

TAUNTON'S

Fine Woodworking

Perfect cope-and-stick doors, p. 42



Build a Shaker trestle table

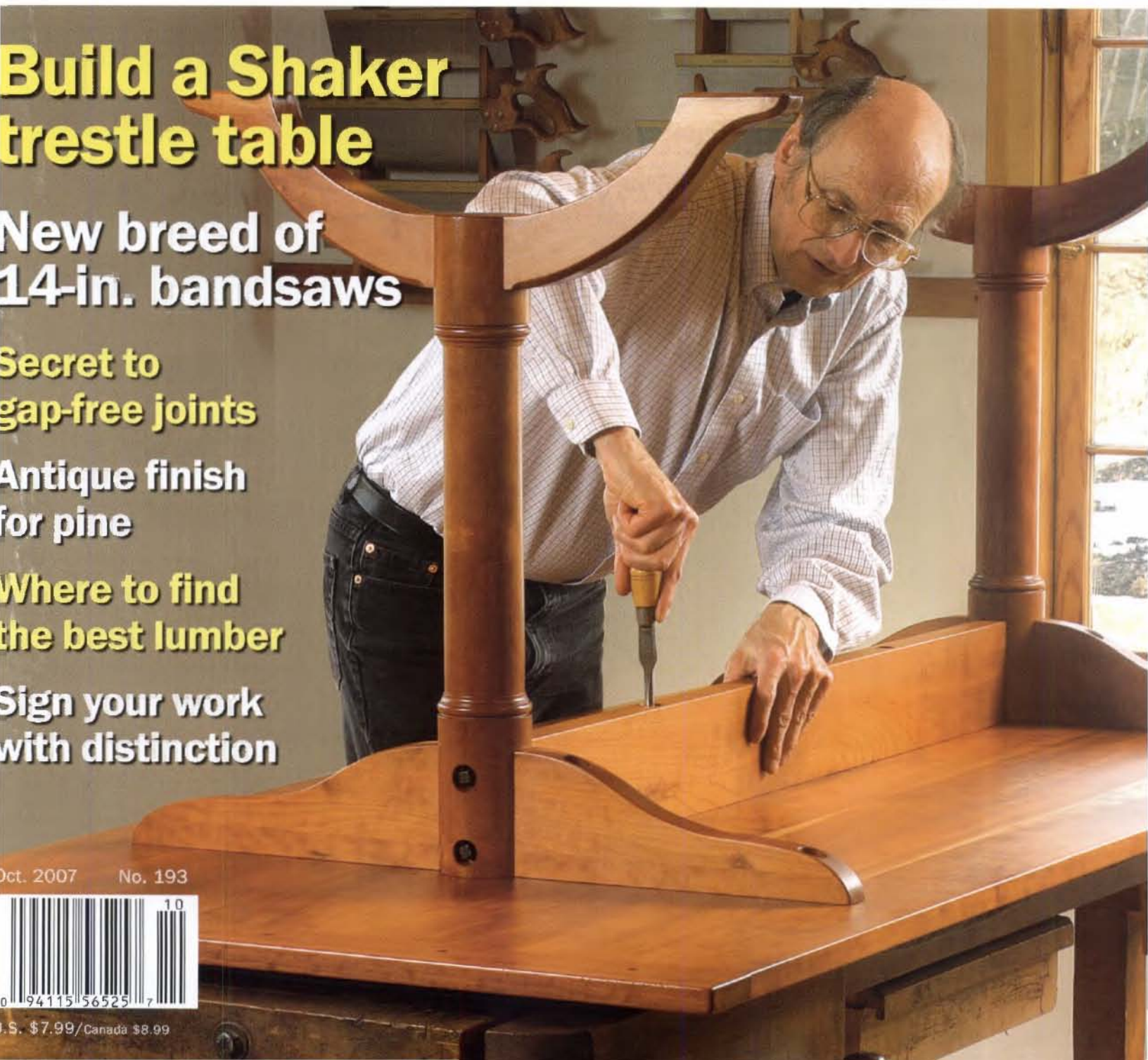
New breed of 14-in. bandsaws

Secret to gap-free joints

Antique finish for pine

Where to find the best lumber

Sign your work with distinction



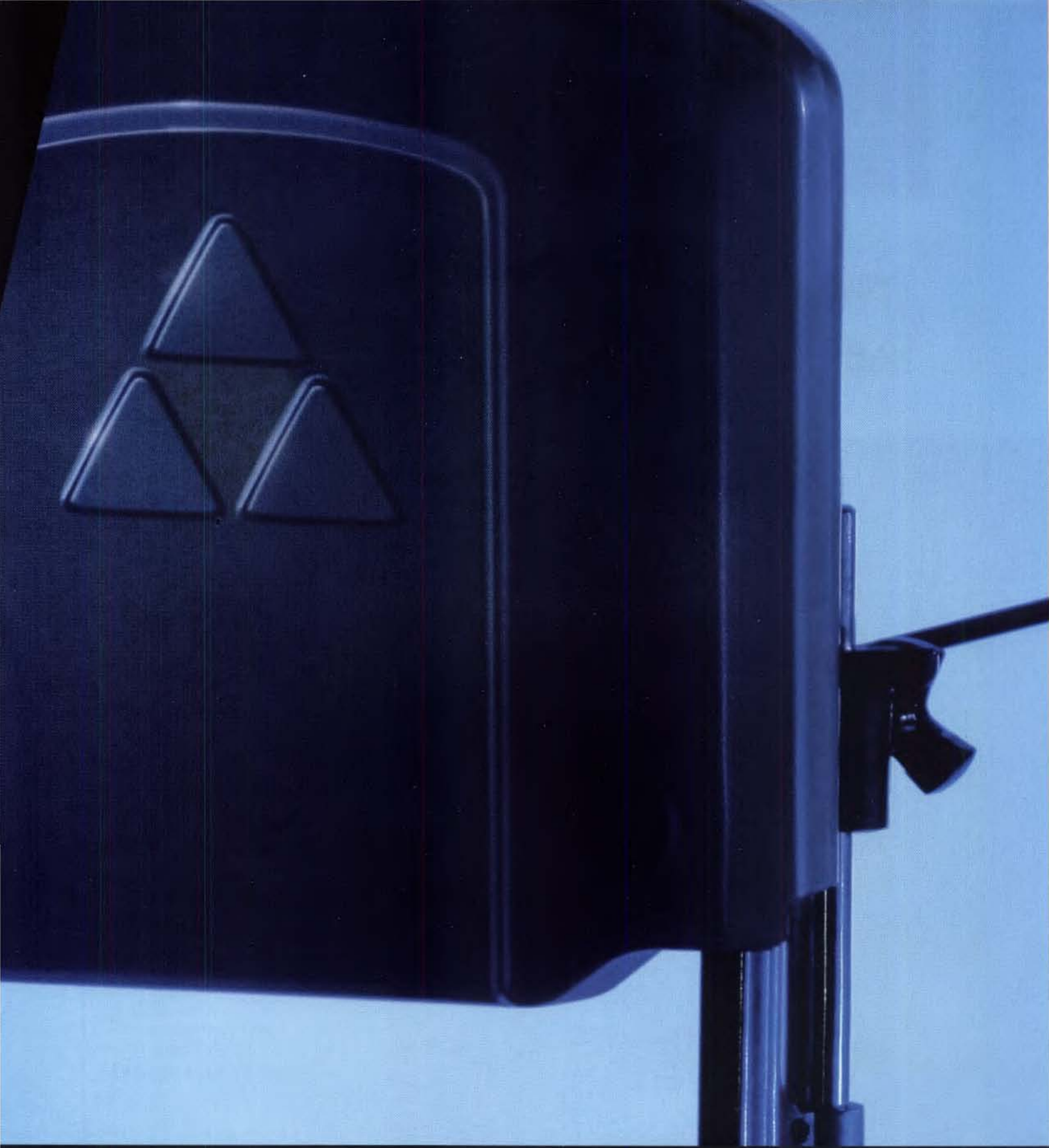
Oct. 2007 No. 193



U.S. \$7.99/Canada \$8.99



Look for the next evolution in woodworking. Coming soon.



Check out www.triedandtrueprecision.com.

READER SERVICE NO. 128



contents

SEPTEMBER/OCTOBER 2007 ■ **ISSUE 193**



features

36 Arts & Crafts Wall Shelf

Hollow, quartersawn columns and traditional inlay elevate an easy project

BY NANCY HILLER

42 Frame-and-Panel Doors Made Easy

Cope-and-stick router bits are quick but tricky. Here's how to get perfect results

BY MICHAEL PEKOVICH

48 **TOOL TEST** New Breed of Bandsaws

New 14-in. models have serious resaw capacity, with more power to handle bigger boards

BY THOMAS McKENNA

54 **FINISHING**
PINE



58 **FLAWLESS
FITTING**

36

**ARTS & CRAFTS
WALL SHELF**



54 **Best Finish for Pine**

Thin layers of shellac and stain add age and warmth without blotching

BY TOM WISSHACK

58 **The Secret to Making Perfect Joints**

Trim hidden areas to quickly produce a flawless fit

BY STUART LIPP

63 **Router-Made Bandings**

Dress up your work with these unique designs

BY MARK ARNOLD

68 **Lumber From Mini-Mills**

Unusual woods at bargain prices might be closer to home than you think

BY MARIO RODRIGUEZ

72 **Shaker Dining Table**

**COVER
STORY**

Form meets function in this classic design

BY CHRISTIAN BECKSVOORT

80 **What's Your Sign?**

Readers, editors, contributors sign their work in distinctive ways

BY CHARLIE REINA

42 **FRAME-AND-PANEL
DOORS**



up front

6 **On the Web**

8 **Contributors**

10 **Letters**

14 **Methods of Work**

- Tablesaw tapering jig
- Magnetic cabinet catch

22 **Tools & Materials**

- Powermatic drill press
- Freud premium sawblade
- Work Sharp sharpening machine

30 **What's the Difference?**

Pin gauges vs. slicing gauges

32 **Fundamentals**

Is it time to get a fresh edge?

in the back

84 **Readers Gallery**

88 **Q & A**

- Drying freshly cut lumber
- A tabletop finish

96 **Master Class**

Free-form steam-bending

106 **Finish Line**

Original Arts & Crafts

110 **How They Did It**

The back cover explained

Back Cover

Masterful apprenticeship



The Taunton Press
Inspiration for hands-on living®

FineWoodworking.com

free online extras:

Available July 31 at www.finewoodworking.com/extras



AUDIO PODCAST **The Wood Butcher Papers**

Tune in for our yearlong audio series hosted by the original Wood Butcher, newspaper columnist Saul Isler. In his first episode, Isler shares audio clips from pen pal James Krenov, and recalls the day Krenov gave him a handmade plane.



VIDEOS **Free-Form Steam-Bending**

Watch Michael Fortune (Master Class) demonstrate his double-bending technique to create a table leg that curves at an odd angle.

Tour a Boutique Lumbermill

Mario Rodriguez ("Lumber from Mini-Mills") leads a guided tour of an owner-operated lumber mill in Pennsylvania. Also, use our directory of mini-mills to find a sawyer in your area.



"Whirlpool Turned Vase"
by Brian McEvoy
Edmonton, Alta., Canada
PHOTO: LINDA FINSTAD

plus:

- **FURNITURE GALLERY**
- **READER TOOL REVIEWS**
- **WOODWORKING BLOGS**

members only:

Become a member for electronic access to 30-plus years of *Fine Woodworking* articles, how-to videos, and exclusive Web content.

ONLINE CLASSROOM



Build a Round Table

AUGUST 1: Gary Rogowski leads our first online woodworking class. Follow along and build an elegant side table.

- 12-step video instruction
- Download the project plan
- Ask questions in the experts forum



VIDEO **Refinishing Furniture**

AUGUST 27: Professional finisher Peter Gedrys demonstrates the complete refinishing process to give old furniture new life.

plus:

- **CURRENT ISSUE ONLINE**
- **ARCHIVES OF 1300+ ARTICLES, AND PROJECT PLANS**
- **MORE THAN 300 SKILL-BUILDING VIDEOS**
- **ASK THE EXPERTS: Peter Gedrys on finishing**



Fine Woodworking

EDITOR **Asa Christiana**

ART DIRECTOR **Michael Pekovich**

MANAGING EDITOR **Mark Schofield**

MANAGING EDITOR, ONLINE **Matt Berger**

ASSOCIATE EDITORS

Thomas G. Begnal, Steve Scott, Thomas McKenna, David Helm, Charlie Reina

ASSISTANT EDITOR **Anissa Kapsales**

ASSISTANT EDITOR, ONLINE **Gina Eide**

SENIOR COPY/PRODUCTION EDITORS

Elizabeth Healy, Julie Risink

ASSOCIATE ART DIRECTOR **Kelly J. Dunton**

ASSISTANT ART DIRECTOR **John Tetreault**

SHOP MANAGER **John White**

ADMINISTRATIVE ASSISTANT **Betsy Engel**

CONTRIBUTING EDITORS

Christian Beckvoort, Gary Rogowski, Garrett Hack, Roland Johnson, Steve Latta

METHODS OF WORK **Jim Richey**

PUBLISHER **Anatole Burkin**

MARKETING MANAGER **Melissa Robinson**

ADMINISTRATIVE ASSISTANT **Christina Glennon**

CIRCULATION DIRECTOR **Dennis O'Brien**

SENIOR SINGLE COPY SALES MANAGER **Jay Annis**

ADVERTISING SALES MANAGER **Peter Badeau**

SENIOR NATIONAL ACCOUNT MANAGER

Linda Abbott

NATIONAL ACCOUNT MANAGER **John Lagan**

CORPORATE ACCOUNTS MANAGER **Judy Caruso**

SENIOR AD SALES SUPPORT ASSOCIATE

Marjorie Brown

WOODWORKING BOOKS & VIDEOS

EXECUTIVE EDITOR **Helen Albert**

Fine Woodworking: (ISSN: 0361-3453) is published bimonthly, with a special seventh issue in the winter, by The Taunton Press, Inc., Newtown, CT 06470-5506. Telephone 203-426-8171. Periodicals postage paid at Newtown, CT 06470 and at additional mailing offices. GST paid registration #123210981.

Subscription Rates: U.S. and Canada, \$34.95 for one year, \$59.95 for two years, \$83.95 for three years (in U.S. dollars, please). Canadian GST included. Outside U.S. and Canada, \$41.95 for one year, \$73.95 for two years, \$104.95 for three years (in U.S. dollars, please). Single copy, \$7.99. Single copies outside the U.S. and possessions, \$8.99.

Postmaster: Send address changes to *Fine Woodworking*, The Taunton Press, Inc., 63 S. Main St., PO Box 5506, Newtown, CT 06470-5506.

Canada Post: Return undeliverable Canadian addresses to *Fine Woodworking*, c/o Worldwide Mailers, Inc., 2835 Kew Drive, Windsor, ON N8T 3B7, or email to rwmta@taunton.com.

Printed in the USA

HOW TO CONTACT US:

Fine Woodworking

The Taunton Press, 63 S. Main St., PO Box 5506,
Newtown, CT 06470-5506 203-426-8171
www.finewoodworking.com

Editorial:

To contribute an article, give a tip, or ask a question, contact *Fine Woodworking* at the address above or:

Call: 800-309-8955
Fax: 203-270-6753
Email: fw@taunton.com

Customer Service:

For subscription inquiries, you can:

- Visit our subscriber service section at:
www.finewoodworking.com
- Email us: fwservice@taunton.com
- Call our customer support center:

To report an address change, inquire about an order, or solve a problem, call:
800-477-8727

To subscribe, purchase back issues, books or videos, or give a gift, call:
800-888-8286

Advertising:

To find out about advertising:

Call: 800-309-8954
Email: fwads@taunton.com

Member Audit
Bureau of Circulation



Retail:

If you'd like to carry *Fine Woodworking* in your store, call the Taunton Trade Company at:
866-505-4674

Mailing List:

Occasionally we make our subscribers' names and addresses available to responsible companies whose products or services we feel may be of some interest to you. Most of our subscribers find this to be a helpful way to learn about useful resources and services. If you don't want us to share your name with other companies, please contact our Customer Service Department at:

800-477-8727

The Taunton Guarantee:

If at any time you're not completely satisfied with *Fine Woodworking*, you can cancel your subscription and receive a full and immediate refund of the entire subscription price. No questions asked.

Copyright 2007 by The Taunton Press, Inc. No reproduction without permission of The Taunton Press, Inc.

Free Catalog

Furniture Parts Ready-to-Finish

Call 800.843.7405
tablelegs.com



CLASSIC DESIGNS by MATTHEW BURAK

SOLUTIONS FOR THE SERIOUS WOODWORKER

READER SERVICE NO. 133

Operate 3-Phase Shop Motors from Single Phase Power

Different Models To Fit Your Needs



The Ronk ROTO-CON™

Rotary Phase Converter will provide 3-phase power from single-phase sources to operate single or multiple motor applications found in woodworking shops.

The Ronk ECONO-PHASE™ Shifter is a medium-duty static-type converter for shop applications such as drill presses, mills, saws, etc., where continuous full load use is not required, but low initial cost is important.

RONK ELECTRICAL INDUSTRIES, INC.
1-800-221-ROK EXT. 219
www.ronkelectrical.com
P.O. Box 160, Dept. 219 • Nokomis, IL 62075 • Ph: 217/563-8333 Ext. 219 • Fax: 217/563-8336

READER SERVICE NO. 41

triton



WORLD'S BEST ROUTERS.

A bold statement but we think you'll agree.

Triton's award winning 2 1/4 HP and 3 1/4 HP routers have been praised by industry experts and consumers alike. Innovative features are: Above-the-Table cutter changes with one wrench, "REAL" dust collection, Rack-and-Pinion height adjustment, Micro Adjustment throughout the full plunge range and introducing the "Table Top" Height Winder Crank on the new 2 1/4 HP model.

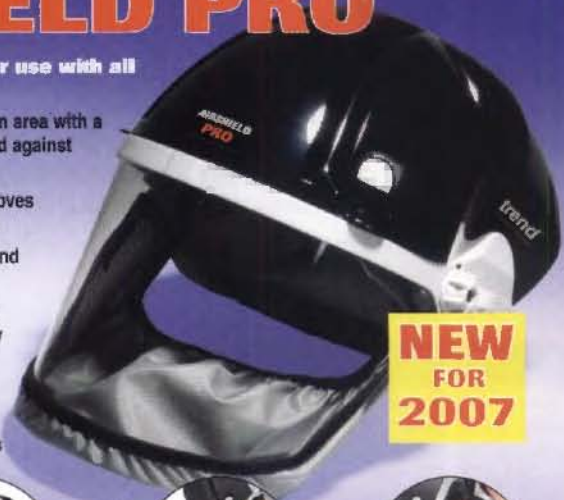
WWW.TRITONWOODWORKING.COM
Toll free: 1-888-874-8661

READER SERVICE NO. 134

AIRSHIELD PRO

NEW fully protected face shield for use with all woodworking applications.

- Twin filters create a 400% larger filtration area with a 200% increase in performance compared against the original Airshield
- A combination face-seal and hood improves protection whilst keeping hair dust free
- Optimum center of gravity for balance and comfort
- Single rechargeable Ni-MH battery pack for 8 hours use, with audible low battery warning
- Easy access to filters, fan and battery pack
- Accessory attachment for ear defenders



**NEW
FOR
2007**



Lowered



Raised



Routing



Sanding

trend
routing technology

www.trend-usa.com
Tel: (270) 872 4674 Fax: (866) 204 5441

AD107/11

READER SERVICE NO. 130

contributors

Mark Arnold ("Router-Made Bandings") got into furniture making via the well-traveled path of trim carpenter and built-in-cabinet maker, with much help from a two-year course at the North Bennet Street School in Boston. He and his wife edit *American Period Furniture*, the annual journal of the Society of American Period Furniture Makers. You can learn about weekend classes in Arnold's central Ohio shop on his Web site, www.bostonwoodworking.com.



Tom Wisshack ("Best Finish for Pine") lives and works on Main Street in Galesburg, Ill., a town best known as the birthplace of poet Carl Sandburg. An artist, furniture historian, and restorer, Wisshack specializes in making period furniture, with some pieces so convincingly aged that they have fooled the experts.

Stuart Lipp ("The Secret to Making Perfect Joints") lives and works in New York City. Lipp studied woodworking in Maine and Scotland before moving to New York in 2003. That is when he began building custom pianos at Steinway & Sons; now, he oversees workplace safety and the construction of various limited-edition pianos.



FineWoodworking.com

For more information on our contributors, go to www.finewoodworking.com/authors.



Charlie Reina ("What's Your Sign?") came to *Fine Woodworking* a year ago after a 30-year career in broadcasting. Having worked as a writer and producer for *Good Morning America* and other national news programs, he took up woodworking as a hobby in the 1980s after Norm Abram visited *GMA* to promote his brand-new show, *The New Yankee Workshop*.

Nancy Hiller ("Arts & Crafts Wall Shelf" and *Finish Line*) learned early to appreciate British design. When she was 12, she and her family moved to England, where she later trained in furniture making and made a living as a woodworker. Returning to the United States to earn bachelor's and master's degrees in religious studies, she found her way back to woodworking and has operated NR Hiller Design Inc. since 1995. She also teaches a cabinetmaking class at Kelly Mehler's School of Woodworking.



The Taunton Press
Inspiration for hands-on living®

INDEPENDENT PUBLISHERS SINCE 1975

TAUNTON, INC.

Founders, Paul and Jan Roman

THE TAUNTON PRESS

President Suzanne Roman

Executive Vice President &
Chief Financial Officer Timothy Rahr

Executive Vice President &
Publisher, Magazine Group Jon Miller

Chief of Operations Thomas Luxeder

Group Publisher, Home Paul Spring

DIRECTORS

Creative & Editorial Director Susan Edelman

Human Resources Director Carol Marotti

Technology Services Director Jay Hartley

Controller Wayne Reynolds

Advertising Director David Gray

Fulfillment Director Patricia Williamson

Financial Analysis Director Kathy Worth

Circulation Director Dennis O'Brien

THE TAUNTON PRESS

Books: *Marketing:* Melissa A. Possick, Audrey Locorotondo. *Publicity:* Nicole Salvatore, Janel Noblin. *Editorial:* Helen Albert, Kathryn Benoit, Peter Chapreau, Steve Culpepper, Pamela Hoenig, Courtney Jordan, Carolyn Mandarano, Nicole Palmer, Jennifer Russell, Erica Sanders-Foege, Kathleen Williams. *Art:* Alison Wilkes, Nancy Boudreau, Amy Griffin, Sandra Mahlstedt, Wendi Mijal, Lynne Phillips, Carol Singer. *Manufacturing:* Thomas Greco, Laura Burrone.

Business Office: Holly Smith, Gayle Hammond, Patricia Marini. *Legal:* Carolyn Kovalski. *Magazine Print Production:* Philip Van Kirk, Nicole Anastas, Jennifer Kaczmarek.

Circulation: David Pond, Andrew Corson, Catherine Hansen.

Distribution: Paul Seipold, Walter Aponte, Frank Busino, David DeToto, Leanne Furlong, Deborah Greene, Frank Melbourne, Reinaldo Moreno, Raymond Passaro, Michael Savage, Alice Saxton.

Finance/Accounting: *Finance:* Brett Manning. *Accounting:* Patrick Lamontagne, Lydia Krikorian, Michelle Mendonca, Judith O'Toole, Elaine Yamin, Carol Diehm, Dorothy Blasko, Susan Burke, Lorraine Parsons, Larry Rice, James Tweedle, Priscilla Jennings.

Fulfillment: Diane Goulart. *Fulfillment Systems:* Jodi Klein, Kim Eads, Nancy Knorr, Thomas Kuzebski. *Customer Service:* Kathleen Baker, Bonnie Beardsley, Deborah Ciccio, Katherine Clarke, Alfred Dreher, Paula Ferreri, Eileen McNulty, Patricia Parks, Deana Parker, Patricia Pineau, Betty Stepney. *Data Entry:* Melissa Youngberg, Anne Champlin, Mary Ann Colbert, Caryne Lynne Davis, Maureen Pekar, Debra Sennefelder, Andrea Shorrocks, Marylou Thompson, Barbara Williams.

Human Resources: Linda Ballerini, Christine Lincoln, Dawn Ussery.

Information Technology Services: Applications

Development: Heidi Waldkirch, Jun Lu, Frank Miller, Robert Nielsen, Linda Reddington, John Vaccino, Daniel Woodhouse. Desktop and Network Support: Kenneth Jones, Petre Cotoana, Paul DelPadre, Gabriel Dunn, Michael Lewis, Jay Ligouri.

Operations: Joseph Morits, Roberta Calabrese, Kevin DeGroat, Leah Flynn, John Gedney, Marc Imbimbo, Jennifer Licursi, Susan Nerich, Jeannette Pascal, Amy Reilly. T Room: Michael Louchen, Geraldine Benno, Anna Pendergast, Anne Scheurer, Norma-Jean Taylor. Maintenance: Lincoln Peters.

Promotion: Jane Weber, Promotion Creative: Jennifer Wheeler Conlon, Kristen Coons, Michele Mayernik, Sandra Moryka, Nicole Pallatto, William Sims. Promotion Operations: Diane Flanagan, John Cavallaro, Sandra Hannan, Kate Krentsa.

Taunton Creative: Michael Amaditz, Sarah Opdahl. Video: Gary Junken, Michael Dobseavage.

