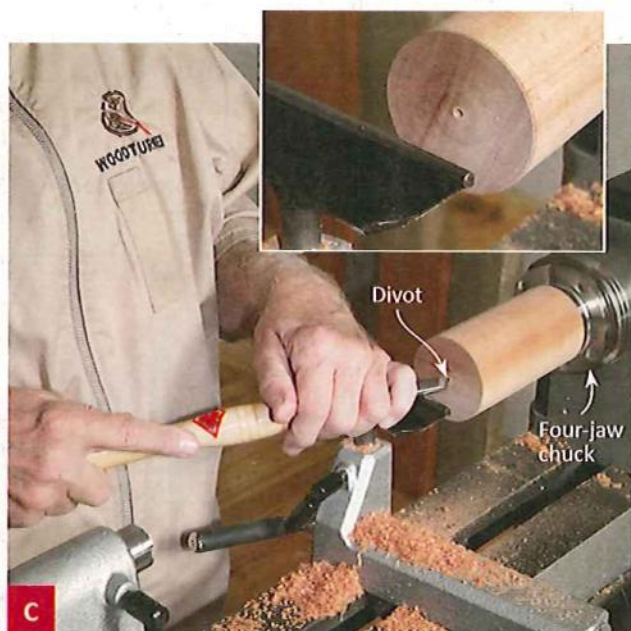
**3** With a  $\frac{3}{16}$ " parting tool, turn the tenon for the mill base and top, where shown in **Figure 1**, to fit into a four-jaw scroll chuck. Switch to a  $\frac{1}{16}$ " parting tool, and part off the top end of the blank in two operations for safety. First, part down to  $\frac{1}{2}$ " diameter where marked on the cylinder. Next, stop the lathe and finish the parting with a handsaw (**Photo B**). Slide the tailstock out of the way, and remove both parts.

### Bore the mill base and top blanks

**1** Install a four-jaw scroll chuck, and tighten the jaws on the base blank tenon. (Make sure it is secure as there will be significant pressure applied during the drilling process.) Move the tool rest around to the end of the blank and just below its center. Clean up the bottom end of the base blank with a  $\frac{1}{4}$ " gouge. Now, with the toe of a  $\frac{1}{2}$ " skew, divot the end, as shown in **Photo C**, to establish its center and prepare the blank for drilling.

**2** Outfit your tailstock with a Jacobs chuck and  $1\frac{1}{2}$ " Forstner





bit. With the bit's spur centered in the dimple, and using a speed of around 1,200 rpm, advance the bit into the spinning base and bore a 1/2"-deep recess, as shown in **Photo D**.

**3** Install a 1 1/8" bit in the Jacobs chuck. Now, bore a little beyond halfway through the base blank at 1,200 rpm, using quick, short cuts to avoid overheating the bit and burning the wood. Rid the hole of debris often by backing the bit out. Stop drilling once the hole exceeds the halfway point in the base

blank. (I made a mark on the bit's shaft to help me determine when I had bored more than halfway in the cylinder.)

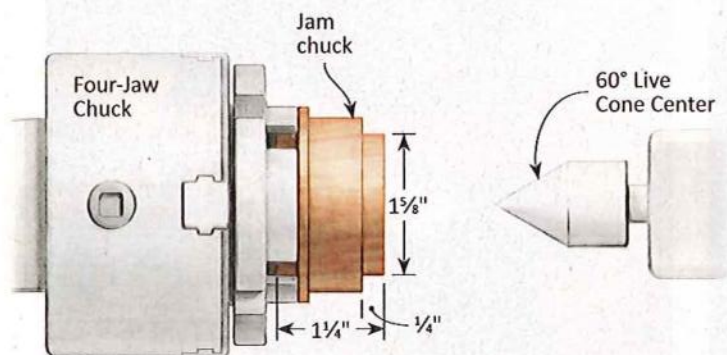
**4** To complete the through-hole, swap the ends of the base blank. To secure it, switch to 35mm bowl jaws and expand them inside the 1/2"-deep x 1 5/8" recess. Reduce the speed to 700 rpm, and remove the tenon at the top end of the base with a 1/4" bowl gouge. Dimple the end with a 1/2" skew, and then continue drilling the through-hole in the mill base, as shown in **Photo E**.

**5** Install the original jaws in your four-jaw chuck, and then mount the top end of the top blank. Install a 5/16" brad-point bit in the Jacobs chuck, and bore a centered hole through the top blank.

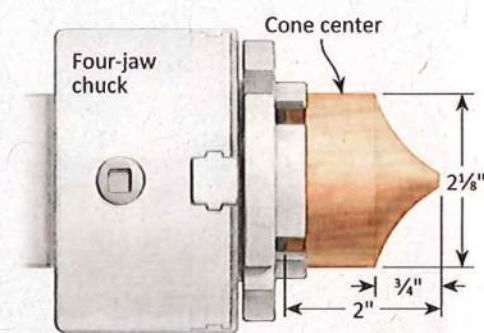
**6** Now, increasing the speed to around 1,800 rpm, turn a spigot to fit snugly in the through-hole in the top end of the base (about 1 1/8" diameter), as shown in **Photo F**. (Later, you'll turn the spigot to a 1" diameter to fit with slight clearance in the through-hole for friction-free twisting of the top when grinding.)



**Figure 2: Jam Chuck**



**Figure 3: Shop-Made Cone Center**



### Turn the mill parts to final shape

- 1** Make a 1 5/8"-diameter jam chuck to fit into the 1/2 × 1 5/8" recess at base blank bottom end (Figure 2). Mount it in the four-jaw chuck. Install a live cone center in the tailstock. Now, fit the cylindrical blanks for the base and top together, and place the assembly between centers on the lathe.
- 2** Make a copy of the full-sized template at right, and transfer the depth dimensions on it for a ready reference. Now, adhere it to a piece of cardboard, and cut it to shape. Use it as needed to check the shape as to turn your mill. Next, using the dimensions on the template or in Figure 1, mark the narrowest diameters on the mill assembly.
- 3** With the 3/16" parting tool and caliper, establish the depth of the large tapered cove, where marked and as shown in Photo G.



**4** Use a  $\frac{1}{4}$ " deep-fluted gouge to form the tapered shape of the mill, removing the waste between the bead locations. Always move the tool tip downhill during the shaping, as shown in **Photo H**.

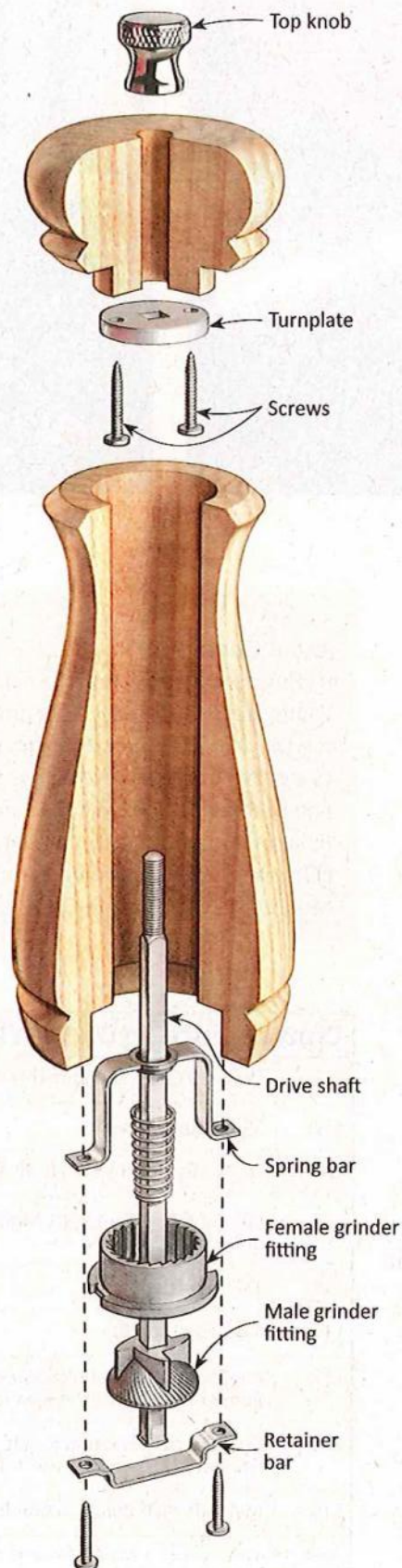
**5** With a  $\frac{1}{2}$ " skew, make the finer cuts to form the V-groove-like coves and beads, as shown in **Photo I**. Here, strive for a depth of between  $\frac{1}{8}$ " to  $\frac{3}{16}$ ", keeping the toe of the tool tip down. Lift the handle slowly as you enter the turning, rotating it from left to right or vice-versa, depending on the V-wall you are shaping. Take care to not round over the bead. You want a V shape around the edges as well. Finish-sand from 150 through 800 grit.

**6** Switch to a  $\frac{3}{8}$ " spindle gouge to round the top to shape. Work to establish a 1" top height from the top/base joint to the top end of the top. Stop the lathe and remove the top.

**7** Secure the base with the live cone center at the top end and a jam chuck at the bottom end. Now, use the  $\frac{1}{2}$ " skew to form the V-groove-like cove at the bottom of the base, as described in **Step 5**. Also taper the bottom end of the base to final shape. Now, sand the base from 150- through 800-grit sandpaper. Stop the lathe.

**8** With the lathe stopped, apply finish to the base. I wiped on a generous coating of Mylands High Build Friction Polish. Then, with the lathe running at around 1,800 rpm, I pressed a cotton cloth to the surface,

**Figure 4: Mill Exploded View**

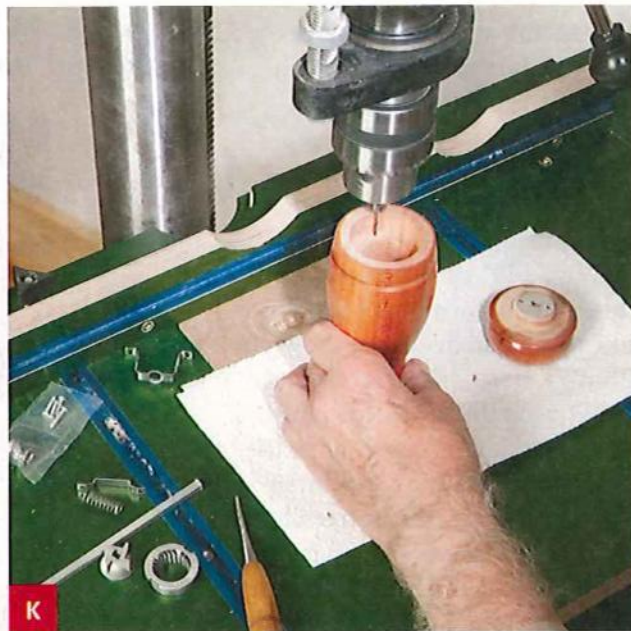


Full-Sized Template

### Tip Alert

Use a piece of paper towel over the cone to prevent it from discoloring the wood.





raising a long-lasting sheen. (See page 45 for alternative woodturning finishes.)

Remove the base and chuck.

**9** Make the shop-made wood cone center, as shown in **Figure 3**. Now, place the top between cone centers and reduce the spigot's diameter slightly with a  $\frac{3}{16}$ " parting tool, as shown in **Photo J**. Test the fit to ensure that the spigot fits with a slight clearance in the base through-hole.

**10** Replace the cone centers with the four-jaw chuck and 35mm jaws. Now secure the top's spigot in the jaws. With a  $\frac{1}{4}$ " bowl gouge, finish shaping the top. Repeat the sanding and finishing processes described in **Step 8** to complete the top.

**11** At the drill press, use a  $\frac{1}{16}$ " bit to drill the needed  $\frac{3}{4}$ "-deep pilot holes for the mechanism screws, where shown in **Figure 4** and as shown in **Photo K**. Finally, drive the screws and assemble the grinding mill components. Secure the mill top to the base with the knob. Now, fill the mill with peppercorns or sea salt crystals, depending on the mechanism. ■

#### About Our Author

Having turned for some 40 years, Byron Young is the current vice president of the Mountaineer Woodturners in Cedar Lakes, West Virginia. He enjoys turning and selling a variety of items such as finials, Christmas ornaments, and animal calls. He also does turning demos at the Mountain State Art and Craft Fair.

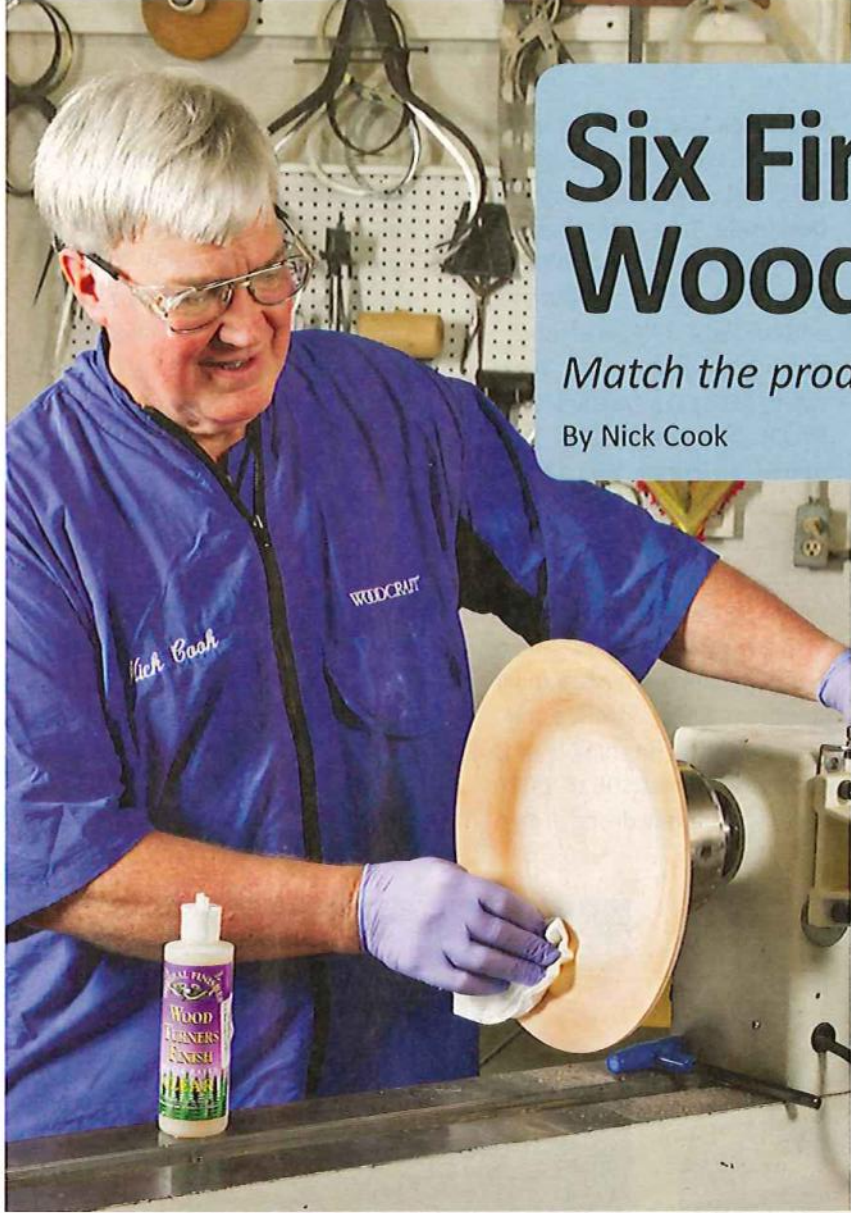


#### Convenience-PLUS BUYING GUIDE

|                             |                                                                       |                     |                    |
|-----------------------------|-----------------------------------------------------------------------|---------------------|--------------------|
| <input type="checkbox"/> 1. | Nova G3 Chuck without Threaded insert                                 | #147016             | \$118.99           |
| <input type="checkbox"/> 2. | 35mm Bowl Jaws                                                        | #146214             | \$44.99            |
| <input type="checkbox"/> 3. | $\frac{1}{2}$ " Keyless Jacobs Chuck, #2 Morse Taper                  | #152678             | \$45.19            |
| <input type="checkbox"/> 4. | 60° Cone Live Center, #1 Morse Taper or #2 Morse Taper                | #149169,<br>#149168 | \$23.69<br>\$23.69 |
| <input type="checkbox"/> 5. | 1 $\frac{1}{8}$ " Forstner Bit                                        | #125940             | \$11.59            |
| <input type="checkbox"/> 6. | 1 $\frac{1}{16}$ " Forstner Bit                                       | #147884             | \$8.99             |
| <input type="checkbox"/> 7. | Chef Specialties Stainless Steel Pepper Grinder Mechanism for 6" Mill | #126638             | \$16.99            |
| <input type="checkbox"/> 8. | Chef Specialties Ceramic Salt Grinder Mechanism for 6" Mill           | #151325             | \$11.99            |
| <input type="checkbox"/> 9. | Mylands High Build Friction Polish, 500 ml.                           | #813772             | \$19.99            |

Above items are available at Woodcraft stores, [woodcraft.com](http://woodcraft.com) or by calling (800) 225-1153. Prices subject to change without notice.





# Six Finishes for Woodturners

*Match the products with the projects.*

By Nick Cook

**T**here is no one finish suitable for all of your woodturning projects. So where do you start when selecting the right one? The criteria for choosing the most appropriate finish for your turning include the type of wood, the project's size and intended use, durability, drying time, desired sheen (satin or gloss), ease of application, solvent or water-based, cleanup, repairability, and whether the finish can be used with food. While that's a mouthful, I've simplified the selection process by focusing on six finishes that pretty much cover the gamut from small daily-use turnings to furniture parts to purely decorative pieces.

Before you even consider the appropriate finish, however, it's critical that you prepare the turning's surface properly because no finish will cover or hide torn grain, tool marks, or sanding scratches. To combat any "surprises," check out "Sanding Savvy" at left.

## Sanding Savvy

To achieve the desired result with any turning finish, keep these sanding pointers in mind:

- Always use fresh sandpaper, and throw it away as soon as it gets dull.
- Provide raked/side lighting on the sanding surface to pick up any scratches and other defects.
- Sand your project through all the grits up to 320 or 400 grit without skipping any. (Some projects, such as pens and bottle stoppers may need finer sanding.)
- When you think you are finished sanding, sand one more time with the grain (and the lathe off) to remove scratches across the grain. Basically, fine sanding scratches add tooth to the surface for all but oil finishes to stick to it.
- Avoid causing heat when sanding, or you'll burnish the surface, making it difficult for a finish to adhere and penetrate.
- Clean the surface of all of your turnings with a paper towel before applying finish.

## Worthy Alternatives

While I cover several finish products here, be aware that many other quality finish products exist. For an expanded look at products that can substitute for those featured, go to [woodcraftmagazine.com/onlineextras](http://woodcraftmagazine.com/onlineextras)



# Finish 1

## Seal the deal with CA

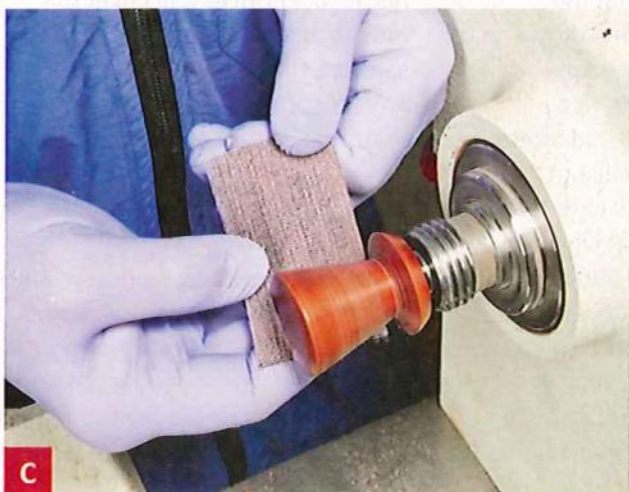
CA (cyanoacrylate) glues have proven ideal for small projects for quite some time. Recent developments have made some CAs more user-friendly and less likely to streak. The thinner viscosity of the Stick Fast CA Wood Finishing Kit makes it easier to apply. Combined with the abrasive mesh and polishing compound (included in the kit), the multistep application process lets you produce a hard, durable finish quickly. And while the CA dries to a satin finish, it can be buffed to a high gloss. Be sure to heed the safety precautions mentioned at right whenever working with CA.

**Best Uses:** CAs are especially good for pens, wine stoppers, game calls, and other small projects.

**Downside:** Take care when applying CA finish. Use nitrile gloves to keep CA off your skin and to prevent fingers from sticking to paper towels. Wear safety glasses or face shield. Finally, ventilate the area as fumes can irritate. Buy a bottle of super solvent, just in case.

**Application:** The Stick Fast system contains thin CA finish, medium CA finish, aerosol CA activator, 400-grit sanding mesh, satin polish and gloss polish. Similar to other CAs (by Satellite and Titebond), the finishing is simple. With the lathe at 300 to 1,000 rpm, apply a few drops of thin

CA to your project with a paper towel (Photo A). Then spray an aerosol mist of CA activator to cure the finish instantly and seal the wood (Photo B). Sand the project lightly with abrasive mesh before applying medium CA finish (Photo C). Using the same technique, apply three to five coats of medium CA finish, misting with CA activator after each application. There's no need to sand between coats of medium CA finish. However, the surface should be sanded with a sanding mesh to a uniform dullness or satin appearance. Then, apply a small amount of satin CA polish with a paper towel (Photo D), and buff until dry. Repeat with gloss polish for a gloss finish.





## Finish 2

### Let it shine with water-based

**General Finishes Water-Based Wood Turners Finish** produces a rich amber tone that can be buffed to either a satin sheen or high gloss. It is food-safe, durable, and acid resistant. A water/urethane product, it's safe to work with and can be applied with a paper towel, brush, or sprayer. It applies easily and cleans up with water. More good news: it lets you achieve an attractive surface with only one coat for sealing and successive coats for a deeper luster. It is not seen as a filler for open-grain woods.

**Best Uses:** Use this finish on salad bowls, platters, salt and pepper mills, and other utility items needing a durable finish.

**Downside:** Longer drying time means that you need to wait a bit to apply multiple coats.

**Application:** With the lathe off, apply water-based finish with paper towels (**Photo A**) or brush it on with a foam brush. When applying multiple coats, the first application will dry in 30 to 45 minutes. Apply additional coats in 30 minutes. The final finish requires five to seven days to cure to be food-safe. Use a flannel/cotton buffing wheel with carnauba wax to bring out the satin sheen following the final coat (**Photo B**).



## Finish 3

### 3-step lacquer and wax

Gloss spray lacquer produces a glass-clear coating that goes on quickly. I prefer spraying over brushing. Here, I use Deft Clear Wood Finish. It dries fast and lets you reapply it in 30 minutes, with no sanding in between.

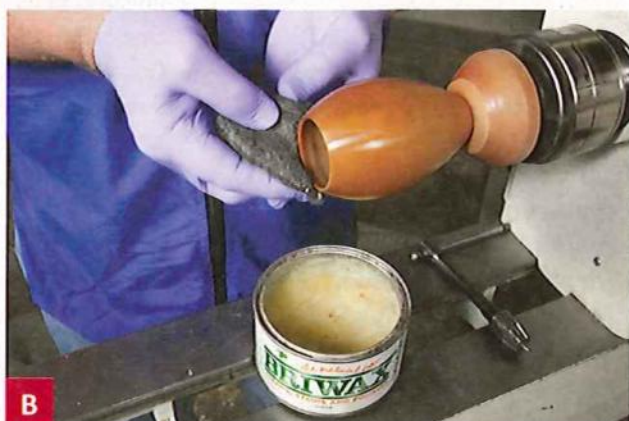
I like gloss lacquer over satin for building depth and because it contains fewer solids. Plus, you can repair it with a wax remover, light sanding, and another coat.

**Best Uses:** Consider lacquer for small and large decorative turnings—vessels and other showy pieces. I don't recommend it for utility ware in contact with food.

**Downside:** Lacquer is flammable, and its fumes can be a problem. Spray only in well-ventilated areas and away from heat sources.

**Application:** Sand small hollow forms and similar decorative turnings through 600-grit sandpaper before applying as many as five coats of gloss

lacquer. With the lathe turned off, clean the turning, and then hold the can's nozzle about 6" to 8" from the surface and spray (**Photo A**). Rotate the turning for an even coat all around. Once dry, use #0000 steel wool with clear Briwax to level the surface (**Photo B**). Buffing with a buffing wheel and carnauba wax will bring out the shine. For a satin finish, skip the steel wool and wax and apply a final coat of satin lacquer finish.





## Finish 4

### Strike it rich with oil

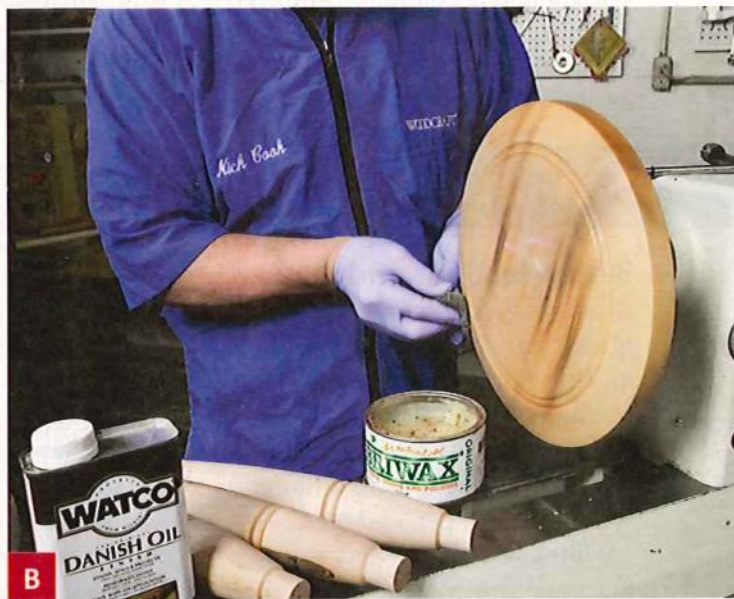
Watco Penetrating Danish Oil, Natural, is a blend of boiled linseed oil and varnish that penetrates, seals, and adds a low luster. While it comes in several shades, such as natural, walnut, cherry, and golden oak, I find that natural is the obvious choice for all woods. It applies easily, though it takes time to achieve the desired result. The final finish is relatively soft, somewhat durable, and repairs quickly. And while it dries slowly, it produces a warm amber tone.