Publishing Services: Deborah Cooper. Publishing Technologies: Mark Merritt, Tracy Goodpastor. Photography: Scott Phillips. Prepress: Richard Booth, William Bivona, David Blasko, Richard Corrales, William Godfrey, Brian Leavitt, Chansam Thammavongsa. Advertising Production: Laura Bergeron, Lisa DeFeo, Steven Molnar, Patricia Petro, Kathryn Simonds, Martha Stammer.

TAUNTON DIRECT

Donna Capalbo, Michele Ladyko, Kathleen McGreevy, Michael Valanzola.

TAUNTON INTERACTIVE

Jodie Delohery, Robert Harlow, David Hall, Bill Tine, Christopher Casey, Mark Coleman, Trish Dardine, Ruth Dobseavage, Lisa Durand, Erika Foreman, Geoff Krajewski, Steve Lombardi, Victoria North, Michael Stoltz, Dawn Viglione.

TAUNTON TRADE

Kevin Hamric, Director: John Bacigalupi, Brett DeMello, Allison Hollert, Elizabeth Quintilliano, Rebecca Shafon. Single Copy Sales: Jay Annis, Mark Selekman, Valerie Droukas.

TAUNTON MAGAZINES

Fine Woodworking • Fine Homebuilding
Threads • Fine Gardening • Fine Cooking

Our magazines are for people who are passionate about their pursuits. Written by practicing experts in the field, Taunton Press magazines provide authentic, reliable information supported by instructive and inspiring visuals.

TAUNTON BOOKS

Our books are filled with in-depth information and creative ideas from the finest authors in their fields. Whether you're practicing a craft or engaged in the creation of your home, Taunton books will inspire you to discover new levels of accomplishment.

WWW.TAUNTON.COM

Our website is a place where you can discover more about the interests you enjoy, converse with fellow enthusiasts, shop at our convenient on-line store or contact customer service.

EMPLOYMENT INFORMATION

To inquire about career opportunities, please visit our website at careers.taunton.com. You may also write to The Taunton Press, Human Resources, 63 S. Main St., Box 5506, Newtown, CT 06470.

CUSTOMER SERVICE

We are here to answer any questions you might have and to help you order our magazines, books and videos. Just call us toll-free at 800-477-8727.

The Taunton Press, Inc., Taunton Direct, Inc., Taunton Trade, Inc., and Taunton Interactive, Inc., are all subsidiaries of Taunton, Inc.



Easy-to-build boat kits

- * 35 kayaks, canoes, rowing boats & more.
- * Pre-cut parts, epoxy & hardware included.
- * Advanced design - stitch & glue.
- * Free catalog - 410 267.0137 or online:

clcboats.com

READER SERVICE NO. 39

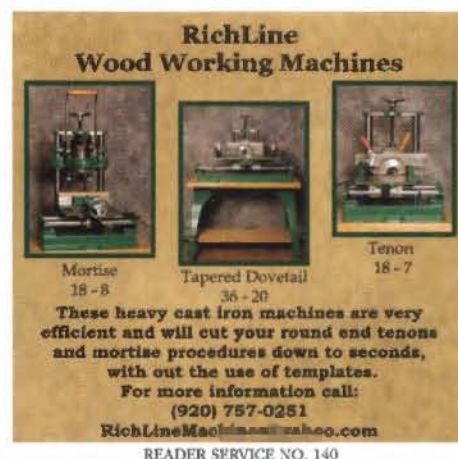


WristWriter™ Be more productive instead of looking for tape, notes & pencil!

Save time! End mistakes! Get it done right the first time!

www.wristwriter.com
508-747-5006 or 877-974-7897

READER SERVICE NO. 123



RichLine Wood Working Machines

Mortise 18-8 Tapered Dovetail 36-20 Tenon 18-7

These heavy cast iron machines are very efficient and will cut your round end tenons and mortise procedures down to seconds, with out the use of templates.

For more information call:
(920) 757-0251
RichLineMach info@richlinehq.com

READER SERVICE NO. 140



RouterBits.Com

Over 800 Whiteside Router Bits!

Email catalog@RouterBits.Com for a free print catalog!

READER SERVICE NO. 105



YOUR GATEWAY TO QUALITY LUMBER

Germany's modern sawmills and export traders supply customers worldwide with sawn timber products according to all requirements and national standards. They are your competent and reliable business partners!

www.germantimber.com

GERMANTIMBER®

READER SERVICE NO. 110

Spotlight

ISSUE NO. 192
August 2007
p. 36



COMMENTS ON GLUE TEST POUR IN

Thanks for an eye-opening test. I was disappointed that you did not include cyanoacrylate glue, a favorite of wood turners. I ran my own tests and yellow glue did beat polyurethane. But the overall winner was Satellite City's Super 'T', a cyanoacrylate (or "Super") glue.

—EDWARD H. RUSSELL, West Tisbury, Mass.

There's so much "information" floating around that it's refreshing to have some real comparisons and conclusions, with data to back them up. I applaud you for being willing to upset advertisers for the sake of the reader. My only quibble is that there was not a urea-formaldehyde glue included in the comparisons. I know they're not as popular as the others, but with their low creep factor, they work very well for bent laminations.

—JEFF BRATT, San Diego, Calif.

A glue absent from your article was (Weldwood) plastic resin. Its long open time and low creep make it the go-to adhesive for complex glue-ups and bent laminations. After conducting tests similar to the ones described in your article, I found that joint strength with plastic resin glue increases as much as nine times during its viable pot life of roughly two hours. I now tell my students that after mixing their glue to let it rest (slake) for 30 to 45 minutes prior to use, dramatically strengthening the adhesive bond.

—PAUL KINSEY, College of the Redwoods, Eureka, Calif.

One methodological issue seems problematic: These open bridle joints didn't seem to be clamped tight while the glue cured. Yet polyurethane glue expands as it cures. Does this not imply that the gaps in the joint would be widened by the glue itself, thereby weakening the bond for this type of glue?

—PETER WELLS, Marigny l'Eglise, France

I wonder if you used any type of filler with the epoxy when used in the loose joint. After building six boats, I've concluded that straight resin without a filler does not result in a strong joint.

—HANS WENDLER, Epsom, N.H.

Author replies: This article has generated a lot of letters, email, and online chatter. I'll respond here to the three comments raised most often.

First, why didn't we include other woodworking glues such as white glue, urea formaldehyde, "Super" glue, and a fast-set epoxy? The complexity of the test limited us to six of the glues most commonly used for furniture making. It still took considerable time to make and destroy 162 joint samples.

Second, readers were surprised by the poor performance of the polyurethane glue, especially on loose joints. They asked whether we dampened the wood before applying the glue and clamped the joint afterward. We did dampen all polyurethane glue surfaces. We put a spring clamp across all of the tight joints, regardless of the glue, because in trial joints, shop manager John White noticed that some glues caused the tight bridle joints to open up. The snug and loose joints were clamped away from the glue area to maintain an even gap (or pressure) on both sides of the tenon.

Last, a number of readers, in particular those who have built wooden boats, noted that epoxy is much stronger, especially when asked to fill gaps, if a filler such as wood flour is added. This may be, but no mention of it was made in the instructions for the System Three epoxy used in the test.

—MARK SCHOFIELD, managing editor



THIS MORNING,
ALL YOU WERE GOING TO DO WAS PAINT.

When you start a project with Craftsman tools, there's no limit to where you can end up.

THERE'S A CRAFTSMAN IN ALL OF US

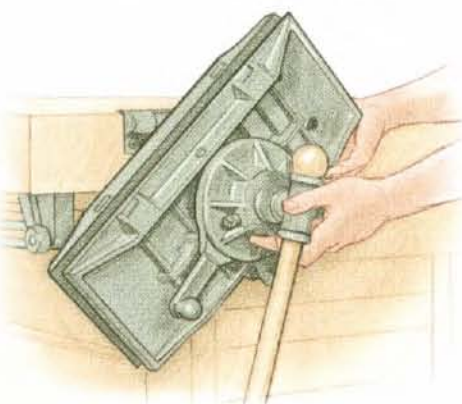
CRAFTSMAN

Emmert's great invention

Thanks for the article on vises ("Making Sense of Vises," *FWW* #191). Besides books and glossy magazines, one of my other big vices is vises.

I have one quibble: You included a "patternmaker's vise" on p. 51. That is true, of course, but the one you show appears to be an Emmert #1 or one of its copies (since the patent has long expired). Would it have been a lot of trouble to include the name of the great tool designer who invented this wonderful device?

—RICK SHAFFER, Cottonwood, Ariz.



Editor replies: Better late than never. Joseph F. Emmert patented this vise in 1891, and the near-perfect tool has remained largely unchanged since then. Part of its greatness is that it allows you to reposition a workpiece at almost any angle without having to loosen the jaws.

Is someone copying your design?

Dear colleagues: Is someone else copying your original design? If you search the Internet for Maloof-style rockers, you'll find a hundred-plus woodworkers using Sam's ideas and techniques for commercial gain. The other day I found a person and company that I believe traced my 1975 stool from *The Custom Furniture Source Book* (The Taunton Press, 2001) and put my design into production in China. An even cheaper knockoff is sold at Costco.

In a world of Wal-Mart and globalization, can I protect my little object? Should I bother to try?

In the reproduction furniture community, everyone copies the tried and true.

So where does that leave today's studio furniture makers and designers?

Fine Woodworking has offered to host a discussion on this issue. If you have a thought, photo, or legal opinion about authorship and design protection, or have a personal experience with this question, please go to www.finewoodworking.com/extras for a link to an interactive discussion on this topic.

—JOHN GREW SHERIDAN, San Francisco

Metric system better for mixing shellac

In a recent *FWW* email newsletter (May 25, 2007; sign up at FineWoodworking.com for the free eLetter) there was an article on mixing your own shellac. I suggest going metric, by weight only, making it far easier to scale up or down for bigger or smaller quantities.

If you have a digital kitchen scale (or any scale that measures grams), you weigh a volume of denatured alcohol and add the appropriate weight of shellac for the cut you want (see the listing below).

To mix half a cup of a 2-lb. cut, put your empty jar on the scale, push the button to zero the scale, pour in 100g of alcohol, and add 30g of shellac flakes. That 100g of alcohol will measure 125 ml, or 4¼ oz., a little over ½ cup in volume.

For thicker and thinner cuts, add the following amounts of shellac to 100g of alcohol:

- 15g of shellac for a 1-lb. cut
- 30g for a 2-lb. cut
- 45g for a 3-lb. cut

Working by weight simplifies mixing tasks. I weigh directly in my mixing container, with no measuring spoons or cups, and with more accurate quantities.

A decent electronic scale can be had for \$30 or so in cooking-supply stores.

—PETER ZIMMER, Halifax, NS, Canada

Writing an Article

Fine Woodworking is a reader-written magazine. We welcome proposals, manuscripts, photographs, and ideas from our readers, amateur or professional. We'll acknowledge all submissions and return those we can't publish. Send your contributions to *Fine Woodworking*, PO Box 5506, Newtown, CT 06470-5506.

Use a handsaw to carry plywood?

Yours is a great magazine, so I was surprised to see a tip (Methods of Work, *FWW* #192) that suggests using a handsaw to carry a sheet of plywood. I can't imagine a craftsman laying the teeth of a handsaw across an expensive piece of plywood with thin walnut veneer.

—CARL WILLIAMS, Pasadena, Calif.

Editor replies: Good point. The teeth might damage a sheet of fine hardwood plywood. We think a strip or two of masking tape along the teeth would solve the problem. But for most of the general-use sheet goods we haul around the shop (construction-grade plywood, hardboard, medium-density fiberboard, and the like), the tip works well as shown.

Better way to make a slotted dowel?

I think I have a quicker way to "Cut a lengthwise groove in a [1-in.] dowel" (Q&A, *FWW* #192). Use a piece of stock 1 in. sq. and several inches longer than the required length of the dowel. Then saw the slot in one face of the square. Now position the blank on a router table and cut all four sides with a ½-in.-radius roundover bit, keeping an inch or so square on each end.

—BOB SELKIRK, Fort Myers, Fla.

Buy generic router bits in cheap sets

I appreciated your recent shop test of router bits (*FWW* #191). This may sound like heresy, but where are the generics? Sure, I indulge in the top brand names, but in recent years I have succumbed to offers from department stores, home centers, and catalogs for large and small sets of bits, usually of indeterminate origin. The average price per cutter is \$2 to \$3!

I never worry about chipping an edge or having to send them for re-sharpening; the bits cost about as much as twist drills.

—ROGER APTED, Milton, Wis.

Correction

In a recent article, "Tool Test: Benchtop Drill Presses" (*FWW* #192), we inadvertently put the Best Value logo on the wrong Grizzly drill press (there were two in the test). The winner, as indicated elsewhere in the article, was the Grizzly G7943.

**We Manufacture & Service
SHAPER & MOULDER KNIVES FOR**
**WILKINS & BUSSEY • POLY DLSAW
 K&O WOODMASTER • GRIZZLY
 • SHOP FOX • CORRUGATED BACK**
 We distribute
FRERKORN • TRIT • AMANA • FORREST
 Back Distributors
Top Quality Products at Competitive Prices
 NORTH:
 32 Meadow Road
 Florida, NY 12111
 Phone: 518-818-8121
 Fax: 518-818-1047
 SOUTH:
 176 Lee Dick Place
 Mooresville, NC 28115
 Phone: 704-336-3061
 Fax: 704-336-4127

W. Moore Products Inc.
www.wmooreproducts.com
 • Serving the industry
 for over 11 years

READER SERVICE NO. 12

**Attention: Makers of solid
panel cabinet doors**

SPACE 10 BALLS
 US Pat 5,317,852 CD# Pat 21-5722

**Revolutionary NEW
Product**
 The inexpensive solution
 to your age-old problem:

- Cuts solid panel's
• Compresses
• warps inward
• Glues joint tight
• 1-also eliminates
cracking glue joints

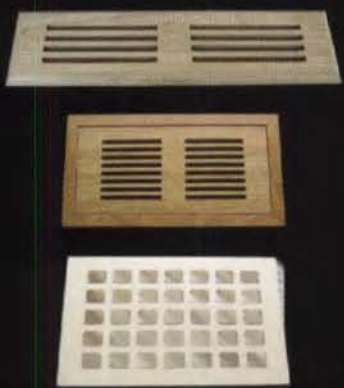
SPACE 10 BALLS is a 100% dispenser
- it spreads glue and not cures
8 to 10 SPACE 10 BALLS

BLACK BRIDGE ONLINE INC.
 1-800-825-8912 blackbridgeonline.com

READER SERVICE NO. 70

**CAPE COD
AIR GRILLES**

*Custom Grilles
Are Our Specialty*



ALL WOOD SPECIES

Call For A Free Brochure
 Phone: 1-800-547-3700
 Fax: 508-384-7330

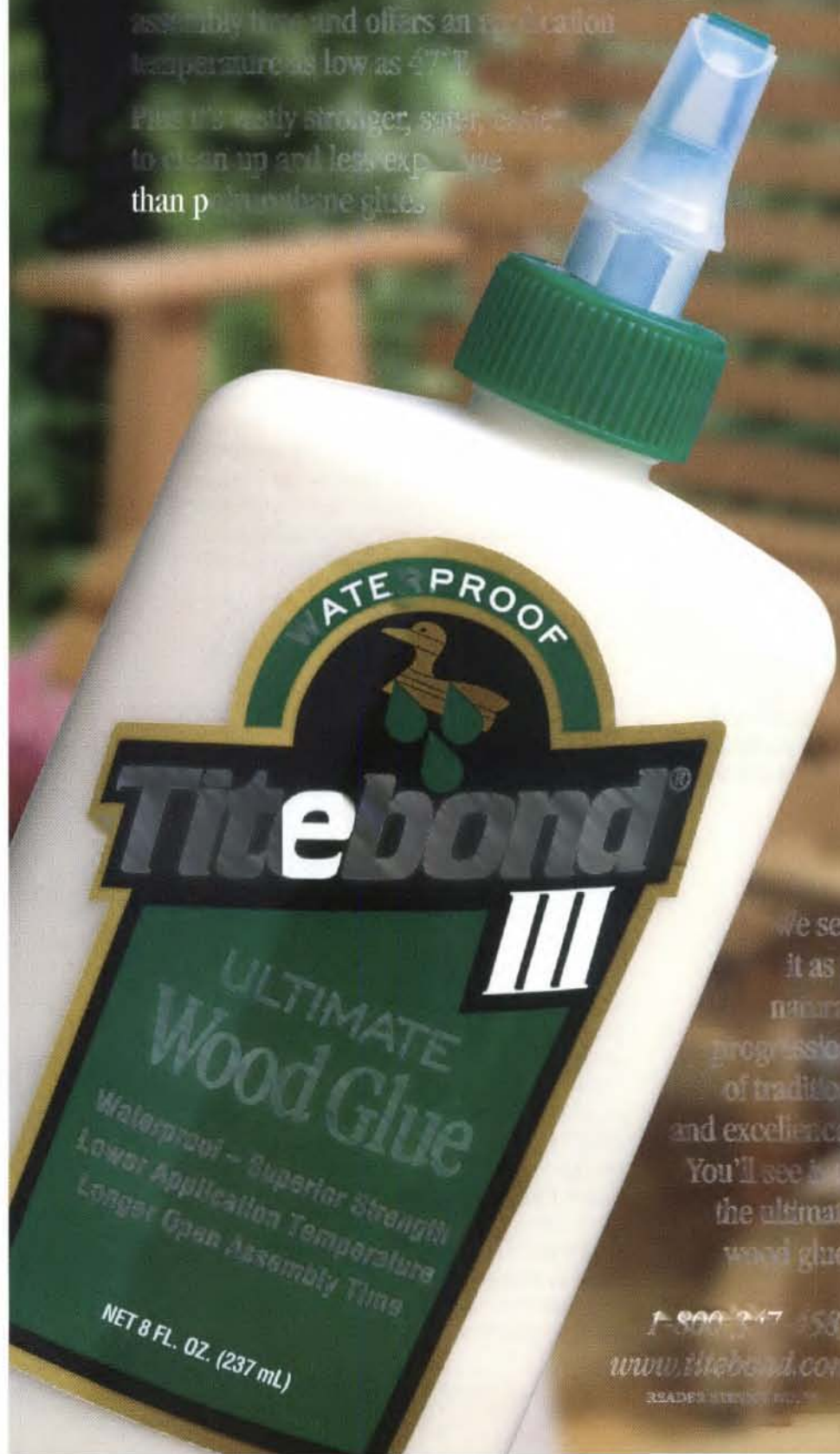
Visit us on the web:
www.ccairgrilles.com

READER SERVICE NO. 65

The Best Wood Glue Ever

What makes Titebond® III Ultimate Wood Glue the best ever? It's water-soluble, yet cleans up with water. It allows eight minutes of open assembly time and offers an application temperature as low as 47°F.

Plus it's vastly stronger, safer, easier to clean up and less expensive than polyurethane glues.



We see it as a natural progression of tradition and excellence. You'll see it as the ultimate wood glue.

1-800-247-1583
www.titebond.com

READER SERVICE NO. 79

Introducing the W&H Model 206!



Built In Multi-Pass
System

Variable Feed
Motor

GS1 Guide
System

Variable Feed
Control W/Magnetic
Dropout Switch

Steel Welded Stand

Heavy Duty Cords

NEW

7 Year Warranty



Multi-Pass Kit Vari-Feed Kit

70 Powers St. Milford, NH 03055
phone. 800.258.1380

www.williamsnhussey.com

READER SERVICE NO. 17



Inside Passage School of Fine Woodworking

A school founded on the teachings of James Krenov

Nine-Month Craftsman Program
One to Six-Week Artisan Programs

Weekly Lectures by James Krenov

Located on the Sunshine Coast of British Columbia

www.insidepassage.ca

1 877 943 9663

READER SERVICE NO. 90



www.holbren.com
800-838-3547 24/7
sales@holbren.com

AMERICAN MADE TOOLING

- Whiteside Machine Router Bits
- LRH Shaper Cutters and Magic Molder
- Ridge Carbide Saw Blades
- Byrd Tool Shelix Spiral Jointer and Planer Heads
- Forest City Drill Bits and Mortising Chisels



ROUTER BITS MADE IN U.S.A.



Basic 7 pc Router Bit Set #401

Only \$88.00 Delivered

- ⇒ Free Shipping On Every Order
- ⇒ Fast Delivery & Large Inventory
- ⇒ Low Price Guarantee

READER SERVICE NO. 21

SHAKER

A fine collection of reproduction Shaker furniture, oval boxes and more. Available as do-it-yourself kits or custom finished. Large selection of replacement chair tapes.

Call now for free catalog
1-800-840-9121

SHAKER WORKSHOPS
Box 8001-FW
Ashburnham, MA 01430

www.shakerworkshops.com/fw



READER SERVICE NO. 120

Original Saw 3512-01

- 24" Crosscut
- Dado operations
- bevel cutting
- miter cutting
- compound mitering
- 1 & 3 phase models
- Consistent results
- day after day.
- Year after year
- It all adds up.....
- See website for details



NEW



SS Series Manual
Sliding Stops



800/733-4063

www.originalsaw.com

Original Saw Company - Britt, IA 50423

READER SERVICE NO. 151

SATA CENTURY - 100th Anniversary Edition

worth their weight in GOLD



- Gold plated and set with a Swarovski crystal
- Available as SATAjet 3000 standard or DIGITAL version in HVLP or RP technology, and also in a SATAmixjet 4 HVLP
- Nozzles individually checked by hand
- Fully functional
- Limited Edition - while supply lasts

SATA

Exclusive Independent Nationwide
Distributor of SATA Products

Dan-Am Co.®

Call 800-533-8016

www.satausa.com

100 YEARS

READER SERVICE NO. 13

what's the difference?

Pin gauges vs. slicing gauges

BY STEVE LATTA

Pin gauges and slicing gauges fall under the umbrella of marking gauges and are primarily used to scribe lines for joinery. Pin gauges are simple and inexpensive. They consist of a steel pin mounted near the end of a bar that's most often made of wood. Without refinement, the pin makes a V-shaped cut that tends to rip the fibers when marking across the grain, as for a tenon.

On slicing gauges (often called cutting gauges), the pin is replaced by a knifelike cutter that typically is flat on the outside face and beveled on the inside. This wedge shape pulls the main body of the gauge tight to the edge of the stock and discourages the blade from wandering. This profile also leads to tighter joinery because the bevel is on the waste side of the cut.

A modern variation of the slicing gauge is the wheel gauge, which uses a beveled circular cutter mounted at the end of a bar or a round steel shaft. The cutter does not rotate during use. When a section of its edge dulls, it can be loosened and rotated to expose a new section.

The all-metal versions of the wheel gauge come with disk-shaped fences that typically are smaller than the rectangular wood fences common to traditional slicing gauges. To me, they feel awkward and provide too little bearing surface along the edge of the workpiece. Still, many folks I know would be reluctant to give theirs up.

I prefer a shopmade slicing gauge (mine is shown in *FWW* #183, p. 46). Commercially made slicing gauges with wide fences include traditional Western designs (for example, by Crown Tools) and Japanese versions, which have especially large fences.

If you have a pin gauge, you can convert it to a slicing gauge. Just file the pin's outside face flat and its inside face on an angle to form an edge that actually will cut the wood. □



It's all in the blade. The pin gauge (left) uses a pointed steel pin that makes a V-shaped cut. Slicing gauges tend to make cleaner cuts. The traditional version (center) uses a knifelike cutter, while the wheel gauge (right) employs a beveled circular cutter.

PIN GAUGE

The bane of the pin. Marking across the grain with a pin gauge leads to torn wood fibers and a ragged cutting line.



SLICING GAUGES

Clean cutting. Both the knife gauge (right) and wheel gauge (below) make clean cross-grain marks, but the square fence of the knife gauge offers more bearing surface.





Laser Engraving, Cutting and Marking Systems

Start Your Own Laser Engraving Business!

Starting at \$9,995!

Create and sell custom engraved and cut logos, photos, graphics and more - and it's as easy to operate as a printer. Call us today toll free at 888-437-4564 to receive a free brochure, sample kit and CD demo of the system in action!

Inlay Signage



Architectural Modeling



Overlay Plaques



Memorial Plaque



Photo Wood Cards



Toll Free: 1.888.437.4564

Phone: 303.277.1188

sales@epiloglaser.com

www.epiloglaser.com/fw.htm

READER SERVICE NO. 94

The Woodworker's Dream!

Over 65,000 Woodworking Products

Lowest Prices... Widest Selection... All From Stock!



Lighting



Wood Mouldings



Flexible Mouldings



Castors



Pliable MDF Board



Cabinet Inserts



TV Lifts



Drawer Slides



Knobs & Pulls



Wood Carvings

Call For Our Free 1,100+ Page Catalog!

Outwater Plastics Industries

1-888-772-1400

Catalog Requests

New Jersey • Arizona • Canada

1-800-631-8375

Sales & Product Information

www.outwater.com

1-800-888-3315

Fax

READER SERVICE NO. 48

Sliding Power.

NEW



3 HP Sliding Table Saw

MODEL 10-110

- Accepts 29/32" Dado
- 58" Rip Capacity
- 49" Sliding Carriage
- Magnetic Bump Switch
- 5/8" Arbor
- Crosscut Fence



Table Insert w/ Depth Indicator



Heavy Duty Cast Iron Trunnion



Triple Drive Belt System

RIKON

www.rikontools.com

877-884-5167

READER SERVICE NO. 147

Is it time to get a fresh edge?

SIGNS THAT YOUR TOOLS ARE LOSING THEIR CUTTING POWER

BY STEVE SCOTT



Showing some wear. As a handplane blade dulls and gets nicked, the shavings no longer come off as a wide ribbon but are sliced down their length.