**Best Uses:** Watco Penetrating Danish Oil works well for general turnings and furniture such as the stool legs and seat shown below.

**Downside:** Watco Penetrating Danish Oil dries slowly, typically taking several hours. In fact, I like to wait 24 hours before reapplication. Take care to properly dispose of your oily paper towels to avoid a spontaneous combustion fire. The product results in a satin sheen only.

**Application:** With the lathe off, wipe on a full wet coat of oil using a paper towel (Photo A),

and allow it to penetrate into the wood for 15 to 20 minutes. Then wipe off the excess and burnish it into the wood with a dry paper towel. This is not the same as burnishing raw wood with sandpaper. Allow the coat to dry 24 hours or more, and then reapply to build three to five coats over the course of several days or weeks. When the piece is completely cured (again, 24 hours after the final coat), apply a coat of wax using #0000 steel wool (Photo B). Finally, buff the wood surfaces to achieve a pleasing satin sheen.



## Finish 5

### Speedy friction finishes

One popular category used to finish the pepper and salt mills on page 38 includes friction finishes such as Hut Crystal Coat and Mylands High Build Friction Polish. When correctly applied, the end result is a glowing high-gloss, one-coat finish executed in record time.

**Best Uses:** Apply friction finish to pens and other small turnings.

**Downside:** Because of its alcohol base, oils from your hands can degrade a friction finish over time. Other ingredients include petroleum distillates, shellac, and waxes, making the finish highly flammable. Its fumes can irritate. To be safe, ventilate the work area, and stay away from any heat source.

**Application:** Sand surfaces to 600 grit or higher. Then, shake the bottle and add a few drops to a paper towel. With the lathe turned off, wipe the friction finish on the turning. Then, with the turned lathe on, hold a paper towel to the turning with moderate pressure.





## Finish 6

### Super-simple mineral oil

While mineral oil is a by-product from distilled petroleum, it remains one of the best food-safe finishes for utility items, and it's cheap! (I found a 16 oz. bottle at a local pharmacy for \$5.19.) It is colorless, odorless, tasteless, and totally inert. It goes on easily, can be applied on or off the lathe, and is easy to repair. Add beeswax to it to add more protection and sheen, but not on art objects. It collects dust. Reapply as needed.

**Best Uses:** I use the mineral oil and wax combo for honey dippers, spurtles (stirring sticks), salad bowls, baby rattles, and other utility items.

**Downside:** This finish offers only low water resistance. It needs regular recoats and can collect dust. Expect a low luster only.

**Application:** Apply mineral oil with the lathe running at a low speed (**Photo A**). (A plastic pump bottle like the ones used for liquid soap makes a great dispenser for your oil.) Use paper

towels to make a pad, and pump a squirt or two of oil on it. Blot the oil to avoid a puddle on the pad as the spinning object will sling the liquid onto you and everything in the shop.

As you apply the oil, burnish it into the spinning wood. The addition of beeswax over the mineral oil adds luster and a little more protection. Then take a block of beeswax and apply it directly (**Photo B**). Use a dry paper towel to buff the surface to a soft, fragrant finish.



### About Our Author

Nick Cook is a full-time professional turner whose home and commercial shop are located in Marietta, Georgia. In addition to turning anything from bottle stoppers to porch posts and everything

in between, he is one of the founders of the American Association of Woodturners (AAW). He's also an established turning teacher who travels the country conducting woodturning workshops.



### Convenience-PLUS BUYING GUIDE

|                              |                                                                                                                                                             |         |         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|
| <input type="checkbox"/> 1.  | Stick Fast CA Wood Finishing Kit, including 1 oz. Thin CA Finish, 2.5 oz. Medium CA Finish, 3 oz. CA Activator, Satin and Gloss Polishes, 400-grit Abrasive | #851687 | \$29.99 |
| <input type="checkbox"/> 2.  | Large Powder Free Nitrile Gloves, 6 mil., 100 gloves/box                                                                                                    | #152808 | \$15.99 |
| <input type="checkbox"/> 3.  | General Finishes Water-Based Wood Turners Finish, 8 oz.                                                                                                     | #153331 | \$11.99 |
| <input type="checkbox"/> 4.  | Beall Wood Buff System, 3 Flannel/Cotton Buffing Wheels, Quick-Change Adapter, (3) Buffing Compounds                                                        | #141069 | \$76.99 |
| <input type="checkbox"/> 5.  | Carnauba Wax, 1/2 lb. block                                                                                                                                 | #08A75  | \$21.99 |
| <input type="checkbox"/> 6.  | Deft Clear Wood Finish, 12 oz.                                                                                                                              | #143196 | \$9.99  |
| <input type="checkbox"/> 7.  | Elephant Steel Wool, #0000, 16 pads                                                                                                                         | #153855 | \$5.99  |
| <input type="checkbox"/> 8.  | Briwax, Clear, 16 oz.                                                                                                                                       | #85C25  | \$18.99 |
| <input type="checkbox"/> 9.  | Watco Penetrating Danish Oil, Natural, 1 pt.                                                                                                                | #123976 | \$11.50 |
| <input type="checkbox"/> 10. | Beeswax, 1/2 lb. block                                                                                                                                      | #08A71  | \$14.99 |
| <input type="checkbox"/> 11. | Hut Crystal Coat, 6 oz.                                                                                                                                     | #141049 | \$14.99 |
| <input type="checkbox"/> 12. | Mylands High Build Friction Polish, 500 ml.                                                                                                                 | #813772 | \$19.99 |

Above items are available at Woodcraft stores, [woodcraft.com](http://woodcraft.com) or by calling (800) 225-1153. Prices subject to change without notice.



# All-American Pie Safe

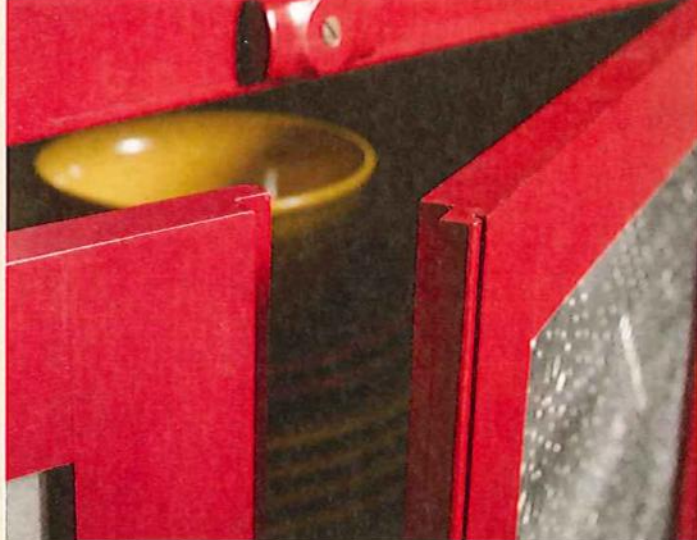
*A classic case made simple with modern joinery*

By Craig Bentzley



Overall dimensions:  
41 $\frac{3}{4}$ "w x 17"d x 55 $\frac{3}{8}$ "h





In the days before refrigeration and window screens, homemakers needed a place to safely house their freshly baked goods. Featuring doors with pierced tin panels, pie safes allowed air to circulate so that baked goods could cool while keeping pesky insects at bay. Today, folks don't need to use these cabinets to protect their favorite desserts, but pie safes still serve as a nice focal point. These handsome cabinets are perfect for storing condiments, canned goods, cookbooks, and collectibles.

A product of necessity, most pie safes were cobbled together by rural woodworkers, not skilled cabinetmakers. In that vein, I based this pie safe on an antique piece, but simplified the joinery to put it within the reach of anyone with a few tools and a modicum of woodworking skills.

It's worth pointing out that the pierced tin panels on most antique pie safes point outward. The assumption was that the razor-sharp edges provided a deterrent for insects trying to enter the safe. Today, the

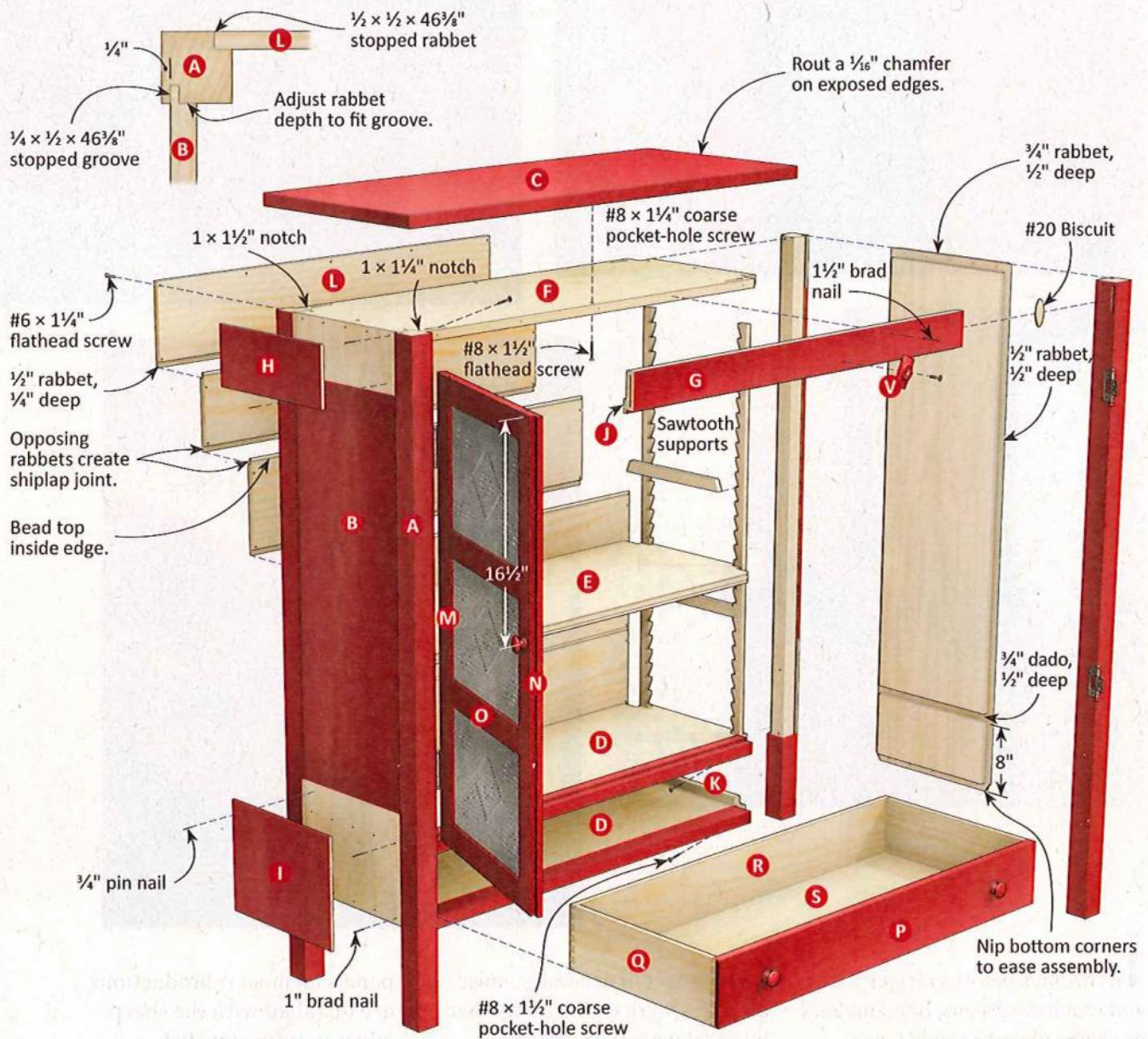
panels on most reproductions are installed with the sharp edges pointing inward.

*Note: Punching your own tins is a relatively simple, albeit time-consuming, process. To speed things along, I bought pre-punched panels. If you want to try your hand at punching tin, go to page 59 for additional information about the process and shop-made punching tools; then go to page 76 for a simple pattern you can use.*

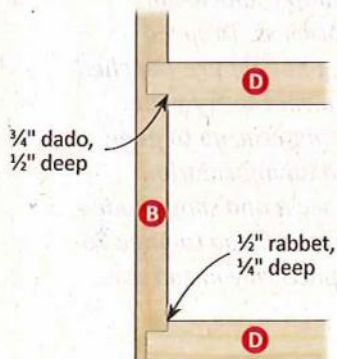


## Figure 1: Pie Safe Overall Exploded View

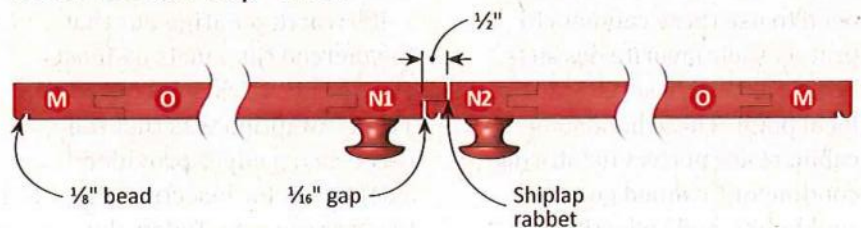
### Back Leg Detail Top View



### Divider Detail Front View

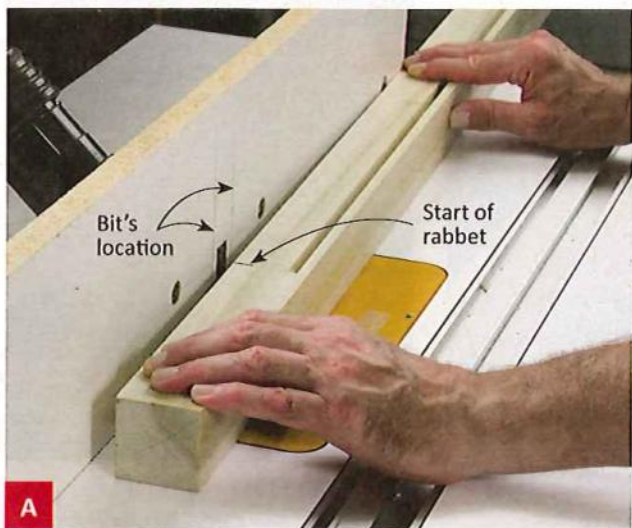


### Door Detail Top View



Note: Attach sawtooth supports with glue and pin nails.