Beginning woodworkers are told often about the importance of keeping tools sharp. Deciding when to stop and resharpen or replace a tool ultimately depends on how much poor performance you're willing to accept. Applying that lesson, however, takes practice. For starters, how can you tell when a tool is losing its edge?

Christian Becksvoort calls the descent from sharp to dull "a gentle, downward curve, with steadily declining results and ever more effort required."

We asked Becksvoort and other contributing editors to describe some indicators that it is time to sharpen. The three warning signs: effort, results, and tool condition.

How hard are you working?

When deciding whether a tool is losing its edge, "my first clue is an increase in cutting resistance," says Garrett Hack.

Simply put, a dull cutting edge on a hand or power tool requires more force to cut the wood. On router tables, for instance, a dull bit means you'll have to

exert more pressure to keep the wood against the fence.

"A dull bit will tend to push the material away," Roland Johnson says. "A sharp bit just cuts." In similar fashion, a dull jointer knife wants to lift a board off the table.

You'll have to push harder to move stock through a cut if a bandsaw or tablesaw blade is dull. A dull tablesaw blade requires extra effort even if cleaned of gum and pitch, Becksvoort says.

On the bandsaw, you'll find yourself pushing the blade against the rear thrust

Power tools

The brute force provided by an electric motor can't overcome the effects of a dull blade or bit. You'll work harder to feed the stock or guide the tool, and the finished cut will not be clean.



More push needed. The extra force required to feed stock into a dull bandsaw blade can cause the blade to wander. A rough, wavy cut is the result.



Slow going. A dull tablesaw blade requires more effort to feed stock into the cut, and the difference shows in the work. Although a dull blade won't look markedly different from a sharp one, it can leave stock looking burned and scarred.



FREE TOOL CATALOG!



Your Best Work Starts With Us...

with over 15,000 of the finest woodworking tools in the world, Woodcraft can help you work more efficiently and skillfully than ever. Call for your FREE copy today.

WOODCRAFT 1-800-542-9115
Helping You Make Wood Work www.woodcraft.com

406 Airport Industrial Park Road
P.O. Box 1686, Parkersburg, WV 26102-1686 C07WW10T

READER SERVICE NO. 38

WHITECHAPEL LTD



315 PAGE COLOR CATALOG \$5.00
1-307-739-9478 whitechapel-ltd.com

Blum Smooth Plane



BlumToolCo. 1-800-521-5458
406 Pearl Street, Walnut, IA 51577
Unique Planes, Sharpening Jigs & Portable Workbench
www.blumtoolco.com

READER SERVICE NO. 95

Teardrop Trailer Plans

Build your own classic camping trailer!
The ultimate woodworking project

- NO WELDING REQUIRED!
- FULL GALLEY IN REAR

8' Cubby



Complete plans include built-in icebox, stove, water tank, 12V electric system, cabinets, floor hatch for porta-potty. Sleeps two inside the cabin, 4' x 8', 900 lbs.

Kuffel Creek Press • www.kuffelcreek.com
PO Box 2663 • Riverside • CA 92516 • fax 951/781-9409

READER SERVICE NO. 54

CUT PERFECT EDGES & FLAT BOTTOMS WITH AMANA TOOL'S® NEWEST SUPER FINE DADO SET



Amana Tool's® latest industrial quality dado head, sets the standard for super smooth, flat-bottom cuts for both along and across the grain.

Perfect for Wood, Melamine & Laminates, Veneered Plywoods, Crosscutting and Rippling.

"This dado set cuts incredibly clean with absolutely no tearout or ragged edges"
- Lonnie Bird



\$199⁹⁵ Amana Tool #658060
List Price \$364.00



8" 24T WITH SIX 4-WING CHIPPERS
Includes Free Shim Set for fine adjustments



Amana Tool®
High Performance Cutting Tools

For A Dealer Nearest You Call 1-800-445-0077
Visit Our Website www.amanatool.com



ASK LONNIE BIRD
For tips & techniques visit our Q&A column online
www.amanatool.com

READER SERVICE NO. 19

FOR THE TOUGHEST JOBS ON PLANET EARTH.



GORILLA TOUGH



From building, to creating,
to repairing and more.

1-800-966-3458 • GORILLATAPE.COM

© 2007 The Gorilla Glue Company. T3HD

READER SERVICE NO. 60

Hand tools

As it dulls, a chisel or plane iron will gradually offer more resistance to the force you apply.

DULL



SHARP



A sign of wear. A dull plane iron will show a telltale line of light near the cutting edge. A sharp blade won't.

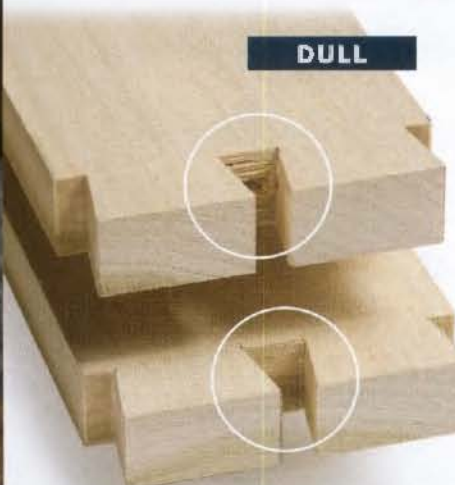


DOVETAILS ARE A GOOD TEST

Torn-out end grain between the tails indicates a dull chisel. Soft woods like white pine show tearout sooner.



DULL



SHARP



bearing as you force stock through a cut, according to Gary Rogowski. This is more apparent with thicker stock.

With handplanes, Hack says, a dull edge is most noticeable on end grain. And dull chisels are harder to handle.

"On long grain I have to push harder," says Hack, "and I sometimes lose control because the dull edge wants to dive into the fibers rather than sever them."

Becksvoort sharpens his chisels after one large dovetailed case or two or three smaller pieces.

What do the results look like?

If increased effort is the first sign of a dulled edge, poor results are the surest.

Jointers and planers will leave tearout when blades are dull. Becksvoort changes them after two to four months of frequent use. The dulled blades give the wood a polished appearance that is "very shiny, but not particularly smooth."

A router with a dull bit can burn the stock, but that also can happen with a slow feed rate. A surer sign, Hack notes, is a cut with feathery or splintered edges.

On the bandsaw, Rogowski says, a dull blade will wander and yield a wavy cut, or begin to drift increasingly to one side.

With chisels, Becksvoort finds that when chopping dovetail slots, "I begin to get an unacceptable amount of tearing as I chop down across the grain."

Hack gauges the sharpness of a handplane edge "by looking at the shaving and by feeling the surface."

On long grain, he looks for tearout and a dull or slightly rough surface.

"The shavings no longer come off as a continuous thin ribbon but are getting sliced down their length at each nick, or they have holes where tearouts occur."

How does the tool look?

If you are still unsure that you have a dull blade, look at the edge itself.

On plane irons and chisels, a dull blade will reflect a line of light at the cutting edge. Dull sawteeth are much harder to see. They won't look or feel any blunter than sharp ones. But if a good cleaning doesn't improve their cutting ability, you'll know the edge is suffering. □

INTRODUCING...

One-Handed Tool & Gear Transportation



The New **OT** Line
of Open-Top Tool Bags

Available in three
work-ready sizes,
FALL 2007

VERTICAL TOOL STORAGE



VETO PRO PAC
TOOL BAGS THAT WORK.

877.847.1443 WWW.VETOPROPAC.COM

READER SERVICE NO. 132

JessEm
Tool Company

THE NEW

Mast-R-Slide™



Love At First ...Slide!

JessEm's New **Mast-R-Slide™** Precision Sliding Cross-Cut Table is the ultimate add-on for your table saw. Thirty double-sealed precision bearings in an innovative linear guide mechanism provides an exceptionally smooth and accurate cross-cutting solution. Fits most table saws and offers a maximum cross-cut of 36 inches. Upgrade your saw with a **Mast-R-Slide™** from JessEm Tool today.



Visit us at www.jessem.com
Call: 866-272-7492 • Barrie, Ontario Canada

READER SERVICE NO. 40

FESTOOL DOMINO

- See Demonstration Videos @ www.mcfeelys.com/domino
- Makes loose-tenon joints **Quickly and Accurately**
- DOMINO tenons have **more gluing area** than Biscuits or Dowels
- Carbide-tipped bit cuts **cleanly and quickly**
- Provides **positive alignment** and joint strength



McFEELY'S™

PO Box 44976 • Madison • WI 53744
Toll Free 1-800-443-7937 or at www.mcfeelys.com

READER SERVICE NO. 47

ROJEK
1921

European reliability
at affordable prices!
2-year manufacturer's warranty



KPS 300A
5-in-1 Combo Machine
12" Table Saw with scoring unit
Shaper (5 speeds)
12" Planer & 12" Jointer
Slot Mortiser



VDA 316
Slot Mortiser



MSP 315
12" or 16"
Planer/Jointer



PK 250A
Cabinet Saw



PK 300V
Table Saw

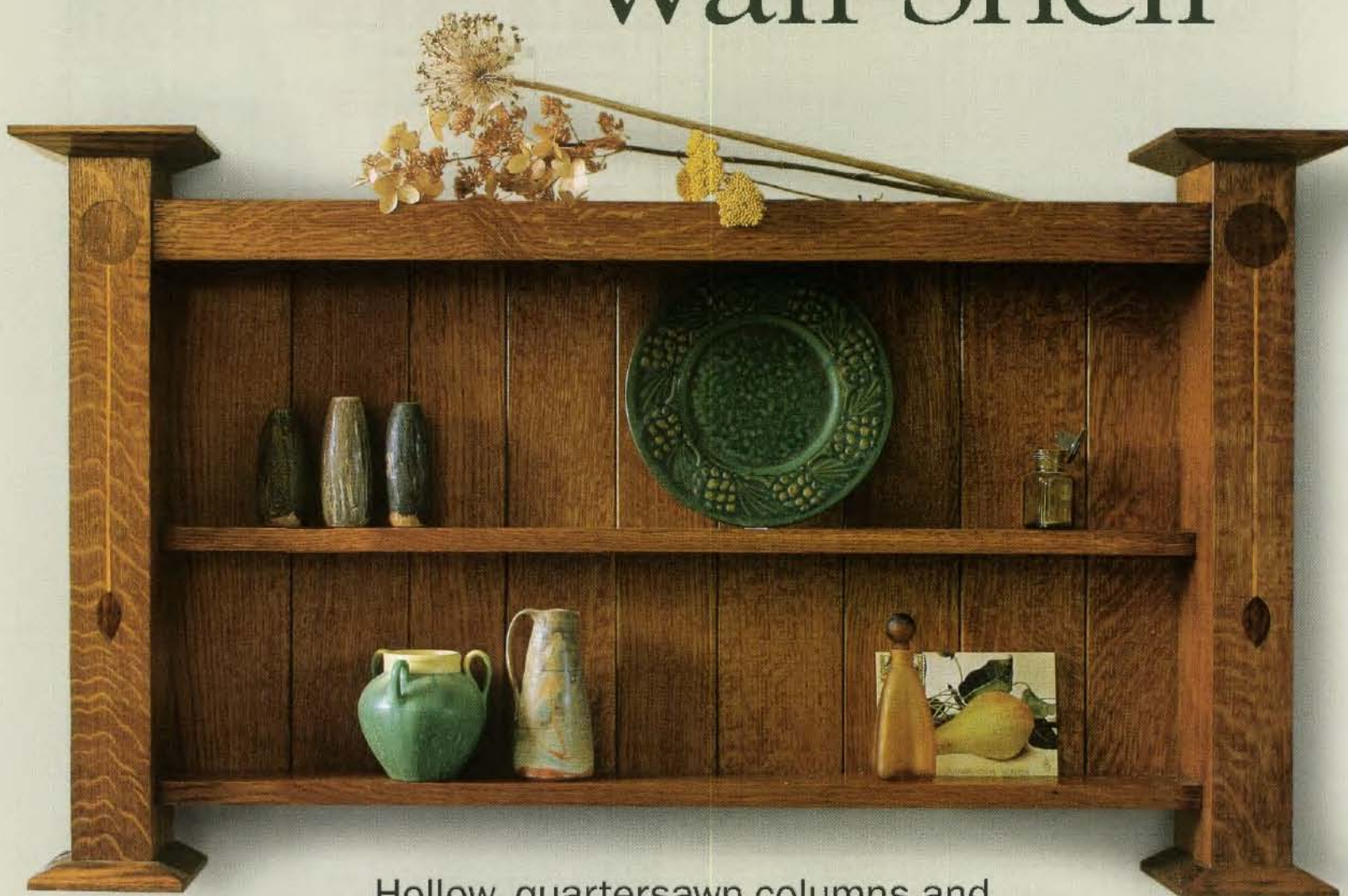
Visit us At
www.rojekusa.com

Call us Today
800.787.6747

TM
TECH MARK, INC.

READER SERVICE NO. 144

Arts & Crafts Wall Shelf



Hollow, quartersawn columns and traditional inlay elevate an easy project

BY NANCY HILLER

While looking through a book on home design several years ago, I noticed a small cabinet hanging above a claw-foot bathtub. With its inlaid columns and beveled caps, the shelf was wonderfully British in style and was quite distinct from American interpretations of Arts and Crafts design. Although the original cabinet had a pair of doors, its shallowness seemed more suited to open shelves.

The design of this cabinet may be simple, but making it involves using a number of valuable techniques such as mitered joints for the columns, decorative inlay, and a finish for quartersawn oak that makes new work look old (see *Finish Line*, pp. 106-107). Although quartersawn oak is the traditional choice for English Arts and Crafts furniture, this piece would look equally good if it were made of cherry or nonfigured maple.

Mitered columns showcase oak grain

The columns are the focal point of this piece. They are hollow, made of three vertical boards mitered together at the front corners so that the quartersawn figure is visible on each face, with a fourth board inserted as a back filler.

Even if you are not using oak, these mitered corners will give the columns a much cleaner look than simple butt joints. While you certainly could use a single,

MITER AND GLUE UP HOLLOW COLUMNS

This method of construction allows the hallmark Arts and Crafts ray-fleck figure to appear on each face.



Attach an auxiliary fence. Using a supplemental fence on a right-tilt saw prevents the thin, already mitered edge from creeping under the sliding rip fence.

thick block of wood for the columns, doing so seems clumsy for a delicate piece of furniture, and the columns would be less stable when subjected to seasonal changes in humidity.

Cut the miters in one pass on the table-saw, holding the board down firmly all the way along the cut. If it lifts even a little or wanders away from the fence, the mitered edge will not fit tightly.

After cutting the miters, you can go ahead and cut the pieces to length. Dry-clamp one of the columns to work out any kinks in the process. Now you are ready to glue them.

There are a number of ways to approach this glue-up, but the method I use has proven efficient and easy for somebody working alone, and it yields great results. I use Ulmia picture-framing miter clamps (www.garrettwade.com or www.collinstool.com) because they are lightweight and easy to handle. While the pointed ends of the wires do leave small indentations in the wood, the coarse grain of the oak distracts the eye enough that the marks disappear when filled with wood putty.

I match the putty to the piece only after the third step of the finishing process (see *Finish Line*, p. 107). If you don't want to buy Ulmia clamps or if you are using a finer-grained lumber such as maple or



Start clamping at the front of the column. Because the pieces that form the column are now cut to length, make sure to get the ends level with each other.

cherry, you can use tape (see "The Miter Joint for Casework," *FWW* #190, p. 66, for the taping method) or picture-framer's miter clamps to avoid these marks.

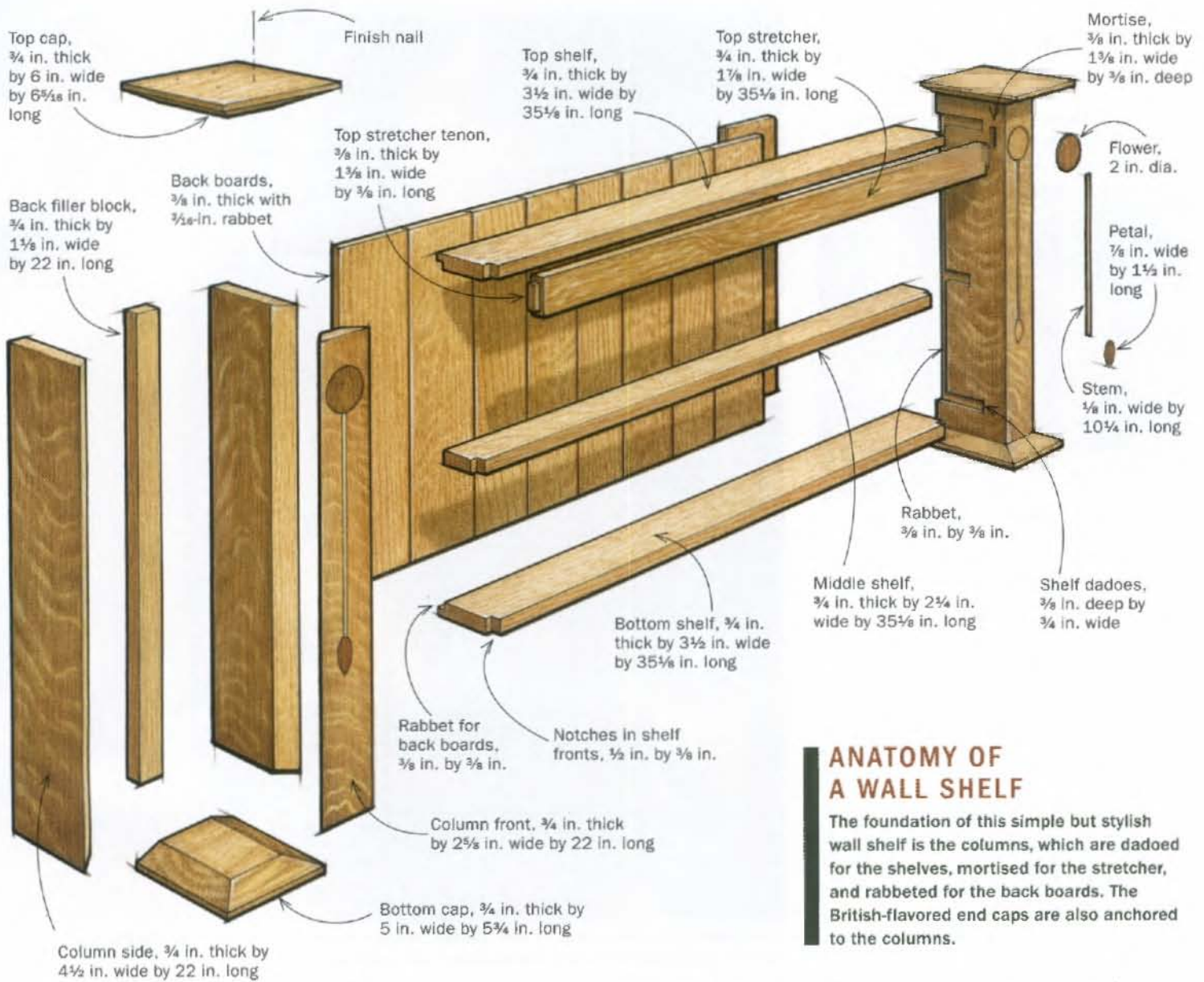
As soon as each column's miters are clamped, insert and clamp the filler board at the back. After the glue is dry, run the back face of each column over the jointer to level the joints.

Rout the shelf dados, rabbets, and stretcher tenons

The shelves will be housed in stopped dados routed into the columns. Mark the columns and rout the dados while the two columns are clamped together. When marking the dados, there are two things you must remember: Because the center shelf is set back more than the other shelves, its dado begins farther back than

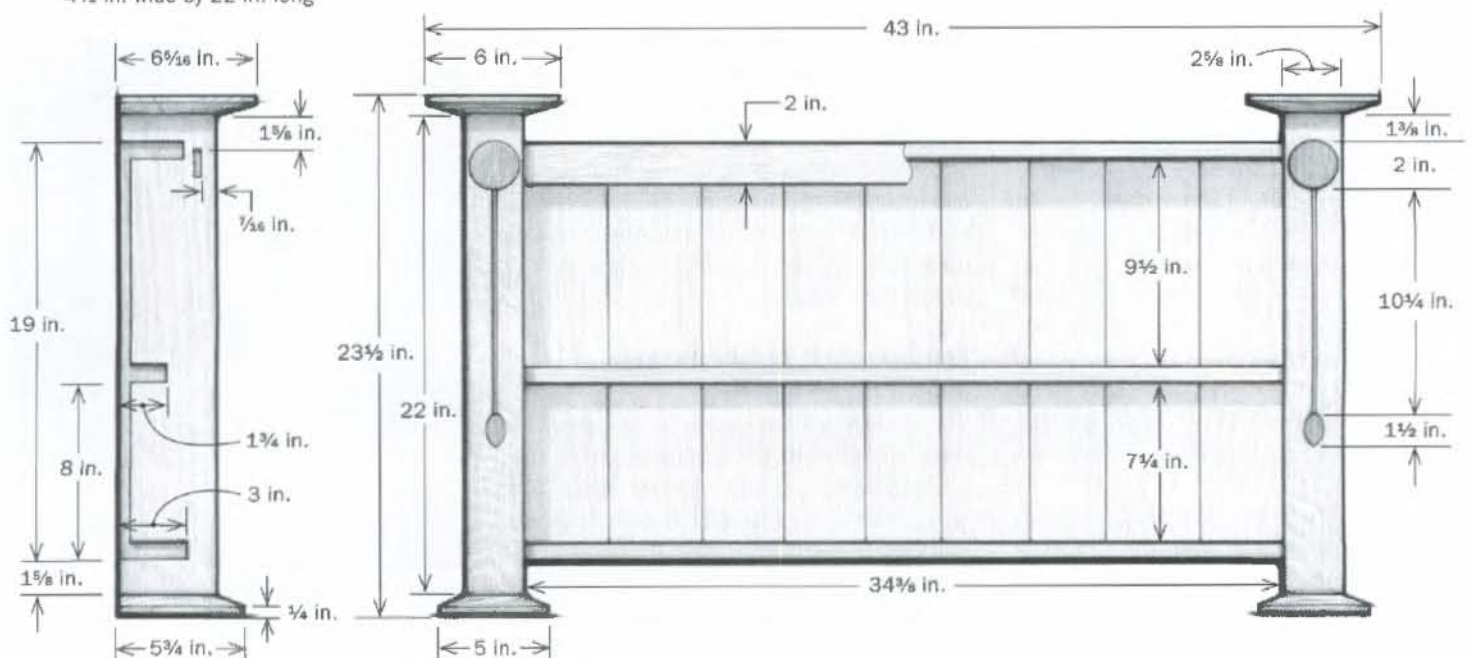


Insert the filler piece in the back. Once the back is in place, use bar clamps to apply pressure.



ANATOMY OF A WALL SHELF

The foundation of this simple but stylish wall shelf is the columns, which are dadoed for the shelves, mortised for the stretcher, and rabbeted for the back boards. The British-flavored end caps are also anchored to the columns.





CUT THE DADOES AND RABBETS



Route shelf dados while columns are clamped together. Clamp a straightedge to the columns to guide the router (left). Use a chisel to square up the front edge of the dados by hand (above).

the dados for the top and bottom shelves; and all of the dados are stopped short of the shelf fronts to accommodate the notch in the front of the shelf.

Cut the dados in one or two passes using a $\frac{3}{4}$ -in. straight bit, guiding the router with a straightedge clamped to the work. With a chisel, square up the front ends of the dados.

While milling stock for the shelves (after you have finished cutting the dados), be attentive when you get close to $\frac{3}{4}$ in. thick and keep checking the stock against the dado. The fit should be hand-tight, requiring some pressure to push the stock home but not so tight as to need heavy pounding with a mallet.

Next, rout a rabbet for the backboards on the underside of the top shelf and on the upper side of the bottom shelf. The columns also need a rabbet to hold the backboards. When cutting the rabbets in the columns, stop them in the upper and lower shelf dados. Check how everything lines up.

The top stretcher will be tenoned into the columns. The small mortises for these stub tenons can be cut using a router guided by its own fence or just drilled out and then finished with a chisel. I cut the stub tenons by hand with a backsaw.



Route a rabbet for the backboards. A rabbeting bit works well, with the guide bearing running against the side of the column. Stop the rabbet in the shelf dados.

Fit the shelves

When the piece is finished, there will be three distinct shelf setbacks. The top shelf will have a stretcher in front of it, so even though the top and bottom shelves are cut to the same depth, the top shelf will sit nearly at the front of the column. The bottom shelf, which does not have a stretcher, will be set back about $\frac{3}{4}$ in. more, and the center shelf will be the farthest back.

Cut the shelves to size, remembering to rip the center shelf narrower than those at

the top and bottom in order to accommodate the extra setback as well as the backboards. Mark out for the notch on the front edge and use a backsaw to remove the waste, or you can cut these notches and the joints for the stretcher on the tablesaw. Test-fit the shelves in their dados.

Create the decorative inlay and assemble the case

I do my inlay with the aid of a magnifier that mounts to my workbench. The first step is cutting out templates (using

A simple inlay technique



1 **Score the outline.** Press lightly at first to avoid getting caught in the grain, then more deeply a second and third time.



2 **Remove most of the recess.** Rout close to the inlay border, leaving a bit of waste to clean up by hand.



3 **Pare to the line.** Carving gouges make it easy to clean up and shape the recess accurately.

Prepare the inlays by resawing stock (on the tablesaw or band-saw) to $\frac{3}{32}$ -in. thickness. Regular commercial veneer is too thin and doesn't leave any margin for error.

Trace the outline onto the inlay stock and cut each part to shape, using a scrollsaw or a coping saw, files, and coarse sandpaper. After the inlays are shaped, mark the position of the flower and leaf on each column, taking care to center them in the width and align each element with the other. You can use double-sided tape to ensure that the inlays don't slip out of position while you are scribing around them. Score the outline with a sharp knife or awl. Carefully rout out the main portion of the recess, using a $\frac{1}{4}$ -in. straight bit set at just less than $\frac{3}{32}$ in. deep.

Pare away the remaining waste with carving gouges and a knife, making sure the bottom of the recess is uniformly flat. Cut the recess for the stem using a $\frac{1}{8}$ -in. straight bit (also set at slightly under $\frac{3}{32}$ in.), and a router equipped with a fence.

Using yellow glue, with cauls to distribute clamping pressure, glue in the flower and leaf. After the glue is dry, sand them flush. Finally, trim the stem to fit and glue it in place.



4 **Rout for the stem.** After routing the groove, rip stock to fit tightly into it.



5 **Glue in the flower and leaf.** Use a caul to apply even pressure. Newspaper prevents the caul from sticking to the inlay.



6 **Insert the stem and finish up.** Glue and clamp the stem in place (above). Once the glue is dry, scrape and sand the inlay flush (right).



ASSEMBLE THE SHELF



Clamping the case. Use enough pressure to pull the shelves into their housings, but avoid excessive strain on the hollow columns (left). Apply finish to the parts before screwing the back boards in place (above).

cardstock) for the flower and leaf. Select a species that will show up against the background wood (for more about the inlay technique, see the facing page).

At this point, the piece should be ready to dry-fit. First, sand all of the parts to P180-grit. Dry-fit first and then glue the front stretcher and the shelves into place at the same time. The stretcher should also be glued and clamped to the front edge of the top shelf. When the assembly is dry, sand the entire piece to P180-grit.

While the columns are the visual anchor, the beveled end caps give the piece its British flair. Cut the caps and bevel them on the tablesaw.

Now mill the backboards, rabbeting alternate edges on the tablesaw. Sand the backboard faces and use a block plane to work a small bevel on the front edge of each board. Apply finish to the backboards (see *Finish Line*, pp. 106-107). Once all the other parts also have been finished, attach the backboards using small screws.

When the shelf is completely assembled, rout the slots for keyhole hanging and install the hardware. Attach the caps to the columns with finish nails. □

Nancy Hiller owns and operates NR Hiller Design Inc. in Bloomington, Ind.



Rout two depths for hanging hardware. The first step will hold the hardware, while the deeper step allows the hanging screw to be inserted.



Attach the end caps. Countersink the finish nails and fill the holes with matching wood putty.

Frame-and-Panel Doors Made Easy



Cope-and-stick router bits
are quick but tricky.
Here's how to get perfect results

BY MICHAEL PEKOVICH

Photos, this page: Michael Pekovich; facing page: John Terreault

This past summer, during the remodeling of my kitchen, I was faced with the task of making 31 cabinet doors. I needed speed and simplicity, so I broke out my router table and a set of cope-and-stick router bits. These bit combinations allow you to rout door frames quickly, in two steps. The first bit routs a profile and panel groove on the inside edge of all the frame parts. The second bit is a mirror image of the first, routing a coped profile and a stub tenon on the ends of the frame rails.

What you create is not a traditional mortise-and-tenon joint. But done right, it gives you a cabinet door that's just as strong. The key is to use a flat panel of plywood or medium-density fiberboard (MDF) that's glued in place—not a raised panel, which is designed to float. All in all, I was able to build all 31 doors in the course of a weekend, from milling lumber to finish sanding.

Different types of cope-and-stick bits are available, with an array of profiles from simple thumbnails to more ornate ogees (see sidebar, right.) In general, these bits are designed for $\frac{3}{4}$ -in.-thick doors, but there are cope-and-stick bits available for stock $\frac{1}{2}$ in. or thinner.

Start with straight, square stock

I began by milling the door-frame stock. I prefer quarter-sawn or rift-sawn boards because the tight, straight grain is both good-looking and stable. It's important that the stock be straight and square. Any slight bow or twist will make fitting the door a nightmare.

Don't be tempted to flatten an entire wide board and then rip the frame parts from it; that will lead to bowed or twisted stock. Instead, start with rough-sawn $\frac{1}{4}$ stock and rip the parts oversize on the bandsaw. Crosscut the stock to remove any serious twist, bowing, or knots, but keep it as long as possible to reduce the number of pieces you'll have to rout. Then joint and plane the boards to final thickness (mine finished at $\frac{3}{4}$ in.), and rip to the exact width on the tablesaw.

Rout the edge profile on all pieces

Now you can rout the edge profile on all of the door-frame pieces while they are still long. Start with the "stick" bit in your router. Adjust the height until you produce a profile with a $\frac{1}{16}$ -in. fillet at the top. A shallower fillet would create a weak upper portion of the joint and a deeper fillet would locate the panel groove too far toward the back, creating a thin rear wall. Align the router-table fence precisely with the guide bearing on the bit. Attach featherboards to hold the stock against the table and fence when routing. If you're using a smaller router or a very hard wood such as oak or maple, you may need to take two passes to reach final depth. In that case, set up for a three-quarter-depth cut and rout all the stock before adjusting the fence for the

Bit types



TWO-BIT SET

Router bits for door frames are referred to in woodworking catalogs as "cope and stick" or "rail and stile" bits. Their function is to rout a profile and a panel groove on the inside edge of the frame parts and to cope the ends of the rails to fit that profiled edge. The bit style I use consists of a pair of matched bits (above). Another style of bit that is available is a stacked bit (left), in which the cutters necessary for each profile are included on a single bit. The stacked style does away with bit changing and may be more convenient for occasional use, but the two-bit style can be used with two dedicated routers for a better production setup. Both styles range from \$80 to \$150.

A less-expensive alternative is a reversible bit, with cutters that are reconfigured on a shaft for each cut. These sell for \$80 to \$100, but I don't think the savings is worth the inconvenience.



STACKED SINGLE BIT

ADJUSTABLE BIT FOR PLYWOOD PANELS

Most bit sets cut a $\frac{1}{4}$ -in. groove in the stiles and rails. And that works fine for MDF panels, which are a true $\frac{1}{4}$ in. Unfortunately, veneered plywood typically measures less than that and will leave an unsightly gap. One solution is an adjustable bit set, made by both Freud and Amana. These feature a pair of stacked cutters that can be adjusted from $\frac{3}{16}$ in. to $\frac{5}{32}$ in. for $\frac{1}{4}$ -in. plywood by installing or removing shims. It took me about a half hour to set up the bits, but the

resulting fit was precise. At \$160 to \$180, an adjustable set is worth it if you work with plywood.

ADJUSTABLE BIT SET

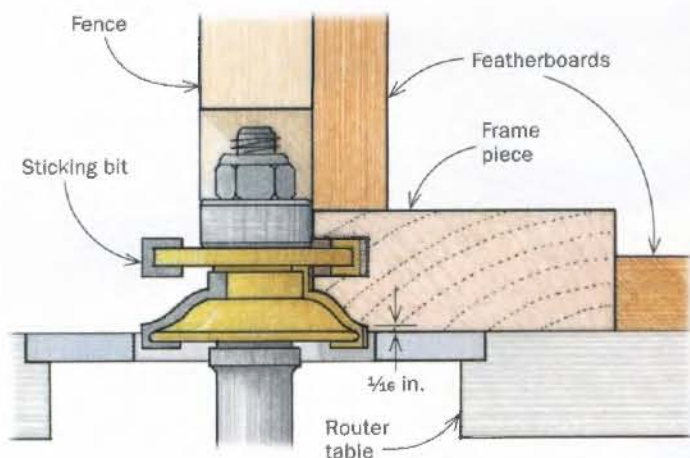
Plywood in $\frac{1}{4}$ -in. groove



Groove width is adjusted for perfect fit.

1 Rout the profile

Make the edge profiles first. Even before the frame pieces are cut to size, rout their edge profiles to accept the panel. Do this in one or two passes, using the sticking bit.



final pass. Removing the bulk of the waste on the first pass will yield a cleaner surface on the second.

Use a story stick for crosscutting

Once the edges have been profiled, it's time to cut all the parts to final length. Instead of a tape measure, I made a "story stick" to record the width and height of the case openings, along with the number of doors that fit in the opening. For cases with two doors, I measured the width and marked the halfway point.

I then used the story stick to set up the tablesaw for crosscutting. I started with the stiles, which run top to bottom in the case

opening. First I clamped a stop block to the rip fence in front of the blade, to prevent the stile from binding between the blade and the fence during cutting. Then it was simply a matter of aligning the mark on the story stick with the blade and setting the fence so that the stop block was flush with the end of the stick. Cut the stiles, making sure to mark the door number on each piece.

Cutting the rails to length is a bit trickier. Because they fit between the stiles, you must account not only for the width of the stiles but also the depth of the stub tenons. This can lead to some head-scratching, but I found a simple method that let me dispense with the math. First, make a setup block that is equal to the width of the two stiles minus the depth of the panel grooves. Use this setup block in conjunction with the story stick to quickly dial in

2 Cut the stiles

Put away your tape measure. Mark the door-frame length and width measurements on a thin "story" stick. You'll transfer the marks directly to the tablesaw.



Clamp a stop block to the rip fence. Use the story stick to set the rip fence for crosscutting the stiles.

the right dimensions for the rails. Because rails are usually short, use a stop block clamped to the crosscut-sled fence to set the length. Again, align the mark on the story stick with the blade; then rest the setup block on the story stick flush with the end, and pencil a line on the sled to mark the end of the rail. Clamp the stop block at the line and cut the rails.

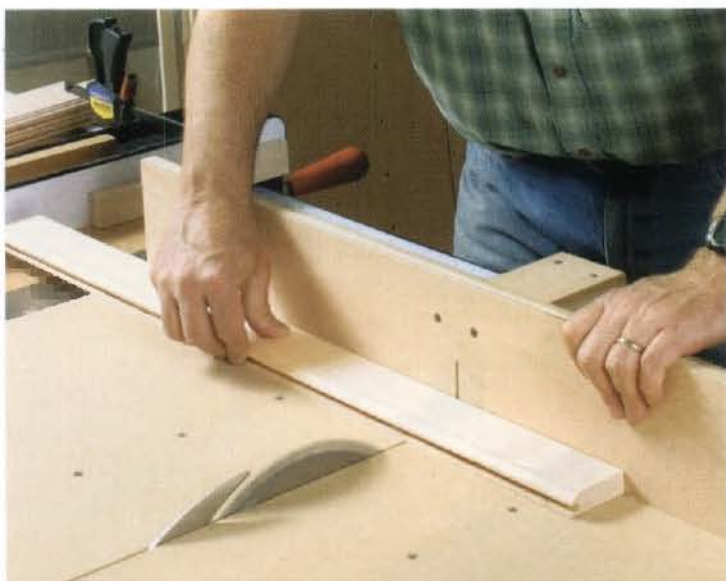
A sled for end-routing

With the parts cut to length, it's time to install the coping bit and profile the ends of the rails. Do not try to run these rails against the router-table fence without additional support; the pieces are too narrow to stay square against the fence. Instead, use a simple plywood sled fitted with hold-down clamps to run the stock squarely and safely across the bit. But before setting up the sled, cope the long edge of an extra piece of frame stock to make a special backing block. This piece will marry with the profiled edge of the rail stock and prevent tearout. When the other end of the rail is routed, the trailing edge will be flat, and a flat backer block will suffice.

After the backing block is made, clamp an offcut in the sled and take a test cut. Adjust the bit's height until the two pieces are flush and you're ready to cope the rails. Start with the flat edge against the sled fence and cope the first end. Then rotate the rail, insert the backing block into the panel groove, and cope the second end.

Make the panels undersize in width

With the frames complete, all that's left to do is to size the panels. I made them $\frac{1}{16}$ in. narrower than the length of the rails. This is to accommodate the slight amount of seasonal movement (yes, even MDF moves), and to make sure the panel allows the frame parts to seat fully during glue-up. The panels' length equals the stile length minus the setup-block length. The MDF I used fit very snugly into the panel groove, so I knocked the panels' corners off quickly with a



Cut all the stiles. Lead with the profiled edges to keep them free of chipout. A well-made crosscut sled keeps the cuts square.

3 Cut the rails

Cutting the rails requires an extra step. Start by cutting a block to the width of two rails minus the combined depth of their grooves. When you subtract this distance from the door width, you'll get the correct length of the rails.



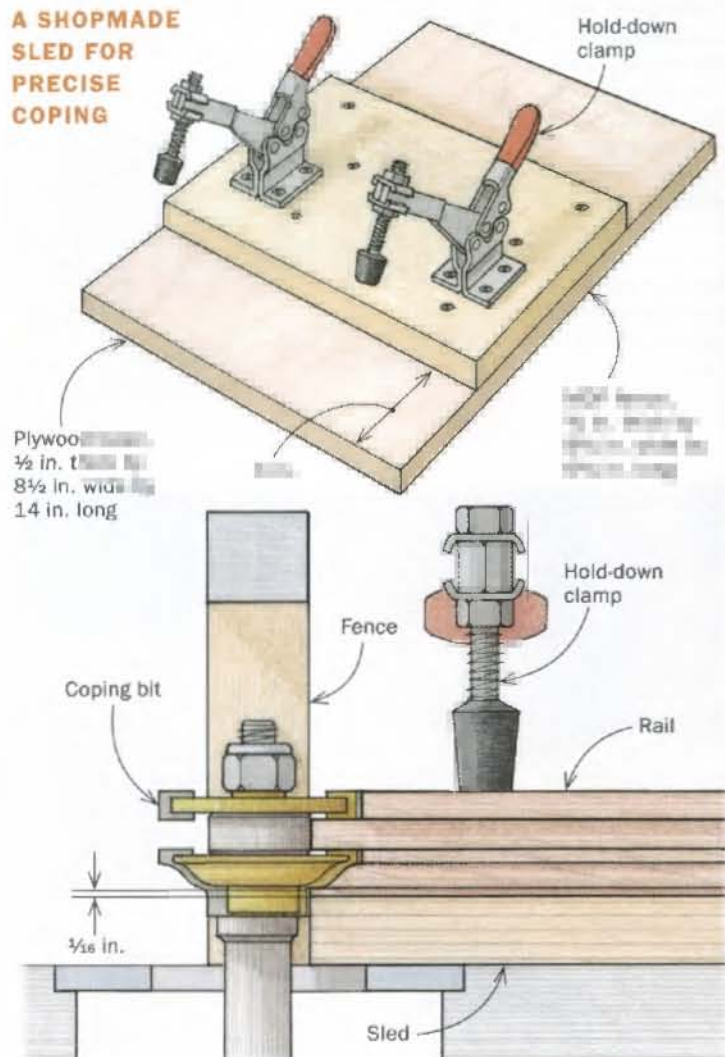
Use the block to set up the cut. With the story stick's door-width mark aligned with the sawblade, use the block to draw a line on the sled fence.



Cut the rails. With a stop block clamped at the line, you can cut all the rails to a precise and uniform length for a specific door size.

4 Cope the rails

A SHOPMADE SLED FOR PRECISE COPING



Profile the rail ends. Switch to the coping bit and use the sled to keep the rails square and secure for their end cuts. After making test cuts to ensure the faces will be flush (left), begin by coping the rail with the flat edge against the fence (above).



Back the profile with its mate. Before coping the opposite end, run a short length of scrap past the coping bit to make a backer block for the rail's profiled edge (above). With the backer block mated behind the piece, cope the second rail end (right).



5

Assemble the panels



Mark and glue one stile. After marking the location of the panel on one of the stiles, apply glue inside the entire length of the stile's groove. The panel will be glued to the stiles only.

block plane. (Unlike plywood, which is thinner than its nominal thickness, MDF measures out on the mark.)

How to keep it all square

Gluing up cope-and-stick doors is a challenge. One concern is that the stub tenons could slide along the panel groove, making it difficult to glue up the parts square. Or, the panel could fit so tight that it seizes up on contact with the glue, making it very difficult to square up the parts. Fortunately, this procedure eliminates both potential problems. I installed the panel in a stile groove first, then slid the rails on, and finally, added the second stile.

To position the panel correctly, mark its location on the stile by holding a rail in place and marking the width of its tenon. Apply glue along the panel grooves of the stiles only. Then apply glue to the coped ends of the rails. If there is glue in the rail grooves, they won't slide along the panel. Install the panel, making sure it's fully seated. Then push a rail onto the panel, fully seating it, and slide it down onto the stile. Install the second rail in the same manner, using the panel to align the rails parallel to each other and square to the stiles. All that's left is to install the last stile.

Once that's done, clamp along the entire joint. Be careful not to apply too much pressure across the panel, because it's slightly narrower than the rails, and the stiles could bow inward. Use a straightedge to make sure the stiles are flat with the rails. The short tenons provide little resistance against flexing upward. □

Michael Pekovich is Fine Woodworking's art director.



Placing the panel is key. Line up the panel precisely between the layout marks, and push it down to the groove bottom. This will keep the rest of the assembly square.



Attach the rails. After applying glue to the leading end of one rail, slide it down the panel edge and fit its stub tenon into place in the stile groove. Do the same with the second rail. Complete the assembly by gluing on the last stile.



Check and clamp. Before tightening the clamps, use a straightedge to make sure the panel is flat in all directions. Adjust the clamps if necessary, and tighten.



New Breed of Bandsaws

New 14-in. models have serious resaw capacity, with more power to handle bigger boards

BY THOMAS MCKENNA



Smooth cutter with power to spare

The Laguna LT14SE is a quiet, powerful machine that makes the most demanding curve and resaw cuts with ease. It's the only saw of the bunch that came fully assembled. Fit and finish are excellent with large knobs to adjust tension and tracking, though the table could use a bit more width to the right of the blade. The machine does not have a tension scale, so you have to test the blade tension using a gauge or your finger. Ceramic guides offer support very close to the top of a workpiece. The insert plate is large, and its throat provides wide-open access to the guide adjusters below the table, all of which make blade changes easy as pie.



Lots of features for a good price

The Grizzly G0457 saw has plenty of resaw power and capacity. The fit and finish are great.

The wheel covers are hinged, and they slide off easily so you have greater access to the interior and you don't hit your head on a corner (don't ask) when the door drifts closed. Dust collection works well, though installing a blade is tough. The tension is easy to set and adjust, with an intuitive quick-release mechanism. The tracking knobs are a good size. The tall fence included with the saw slides smoothly, locks surely, and is great for resawing. Curve cuts were no problem, and resaw cuts were of fine quality.

The bandsaw is one of the most versatile tools in a woodworking shop. It can resaw, cut curves, and rip lumber more safely than a tablesaw. It also can be used to cut joinery, such as tenons or even dovetails. The most common bandsaw *Fine Woodworking* editors see in our travels is the 14-in. model. It offers a great blend of price and performance for the small-shop woodworker.

The toughest task for these bandsaws is resawing, those slicing cuts into the edge of a board that turn one piece of thick lumber into thinner boards or sheets of veneer with minimal waste. Older 14-in. saws had a limited resaw capacity of only around 6 in. (although some did offer a riser-block accessory to increase capacity by 6 in. or so), and many had small ¾-hp or 1-hp motors, not ideal for heavy work.

A new generation of 14-in. saws offers more resaw capacity and power than their forerunners. I looked at eight machines with a minimum resaw capacity of 10 in. and with motors of at least 1¼ hp.

Some of the saws in this group, such as the Delta, General, Grizzly G0555X, Jet, and Powermatic, have the familiar cast-iron frames but with enclosed bases. Except for the General, all of the saws in this cast-iron family require the installation of a riser block to achieve the minimum resaw capacity for this review. The other saws—Grizzly G0457, Laguna, and Rikon—are European style, with welded steel frames.

Close inspection of key components

With the exception of the Laguna, which arrived ready to roll, each machine required assembly, which took anywhere from two to four hours per machine.

After assembly, I took a close look at the essential components, checking roundness and alignment of the wheels, table flatness, versatility and functionality of the fence, and guide-post alignment.

Wheels should be round and in line—

Wheels that are severely out of round will cause significant vibration in the saw, making it difficult to cut to a line. All of the machines had round wheels.

Alignment also is an issue. For the saw to work properly, the top and bottom wheels should lie in the same plane; otherwise, it will be tough to track a blade in the center of both wheels. Wheels on the Delta and the Grizzly G0555X aligned perfectly. The Jet and the Powermatic had the worst

MEASURING WHEEL AND POST ALIGNMENT

WHEEL ALIGNMENT AFFECTS TRACKING

Misaligned wheels will make it hard to track a blade in the center of the wheels. We checked alignment by laying a dead-flat straightedge across the wheels. Any discrepancies were measured with a feeler gauge. Wheels on the Delta and the Grizzly G0555X aligned perfectly; wheels on the Powermatic and the Jet were the most misaligned and could not be fixed with shims.



MISALIGNED GUIDE POST MEANS TROUBLE

Serious misalignment will require adjusting the guides whenever the post is moved. To measure for this, we lowered the post and snugged one guide against the side of the blade (left). Then we raised the post and measured any gap at the top (above). The sequence was repeated for the thrust bearing.

FEATURES THAT EASE BLADE CHANGES

QUICK RELEASE AND LOTS OF OPEN SPACE

A quick-release tension mechanism (right), like that on the Grizzly G0555X, allows you to release and retension a blade by flipping a lever. Having removable guards and open access around the wheels for your fingers also eases the pain of blade changes.



ERGONOMIC TRACKING ADJUSTMENTS

After installing and tensioning the blade, it needs to be centered over the tires, a process known as tracking. The Rikon makes it easy to see the blade as you track it and has a large, easy-to-grip adjustment knob.



misalignment. The problem may be fixed by shimming out the wheel that's behind. It's easier to do on the top than the bottom. However, the misalignment on the Jet and the Powermatic could not be fixed because their bearing shafts are too short.

Flat tables and effortless tilting are pluses—A bandsaw table doesn't have to be perfectly flat to get good cuts, but serious dips or imperfections could make squaring the table to the blade a frustrating task. All of the tables are made from cast iron, and all were very close to dead-flat.

The tilting tables are supported by cast-iron or die-cast trunnions. I saw no discernible differences in performance between the two materials, and all of the tilting mechanisms worked fine.

The best fences slide smoothly, lock soundly, and are adjustable—Ideally, you want a fence that slides without hiccups and locks down securely. And because a bandsaw blade tends to drift (run off square) as it wears, a fence that can be adjusted to compensate is handy.

In terms of fence quality and versatility, both Grizzly saws win hands-down. Their fences are heavy-duty, tall for resawing, run smoothly, lock securely, and are adjustable for blade drift. The Laguna fence gets a nod because it is heavy duty and has a smart way to attach an auxiliary fence via a T-slot along one face.

A straight-running post means fewer guide adjustments—The guide post, the rod that holds the upper guides, is a di-

minutive part of the bandsaw. But if the post is significantly out of alignment (chart, p. 53), either front to back or side to side, you'll have to fiddle with the guides and thrust bearing every time you move the guide post to keep the guides close to the workpiece. That's a serious time-killer.

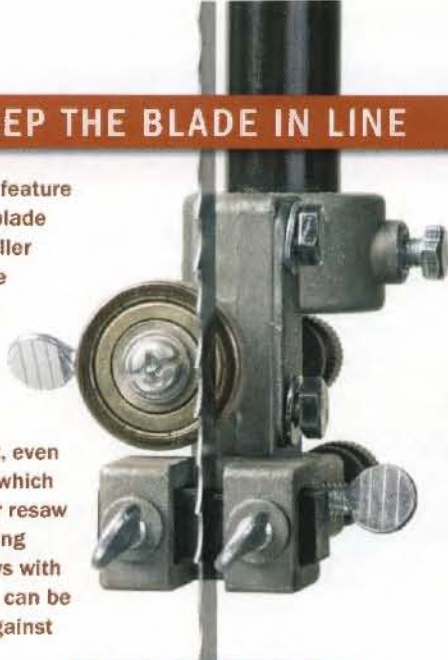
If the post is out of alignment on a cast-iron saw, there's no way to fix it. The Euro-style saws have mechanisms for correcting a misaligned post, but it's a fussy procedure and varies from machine to machine.

Blade changes should be bloodless

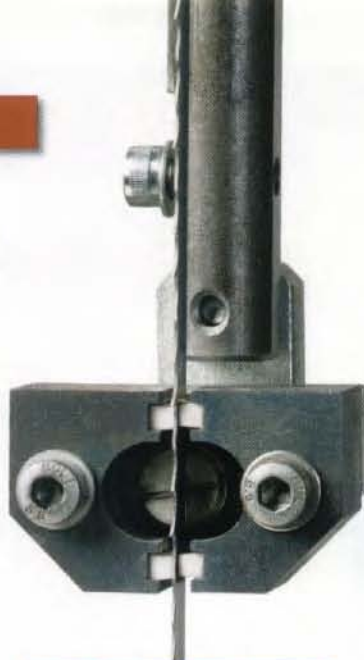
Regardless of how often you change the blade in your bandsaw, you want the process to be painless. Having changed blades on eight machines repeatedly during our

GUIDES KEEP THE BLADE IN LINE

Saws in this review feature two basic types of blade guides: blocks or roller bearings. Block-type guides, like those on the Jet and the Delta, work well. But Laguna's ceramic guides offer better support, even closer to the work, which was reflected in our resaw tests. Also performing better were the saws with roller guides, which can be snugged right up against the blade for very solid support.



CLASSIC BLOCKS



LAGUNA'S BLOCKS



ROLLER BEARINGS

tests, I've come to appreciate a saw that makes things easier, from blade tensioning and tracking to fine-tuning the guides.