Relying on the marks on the fence and rear right leg, plunge the rear right leg against the bit to start the cut.



Start the rabbet for the rear left leg on the end, and stop at your layout marks. Use a chisel to square the stopped ends.

## Start with the sides

**1** From 8/4 stock, mill the leg posts to 2" square. Trim the legs (A) to final length.

*Note: Since this piece will be painted, you can laminate the leg posts from thinner stock. If you do this, give the posts a few days to dry so that the residual moisture completely evaporates before machining to final dimension. Otherwise, telltale lamination lines may appear after assembly.*

**2** Mark the tops of the legs (A) for ease of orientation/identification.

**3** Referring to Figure 1, lay out the grooves and the rabbets

on each leg. Using a table-mounted router and 1/4"-wide slot cutter bit, cut 1/2"-deep  $\times$  46 3/8"-long stopped grooves for the side panels (B).

*Note: Because of feed direction, half of these stopped slots will start in the leg. Mark the location of the slot on the leg and the bit's location on your router fence. Using the lines as a guide, plunge the leg into the bit, and rout the groove.*

**4** Using a rabbeting bit, rout the 1/2"  $\times$  1/2"  $\times$  46 3/8"-long stopped rabbets on the rear of the back leg posts (A) for the back boards (L),

as shown in Photos A and B. As you did with the grooves, draw lines on the legs and fence to guide your mid-leg starts and stops.

**5** Square up the rounded ends of the rabbets with a chisel.

**6** Cut the plywood sides (B) to the dimensions shown on the Cut List.

**7** Use a table-mounted router to cut the 1/2"  $\times$  1/2"-deep rabbets on the long inside-facing edges of both sides (B).

*Note: Plywood thickness can vary. Make a test cut on a scrap piece before routing the side. Adjust the cutting depth to fit the width of the leg groove.*

Next, adjust the fence and cut the 3/4"  $\times$  1/2"-deep rabbets on the top and bottom edges.

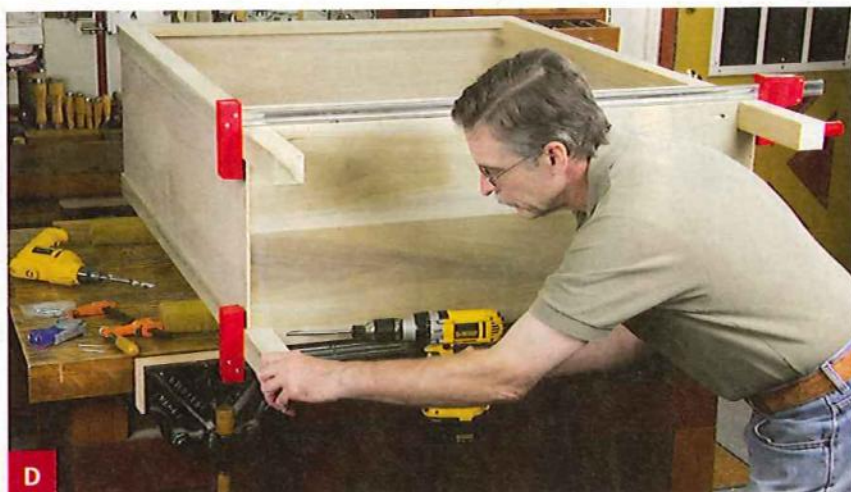
**8** Trim the sharp corners off the bottoms of the sides with a handsaw (Figure 1). (This cut ensures that the sides [B] fit into the stopped grooves on the leg [A].)

**9** Lay the sides in open-book fashion, and clamp a straightedge across both panels. Using a handheld router, cut the 3/4"  $\times$  1/2"-deep dados for the top divider (D), where shown in Figure 1 and Photo C.



Routing both sides at once saves time and ensures that the divider dados line up. Note the trimmed bottom corners.





**D** Pull the joints together with clamps, and drive pocket screws to keep them tight. Brads and glue guarantee a rock-solid assembly.

**10** Paying attention to the proper leg orientation, glue up the side assemblies (A, B). Make sure that everything is square and that the clamps are correctly positioned so the leg posts aren't canted in or out.

### Make the rest of the case

**1** From 5/4 stock, mill the top (C), drawer dividers (D) and adjustable shelves (E) to 1" thick. Continue milling the material for the sub-top (F) and the top front rail (G) to 3/4" thick.

**2** Cut the dividers (D) and sub-top (F) to the dimensions shown on the **Cut List**. Measure, mark, and then notch the dividers and sub-top so that the ends fit around the legs.

**3** Using a table-mounted router, rout the 1/2 x 1/4"-deep rabbets along the ends of the drawer dividers (D), where shown in **Figure 1 Divider Detail**.

### Tip Alert

If you're not proficient with a handsaw or a jigsaw, the notches can be cut accurately on the tablesaw using a crosscut sled with a tall fence.

**4** Using a pocket-hole jig, drill the drawer dividers (D) and sub-top (F) adjacent to their notched corners so that they can be screwed to the legs during assembly.

**5** Dry-assemble the case to check the fit of the joints and to rehearse for the glue-up.

**6** While the case is dry-clamped, fit the top front rail (G) between the legs. Then disassemble the case, and cut the biscuit slots in the ends of the rail and in the legs (A).

### Assemble the case

**1** Install the upper divider (D) first. Apply glue in the dadoes, and position clamps across the case front and back. Check for square, drive the pocket screws, and then shoot five 1" brads across the width of each side of the shelf, where shown in **Figure 1**. Leave the clamps in place while the glue dries.

**2** Next install the top front rail (G). Apply glue in the biscuit slots, insert the biscuits in the top front rail, and then spread the top apart just enough to slip in the rail. Place a clamp across the front of the case, and pull the joints tight.



**E** Pinning the faux rails in place eliminates the need to use clamps or to wait for glue to dry.

**3** Apply glue in the rabbets for the sub-top (F) and along the front edge of the sub-top, and install. Clamp the sides to the sub-top, install the pocket screws, and then shoot five 1" brads across the width of each side (B) and into the sub-top (F). Shoot five 1 1/2" brads across the face of the top front rail (G) for extra reinforcement.

**4** Finally, install the bottom drawer divider (D). Apply glue to the rabbets, and slide the divider up from the bottom of the case. Pull the case together with clamps, and install the pocket screws, as shown in **Photo D**. Reinforce the joint with five 1" brads.

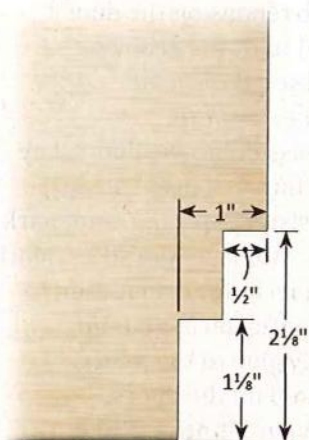
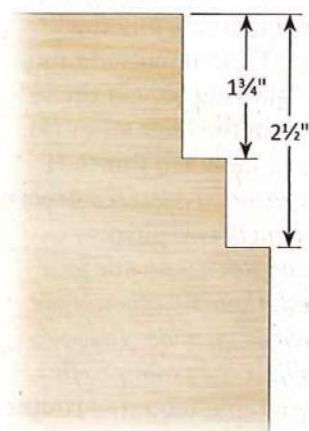
**5** Make up the faux top and bottom side rails (H, I), and attach with glue. (Since this piece will be painted, 1/4"-thick MDF is fine.) Tack them in place with 3/4" pin nails, as shown in **Photo E**.

**6** Install the sawtooth shelf system uprights in the cabinet interior using glue and 1" pin nails. Cut the shelf supports to fit.

**7** Attach the door stop strips (J) to the inside of the top front rail and the front edge of the cabinet bottom, using glue and 3/4" pin nails.



**Figure 2: Shelf Notching Template**



Place pennies between the back boards to create even gaps that allow for the wood to move in response to seasonal changes in humidity.



Using a case-tested template, notch the corners of the adjustable shelves. The ends of the shelves need some wiggle room to fit.

**8** Glue the drawer guides (K) in the drawer compartment between the front and back legs to keep the drawer on track.

**9** Sand or plane a slight ( $\frac{1}{16} \times \frac{1}{16}$ ) chamfer on all edges on the top (C). Attach the top with  $1\frac{1}{2}$ "-long flathead screws where shown.

## Install the back boards and adjustable shelves

**1** Mill the back board stock to  $\frac{1}{2}$ " thick. *Note: Old cupboards often exhibit random width boards. There is no harm in using up any extra material you have lying around.*

**2** Using a table-mounted router, cut the decorative bead on one edge of each of the back boards (L).

**3** Referring to Figure 1, use a rabbeting bit to rout the  $\frac{1}{2}$ "-wide  $\times \frac{1}{4}$ "-deep shiplap rabbets along mating edges.

**4** Cut the back boards to length, and then install them with #6  $\times 1\frac{1}{4}$ " flathead screws. Starting with the bottom board, work your way to the top of the case. Leave a  $\frac{1}{16}$ " gap between each board to allow for movement. A simple way to provide proper spacing between the boards is

to place pennies between each board, as shown in **Photo F**.

**5** Cut the adjustable shelves (E) to about  $\frac{1}{8}$ " shorter than your case's interior width.

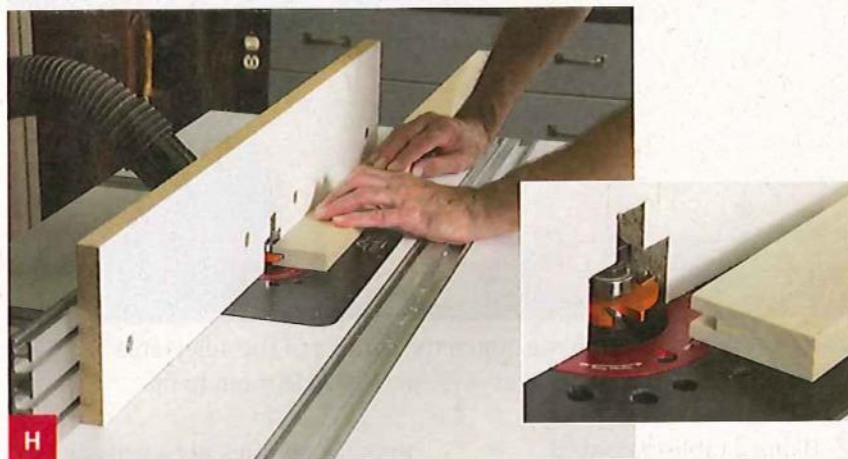
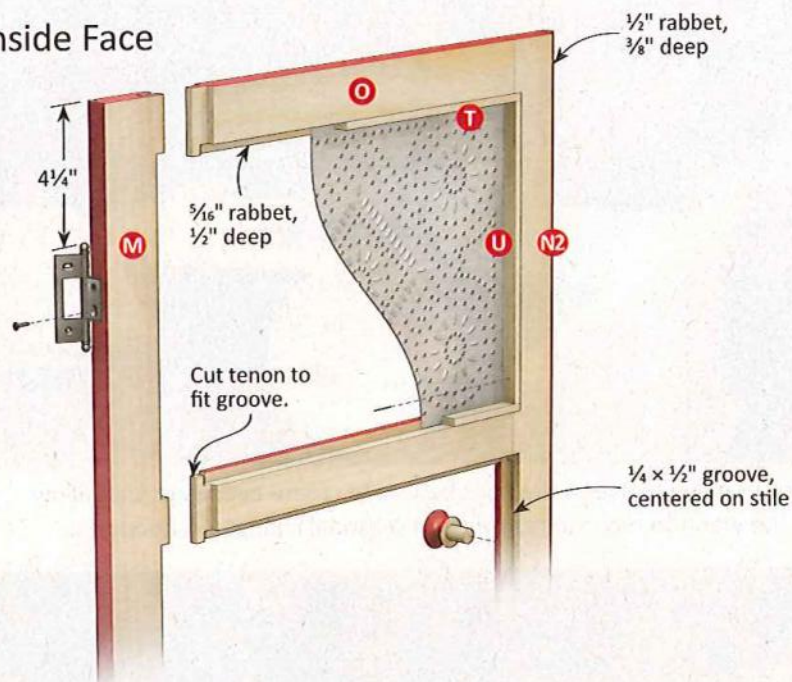
**6** Using a table-mounted router, cut the decorative beads on the front edge of each shelf.

**7** Using Figure 2, make a cardboard notching template. Check the fit of your template against your case, and add about  $\frac{1}{16}$ " clearance around the notches for easy shelf movement; then trace the notches onto each shelf. Notch the shelves, as shown in **Photo G**.



**Figure 3: Exploded View Door Detail**

Inside Face



Working off both faces, rout a centered groove on the inside edge.



Registering the door against the right-angle fence ensures a square assembly. Use additional clamps where needed to keep the door flat.

## Make the doors

- 1** Mill the door material to  $\frac{3}{4}$ " thick. Make sure that all pieces are square, flat, straight, and uniformly thick.
- 2** Using a table-mounted router and a  $\frac{1}{4}$ " slotting bit, cut the  $\frac{1}{2}$ "-deep slots in the door stiles (M, N1, N2), as shown in **Photo H**. *Note: To ensure a centered groove, I made them in two passes – feeding the stock with one face down first, then the other. If the groove winds up wider than  $\frac{1}{4}$ ", simply adjust the tenons to fit.*
- 3** Using a table-mounted router with a rabbeting bit and a backer block to prevent break-out at the end of the cut, rout the stub tenons on the door rails (O) to fit the grooves. *Note: Test-cut the joint to ensure a tight fit.*
- 4** Dry-assemble the doors. Lay out the intermediate rails (O) for consistent spacing, and mark their locations on the stiles. Mark all the pieces for orientation to avoid confusion at glue-up.
- 5** Apply glue to the joints, and clamp up the doors, as shown in **Photo I**. Make sure the intermediate rails line up with your marks.
- 6** When the glue is dry, cut the  $\frac{1}{2} \times \frac{3}{8}$ "-deep shiplap rabbets on the inside edges of the door stiles using a rabbeting bit in a table-mounted router.
- 7** Temporarily install the hinges, and fit the doors in the cabinet opening. (Aim for a  $\frac{3}{32}$ " gap on the sides and a  $\frac{1}{16}$ " gap top and bottom). Once the doors fit, remove the hinges and rout the beads on the outer edges of the door stiles (M) and along the inner edge of the right-hand door (N2), where shown in **Figure 1 Door Detail**.
- 8** Lay the doors face-down, and rout the  $\frac{5}{16} \times \frac{1}{2}$ "-deep





1/4"-thick spacers

Position strips under the door to provide clearance for the rabbeting bit. Attach them to your work surface with double-sided tape.

rabbets for the tin panels, using a handheld router with a rabbeting bit. To provide necessary clearance for the tip of the bit, I added 1/4"-thick MDF spacers, as shown in **Photo J**. Use scrap door and spacer stock to create a foot for your router's base, as shown in **Photo K**. After routing, square the corners with a sharp chisel.

### Make the drawer

**1** Mill the drawer front (P) to 3/4"-thick and the drawer sides (O) and back material

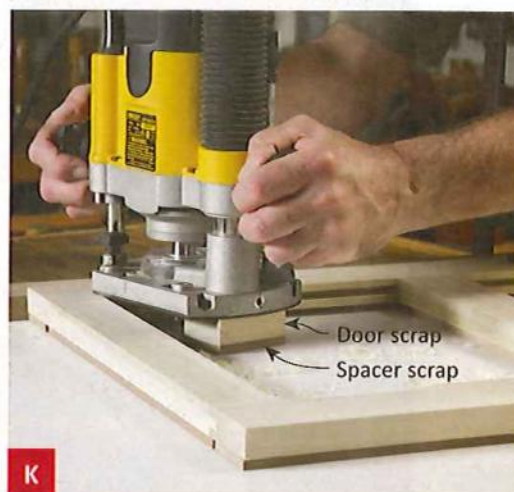
(R) to 1/2"-thick. Cut all parts to width and length, and then mark them for orientation in your dovetail jig.

Cut the 1/4 x 1/4"-deep grooves for the drawer bottom by making two passes on the tablesaw.

**2** Using a router dovetail jig, dovetail the parts as shown in **Photo L**.

**3** Cut the plywood drawer bottom (S) to fit.

**4** Dry assemble the drawer and test for fit. Glue up the drawer.



K

Tape a scrapwood foot to your router's base so that it doesn't tip when rabbeting the frame.

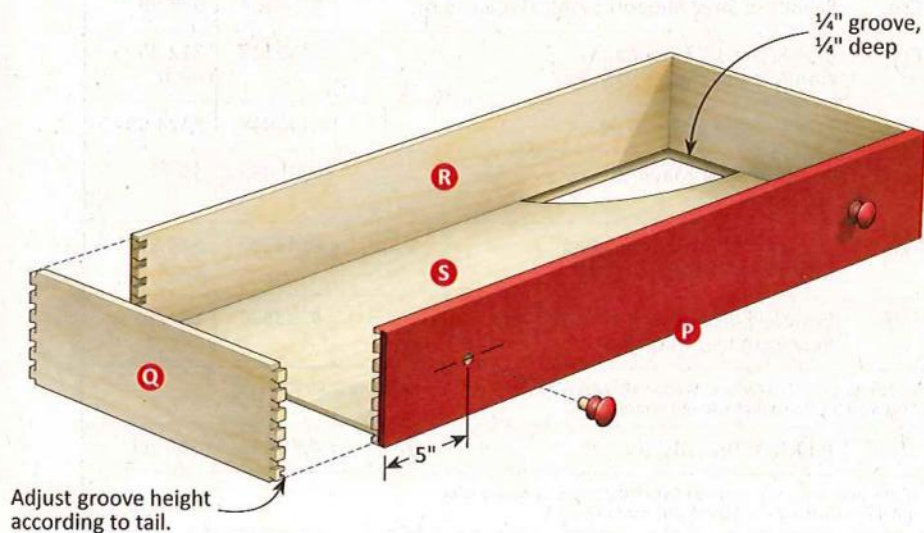
### Finish the cabinet

**1** Clean up and finish-sand all the parts, being sure to soften all sharp edges.

**2** Paint all exterior surfaces. I applied three coats of General Finishes Tuscan Red Milk Paint, sanding between coats with 320-grit sandpaper.

**3** To mimic the dull look of old milk paint, I topcoated the paint with a coat of General Finishes High-Performance Flat Water-Based Topcoat. (I also applied two coats of the clear finish on all of the

Figure 4: Drawer Detail



L

Labeling the parts and cutting the drawer bottom groove ensures proper orientation when routing.





Use clamps to keep the tins flat while you pin the retaining strips to the doors.

interior surfaces to help prevent staining and to ease cleaning.)

**4** Rip a bunch of  $\frac{1}{4} \times \frac{1}{2}$ " retaining strips (T, U), and cut them to fit.

**5** Put the tins in place, holding them and the retaining strips (T, U) in place with spring clamps. Secure the strips with  $\frac{3}{4}$ " pin nails, as shown in **Photo M**.

**6** Hang the doors and install the knobs on the doors and drawer.

**7** Whittle a turn button (V), and install it on the top front rail to keep the doors closed. (For an authentic touch, attach it to the top rail with an old slotted flathead woodscrew.) Enjoy the fruits of your labor. ■

### About Our Author

Craig Bentzley has been restoring antiques and building furniture for nearly 40 years. In addition to writing, Craig also teaches at guilds, woodworking shows, and at Woodcraft stores.



## All-American Pie Safe Cut List

|    | Part                           | Thickness       | Width              | Length               | Qty. | Mat'l |
|----|--------------------------------|-----------------|--------------------|----------------------|------|-------|
| A  | Legs                           | 2"              | 2"                 | 54 $\frac{3}{8}$ "   | 4    | P     |
| B  | Sides                          | $\frac{3}{4}$ " | 13"                | 46 $\frac{3}{8}$ "   | 2    | BP    |
| C  | Top                            | 1"              | 17"                | 41 $\frac{3}{4}$ "   | 1    | P     |
| D  | Top and bottom drawer dividers | 1"              | 15 $\frac{1}{2}$ " | 38 $\frac{3}{4}$ "   | 2    | P     |
| E  | Adjustable shelves             | 1"              | 14 $\frac{3}{4}$ " | 37 $\frac{1}{2}$ "   | 2    | P     |
| F  | Sub-top                        | $\frac{3}{4}$ " | 14 $\frac{3}{4}$ " | 38 $\frac{3}{4}$ "   | 1    | P     |
| G  | Top front rail                 | $\frac{3}{4}$ " | 2 $\frac{3}{4}$ "  | 35 $\frac{3}{4}$ "   | 1    | P     |
| H  | Faux top side rail             | $\frac{3}{4}$ " | 4 $\frac{3}{4}$ "  | 12"                  | 2    | MDF   |
| I  | Faux bottom side rail          | $\frac{3}{4}$ " | 9 $\frac{5}{8}$ "  | 12"                  | 2    | MDF   |
| J  | Upper and lower door stops     | $\frac{3}{4}$ " | 1"                 | 35 $\frac{3}{4}$ "   | 2    | P     |
| K  | Drawer guides                  | $\frac{3}{4}$ " | $\frac{3}{4}$ "    | 12"                  | 2    | P     |
| L  | Back boards                    | $\frac{1}{2}$ " | 7"                 | 36 $\frac{3}{4}$ "   | 7    | P     |
| M  | Outer door stiles              | $\frac{3}{4}$ " | 2 $\frac{5}{16}$ " | 36 $\frac{1}{2}$ "   | 2    | P     |
| N1 | Inner door stile-left door     | $\frac{3}{4}$ " | 2 $\frac{1}{2}$ "  | 36 $\frac{1}{2}$ "   | 1    | P     |
| N2 | Inner door stile-right door    | $\frac{3}{4}$ " | 2 $\frac{5}{16}$ " | 36 $\frac{1}{2}$ "   | 1    | P     |
| O  | Door rails                     | $\frac{3}{4}$ " | 2"                 | 14 $\frac{1}{4}$ "   | 8    | P     |
| P  | Drawer front                   | $\frac{3}{4}$ " | 5 $\frac{1}{16}$ " | 35 $\frac{3}{4}$ "   | 1    | P     |
| Q  | Drawer sides                   | $\frac{1}{2}$ " | 5 $\frac{1}{16}$ " | 14 $\frac{3}{4}$ "   | 2    | P     |
| R  | Drawer back                    | $\frac{1}{2}$ " | 5 $\frac{1}{16}$ " | 35 $\frac{3}{4}$ "   | 1    | P     |
| S  | Drawer bottom                  | $\frac{3}{4}$ " | 14 $\frac{3}{4}$ " | 35 $\frac{3}{4}$ "   | 1    | BP    |
| T  | Long tin retaining strips      | $\frac{1}{4}$ " | $\frac{1}{2}$ "    | 13 $\frac{13}{16}$ " | 12   | P     |
| U  | Short tin retaining strips     | $\frac{1}{4}$ " | $\frac{1}{2}$ "    | 9 $\frac{1}{2}$ "    | 12   | P     |
| V  | Turn button                    | $\frac{1}{2}$ " | 1"                 | 2 $\frac{1}{4}$ "    | 1    | P     |

**Materials:** P=Poplar, BP=Birch Plywood, MDF=Medium-Density Fiberboard

**Hardware:** (2) #20 biscuits, (8) #8  $\times$   $\frac{1}{2}$ " pocket-hole screws, (4) #8  $\times$   $\frac{1}{4}$ " pocket-hole screws, (30) 1"  $\times$  16 ga. brad nails, (5)  $\frac{1}{2}$ "  $\times$  16 ga. brad nails, (108)  $\frac{3}{4}$ "  $\times$  23 ga. pins, (12) 1"  $\times$  23 ga. pins, (28) #6  $\times$   $\frac{1}{4}$ " flathead screws, (6) #8  $\times$   $\frac{1}{2}$ " flathead wood screws, (1) #8  $\times$   $\frac{1}{2}$ " roundhead screw

## Convenience-PLUS BUYING GUIDE

|                                                                                                                                                                        |                                                                                                               |         |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------|--------------|
| <input type="checkbox"/> 1.                                                                                                                                            | CMT Slot Cutter with Arbor and Bearing Router Bit, $\frac{1}{4}$ "H, 1- $\frac{7}{8}$ "D ( $\frac{1}{2}$ "SH) | #822302 | \$34.00      |
| <input type="checkbox"/> 2.                                                                                                                                            | Freud Rabbeting Bit Set, ( $\frac{1}{2}$ " SH)                                                                | #828705 | \$60.97      |
| <input type="checkbox"/> 3.                                                                                                                                            | Whiteside Edge Beading Router Bit $\frac{1}{4}$ " bead ( $\frac{1}{2}$ " SH)                                  | #814384 | \$36.49      |
| <input type="checkbox"/> 4.                                                                                                                                            | Sawtooth Shelf Support System Poplar, 3 ft.                                                                   | #153504 | \$29.99      |
| <input type="checkbox"/> 5.                                                                                                                                            | Classic Brass Oil-Rubbed Non-Mortise Hinges, qty. 4                                                           | #409028 | \$12.99 each |
| <input type="checkbox"/> 6.                                                                                                                                            | Porter-Cable Dovetail Jig                                                                                     | #146048 | \$124.99     |
| <input type="checkbox"/> 7.                                                                                                                                            | Knobs, Shaker Maple 1 $\frac{1}{4}$ " dia., $\frac{1}{2}$ " tenon, 10 pk                                      | #125433 | \$9.99       |
| <input type="checkbox"/> 8.                                                                                                                                            | General Finishes Tuscan Red Milk Paint (Latex), pint, qty. 2                                                  | #148937 | \$13.99 each |
| <input type="checkbox"/> 9.                                                                                                                                            | General Finishes High Performance Polyurethane, Flat, qt.                                                     | #153520 | \$16.50      |
| Above items are available at Woodcraft stores, <a href="http://woodcraft.com">woodcraft.com</a> or by calling (800) 225-1153. Prices subject to change without notice. |                                                                                                               |         |              |
| <input type="checkbox"/> 10.                                                                                                                                           | Punched Tins, qty. 6                                                                                          | #203118 | \$6 each     |
| Above item available from Van Dyke's Restorers, <a href="http://vandykes.com">vandykes.com</a> . (Additional patterns and blank tins are available.)                   |                                                                                                               |         |              |