Having the space to work makes blade changes less frustrating. Blade guards are the biggest obstacle, and on most machines you can remove at least the top guard. Another tricky area is space around the wheels to slide or wiggle a blade over the tire. The Laguna was tops in terms of wide-open access to the wheels and guides.

Tension and tracking are important—Once you have the blade in place, you need to tension and then track it for proper performance. The tension mechanism lifts the top wheel to bring the blade taut. Tracking angles the upper wheel to keep the blade centered across the width of the slightly rounded upper tire.

One notable difference among these new 14-in. saws is the inclusion of a quick-release tension device (except for the General and Laguna). Many manufacturers claim that removing tension from the saw when it's not in use prolongs the life of both blade and tires. In any case, the quick release makes blade changes faster.

Most machines track the blade from the back of the saw via a knob or thumbscrew. Small knobs on the Jet and the Powermatic and a small thumbscrew on the Delta were difficult to turn.

Easy-to-adjust guides save time—A bandsaw's top and bottom guide systems use a thrust bearing to counteract front-to-back deflection as you push the work through the blade. Side guides prevent

TOOL VS. TOOLLESS ADJUSTMENT



Ceramics 101. Laguna's ceramic guides are easy to adjust once you get used to them. The nontraditional design requires you to steady the guides with your fingers as you tighten them in place.



Dial M for microadjust. To move guides forward and backward, threaded, microadjustable mechanisms work well and are precise. Except for the General and the Laguna, all the saws have microadjustable guide systems.

the blade from twisting as you cut curves. Guides on the Grizzly G0555X, Jet, Laguna, and Powermatic were the easiest to adjust.

Cutting tests gauge capacity and power

I did a series of cutting tests in hard maple, both curve cuts and resaw cuts. For consistency, I used the same brand of 1/2-in., 3-tpi, hook-tooth blade in each machine for the gradual curves and resawing. For the tight curves, I used a 1/4-in., 6-tpi, hook-tooth blade. I set the tension as suggested on the saw's built-in gauge for the blade width in question and tested the tension

with finger pressure to be sure deflection was no more than 1/4 in.

First, I made gradual curve cuts along the length of a 3/4-in.-thick board; then I made tighter, more demanding cuts, 2 in. and 1 1/4 in. dia. All of the saws did OK or better in the curve-cutting tests, with the Grizzly G0457, Laguna, and Powermatic the smoothest cutters.

Moment of truth—To gauge the resaw ability of each saw, I resawed 1/2-in.-thick boards as well as 1/8-in.-thick slices from a 10-in.-wide, 12-in.-long hard maple blank. My goal was quality resaw cuts, with edges

READY, SET, RESAW!

To gauge the resaw performance of each machine, I ran two tests on hard-maple blanks, 10 in. wide by 12 in. long. I equipped each machine with the same brand ½-in., 3-tpl, hook-tooth blade and set the tension according to the blade width. First, I made ½-in.- and ¼-in.-thick resaw cuts, feeding the stock by hand. Then, to test the speed and power of each machine, I used a resaw sled that employed weights to pull the workpiece through the blade (below).



BEST VALUE
AUTHOR'S CHOICE

BEST OVERALL
AUTHOR'S CHOICE

MODEL	STREET PRICE	MOTOR	FENCE HEIGHT	WHEEL ALIGNMENT
Delta 28-475X www.deltamachinery.com	\$1,230, with optional riser-block kit and fence	1½ hp, 115v	2½ in.	Perfect
General 690-1 www.general.ca	\$2,609, includes fence	1½ hp, 230v	2 in.	0.090 in., top forward of bottom
Grizzly G0457 www.grizzly.com	\$795, includes fence	2 hp, 110v	6 in.	0.040 in., top behind
Grizzly G0555X www.grizzly.com	\$635, includes fence and optional riser-block kit	1½ hp, 110v	6 in.	Perfect
Jet JWBS-14DX www.jettools.com	\$743, with optional riser-block kit and fence	1½ hp, 115v	2¾ in.	0.22 in., top forward
Laguna LT14SE www.lagunatools.com	\$1,500, includes fence	2 hp, 220v	3¼ in.	0.050 in., top forward
Powermatic PWBS-14CS www.powermatic.com	\$975, includes fence and optional riser-block kit	1½ hp, 110v	2¾ in.	0.150 in., top forward
Rikon 10-325 www.rikontools.com	\$750, includes fence	1½ hp, 115v	3⅞ in.	0.080 in., top behind

that were parallel and consistent from one end of the workpiece to the other. The General, Grizzly G0457, and Laguna sliced through hard maple the fastest and with excellent results.

To gauge the speed and power of each machine in a more scientific way, I employed a resaw sled that uses weights to draw the blank through the blade. I started with a 5-lb. weight on the sled, working up to a 7½-lb. weight. When I tried a 10-lb. weight, only one saw was able to handle the load (the Rikon), so the results are not shown. Again, the General, Grizzly G0457, and Laguna were the faster cutters.

During all of the cutting tests, I also kept a close eye on dust collection, which was good or better on most machines when hooked up to an appropriate dust collector.

And the winner is...

Picking one of these saws as best overall was not easy. In the end, I chose the Laguna LT14SE, which is the perfect combination of performance, capacity, fit, and finish. The downside? As equipped, the model I reviewed retails for \$1,500.

For best value, I chose the Grizzly G0457. It's a very solid package for \$795.

Thomas McKenna is an associate editor. Fine Woodworking shop manager John White made valuable contributions to this article.



DELTA 28-475X

The Delta has plenty of capacity and a large tilting table, but it's loud and vibration prone and made unsatisfactory resaw cuts. For the most part, fit and finish are poor, and dust collection is subpar.



GENERAL 690-1

The General has a massive frame and no-frills adjustments, and it performed well in the cutting tests. But dust collection wasn't great, the table is small, and the fence is clunky and short.

POST MISALIGNMENT	RESAW CAPACITY	GUIDES/ THRUST	GUIDE ADJUSTMENTS	BLADE CHANGES	QUALITY OF RESAW CUTS	TIMED RESAW TEST	
						5 LB.	7½ LB.
Side, 0.012 in.; back, 0.010 in.	11¼ in.	Steel blocks/ bearing	Upper: easy Lower: difficult	Very difficult	Poor	5 min. 36 sec.	3 min. 37 sec.
Side, 0.012 in.; back, 0.050 in.	12¼ in.	Double bearing/ bearing	Upper: easy Lower: difficult	Very easy	Excellent	57 sec.	23 sec.
Side, 0.005 in.; back, 0.001 in.	10¼ in.	Double bearing/ bearing	Upper: very easy Lower: difficult	Difficult	Good	59 sec.	24 sec.
Side, 0.010 in.; back, 0.018 in.	12¼ in.	Bearing/bearing	Upper: very easy Lower: easy	Easy	Good	3 min. 23 sec.	1 min. 25 sec.
Side, 0.035 in.; back, 0.015 in.	12¼ in.	Graphite- impregnated blocks/bearing	Upper: very easy Lower: easy	Easy	Good	57 sec.	Stalled
Side, 0.000 in.; back, 0.017 in.	12 in.	Ceramic blocks/ ceramic block	Upper: easy Lower: easy	Very easy	Excellent	60 sec.	25 sec.
Side, 0.007 in.; back, 0.000 in.	12 in.	Double bearing/ bearing	Upper: very easy Lower: easy	Easy	Very good	2 min. 50 sec.	1 min. 4 sec.
Side, 0.000 in.; back, 0.040 in.	13¼ in.	Bearing/bearing	Upper: difficult Lower: difficult	Very difficult	Good	3 min. 12 sec.	1 min. 33 sec.



GRIZZLY G0555X

This bear is a sound performer at a bargain price. Fit and finish overall are good, blade changes are easy, and the fence is high quality. The saw did fine in all of the cutting tests.



JET JWBS-14DX

Wheel misalignment and lack of power are the big issues with the Jet. It performed well in all the curve-cutting tests, but if you plan to do a lot of resawing, this machine is not your best bet.



POWERMATIC PWBS-14CS

The Powermatic comes loaded with accessories and has plenty of mass and power. It ranked high for performance among its cast-iron brethren, but the wheels were misaligned by more than ¼ in.



RIKON 10-325

The Rikon has plenty of cutting capacity and power and some great features. But it dropped in the rankings because of its overly complicated and poorly machined guide mechanisms.



Best Finish for Pine

Thin layers of shellac and stain
add age and warmth
without blotching

BY TOM WISSHACK

I have never understood why so many woodworkers consider pine an inferior wood. I think it's one of the most beautiful woods available, and it only gets better with time, taking on a marvelous color and patina. But poor staining and finishing techniques have given pine a bad rap.

Pine does present unique challenges. You want the wood to look as if it has aged naturally to its present color. You'll never achieve that look if you apply stain directly to pine, because the color penetrates deeply and unevenly. Softer portions of the wood become very dark, while the harder and more resinous areas resist the stain. Worse, this blotchiness is irreversible. That is, the drastic measures you'd have to take to correct the blotchiness could ruin the piece.

Fortunately, you can achieve superior results if you apply thin layers of shellac and stain with patience and a delicate touch. When you wipe away the excess stain, some will remain in the crevices of moldings and joints, giving the subtle feeling of age that I prefer on pine.

Let the pine age naturally

I smooth my pieces with a handplane and polish them by hand with P600-grit wet-or-dry

TIP

First, do nothing

Unfinished pine will take on a golden color naturally after a few weeks' exposure to the air, as the top half of the sample board shows. This patina will enhance any color you apply.

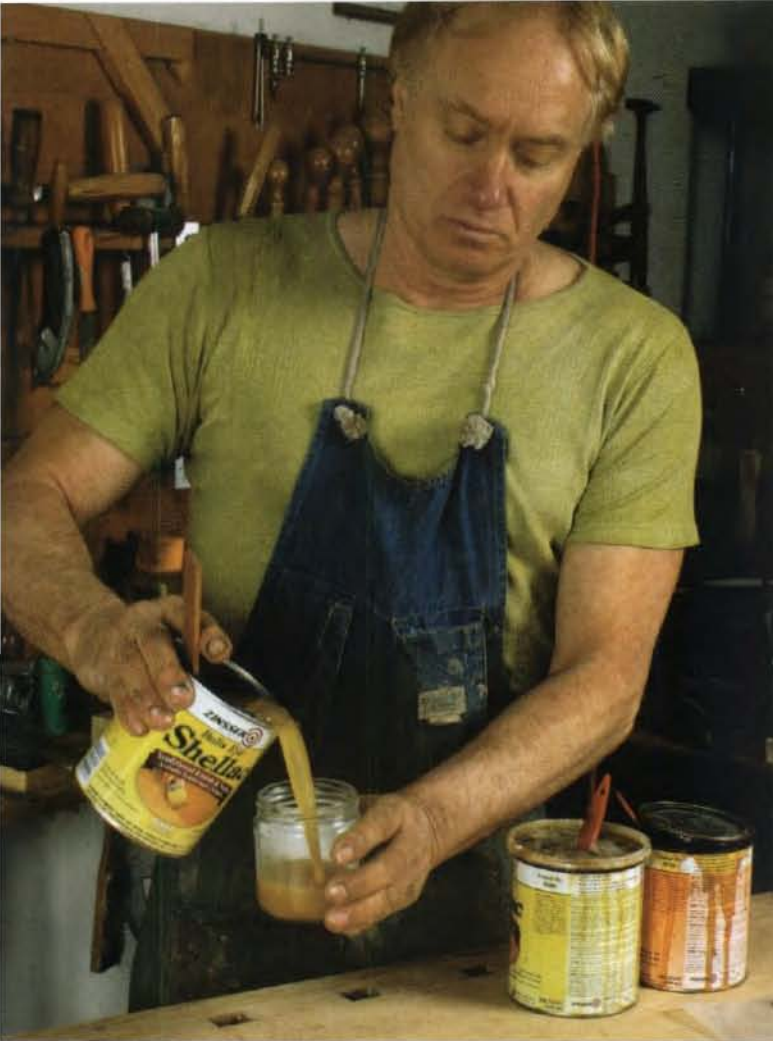


Shellac prevents blotching

COMBINE COLORS FOR SUBTLE WARMTH



A washcoat of thinned shellac partially seals the wood pores, ensuring that subsequent coats of stain will be absorbed evenly. The washcoat also can add a hint of color, as shown in the panel above. Mixing clear shellac (left panel) and amber (right) produces a nice intermediate shade (center).



paper. If you use sandpaper alone, begin with P120- or P180-grit, then work up to P320- or P400-grit.

Whenever I build a piece from pine, I sand it and then allow it to stand in the shop for at least a month before finishing. Pine will take on a natural patina, which I call shop aging. When I apply the finish, the resulting color is always deeper and richer than it would be if I finished the piece right away, so a very light stain normally is adequate. Waiting for the wood color to change is a luxury, but the results are worth it. Applying a finish too soon after constructing a piece of furniture is, in my opinion, a mistake.

Seal the grain

A washcoat of shellac comes first. This serves as a sealer; it's essential to close the pores of the pine and provide a foundation for the stain. Shellac dries very quickly and gives the wood absolute clarity. You can stain over it and—what's critical—remove most or all of the stain if you make a mistake or don't like the look.

I have had good luck with Zinsser shellac, which is widely available. I usually mix the clear and amber varieties, which gives the wood a warm, antique hue. Fill a quart glass jar about one-fourth full of clear shellac. Add small amounts of amber shellac until the mixture is about the color of honey. Note how much shellac you have, then add about half that amount of denatured alcohol. The result is close to a 2-lb. cut, but exact proportions aren't critical.

Brush the shellac onto one horizontal surface at a time, using long, even strokes. Rotate the piece as needed to coat all the



Two washcoats, light sanding. Brush on the shellac with long, single strokes. Two coats are best. Wisshack left the door attached, an unorthodox technique, to ensure that he applied the stain uniformly. He allowed the finish to build up on the brass, giving it a patina similar to the wood. Lightly scuff-sand the dry shellac with P600-grit paper.

Diluted stain adds color gradually

STAIN RECIPE FOR PINE



Mix well. Fill a jar with the mineral spirits and linseed oil, then add the stains. You don't have to measure precisely. Let the color of the mixture tell you when you have the right amounts. Err on the side of making the stain too thin.

This recipe makes about 1 qt. of stain. It uses three Olympic oil stains, which I've found to be very heavily pigmented. If you use another brand, it may not contain as much pigment, so you may have to adjust the amounts.

1 pt. mineral spirits

$\frac{1}{2}$ cup boiled linseed oil

$\frac{2}{3}$ cup Olympic Dark Walnut oil stain

$\frac{2}{3}$ cup Olympic Colonial Maple oil stain

$\frac{1}{3}$ cup Olympic American Cherry oil stain

Mix the ingredients and stir well.

The resulting mixture should have a medium golden-brown look and the consistency of 2% milk. Test the stain on a sample board. If the stain looks too dark, add more Colonial Maple; too light, more Dark Walnut; too brownish, more American Cherry.

TIP

Test the stain on a sample board



Test the color on a sample board that's been given a washcoat of shellac. This lets you tweak the proportions of the stain recipe before finishing the real piece.



Apply stain generously. Brush on a thick coat of stain, working in a defined area such as this door panel. Use the brush to work the stain into corners and the recesses of moldings.

surfaces with this thin washcoat. When covering a wide surface, work quickly, overlapping strokes only slightly. Seal a piece of scrap, too, so you can dial in the stain color before tackling the workpiece.

For best results, apply two washcoats. Wait about an hour between coats and two hours after the second coat. Then scuff-sand with worn P600-grit wet-or-dry paper.

Mix and apply the stain

Oil-based stain is the best type for pine. It can be brushed or wiped on, and it dries relatively slowly. Regardless of the brand, thin it with mineral spirits. That not only gives you more working time, it also keeps the addition of color subtle. A small amount of boiled linseed oil makes the stain more translucent.

Off-the-shelf stains vary considerably in the amount of pigment they contain. The Olympic stains I usually use are very heavy-bodied and require considerable thinning. Stain/sealer products that contain some tung-oil varnish are watery and weaker.

Don't be afraid to experiment with color, intermixing stains and trying different dilutions to get just the shade you want. The box at left gives a good basic stain recipe to use as a starting point. The amount of thinner required depends on the opacity and thickness of the stain you choose. Start with a mixture that's roughly 30% mineral spirits to 70% stain. If that's too intense or opaque, add more spirits. Very often, I end up with 60% thinner to 40% stain.

When the color is right, brush a liberal amount of stain onto the wood, let it stand about five minutes, then



Wait, then wipe lightly. Let the stain dry for 15 to 20 minutes (temperature and humidity will affect drying times). Then wipe away the excess. Work in a circular motion at first, then with straight strokes. Use a very light touch—no pressure on the wood at all.

Additional coats provide depth

Subsequent coats of stain give the wood a warm, amber tone. The layers of finish also add uniformity, minimizing differences in color from one area or board to the next. A coat of thinned shellac seals in the color.



More stain if needed. Brush on a second coat of stain (above), then wipe carefully (right) to avoid hitting an area you've already wiped. If you slip, dab on more stain, then wipe again.



Brush on more shellac. Let the initial coats of stain dry thoroughly, which can take as long as a week. Then brush on another washcoat of shellac. Rotate the piece as needed so you're always working on a horizontal surface.

remove the excess very lightly. A soft cotton cloth works well; quilted bathroom tissue, even better.

The stain mixture normally will stay workable for 15 to 20 minutes. If it begins to set up, lay down another coat of stain before continuing to wipe. A single coat of stain may have a minimal effect on the wood's color. But if you layer three or more coats of stain, you will steadily achieve a rich and increasingly aged look. Let the individual coats of stain dry for at least a week.

Add another coat of shellac, then the topcoats

Once you are happy with the color of your pine, protect the stain with another coat of shellac. If you don't, the stain may dissolve when you apply a topcoat. Use a somewhat thicker mixture this time, say 70% shellac to 30% denatured alcohol.

Don't overbrush or overwork the barrier coat because the alcohol can dissolve the stain beneath. Allow the barrier coat to dry several hours or overnight.

I've found that varnish makes the best topcoat because it adheres well to shellac and gives the wood an additional amber tint. Avoid polyurethane varnish, though; it won't adhere well to the waxy shellac.

Lightly scuff-sand the piece with P400- or P600-grit paper, dilute the varnish by 30% to 40% with mineral spirits, and brush on three thin coats. Smooth the final coat with P600-grit wet-or-dry paper and rub the surface with 0000 steel wool and mineral oil for a satin sheen. □

Tom Wisshack is an artist, furniture historian, and restorer in Galesburg, Ill.



Add protection with a topcoat. Use a mixture of varnish and mineral spirits, brushing it on with long, smooth strokes.

The **Secret** to Making Perfect Joints

Trim hidden areas to quickly produce a flawless fit

BY STUART LIPP



It is a common misconception that fitting a joint means methodically paring the entire area until all the surfaces match perfectly, but in many cases, wood needs to be removed only from hidden surfaces to allow a joint to close completely. I call this technique undercutting.

Do not mistake undercutting as taking the easy way out; undercutting is part of being a conscientious and concerned woodworker. The secret is knowing when to employ the technique. First, dry-fit a joint. Then decide if undercutting is the best option, or the entire joint needs trimming.

Undercutting can mean a few different things, but it usually involves angled relief cuts on surfaces that are not essential for glue strength. For example, when fitting a mortise and tenon, rather than planing the entire shoulder just chisel out the inner surfaces. By the way, if you undercut a joint and it still needs trimming at the edges, you have less material to remove.

I'll show you ways to apply undercutting to a wide variety of joints and situations. Over the past few years I have noticed myself employing this method more frequently, and in every situation the result is improved quality in far less time.

Stuart Lipp lives and works in New York City, where he oversees the construction of custom and limited-edition pianos at Steinway & Sons.

TRIM SHOULDERS ON MORTISES AND TENONS



Gap-free table legs. Undercutting is an efficient method for improving the fit of a mortise-and-tenon joint.

Mortise-and-tenon joints employ two forms of undercutting. The most well known is to make the depth of the mortise greater than the length of the tenon, giving excess glue a place to go and allowing the joint to close. But what if the tenon shoulder still does not fit well? You can spend a lot of time with a chisel or shoulder plane trying to pare a perfect 90° shoulder, or you can quickly undercut it.

Put the workpiece in a vise, tenon up, and use a chisel to pare the end grain in from the edge of the shoulder to the tenon. Remember to keep the outermost edge crisp. Undercut enough material for the shoulder to fit, but be careful not to take too much; a $\frac{1}{32}$ -in. bevel should be more than enough. Do this all the way around the shoulder and you will improve the fit of the joint. The technique is not magic—you still may need to pare the visible edges—but undercutting leaves less area to fit.



Undercut tenon shoulders.
Use a chisel to cut a slight downward bevel (no more than $\frac{1}{32}$ in.) on the tenon shoulder.



Carry the bevel around the shoulder. Work your way around the perimeter of the tenon, leaving the outermost edge intact.



BACK-BEVEL DRAWER PULLS

Turning your own drawer pulls can elevate the look of a piece of furniture, but not if the pulls don't fit tightly to the drawer front. A very quick and easy way to accomplish this is to turn a slight hollow in the back side of the shoulder, leaving the outer edge untouched. You will be ensured a nice, tight joint.



Undercut toward the screw hole.



Undercut toward the tenon.



One-touch technique. Use a skew chisel to undercut a pull while it is still on the lathe.

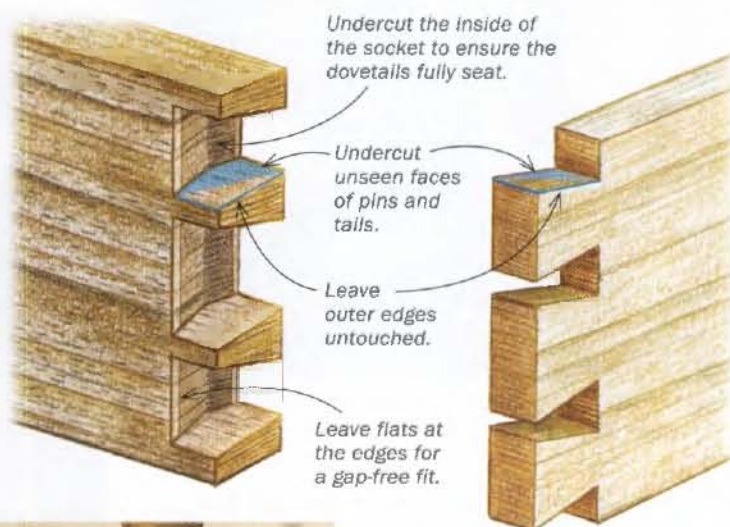


Flush-mount. Pulls should sit flush against a drawer front.

UNDERCUT DOVETAILS

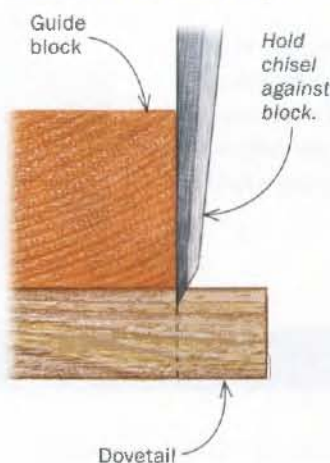


Good fit where it counts. As long as the outer edges of the tails and pins are kept clean and tight, the dovetail is aesthetically correct.



1

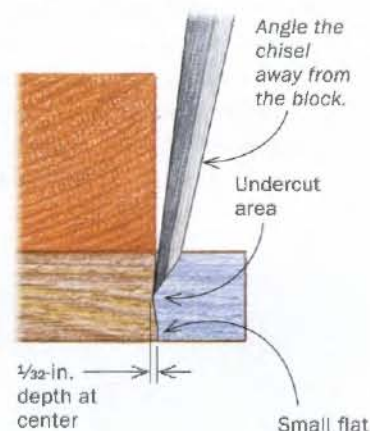
START WITH A VERTICAL CUT
Clamp a guide block to the baseline. Make the first chop with the chisel against the block to establish a flat at the edge.



2

ANGLE THE CHISEL SLIGHTLY TO UNDERCUT THE JOINT

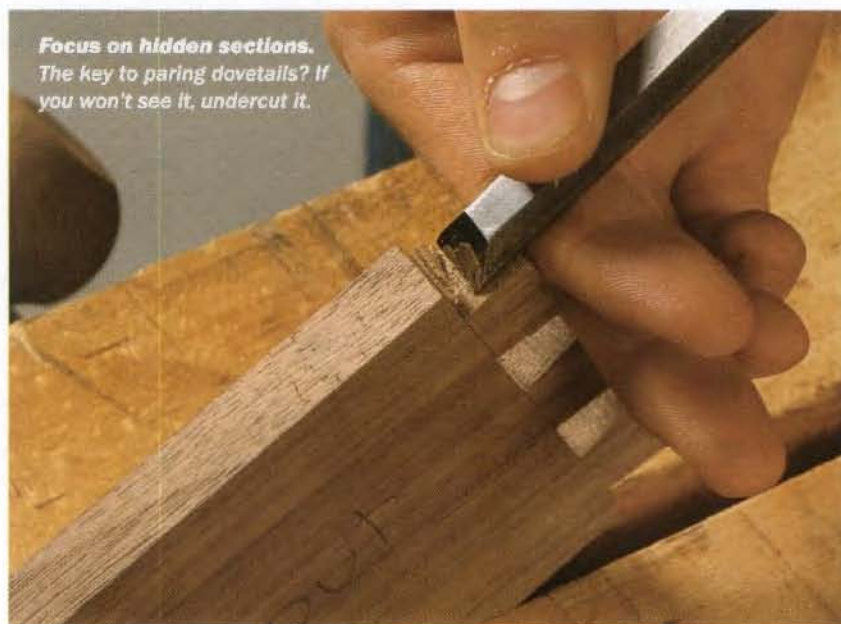
Angle the chisel away from the block for subsequent chops. At the halfway point, flip the board and repeat on the other side.



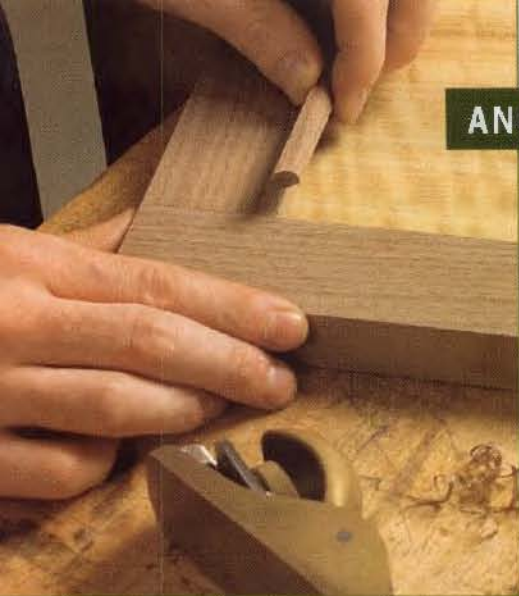
Hand-cut dovetails can be a measure of a craftsman's skill; they also can frustrate and overwhelm. Undercutting dovetails allows for more precise joinery with much less fussing.

Not every face of a dovetail or pin is visible, so the most important edges are the outer ones. First, the bottoms of sockets can be undercut while simultaneously being chopped (see drawing). When doing your final fitting, you can always take a larger shaving from the bottom side of a dovetail or pin. Doing this creates a slight wedge, and as you hit the joint home you will see it getting tighter and tighter. Don't worry about joint failure or lack of strength. The joint will have great contact, plenty of glue surface, and the inherent mechanical strength of the dovetail.

Focus on hidden sections.
The key to paring dovetails? If you won't see it, undercut it.



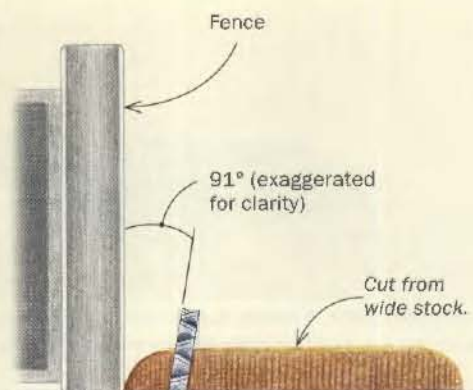
ANGLE MOLDINGS



Easy-fit molding. Cutting edges at 91° and chamfering the back corner allow for a flawless fit on molding details.



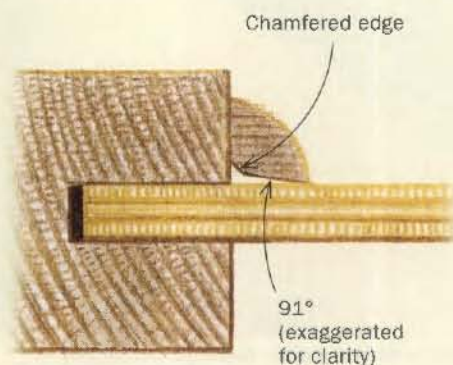
After the profile is cut, rip the molding to thickness with the blade set at 91°.



I was making some cabinet doors recently that had flat panels and an added detail of quarter-round molding glued into the step between the panel and the frame. When I milled the molding, I cut the edges intended for the step at 91° instead of the standard 90°. This technique not only guaranteed a nice tight joint at the two visible edges, it also created a recess on the inside that trapped extra glue, thus reducing squeeze-out and minimizing cleanup. I also used a block plane to put a slight chamfer on the molding's inner corner for additional clearance.



Chamfering the molding's back edge creates additional clearance for a good fit and for hiding glue.



CHAMFER GLUE BLOCKS



Glue blocks are great for adding strength to joints. They can be used to support drawer or chest bottoms, to strengthen bracket feet and mitered joints, and to attach tabletops. However, if there is dried glue squeeze-out in a corner, you won't be able to press the glue block against both sides of the joint. Put a slight chamfer on the inner corner of the glue block, providing clearance for glue or debris.

No clamps needed. A simple rub joint works to adhere glue blocks. Apply the glue and rub the block back and forth until it sticks where you want it.



Create a chamfer. Using a block plane is the easiest way to chamfer a glue block.

SPRING LONG EDGE JOINTS



Bombproof joint. A nearly imperceptible gap, $\frac{1}{32}$ in. at most, toward the center of an edge joint ensures a tight fit for decades.



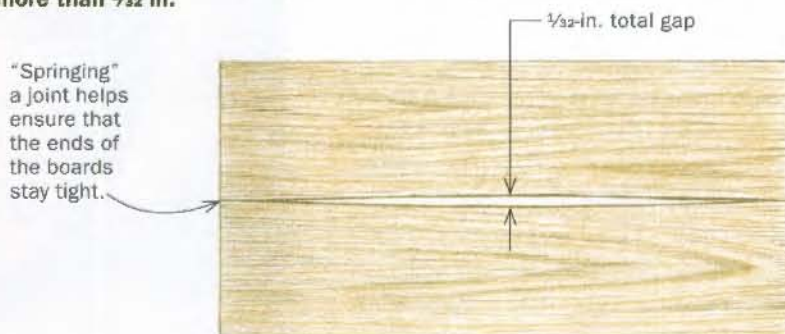
Lay out a visual guide. Separate the boards into five equal sections. Plane the middle section, the middle three, and then the entire edge.



Plane both mating edges at once. This will help compensate for any misalignment in the planing angle.

The most common place for an edge joint to fail is at the ends. The rate of shrinkage is greater there than in the middle; this means more stress is put on the glue joint at the ends. A way to solve this is to undercut the center section, leaving a little extra wood at the ends to accommodate the shrinkage, so the tension that would usually be put on the glue joint is now absorbed by that extra material. Known as springing a joint, this technique also helps ensure that the ends of the boards stay tight during glue-up. You can spring any size joint, but unless it is over 18 in. long, the benefits are negligible.

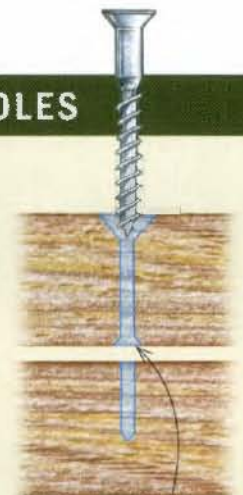
To spring a joint, start with machine-jointed edges; that way you know you are dealing with straight, square surfaces. Next, put the boards horizontally in a vise, and break up the distance into five equally spaced sections. With a handplane, take three light passes: the first over the center section, the second over the middle three sections, and the last over the entire length of the boards. It is crucial that you get a complete shaving on the last pass because any snipe or chatter will compromise the fit of the joint. When you put the boards together with the ends touching, there should be a small gap in the middle, often almost invisible, never more than $\frac{1}{32}$ in.



CHAMFER BACKS OF HOLES



When drilling clearance holes for screws, I find that even with a sharp bit I often get some type of tearout or fuzz on the exit hole. When screwing the piece down, there is a good chance that the little fibers of wood will prevent the joint from closing completely. The remedy is pretty simple: Just kiss each exit hole with a countersink. That removes the fibers and creates the slightest hollow, ensuring a tight fit.



A kiss with a countersink removes tearout and ensures a tight fit.

Router-Made Bandings

Dress up your work with these unique designs

BY MARK ARNOLD

Most woodworkers associate banding with Federal period furniture, when its primary role was protecting the edge of a veneered panel. However, the use of banding is not restricted to veneered work or to period furniture. It is a great way to embellish solid pieces of almost any style.

The advantages of making your own banding are that you can customize the wood to match a project, create designs with curved elements not available commercially, and make them to a length that suits you. As I'll demonstrate, you can make two such bandings

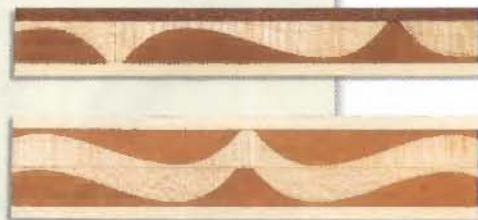
easily using readily available router bits. I demonstrate a third on FineWoodworking.com. Not only will these bandings give your projects a dramatic effect, they'll also give them that personal touch.

Design starts with a router bit and the right woods

When selecting the woods for a particular banding, consider where it will be inlaid. A banding easily can be lost in the motion of a highly figured burl or crotch, or it can appear as an afterthought if the species or colors do not complement the primary wood. Contrast is desirable, but it should not detract from the subject being framed. The most successful bandings are

OGEE BANDING

Use contrasting woods and a reversible ogee bit to make either a narrow banding (below) or a wider one (bottom).



those that appear three-dimensional, like the banding I demonstrate on FineWoodworking.com, or make use of chatoynancy, like the ogee banding (above). Certain woods, such as the curly maple in this example, change in color and luster when viewed from different angles.

A banding blank will yield less than half its width in usable strips and the rest will end up as sawdust, so always make more than you'll need. A 1-in.-wide blank can yield up to 10 usable strips.

Mark Arnold is a woodworker near Columbus, Ohio.

SCALLOP BANDING

A pair of matched beading and fluting bits yields identically shaped bandings whose woods are reversed. Use one to edge an apron and give your table a touch of sophistication.



FineWoodworking.com

Learn to rout and assemble a third type of banding, a lunette, with step-by-step photos.

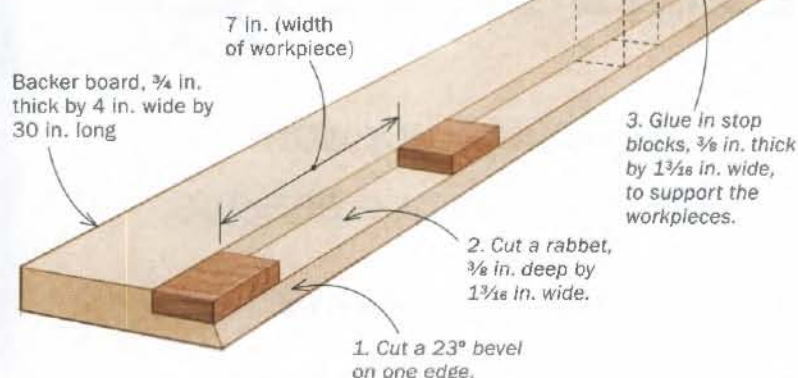


An ogee bit yields two types of banding

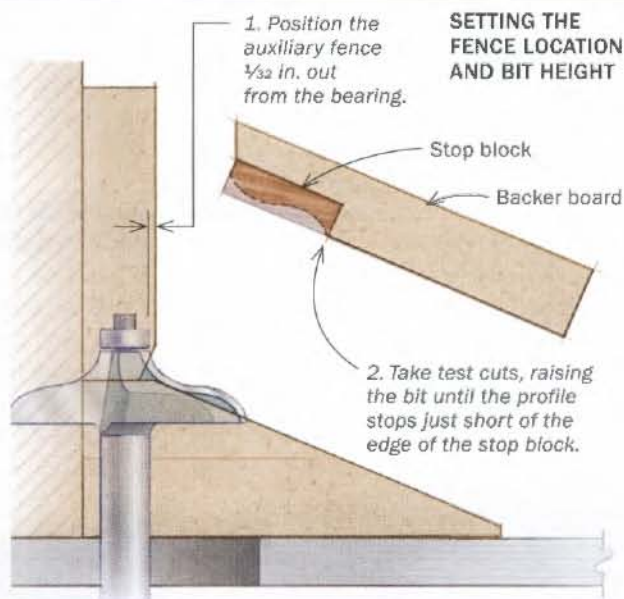
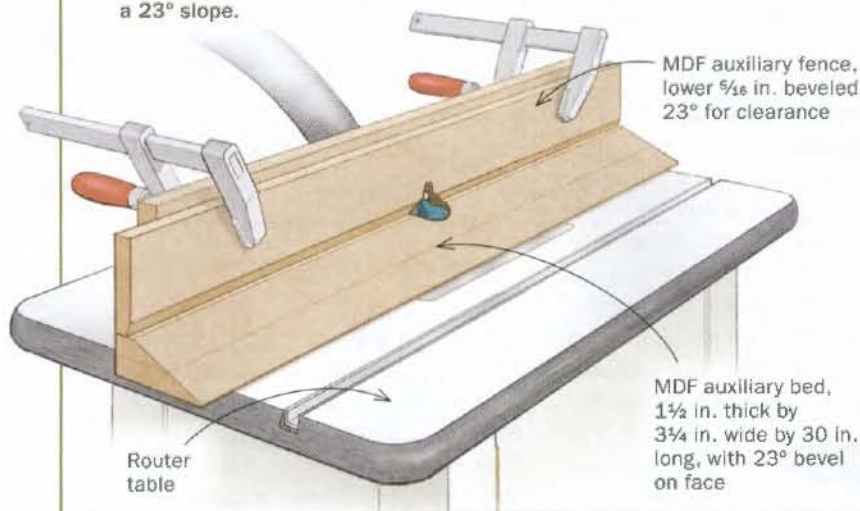
A router bit with a symmetrical S-curve is used to create nested pieces of contrasting color. These pieces can be veneered for a narrow banding or stacked and veneered for a double-wide design.

- 1 MAKE THE BLANKS**
To begin, mill equal amounts of contrasting woods, in this case cherry and maple, to $\frac{3}{8}$ in. thick by 7 in. wide by 30 in. long. Then cut them into strips, $1\frac{3}{8}$ in. wide for this specific bit (see below).

- 2 CREATE A BACKER BOARD FOR ROUTING**
To safely rout the ogee profile, make a backer board out of $\frac{3}{4}$ -in. MDF to house the blanks.

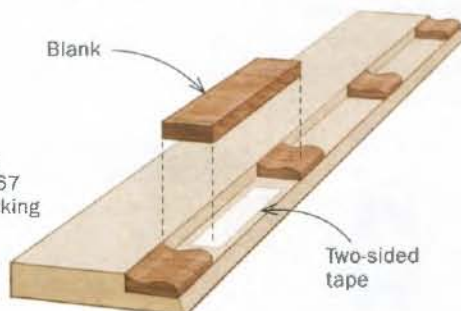


- 3 MAKE AN ANGLED BED FOR THE BACKER BOARD TO RIDE ON**
The centerline of the workpiece must be aligned with that of the router bit's cutter, so you need to build an angled auxiliary bed with a 23° slope.

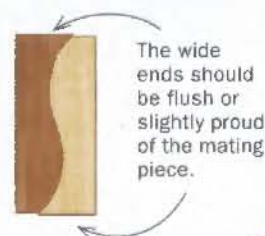


ROUT THE OGEE PROFILE

Secure the blanks in the backer board with double-sided tape. Use a fresh piece of tape for each run. When routing, keep the backer board tight to the fence.



Use push blocks to keep the work against the fence. If the backer board moves away from the fence during routing, the workpiece will be ruined.

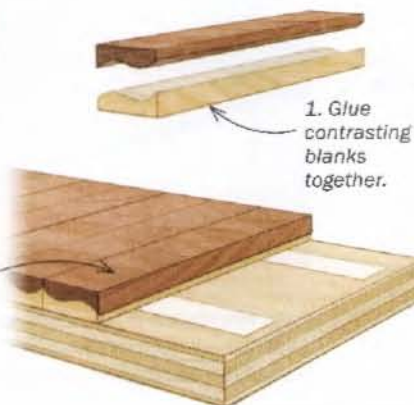




- 5 GLUE AND MOUNT THE BLANKS**
After the glue has cured, tape the pieces to a flat board, maple-side down, so that they form a series of mirror-image pairs that butt together tightly.

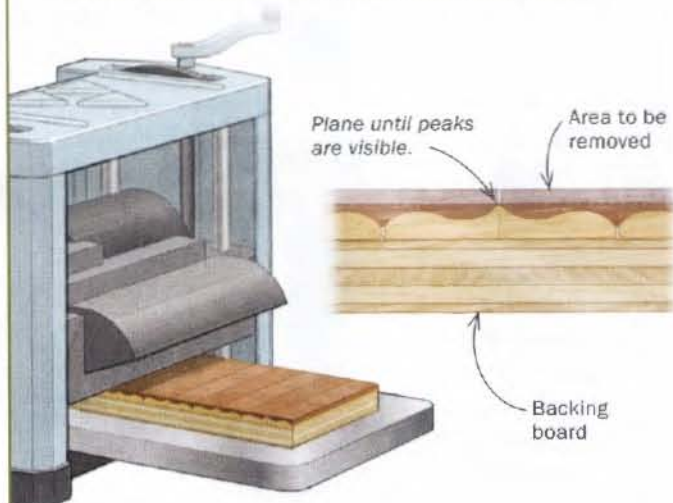
Match the pairs. Glue each cherry piece to a maple piece by nesting their profiles. Clamp several at a time, placing a layer of plastic between each pair to avoid gluing their flats together.

2. Tape the pairs to a $\frac{3}{4}$ -in. plywood backing board.



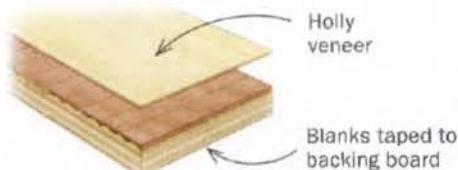
- 6 PLANE THE FIRST FACE**

With the blanks mounted to the backing board, plane the cherry face until the maple peaks are just visible.



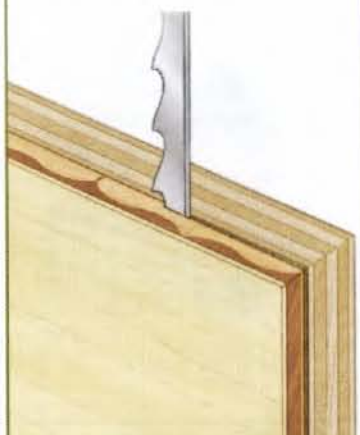
- 7 VENEER THE BLANKS**

Glue a piece of $\frac{1}{8}$ -in.-thick holly or maple veneer to the just-planed cherry. If you can't get the extrathick veneer, use a couple of sheets of standard commercial veneer.



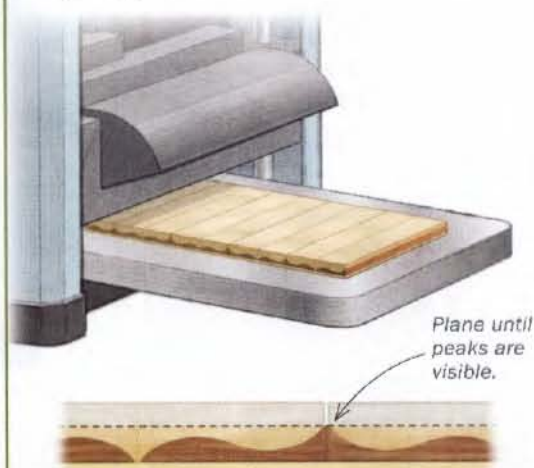
- 8 SAW AWAY THE BASE**

Prying the veneered blanks off the backing board could damage them, so it's better to saw it off on the bandsaw.



- 9 PLANE THE SECOND FACE**

With the veneer face down, plane the maple side of the blanks until the cherry peaks just appear.



- 10 COMPLETE THE BANDING AND RIP INTO STRIPS**

You have two options at this point. Simply add cherry veneer to the maple face for narrow banding, or stack the blocks for a wide banding.

NARROW BANDING OPTION



For narrow banding, apply a sheet of $\frac{1}{8}$ -in.-thick cherry veneer to the non-veneered side.



WIDE BANDING OPTION



For the wider banding, rip the blank in half, then place the two non-veneered faces together, offsetting the top by half a pattern.

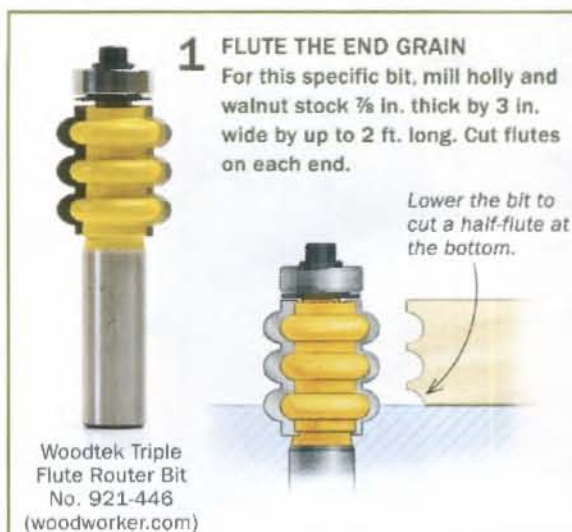


Rip the bandings. Arnold uses a thin-kerf blade to rip his bandings to $\frac{3}{8}$ in. thick. A piece of MDF acts both as hold-down and blade guard. He pushes the strip as long as is safe, then pulls it from the back side of the blade.

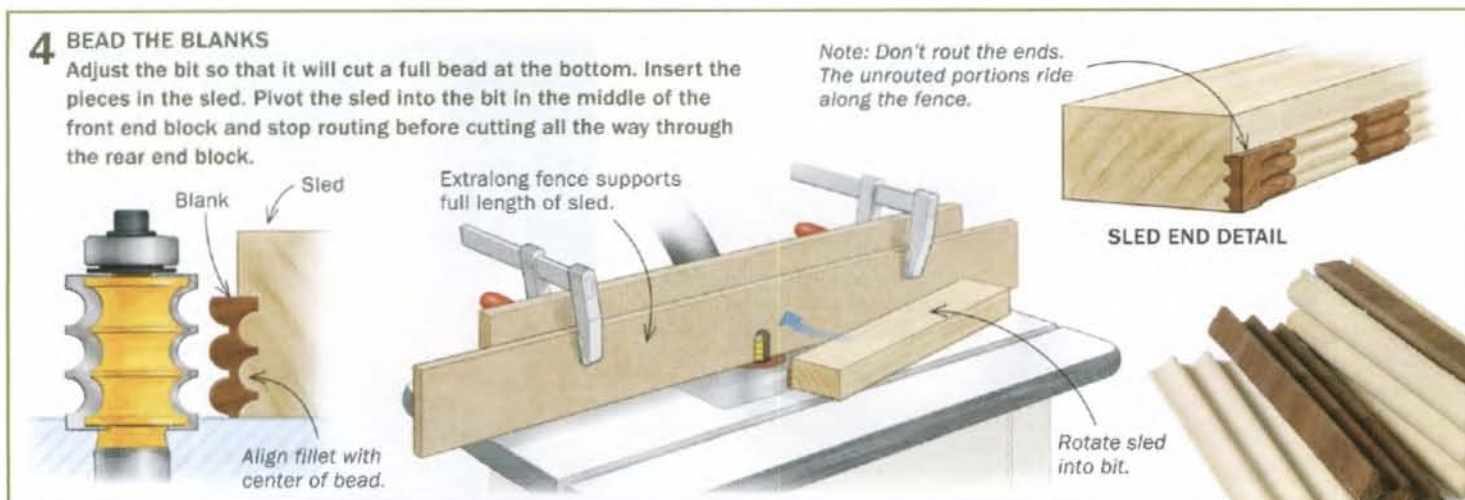
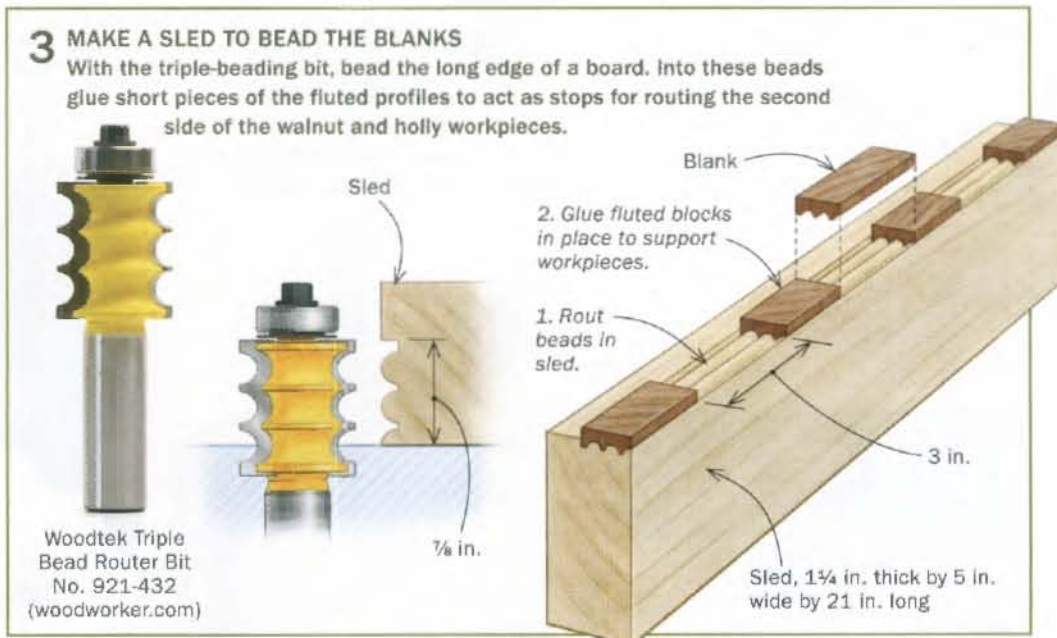
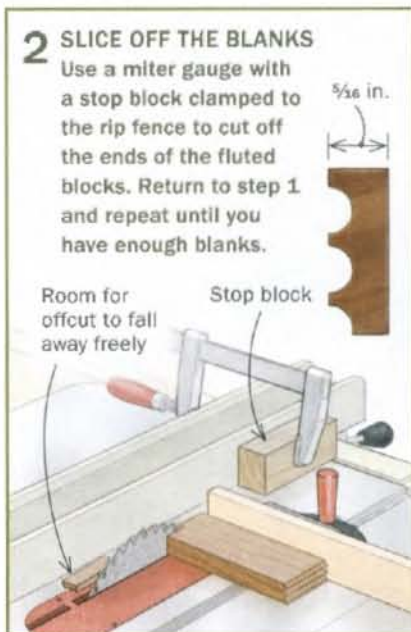
Matched router bits make contrasting bandings



For this banding you'll need two cutters, a beading bit and a fluting bit, whose profiles nest together with the beading bit creating small quirks between the beads.