# Punching Tin

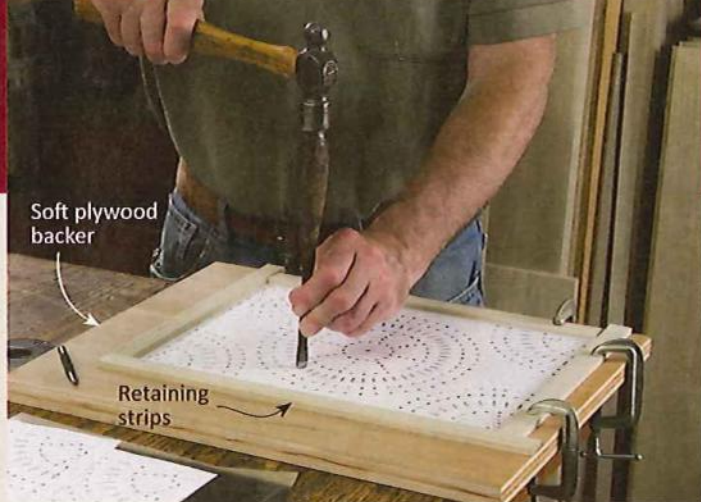
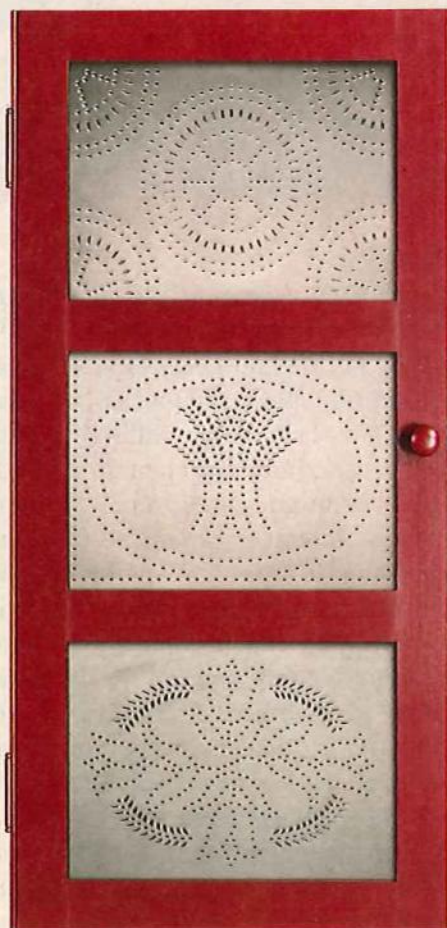
**H**istorically, tin panels offered a “canvas” for local artisans to display their talents. Old pie safes often sport tins that were punched with owners’ names, important dates or locations, and other interesting information. Today, punching tin is still a great way to personalize a piece of furniture.

To punch your own panels, all you need are tins, tools, and time. Blank tins are available from the same source as the pre-punched tins I used on this pie safe. Depending on the complexity of your design, you shouldn’t need more than a couple of tools; mine (see photo, right) consist of an old screwdriver ground to a convex edge and an old center punch reground to a sharp conical point.

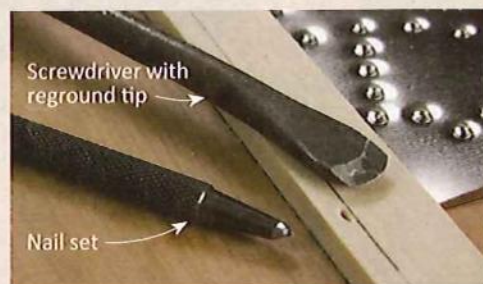
Before you start, you’ll need a pattern. Using my example (or your own pattern), make full-sized photocopies for each panel. To keep the tin flat as it’s punched, I cobbled up a backer board from a scrap piece of plywood and attached rabbeted strips to hold the tin and pattern in place. Tack two strips to the backer board, and clamp the other pair in place, as shown above. Now start punching.

To mimic the look of aged tin, first degrease the panels using hot, soapy water and a soft scrub brush, and then pat them dry with a soft cloth. (Be extremely careful; the edges and punched points are razor-sharp.) Next, lay the panels on cardboard, and spray both sides with an even coat of vinegar, as shown at right. Keep them wet. They start rusting fairly fast, so keep an eye on them. When the panels look aged enough for your taste, rinse them off with cold water and pat them dry. Once they’re completely dry, burnish them with a brass brush, and then seal the tin with matte clear lacquer. -C.B.

Here’s a small sample of some punched designs. Select a pattern that complements your decor.



Tap the tool smartly (only once, if possible) to perforate the tin.



Use your grinder to turn worn tools into custom punches.



The retaining strips (and then the punched holes) secure the paper to the tin while working.



Spray on vinegar to “age” the tin and lacquer to lock in the look.





# Panel-Cutting Guides

*4 ways to break sheet goods down to size*

By Joe Hurst-Wajszczuk



Trimming parts to size on the tablesaw with a premium blade produces the cleanest edges. However, a portable circular saw outfitted with the right blade can come close. For smooth cuts with minimal splintering or tear-out, select a Hi-ATB carbide tooth blade. (I recommend the 7¼", 60-tooth Freud LU79 [#844954, \$49.99.]) This thin-kerf blade comes in handy when I'm trying to squeeze one more piece from a sheet. To keep the blade cutting as it should, reserve its use for sheet goods only.

**E**ven if you own a full-sized tablesaw, cutting a 4 × 8' sheet of plywood, melamine, or MDF into manageable-sized pieces can be a real challenge. Sliding tablesaws or industrial panel saws provide good solutions, but they amount to expensive space-hogs for the small-shop woodworker who just needs to make a few cuts now and then. Fortunately, you can achieve straight, accurate cuts by partnering your existing portable circular saw with your choice of a commercial guide made for the job.

Why not just use a straight board for a guide, you ask? Well, a

closer look at commercial guides reveals that they're designed for the kind of saw or router teamwork that you just can't expect from a simple wooden straightedge. Here, you'll find a rundown of four popular types of commercial guides. I've included price, cutting capacity, and a few other details you'll want to consider before making your final decision. *Note: For our purposes here, "crosscutting" refers to sawing across the direction of plywood's face grain, or the narrow dimension of a sheet. "Ripping" is sawing with the grain, or parallel to a sheet's longer dimension.*



## Crosscutting Guides

Depending on your parts layout, the first move in breaking down a full-sized sheet may involve crosscutting it—a particularly dicey maneuver on a standard tablesaw. This is where a crosscut guide saves the day.

Guides are available in a variety of lengths, but make sure you get one that can grip a 48"-wide panel. Although shorter guides cost less, the savings won't count for much when it's time to crosscut a full sheet of plywood.

### All-In-One Guide

By incorporating cam-lever clamps into a length of aluminum extrusion, WoodRiver turned an otherwise simple straightedge into a stand-alone sawing solution. To use the tool, position it, slide the moveable jaw against the workpiece, and flip the toggle clamp locking lever. The low-profile lever locks well enough in horizontal position to secure the clamp even when you're working on the floor. Levering it down further provides even more locking pressure.

Keep in mind that a guide like this is not self-squaring, so when



making a cut perpendicular to the edge of the sheet, you'll need to set the guide using a square. You'll also need to offset it from the cutline by an amount equal to the distance between the saw's blade and baseplate edge. You can measure for each cut, but

it's much faster to use spacers, as shown in the photo above.

Optional connecting saw or router subbases are available to prevent a tool from straying, but you don't need them as long as you keep the machine pressed against the guide in use.

### Protractor Guide

With its adjustable protractor head and bar, Trend's Varijig Variable Angle Guide offers a surprisingly accurate means of making wide-angled cuts, which can be difficult or impossible to make on a stationary saw. After calibrating the head, I was able to accurately set the angle of the bar to within a half-degree across its length. The guide can be used freehand when crosscutting narrow pieces, but you'll want to use clamps to avoid slippage on longer cuts.

And, as with the All-in-One clamp guide, you'll want to make a pair of offset spacers for quick setup of the cut.

The only disadvantage I found was that the 36"-long bar doesn't span a full-sized sheet. The guide can be outfitted with an optional 56"-long bar to do the trick, but that will set you back an additional \$90. Although this tool's adjustability is a unique advantage, I think it's

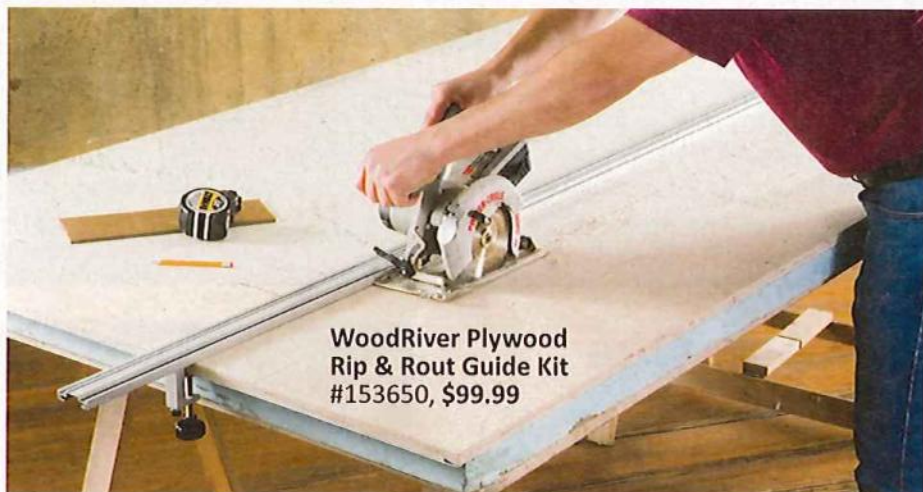


better suited as a secondary guide to be used when making precise angled cuts after breaking down panels.



## Ripping Guides

You can't beat a tablesaw for making straight-line cuts, but wrangling a 100-lb. sheet of  $\frac{3}{4}$ "-thick MDF across a tablesaw isn't for everyone. Sometimes it's better to take the tool to the work instead of the other way around. That's when ripping guides really earn their place in the workshop and on the jobsite.



WoodRiver Plywood  
Rip & Rout Guide Kit  
#153650, \$99.99

## Guide Rail Kit

WoodRiver's Guide-Rail Kit combines two guides in one. Each of the two 56"-long aluminum extrusions can be individually used for crosscutting panels, or the two can be joined with a connector to create a guide that will span an 8'-long sheet. The panel clamps fit into the rail's bottom track and can be set anywhere along its length. A variety of optional

accessories makes the guide a nice choice for the undecided. The kit can be paired with a universal router/saw baseplate (#149196, \$31.50) to keep a tool on track. A protractor head (#150005, \$37.99) is also available for making angled cuts.

The guide rail kit is as easy to set up as the All-in-One. However, the clamps require too much underside clearance to allow working on the floor, so you'll have to set your panel

on sawhorses. The versatility afforded by the sliding clamps and two-part bar is a plus for transport and storage, but the separate parts are easy to misplace, as opposed to a one-piece guide. Also, to prevent deflection of the 112"-long bar, you'll need to either provide additional support at its center or avoid excessive sideways pressure with the saw.

## T-Square Guide

Kreg's Rip-Cut guide offers an alternative approach to ripping sheet goods. Employing the guide as a sort of integral extended saw fence enables ripping sections up to 24" wide, regardless of length. I found that I could rip subsequent sections in less time than it would take to reset the clamps on a typical straightedge guide. And, thanks to the cursor on the base and increments on the guide arm, it's easy to reset the saw without pulling out a tape measure and offset spacers.

This might be the only guide you'd need for jobsite carpentry, but for shop woodworking and cabinetry, you may want a



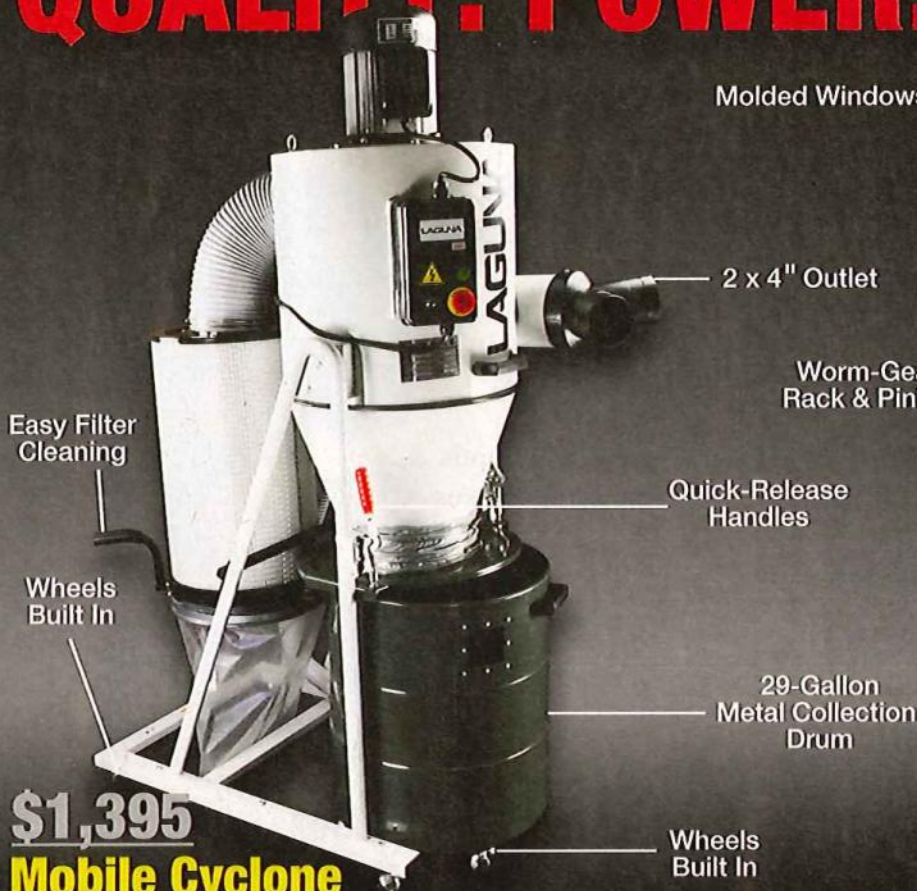
Kreg Rip-Cut  
Circular Saw Guide  
#153926, \$34.99

straightedge guide for backup. Unlike a straightedge, the Rip-Cut guide follows the edge of a panel, so if it isn't straight, the cut won't be either. And, compared

to using a full-length guide, I found that the relatively short 10"-long bearing fence allowed the saw to rotate somewhat, veering from the cutline.



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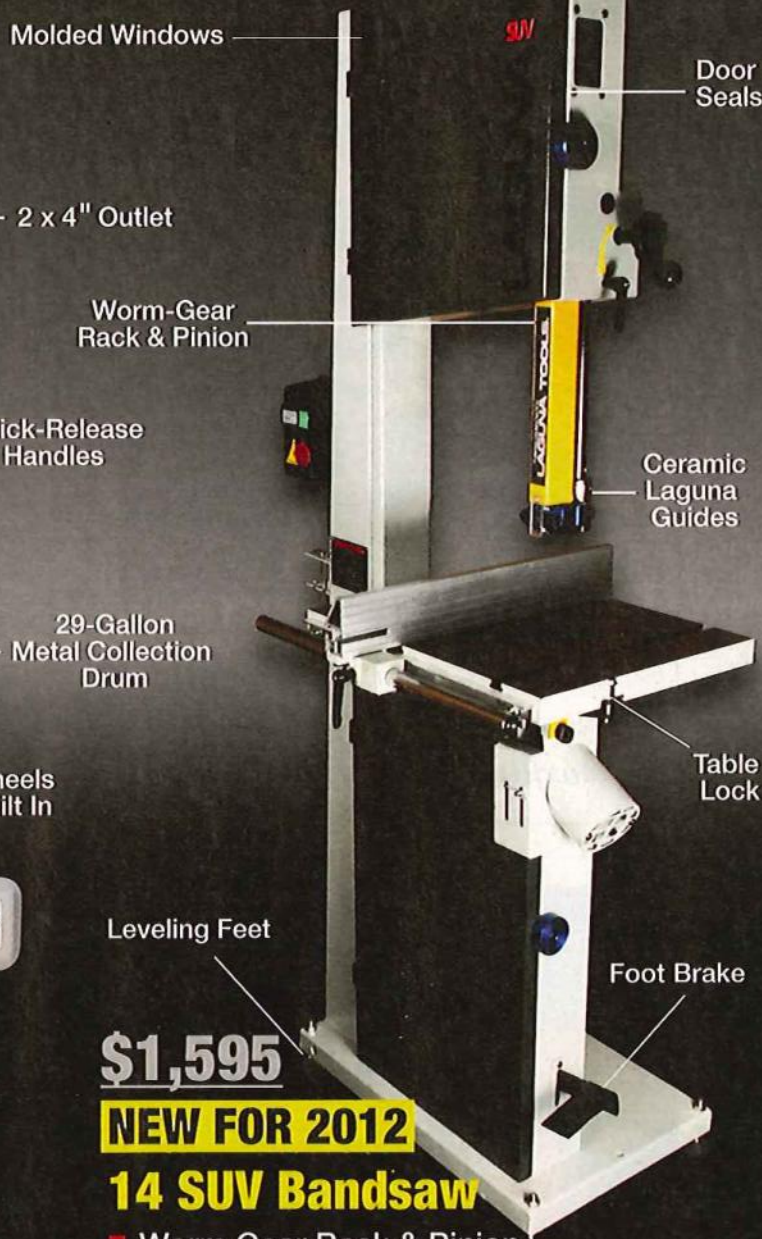
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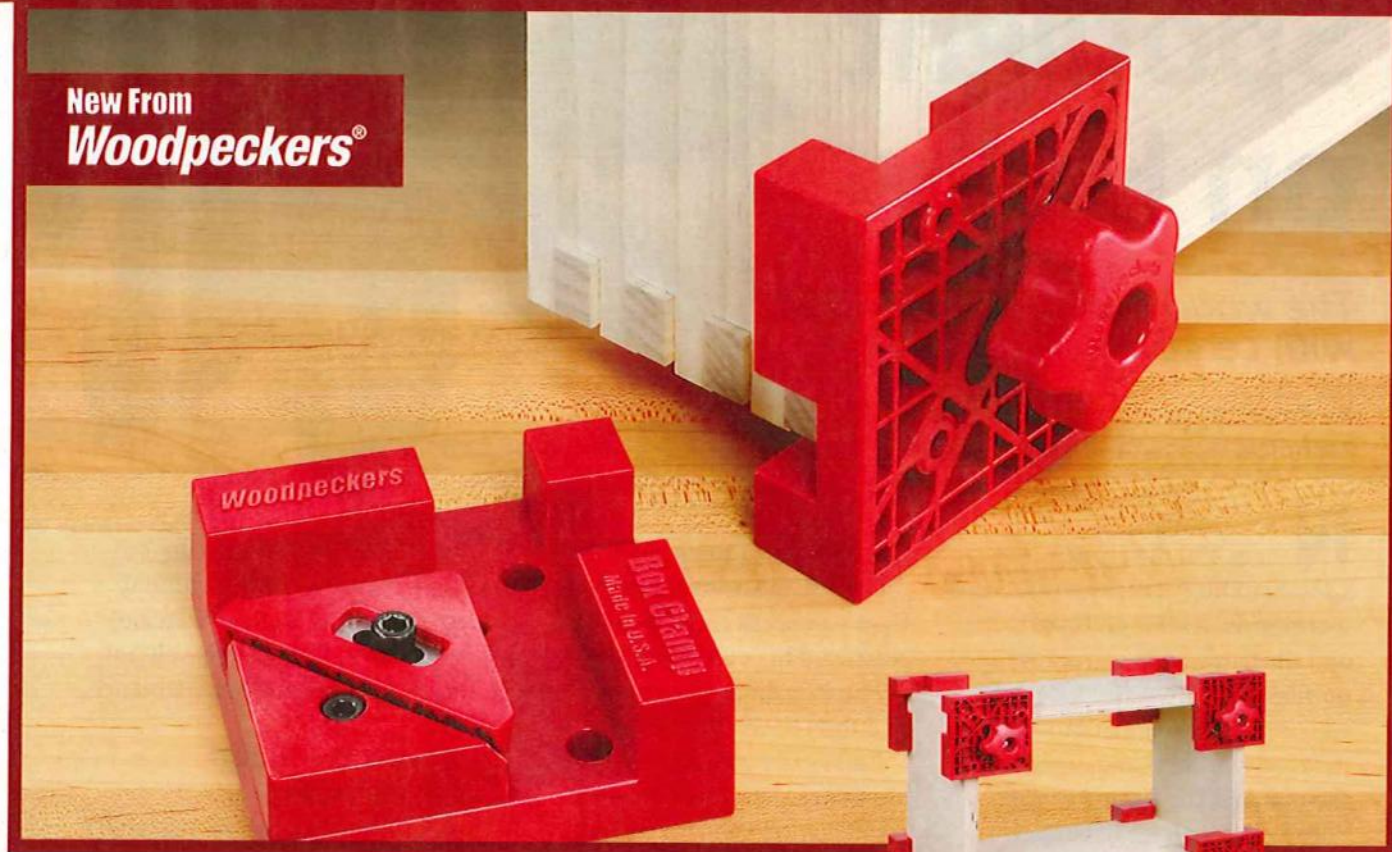




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# Spotlight on Holly

*The world's whitest hardwood with centuries of tradition*

By Pete Stephano

Technical Consultant: Larry Osborn



**N**early 350 different species of holly trees grow worldwide. Although Brazil and China claim the greatest number, the most storied of the species—and the most familiar to woodworkers—are found in Europe and the United States.

Few tree species have such a long history of folklore and holiday tradition as this evergreen hardwood (which, by the way, has its own botanical genus *Ilex*). England's ancient druids associated the tree's shiny, prickly leaves and red berries with special powers of protection, as did the olden

day Romans who brought the foliage inside as decoration for their celebration of the winter solstice. This yuletide practice eventually emigrated to England and then to the New World.

Today, the coming of winter along America's mid-Atlantic coast coaxes swarms of holly berry-and-leaf harvesters to ready decorations for the holiday season. The state of Delaware embraces holly as the state tree.

## History in woodworking

Holly has always been used for small items, such as chess pieces, brush backs and handles, treenware, and inlay. In fact, piano keys made of this extremely white wood look like ivory. Its tight grain and trait of taking a high polish made it the choice for loom spinning rods in the 19<sup>th</sup> century textile industry—the smooth wood did not snag threads.

Today's woodturners love putting holly on their lathes, carvers adore shaping it, and marquetry makers dye it into a host of colors (dyed black, it's an ebony look-alike as shown above, right). Luthiers use holly for pegs,

fretboards, and other tiny but highly noticeable instrument parts. However, due to lack of suitability, the wood is seldom made into cabinets or furniture.

## Where the wood comes from

Holly trees can thrive anywhere in a temperate climate, but the colder the conditions, the smaller the tree. You'll find American holly (*Ilex opaca*) growing in tree form from east Texas to Florida and north to Delaware. Further north in southern New England the species shrinks to shrub size.

Wherever it grows, holly trees rate as fairly abundant. But it's never a very large tree (50' tall maximum) and due to its many branches, holly trees produce comparatively little clear wood. And, as might you might guess, the wood does not constitute a mainstay commercial lumber. In fact, where it grows the largest, along the Mid-Atlantic coast, it's often not even cut for lumber, but instead left to produce its annual growth of shiny green leaves and red berries to be used for holiday decoration.

### It's a fact that...

Once upon a time in England, and later in Colonial America, entrepreneurs stripped holly trees of their bark, and then boiled and strained it to obtain a highly adhesive substance called "birdlime." It was spread on tree branches to capture unwitting songbirds, which were then sold at market as caged pets. The practice is unlawful today.





## What you'll pay

You'll only find holly at specialty wood suppliers, especially for turning squares, pencil (as in No.2 Ticonderoga) and pen blanks, and carving blocks. Because of holly's modest trunk diameter, board size will range from 2-10" in width and 3-10' in length, but with many knots (in fact, the wood normally grades as #1 Common or below). And at about \$20 a board foot, it's expensive. Small sheets of veneer are available for marquetry but are also costly.

## How to select the best stock

Holly is a tight, close-grained wood with barely discernible grain patterns and absolutely no figure. Its large band of sapwood is the whitest of any hardwood. The heartwood is only slightly darker and may show tinges of blue.

Select boards and pieces based on the fewest number of imperfections (knots) and uniform color with no "blue stain." This discoloration typically appears when holly is

harvested during warm weather and seasoning/kiln drying is delayed. Also be mindful that holly is not really that stable, so watch for signs of warp that could worsen. In small pieces for inlay, accents, and so on, this is of little consequence.

## Working holly in the shop

This close-grained, fine-textured wood is subject to scorching and burning when sawn and machined, so avoid a too slow feed rate. When drilling, stop often to clean out the dust from the hole. With holly boards, expect to work around knots.

Holly isn't hard, but sharp cutting edges are important when milling holly due to its interlocked grain. Take very light passes when planing, jointing, and routing. Carvers find that it cuts similarly to basswood; turners like how holly shapes easily, yielding a smooth surface.