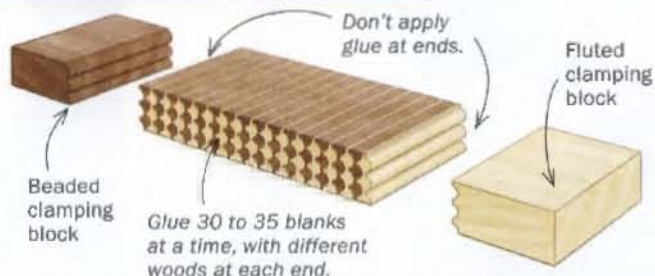
Rout the flutes. Rout the end grain of the holly and the walnut stock using a push block and backing board to control the workpiece and prevent chipout.



5 GLUE THE SECTIONS TOGETHER

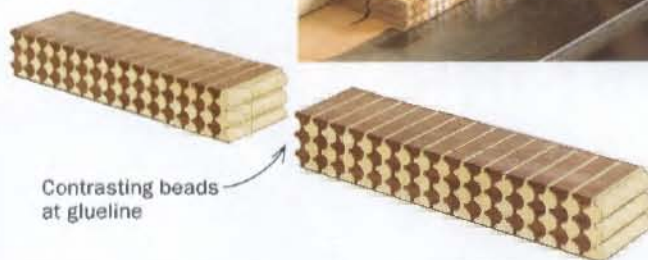


Glue together alternating pieces of holly and walnut. Because the pieces are nested, it takes quite a few to create a long banding.



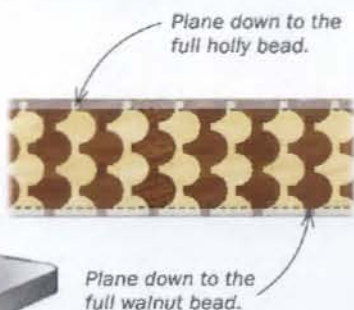
6 RIP THE BLOCK TO CREATE A LONGER BANDING

If need be, rip the assembly in half and glue the two halves end-for-end to create a longer banding blank. Use the clamping block to back up the cut.



7 PLANE THE BLOCK AND ADD VENEER

After planing both faces, glue pieces of $\frac{1}{8}$ -in.-thick holly veneer to them.



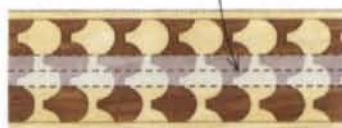
Veneer the blank. After planing, glue pieces of $\frac{1}{8}$ -in.-thick holly veneer to each face.

8 RESAW THE BLANK AND PLANE THE STRIPS

Carefully bandsaw down the middle of the blank to create the two contrasting moldings.



Draw a center-line and make a freehand cut on the bandsaw.

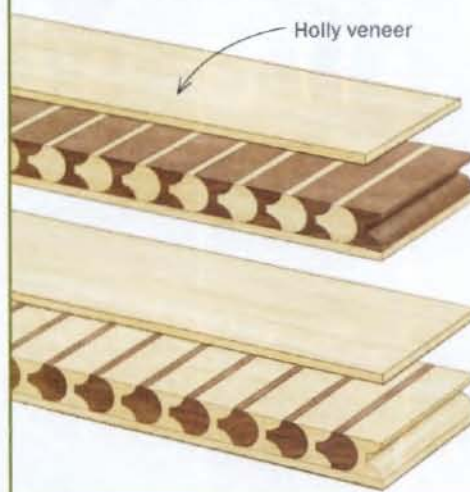


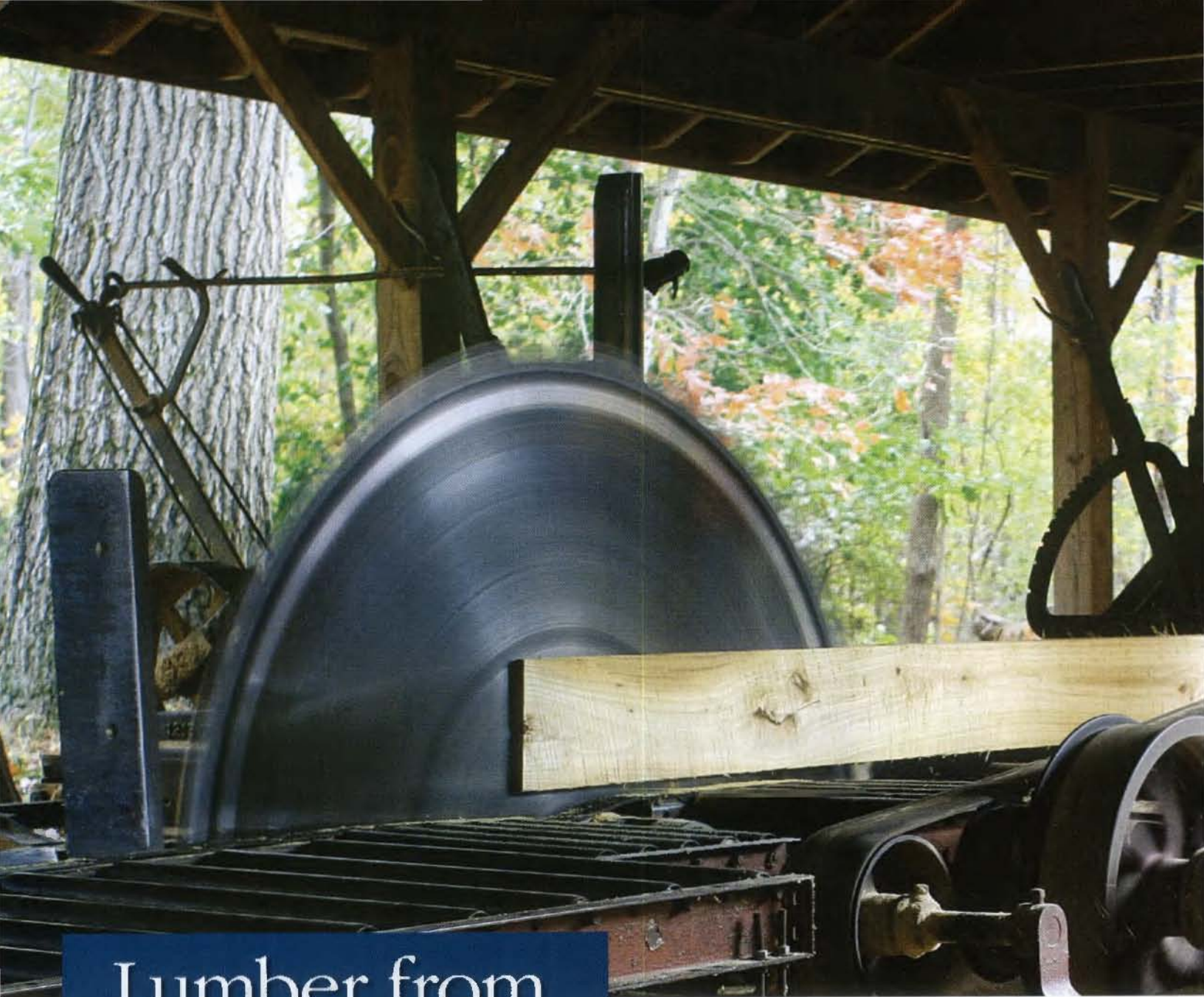
Plane away the waste on each strip, leaving a full bead.



9 VENEER BOTH BANDINGS

After planing both pieces to the correct width, veneer the planed faces with $\frac{1}{8}$ -in.-thick holly veneer.





Lumber from Mini-Mills

Unusual woods at bargain
prices might be closer
to home than you think

BY MARIO RODRIGUEZ

As the name suggests, a mini-mill is simply a small sawmill, typically run by a single person. You find them almost everywhere across the United States. Some of them cut with a monster-size circular sawblade, while others do the work with a gi-normous horizontal bandsaw.

But it's not the machinery that gives mini-mills their appeal. Unlike the big mills that supply lumber to your local hardwood dealer or lumberyard, mini-mills are likely to be a source for unusual and interesting boards—the ones that can make a woodworker's pulse spike.

Some of these finds will be “exotic domestics,” locally grown woods that show unusual figure or color. Such woods aren't normally carried by hardwood suppliers because the supply is limited and the demand is light. On the other hand, this is exactly the stuff a mini-mill values the most.

At a mini-mill, you just might discover a gorgeous length of crotchwood for a door panel, a board with exceptional wild grain



WHAT LOCAL MILLS HAVE TO OFFER

Large boards.

Unique boards, like this stately book-matched pair of 2½-in.-thick walnut crotch slabs, are what you might find at one of these small, independent mills.



Boards from the same log.

At mini-mills, it's not uncommon to find a log that has been flatsawn into boards and then restacked in the order cut. A log cut and stacked like this is a good way to get boards with matching color and grain.

for the top of an end table, or a stack of rarely available local wood such as apple, buckeye, or pecan. You might even come across a 3-in.-thick slab of your favorite wood that would be perfect for a long-planned dining table.

That's why I go to mini-mills. They have material you just won't find anywhere else.

Many of these little sawmills offer custom cutting, so you can request quartersawn boards or special thicknesses. If the mill is mobile, and many are, you can have a log on your property cut to your specs. Or, you can transport a log to their site for milling.

Mini-mills appeal to me for yet another reason. They often offer their stock at bargain prices. Mainly because they have low overhead, you generally can save from 10% to 50% over prices charged by hardwood dealers and lumberyards. That's partly because small sawyers aren't competing with larger mills for premium logs. Much of their wood comes from

Local woods. Mini-mills can be great sources for underutilized local woods. Not far from Philadelphia, Rodríguez found several local woods in stock (from left): pear, sassafras, mulberry, and spalted curly sycamore.



landscapers and property owners who are happy to get a felled tree off their property.

Potential problems

Because mini-mills tend to be mom-and-pop operations, most won't have a drying kiln. That means the wood might not be adequately dry for furniture making. It might even be green, or close to it. You'll need to air-dry the wood further when you get home. Basically, that means stacking it so air can flow freely around it, and sealing the end grain to avoid checking (cracks). A moisture

meter comes in handy here; one costs around \$100. (For more information on how to dry wood, see p. 88, or go to www.fpl.fs.fed.us, click "Publications," and "Drying hardwood lumber.")

Trees that grow near houses, barns, or fence rows can have embedded metal, typically old nails, bullets, or barbed wire. Some mills flat-out refuse to saw such trees.

Should you supply the log, many mills require a signed waiver stating that you are responsible for the cost of repairing or replacing the blade if it is damaged by an encounter with steel.

That said, before they saw a log into boards, most mill operators use a metal detector to check for steel. A metal detector not only helps them avoid problems, but it also helps you by ensuring that the board you buy won't likely have an unpleasant hidden surprise waiting for your tablesaw blade.

Finding a mini-mill

Little mills can be hard to find because they often fly just below the radar. Usually, they don't run ads in the Yellow Pages or the local paper, and they don't hang signs out front. So don't be surprised if you have a mini-mill in town and don't know about it.

The best way to find one is simply to ask around. Landscapers sometimes have mini-mill contacts. If you belong to a woodworking club, raise the question

at a meeting. Your hardwood lumber dealer or lumberyard just might be able to help. So, too, might any local furniture builders or wood turners.

You also can use the Internet. One good source is www.woodweb.com. Another source is a list of owners of Woodmizer portable sawmills, as some have wood for sale. To find out if there's an owner in your area, you can call 800-553-0182.

If you like unusual woods, I suggest you make an effort to track down and visit a mini-mill or two. That special board you've had in mind might just be waiting there for you, ready to speed up your pulse rate. □

A former contributing editor, Mario Rodriguez teaches woodworking at the Philadelphia Furniture Workshop.

Drying time. Boards cut from logs need to air-dry. Sticker the boards to allow air circulation and cover only the top ones.



Three mini-mills

Mini-mills can be as different as the wood they cut. To get a general idea of what you can expect in your region, Rodriguez located three mini-mills, all within an hour's drive of his home in southern New Jersey.

Have mill, will travel



Dave Peregmon of Pennsville, N.J., works full-time as a physical therapist at a rehabilitation clinic. His passion, however, is milling wood. He parks his portable Timber Harvester mini-mill on a lot owned by a busy landscaper, where he cuts whatever they drop off. He can mill logs up to 36 in. dia. and 20 ft.

long. The morning I visited, there were about a dozen logs stacked to the side. Peregmon and Bill Curnow, his 93-year-old assistant, were about to load and saw a poplar log.

In order to get the most from a log, each sawyer performs various rituals, double checks, and adjustments. I was surprised at their efficiency. In about 30 minutes, they had moved the log to the mill, hoisted it onto the carriage, and cut it into a neat pile of boards.

Peregmon's inventory varies from month to month, depending on what the landscapers bring. Locally grown woods are most common, but landscapers sometimes leave some interesting non-native species.



Lumber maker. Peregmon pulls a log up to the mill with a tractor. The log is held stationary as the bandsaw moves on rails (above), cutting a board from the top.

Furniture maker to lumber maker

Dan Hudock finds wood fascinating. You can tell that from the furniture he builds. "I've always been excited about the material," he said. "Often, I put as much effort into selecting the wood for a furniture piece as I do building it."



Although he still builds furniture, most of his time these days is spent running Hudock's Hardwoods in Perkiomenville, Pa., on the site of a former dairy farm (www.hudocks-hardwoods.com).

Hudock is in touch

with every local source for newly felled wood: contractors, landscapers, developers, property owners, and even the municipal services department. While I was visiting, he was cutting a huge elm tree cleared from a large estate nearby.

The centerpiece of his operation is a custom bandsaw mill he designed and built. It can cut a log up to 55 in. dia. He also has a kiln that handles 2,000 board feet of lumber. It takes between



Setting up. Hudock adjusts his bandsaw mill to cut a 2½-in.-thick sycamore slab.

five and 10 days to dry a load. Hudock's inventory includes some of the more common native woods, among them cherry, walnut, red and white oak, hard and soft maple, and poplar. But it also includes a most-wanted list of rare domestics: apple, catalpa, elm, spalted elm, spalted curly maple, butternut, curly red oak, black locust, hickory, holly mulberry, aromatic red cedar, pear, sassafras, and sycamore.

Keeping history alive

Dave and Carol Spacht's sawmill has been a part of Worcester Township, Pa., since 1928. When they purchased the mill in 1983, however, it had long since fallen on hard times, reduced to little more than a collection of decrepit buildings and rusting equipment. Ever optimistic, the Spachts saw it as a business opportunity.

Since buying the property, the Spachts have turned the abandoned mill into a hive of local activity. They maintain the property as a rural sawmill, selling local hardwoods to local craftsmen and woodworkers, and welcoming student tours. Today, the mill is a manicured collection of barns and sheds, housing an amazing 1950s circular saw, drying and storage sheds, wood kilns, an office, and a woodworking shop. On weekends, professional and amateur woodworkers visit, looking for a deal on wood or the perfect plank for a pet project.

Spacht has plenty of ash, oak, maple, poplar, and walnut. And the barn holds several dozen wood slabs averaging 8 ft. long and 3 ft. wide.



Raw material. Rodriguez looks over some of Spacht's inventory. Custom cutting isn't an issue at most mini-mills.



Woodworking education. At Dave Spacht's mill in Worcester Township, Pa., it's not uncommon to see a school bus arrive with a bunch of children, there to learn how lumber is made. Each visitor gets a sample.



No-nonsense sawblade. Spacht uses a 48-in.-dia. circular sawblade that can cut a log up to 30 in. wide.



Shaker Dining Table

Form meets function in this classic design

BY CHRISTIAN BECKSVOORT

The posts are simple turnings



Turn the blank. Becksvoort turns a $3\frac{5}{8}$ -in.-sq. blank to $3\frac{1}{2}$ in. dia., then makes a series of $2\frac{3}{8}$ -in.-dia. parting cuts along the midsection, checking the diameter with calipers. After that, with the parting cuts serving as guides, he reduces the entire midsection to $2\frac{3}{8}$ in. dia.

This table is based on a piece built at the Shaker community in Hancock, Mass. (It's now in the collection of the Fruitlands Museum in Harvard, Mass.) The original, made from cherry, is almost 11 ft. long, with a third trestle to support the center. Such a length made good sense for communal dining, but it's not practical for most homes today. My version has only two trestles, and I typically make the top either 8 ft. or 9 ft. long.

A trestle table has appeal for a few reasons. For one, it can be "knocked down" without fuss. Remove the top from the base parts and the stretcher from the trestles, and you can move the table through doors and up or down stairs. Unlike most tables, which have aprons around the perimeter to stiffen the structure, trestle tables have a single center stretcher. This gives more vertical leg-room. On the other hand, most trestle tables have flat feet, which tend to get in the way of the feet of diners sitting at either end. This Shaker design solves that inconvenience by replacing the flat feet with arched feet. This simple change not only makes the piece more ergonomic, but also gives it an especially graceful look.

Most lathes will handle these posts

I make the posts first, using $16\frac{1}{4}$ stock. If this size isn't readily available, consider face-gluing two pieces of $8\frac{1}{4}$ stock from the same board. Using the same board means the grain and color of the pieces will be close and the glue joint less visible.

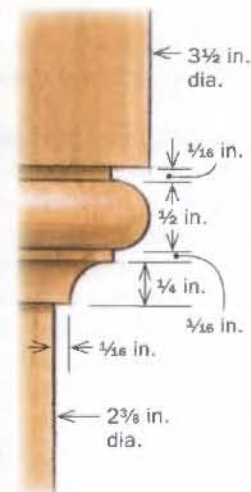
Mill the stock to about $3\frac{5}{8}$ in. sq. and crosscut it to $24\frac{1}{2}$ in. long. Then mount it in a lathe and turn it to $3\frac{1}{2}$ in. dia. At a point 6 in. from the top and 4 in. from the bottom, use a parting tool and calipers to establish the $2\frac{3}{8}$ -in. diameter of the center section.

Continue using the parting tool to make a series of $2\frac{3}{8}$ -in.-dia. cuts between the end cuts. With these cuts serving as a depth guide, use a gouge to reduce the entire center section to $2\frac{3}{8}$ in.



Coves and beads.

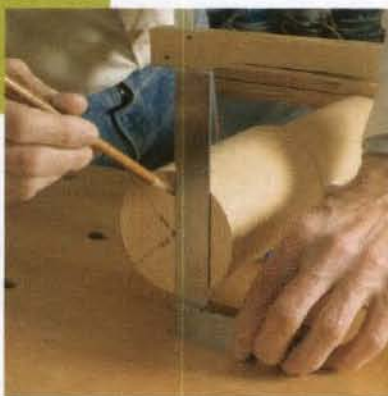
Each end of the midsection terminates in a cove and bead. Mark the $\frac{7}{16}$ -in. width of the detail by lightly touching a pencil point against the spinning post. Cut the cove with a roundnose chisel or small gouge, then the bead with a diamond-point or skew chisel.



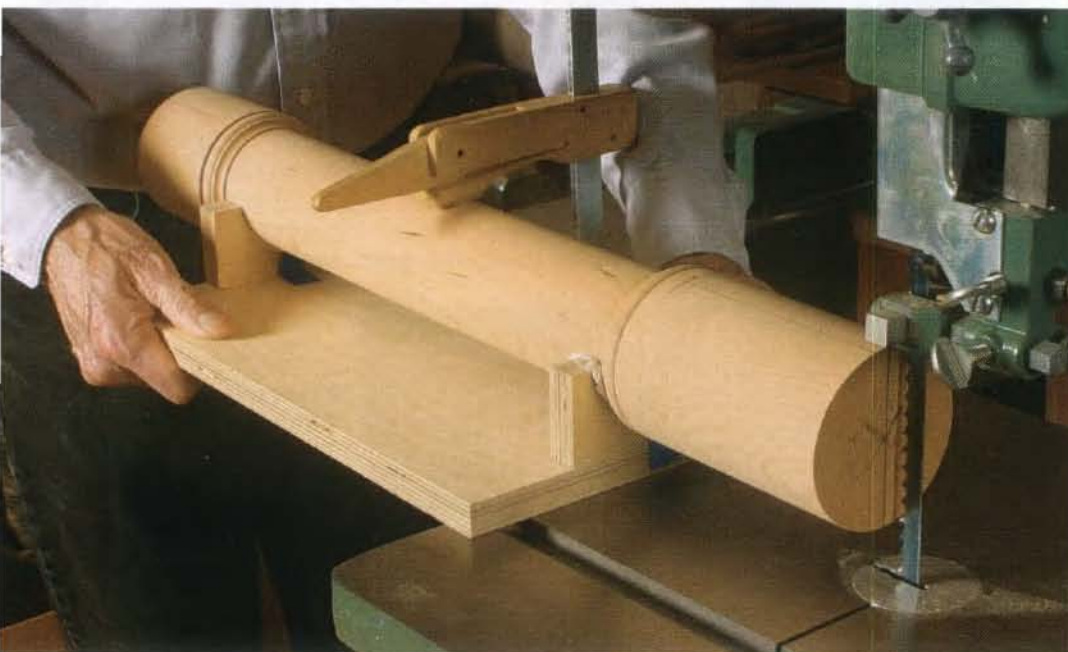
Notch the posts



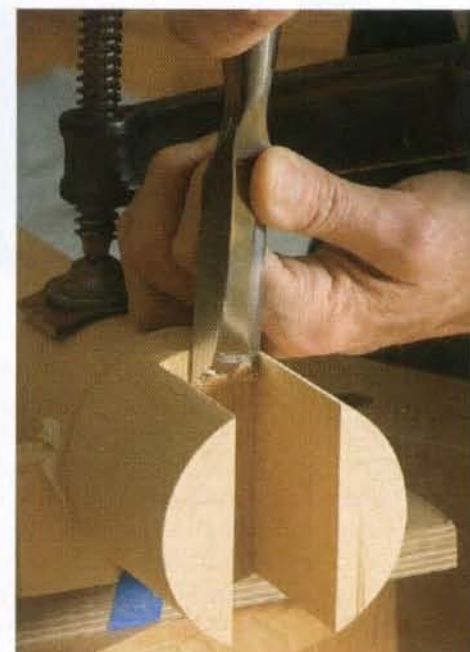
Build a cradle. Two saddles screwed to a base, $\frac{3}{4}$ in. thick by 8 in. wide by 12 $\frac{1}{2}$ in. long, create a cradle for the post that simplifies a number of construction steps.



Lay out the location of the notches. With the cradle on a flat surface, use a square to mark a vertical centerline on each end of the post (left). Measure and mark the width of the notch, then use a square to scribe the notch depth (right).



Cut the two notches. With the post securely clamped in the cradle, use a bandsaw to cut the notch on each end, following your layout lines by eye.



Hand work. Smooth the ends of the notches and the cheeks with a sharp chisel.

dia. At each end of the center section, turn a small cove and a bead with a small flat at each end of it (see drawing, p. 73). If your turning skills are rusty, practice first on a shorter blank.

Jig simplifies post joinery

Once both posts are turned and sanded, they need to be notched for the braces, feet, and stretchers. To hold them for layout and machining, I clamp the posts to a shopmade cradle that consists of a couple of U-shaped saddles screwed to a rectangular piece of plywood. A narrow piece of paper towel in each saddle, held in place with masking tape, helps prevent scratches on the posts.