Sanding holly is nearly effortless as you progress through successive grits. Achieve a polished surface by using fine abrasives. Holly also bonds well with all types of adhesives and poses no problems when dyeing, staining, and finishing. ■

## Holly Quick Take

**Cost** - High

**Weight** - Moderate  
(a little lighter than red oak)

**Hardness** - Moderate  
(two-thirds as hard as sugar maple)

**Stability** - Moderate

**Durability** - Low  
(low regarding decay, modest for wear indoors)

**Strength** - Moderate

**Toxicity** - None

**Tool type** - Power tools and sharp hand tools

**Common uses** - Accents, carvings, turnings, inlay, jewelry boxes, and small musical instrument parts





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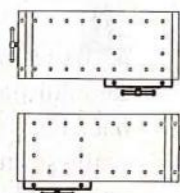
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*My business has me conducting seminars and workshops on hand tool use in locations across Canada, the US and the UK. I have worked on too many benches to remember, though there were a few I would like to forget! Good hand work requires a good bench, the two are inseparable. When I arrive at a location and find a big Sjöberg, it all but guarantees a successful event. I am so adamant about the benches that I will only return to lead a "hands on" event if the facility has proper benches for each student. I have guided several workshops in to purchasing the Sjöbergs Elite series 1500, 2000, 2500 and I recommend these to anyone starting out in woodworking. They are solid, flat and heavy!*

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# Masks & Respirators

*Read this now. Breathe easier later.*

By Chris Hill

**A**s woodworkers, we know that our passion can bite us back if we're not careful. But while spinning bits and blades are easy to see, other threats aren't so visible. Breathing in airborne particles and chemicals can trigger an immediate allergic response and/or cause respiratory problems. Over time, prolonged exposure to these contaminants can contribute to a host of life-threatening ailments.

Dust collectors and air filters help reduce what's in the air, but neither provides the frontline defense you'll get by donning a mask or respirator. Here's a quick rundown of the available types so you can select exactly what you need to protect yourself from the dangers that might already be floating around in your workshop.

## Disposable masks

Convenient and cost-effective, disposable masks are the first choice for woodworking and assorted DIY projects, but it's important to match the mask to the task. Despite what some think, the N-rating doesn't stand for "nuisance" (see, "**Know The Code**," at right). N-rated masks should be used for limiting exposure to non-oily hazards such as sawdust, drywall dust, pollen, and mold. Most woodworkers find that N95-rated masks provide sufficient protection, but if you suffer from acute sensitivity, or if you work with toxic woods, consider stepping up to N100. (This extra protection comes at a price. N95 masks cost about \$2 apiece, N100s start at \$8.)

Beyond the National Institute for Occupational Safety and Health (NIOSH) specs, a few additional features are worth the upcharge. To ensure a good fit, look for masks sporting dual-elastic straps and moldable nose bridges. An exhale valve will help the mask feel cooler and minimize breath-induced fogging of your safety glasses. (You are wearing safety glasses, right?)

Masks don't last forever. Few of us replace a mask every time we pull it from our face (as suggested), but you should discard it at the end of the work day, or when you have any difficulty breathing through it.

3M Pro-Respirator  
(around \$30)



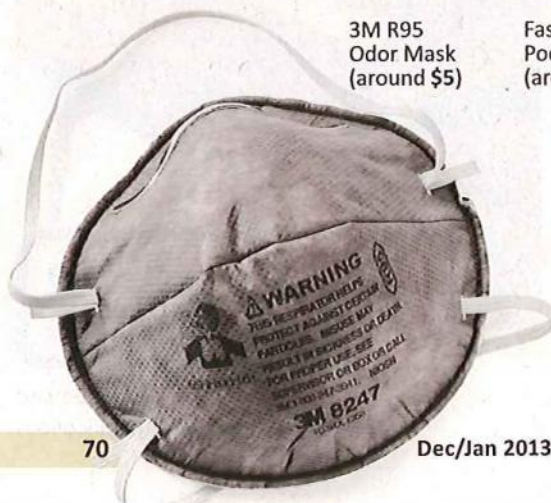
P-100 Particulate Filter



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Respirator (around \$19.99)

## Respirators

Half-face respirators are suitable for dust protection, but they can also be equipped with cartridges that chemically capture toxins that pass through mechanical filters. For this reason, respirators are the required dress code when applying a spray finish, stripping furniture, or doing a similar hard-core chore. Note that cartridges alone do not protect wearers from particulates. For environments that contain both harmful particulates and vapors, wearers must use combination filters that have chemical and mechanical filtration. To capture particles that might prematurely clog the cartridge, many combination

units employ a replaceable prefilter. The easy way to identify the most efficient filters and prefilters is by color: P100 filters are pink.

With regular maintenance, respirators can easily outlast a box of masks. To extend the life of filter cartridges, replace prefilters after eight hours of use, or when you detect a change in airflow. To make certain that you don't use a cartridge that's past its prime, record the date and length of time used. If your filter exceeds the recommended expiration time or you smell or taste any

## Know The Code

Picking the right mask or respirator starts by understanding the rating system of the National Institute for Occupational Safety and Health. An "N" indicates a mask that is non-oil resistant. An "R" indicates some oil-resistance. An R-rated filter should be discarded after eight hours of use. "P" indicates better oil-resistance. A P-rated filter can last for 40 hours of use, or 30 days, whichever comes first.

The number following the letter indicates filter efficiency. Filter materials are tested against particles having a diameter of 0.3 microns (100 times smaller than the diameter of a human hair). Filters with a "95" rating are 95% effective. Filters bearing a "100" are 99.97% effective.

Filter cartridges bear additional numbers on the package or on the cartridge itself. These indicate the chemicals that the filter can provide protection against, such as chlorine and ammonia.

chemical when working, replace it. (Note that some cartridges continue to absorb air even when they're not in use. To extend a respirator's working life, store it in a resealable container.) If you're not planning to spray on a regular basis, consider a disposable respirator. Simply unpack it, spray, and then toss it away. ■

## Powered Respirators

Some woodworking activities, like turning or power-carving, generate a constant barrage of chips and dust. Here, toxic fumes aren't the issue, but comfort is. The mask must be comfortable enough to be worn for hours at a time. Powered respirators employ a blower that forces air through the filter. In addition to the cooling effect, the fan establishes positive air pressure, which eliminates the need for a face-tight seal like other masks or respirators.

Comfort has its price, however. In addition to the higher price tag, the constant air flow causes the filters to clog more quickly.





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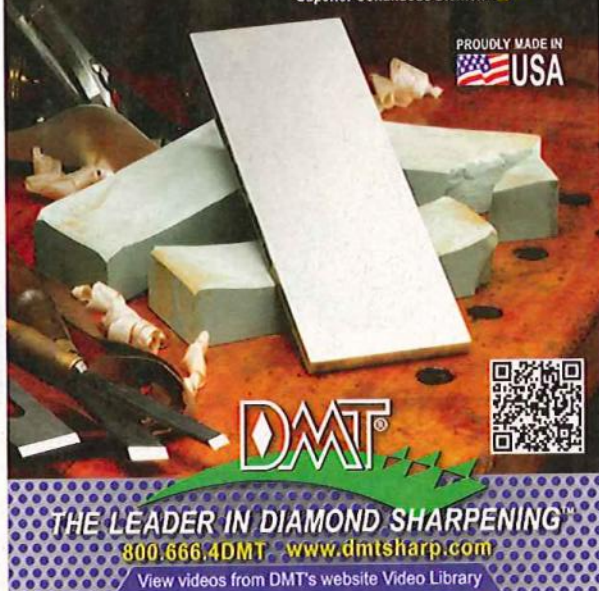
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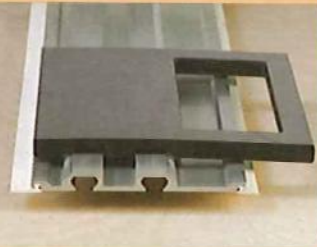
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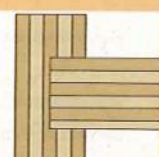


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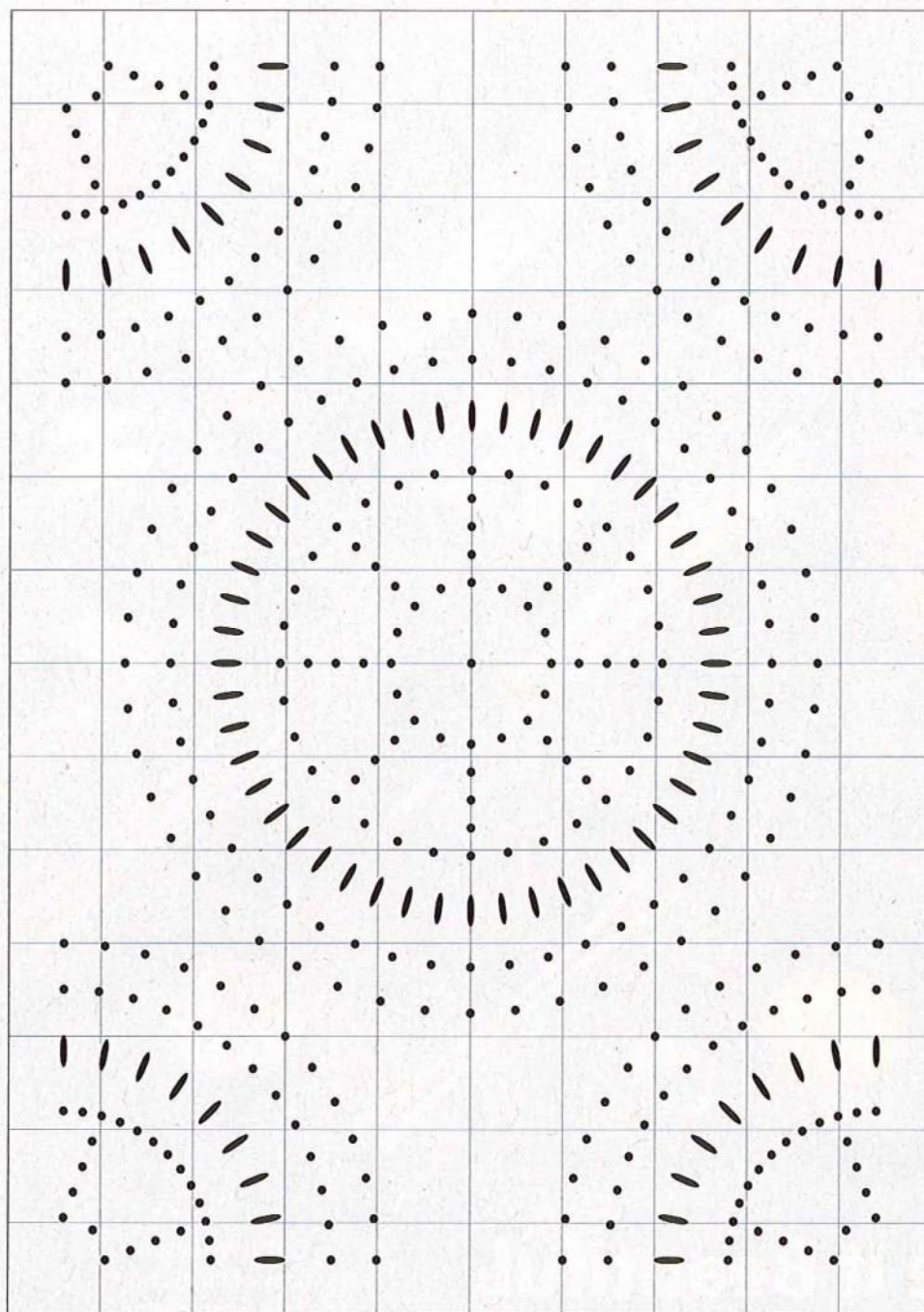


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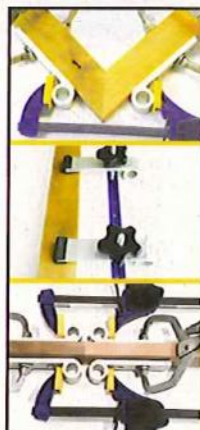
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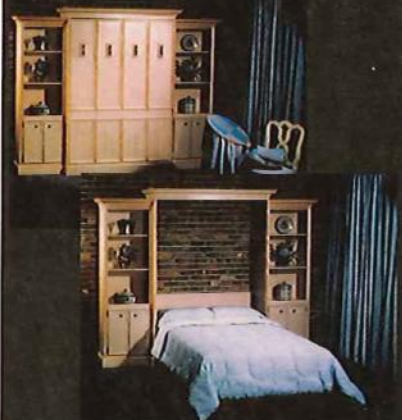
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[www.wbgu.org/americanwoodshop](http://www.wbgu.org/americanwoodshop)

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Season 19 – "Keepers," a collection of masterworks from American home shops, will be aired on over 300 PBS stations. The Create Channel will be airing Seasons 18 and 19 back to back, four times a week. Visit with Scott in person at the Woodworking in America show November 2-3 in Cincinnati, Ohio.



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[www.thomasjmacdonald.com](http://www.thomasjmacdonald.com)

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Image of Tommy MacDonald Photo © Anthony Tieuli for WGBH Educational Foundation



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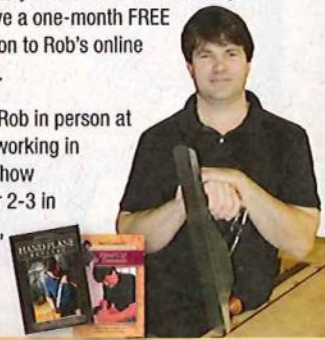
[www.RobsWorkshop.com](http://www.RobsWorkshop.com)

Woodcraft is privileged to partner with Rob Cosman, "Your Hand Tool Coach," featured on the educational [handtoolworkshop.com](http://handtoolworkshop.com).

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