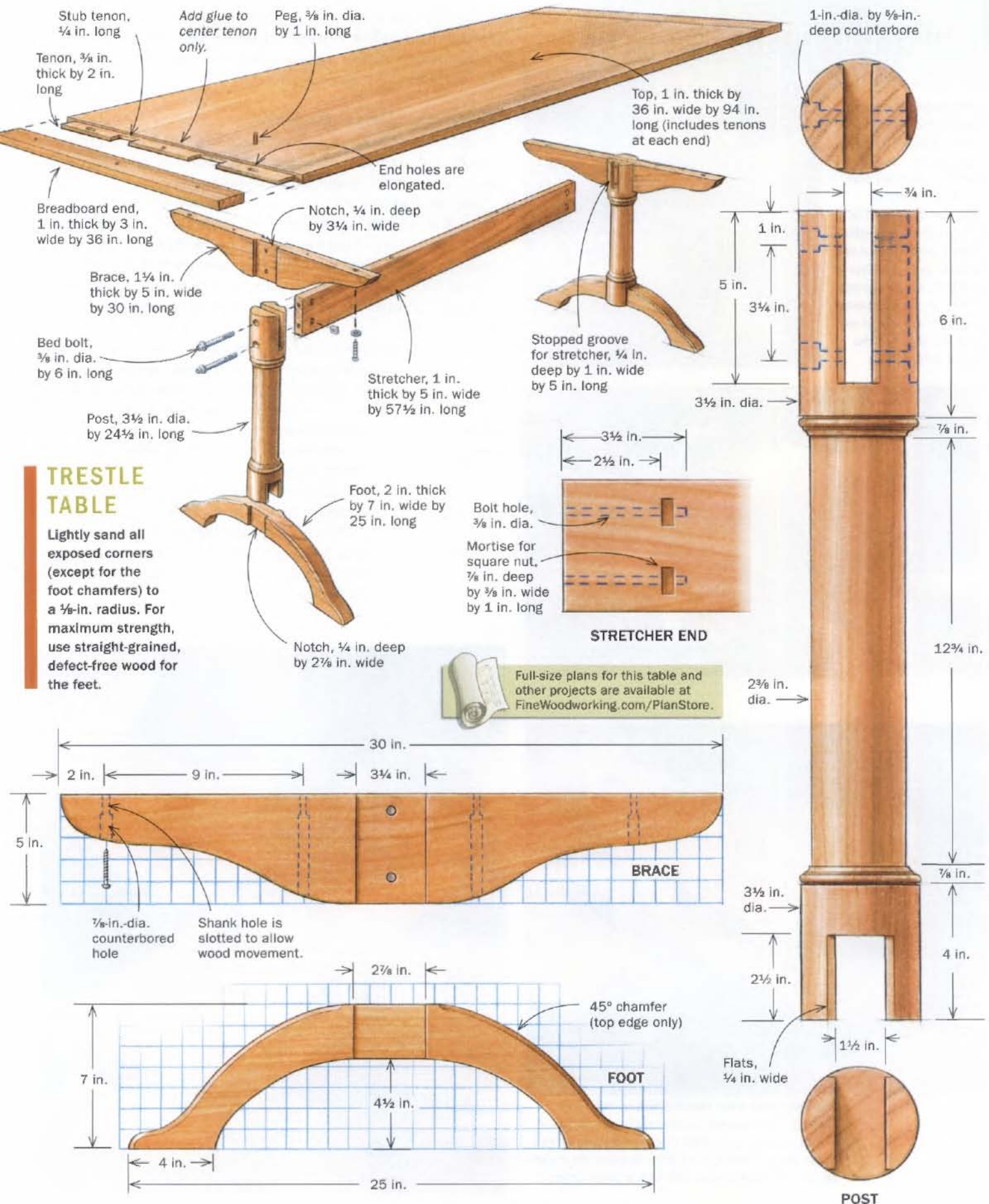
Place the cradle on a bench (with the clamp between the opened jaws of the vise so the cradle can rest flat). Use a square to lay out the width and length of the notch on each end of the post. To lay out a notch, first use a square to mark a vertical line through the center of the turning. Using that centerline as a reference, mark the width of the notch. Finally, mark the depth of the notch. The notches can be cut by hand with a deep backsaw, but a bandsaw

does as good a job in less time. With the post clamped in the cradle, carefully saw between the lines to the bottom of the notch. Then, nibble out the bottom of the notch with the blade. As you switch from one end to another, you'll need to reposition the clamp so that it doesn't bump into the saw table as you cut.

Rout a shallow groove for the stretcher—There's one more machine cut to make on each post—a groove, $\frac{1}{4}$ in. deep by 1 in. wide by 5 in. long, that will accept the end of the stretcher. You can cut the groove with a chisel, but it's easier on a router table.

Again, I use the cradle to support the post. A clamp gets in the way on the router table, so I made a wooden yoke that serves as a clamp. With the yoke screwed to the base of the cradle, the post stays securely in place. Before tightening the yoke, make sure the cheeks of the slot are parallel with the router-table surface.

Install a 1-in.-dia. straight bit in the router, and raise the bit to make a $\frac{1}{4}$ -in.-deep cut in the post. Adjust the router-table fence so that when the cradle slides against it, the bit is centered on the post. Also, clamp a stop block to the fence to stop the cradle

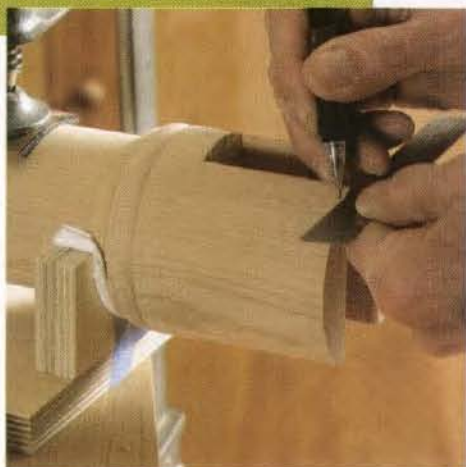


Notch the posts (continued)

Cut small shoulders.

Cut a flat on each side of the notches to ensure gap-free contact between the post and the brace and foot.

First, lay out each flat with a pencil and ruler (right), then make a vertical cut with a chisel to establish the end point. Finally, make horizontal cuts with the chisel to pare the stock to the layout line (below).



Cut the groove for the stretcher. With a U-shaped yoke screwed to the cradle serving as a clamp, use a router table to cut a stopped groove in the top end of the post (top). Square the rounded end left by the router bit with a chisel (right).

when the groove is 5 in. long. Hold the cradle firmly against the fence as you slide it forward to feed the post in the bit.

The router bit leaves rounded corners at the end of each groove. Use a chisel to cut them square.

Fit the other parts to the posts

Templates for the brace and feet can be found on p. 75, but you'll need to enlarge them to full size. I'm not fussy about pattern stock; light cardboard or poster paper works just fine.

Use the patterns and a pencil to transfer the profiles to the stock. Cut the parts on the handsaw, staying just outside the lines. Next, lay out and mark the location of the dados in the braces and feet. These mate with the deep notches in the posts. They can be cut by hand, with a router, or with a dado blade on the tablesaw. To save time, I use the dado blade set for the widest possible cut.

To support the braces and feet during the dado cuts, clamp a long fence to the miter gauge. The fence should extend at least 15 in. on either side of the dado blade. Add a pair of stop blocks to ensure that the shoulders of the dados align perfectly on both sides of the joint. When setting the depth of cut, I leave the areas between the dados a bit thick. That way, I can trim them with a rabbet plane for a perfect final fit.

With the dados cut, I smooth concave edges of the braces and feet using a spindle sander, and convex edges using a stationary disk sander. Smooth the curved edges further by hand-sanding.

Now use the router table and a chamfer bit to rout a 1/4-in. chamfer along the top edges of the feet. Stop each chamfer at a point 1/2 in. from the dados.



Complete the trestles



Dado the legs and braces. Cut a wide dado on each side of the brace and foot (above). Use the tablesaw miter gauge with a long auxiliary fence to support the parts during the cuts. A pair of stop blocks helps ensure that the ends of the dadoses end up perfectly aligned on both sides of the parts.

To fit a joint, first make a knife cut at the shoulders of the dado to sever the wood fibers before trimming the dadoses with a rabbet plane. When the joint begins to engage, I mark the leading edges of the slots with a pencil, which shows me exactly where the joint is still tight. A few more strokes with the rabbet plane and the joint should fit snugly.

Once all braces and feet are fitted to their respective posts, the parts can be glued and clamped to create a trestle. A pair of clamps, each spanning from brace to foot, is all that's needed. After that, at one end of the trestle, measure the distance from the top edge of the brace to the bottom edge of the foot. Do the same at the other end. The measurement should be the same. If they differ, adjust the pressure on the two clamps until the measurements agree. Once dry, sand the bottom of the post and the underside of the arched foot until flush.

When making the stretcher, I start with slightly thicker stock. Then I make light passes with a thickness planer until the stretcher fits snugly in the groove routed in the top of the post.

How to install bed bolts

Each trestle attaches to an end of the stretcher with a pair of $\frac{3}{8}$ -in. by 6-in. bed bolts and nuts (available from Horton Brasses; www.horton-brasses.com). Each bolt extends through a post and brace and into the end of the stretcher. The end of the bolt threads through a nut mortised into the stretcher. When the bolt and nut are tightened, the stretcher and trestle are pulled together to produce a rock-solid joint.

The bed-bolt work starts at the drill press. Once again, the cradle comes in handy. Use the yoke to secure the trestle to the cradle, with the stretcher groove facing down. Make sure the sides of the brace and trestle are parallel to the worksurface. If the parts tilt, the holes won't be square.

Measuring from the top end of the post, mark the hole centers at 1 in. and $4\frac{1}{4}$ in. Position the cradle so that a 1-in. Forstner bit is centered on the upper hole. Clamp the cradle to the drill press,



Dry-fit the parts. Check the fit of the posts to each dado (above). If too tight, use a rabbet plane (left) to trim the sides or bottom of the dado.



Route chamfers. A chamfer bit in a router table is used to chamfer the top edges of the feet. Stop the cut $\frac{1}{2}$ in. short of the dado.

Add the bed bolts

Start by drilling. With a trestle clamped in the cradle, and the cradle clamped to the drill-press table, use a 1-in.-dia. Forstner bit to drill a $\frac{5}{8}$ -in.-deep hole (right). Then, remove the Forstner bit and use a $\frac{3}{8}$ -in.-dia. brad-point bit to drill a hole completely through the post.



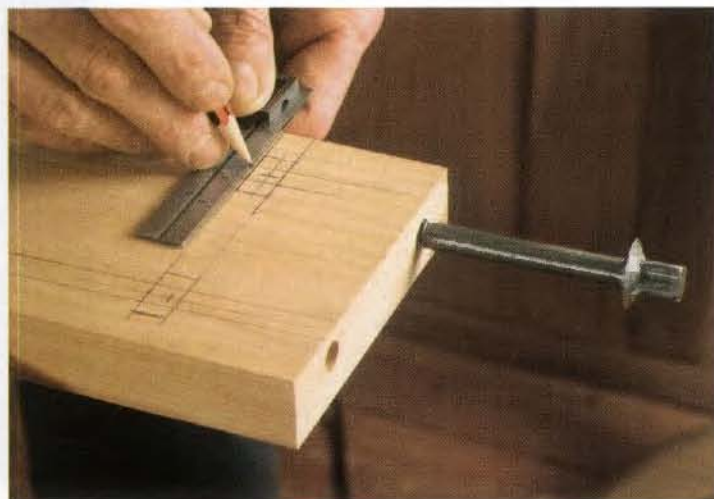
and then bore a $\frac{5}{8}$ -in.-deep hole to accept the head of the bed bolt. Replace the Forstner bit with a $\frac{3}{8}$ -in.-dia. brad-point bit and bore a hole completely through the post and brace. Repeat the process for the remaining holes.

Next, clamp the stretcher in a vise and temporarily mount one of the trestles. Transfer the $\frac{3}{8}$ -in.-dia. bit from the drill press to a portable drill. Using the holes in the trestle as guides, drill matching holes in the end of the stretcher. Remove the trestle and continue drilling until the hole is at least $3\frac{1}{2}$ in. deep, measured from the end of the stretcher.

Portable drills rarely produce a hole perfectly square to the stretcher ends. So, to make sure the mortise for the nut is properly located, I use a bed bolt as a guide. Allow a good portion of the bolt to extend from the hole. Then place a long ruler so it's centered along the length of the exposed bolt. Use a pencil to extend the centerline along the face of the stretcher. With the centerline showing the location of the bolt hole, measure $2\frac{1}{2}$ in. from the end of the stretcher, and lay out the location of the mortise for the nut. A few minutes' work with a chisel yields a mortise just



Drill holes in the ends of the stretcher. Add a trestle to the stretcher temporarily, then use a $\frac{3}{8}$ -in.-dia. brad-point bit to extend the bed-bolt hole slightly into the end of the stretcher. After that, remove the trestle and drill deeper to complete the hole.



Lay out the location of the bed-bolt nuts. With a bed bolt in a stretcher hole serving as a guide (in case the hole isn't drilled perfectly square), mark the location of the bed-bolt nut (above). Cut the mortises for the nuts (left) just deep enough to allow the bolt to thread into the nut.



Put it together. After all the parts have been sanded and finished, it's finally time to put the table together. With the table parts upside down, slide the ends of the stretcher into the post grooves and slip the bed-bolt nuts into the mortises in the stretcher. Then, insert the bolts (top right).

Assembly is easy



Attach the top. A screw and washer go into each counterbored hole in the braces. The slotted shank hole allows wood movement.

big enough to accept the nut. You'll know the alignment is OK if you can slip the bolt into the hole and thread it into the nut. I use a special bed-bolt wrench (available from Horton Brasses; a 12-point socket also works) to turn and tighten the bolts.

With the holes drilled and all the mortises cut, you can mount the trestles to the stretcher.

Build the top and breadboard ends

I make the tabletop by edge-gluing 1-in.-thick stock, using three or four well-matched boards across the 36-in. width.

Breadboards are applied to either end. The original table, made from $\frac{7}{8}$ -in.-thick stock, had a $\frac{1}{4}$ -in.-thick by $\frac{1}{2}$ -in.-long tongue cut fully across each end of the top and pinned to allow for wood movement. The tongue fit into a corresponding groove cut across the entire length of the breadboard end. I make my tenons longer for added strength (see "Keeping Tabletops Flat," *FWW* #183, pp. 32-37, for more detailed instructions).

The top is attached with screws driven through counterbored holes in the braces and stretcher. To allow the top to expand and contract in width due to seasonal changes in humidity, be sure to elongate the shank holes in the braces.

For a finish, I use an oil-and-varnish mix (equal parts of each), applying three coats to all the table surfaces, including the top and bottom of the top and breadboard ends. For added durability, the top then gets two more coats. □

Contributing editor Christian Becksvoort builds furniture in New Gloucester, Maine.





What's Your

Readers, editors,
contributors sign their
work in distinctive ways

BY CHARLIE REINA

You've spent weeks, months even, making that fine piece of furniture. You take pride in your work and want the world—or maybe just future clients—to know who made it. So how do you sign your work for posterity?

We put that question to members of our online discussion group, Knots (www.finewoodworking.com), along with some frequent contributors and FWW editors, and found that woodworkers use signing techniques as varied and personal as their names, and often as creative as their best work. Some go the clean-and-simple route. Some leave their mark with subtle bits of flair, while others get bold and brassy.

Here are some of the best examples and signing techniques that came up most often. Take your pick, or join our online forum and weigh in.

Charlie Reina is an associate editor.

Wood burning



Burning a signature into the wood saves you the step of inking or staining in a dark color, and you get a choice of methods. In his Chardon, Ohio, shop, Bruce Schroeter uses an electric branding

iron to stamp in his signature. These

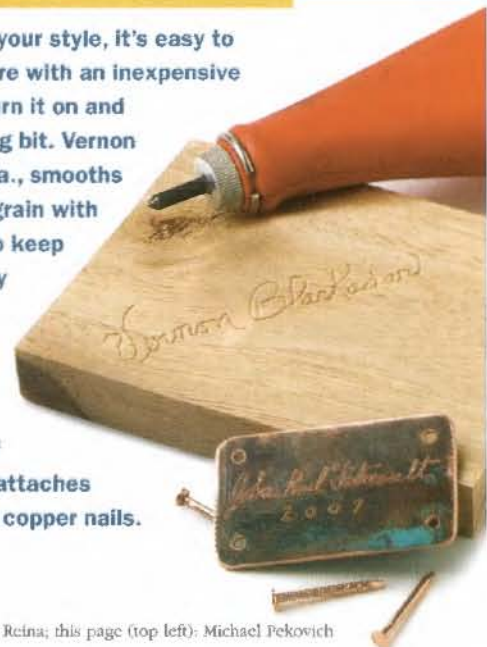
irons also come in the heat-by-flame style, typically used with a propane torch. They're less expensive than plug-ins but take longer to heat. In either case you get another choice: Just supply your name (as Schroeter did); or, for a higher price, supply your own design (as we did for the stamp in the top photo.)

Paul Weber of Tinton Falls, N.J., uses a standard, plug-in wood-burning tool. Its advantage? It allows you to restyle your signature for each piece.

Engraving

If block letters aren't your style, it's easy to "handwrite" a signature with an inexpensive engraving tool. Just turn it on and write with the vibrating bit. Vernon Blackadar of Lithia, Fla., smooths out any coarse wood grain with fine sandpaper first, to keep the bit from constantly bouncing off course.

FWW assistant art director John Tetreault engraves his signature on pieces of salvaged copper, and attaches them to his work with copper nails.



Sign?

Carving



Dennis Soden of Leawood, Kan., uses carving tools to produce his name and the year in letters 1 in. to 2 in. tall. Matt Mulka of Mokena, Ill. (not shown), uses chisels for letters twice that size. Like many of those who sign their work, Soden creates the letter characters on his computer, which gives him a choice of fonts. Then he prints the characters and traces them onto the wood with carbon paper. For more on letter carving, see "The ABCs of Letter Carving," *FWW* #187, pp. 84-87.

Inlaying

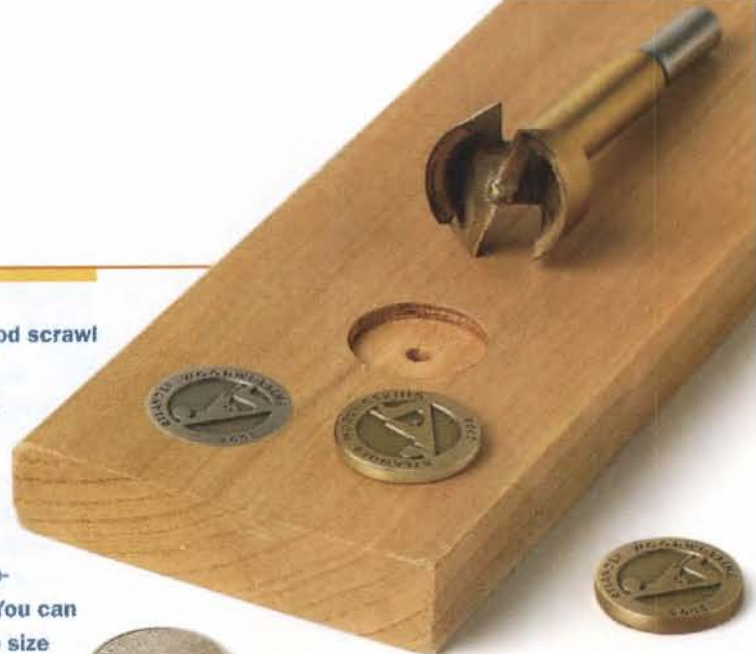
If a quick ink-on-wood scrawl is at the low end of signing techniques, inlaying is at the high end. It typically involves more work, more precision, and sometimes more cost. You can get fancy with the size and shape of the inlay and use a router and template to clear the way.

Or you can make the process a lot easier, just by thinking circular.

Jim Howell of Portland, Ore., makes inlays out of contrasting wood. Using a 1-in. plug-cutter and tablesaw, he cuts out a disk $\frac{1}{8}$ in. thick. He inscribes his floral-design signature with a wood burner or engraver, drills out the receiving hole with a Forstner bit, and glues in the disk.

Several signers inlay pennies minted the same year as the piece was made. Lane Carter of Edgemont, Ariz., epoxies in a new penny and burns in his name alongside it with an electric stencil.

Mike Rylander of Mill Valley, Calif., has his own coins minted and epoxies them into the piece. His coins have consecutive years on opposite faces to get two years from each batch. Custom coin makers typically charge about \$2.25 each for up to 300 bronze coins (\$2.75 each for silver), plus an initial die-making fee of \$210. Prices drop significantly for larger orders.

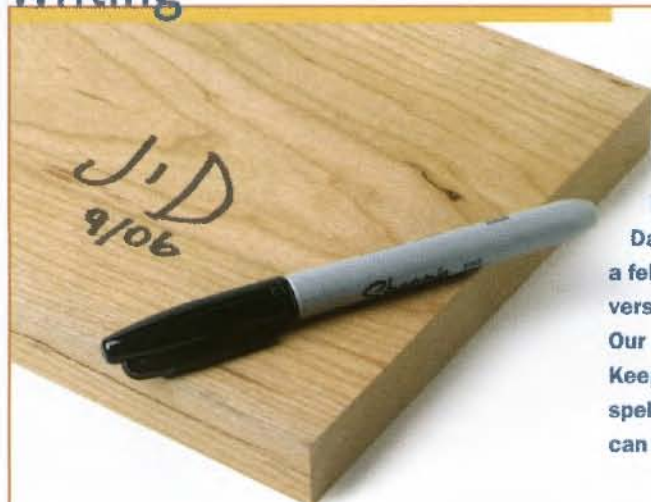


Some of our signers use Dremel-type tools to achieve varying effects, starting with a $\frac{1}{32}$ -in. ball bit for the smallest letters. Max Mayer of Steamboat Springs, Colo., opts for a squiggly "worm-line" design and rubs in a contrasting stain before sanding and finishing the wood. Michael Ochinda of San Jose, Calif. (not shown), uses a block-lettered "Hand-crafted by ..." signature.



Sand coarse wood first. Vibrating-bit engraving tools work better after coarse wood grain is sanded smooth. Wiping a contrasting stain over the signature fills the lines and brings out the words.

Writing

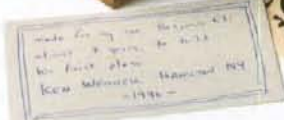


HANDWRITING ON WOOD

Taking a pen directly to your workpiece is as simple as signing gets. Rancher/woodworker David Doyel of San Jose, Calif., uses a felt-tipped pen to handwrite a version of his family's cattle brand. Our advice to ink-on-wood signers: Keep a steady hand, and don't misspell. "Erasing" with 60-grit sandpaper can take a while.

HANDWRITING ON PAPER

To reduce the chance for error, several signers put pen to paper, then paper to wood. Ken Werner of Hamilton, N.Y., made, and "signed," a plane box for his young son.



SOURCES OF SUPPLY

BRANDING IRONS, WOOD-BURNING TOOLS, ENGRAVING TOOLS

www.woodcraft.com
www.leevalley.com
www.rockler.com

CARVING TOOLS

www.highlandwoodworking.com

STAMPING TOOLS

www.infinitystamps.com

MINTED COINS

www.wemakecoins.com
www.coinable.com

LASER PRINT ON PAPER

Mike Harris of Atlanta, Ill., shows what you can do with a computer printer and parchment paper. He glues these signature ovals onto a hidden part of his workpiece, then brushes on a polyurethane finish.



Stamping

If you've ever accidentally pounded a loose nail into the surface of a board, you know how stamping works. Just about anything metallic with a sharp, well-defined edge can be your signature "stamp."

Then again, you might want something more personalized—your name, the date, or a whimsical design like the one Aurelio Bolognesi of Hardwick, Mass., uses. For that, you can have a metal stamp made to your specs. (Bolognesi paid \$140 for his hardened steel stamp.) Then it's just a matter of one solid blow with a hammer. Just make sure to do that before the piece is assembled.



FineWoodworking.com managing editor Matt Berger was living in San Luis Obispo, Calif., when he had this rubber stamp made at a print shop. Matt supplied the design, and paid less than \$20 for the stamp and ink pad. He stamps his work in its unfinished state, then wipes on the finish.

Where to sign your work

Proud as they are of the furniture they make, most of our signers opt for modesty when it comes to leaving their mark. Or maybe they just don't want anything to mar the beauty of the work. Whatever the reason, they tend to sign their work in places you have to look for.

CHAIRS

We get to see wooden chairs from just about every angle, and just about every surface is visible. But there's at least one out-of-the-way place for a signature. Kevin Rodel of Pownal, Maine, signs his Arts

and Craft chairs (featured in FWW #190) on the inside of the seat's back rail.



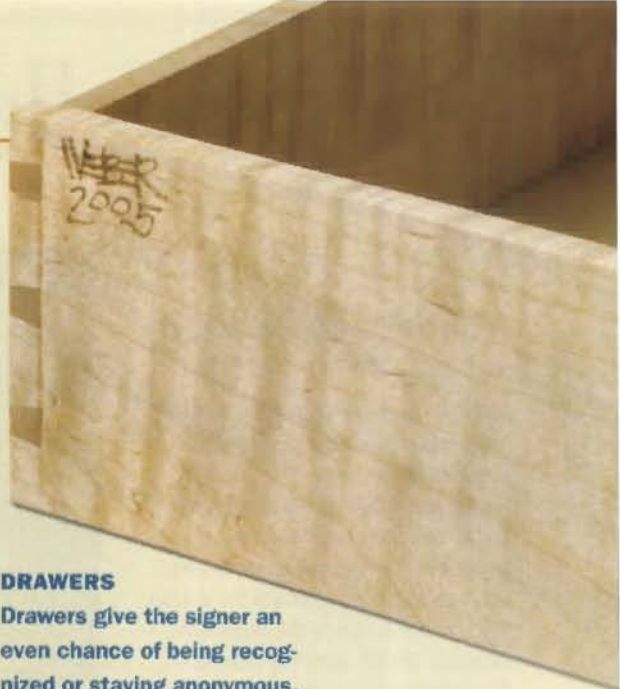
FRAMES

FWW associate art director Kelly Dunton took pen to finished wood on the back of this cherry frame.



DRAWERS

Drawers give the signer an even chance of being recognized or staying anonymous. Paul Weber's wood-burnt signature can be seen only with the drawer out.



TABLES

And then there's a signature that hides in plain sight, courtesy of one of our contributing editors. Look closely at the inset photo of the box on his demilune table, which was featured in FWW #177. Can you see the signature? It's inlaid in Morse code. The short and long ebony lines around the inner semi-circle are the dots and dashes. Cherry spacers separate the letters. They spell H (....) A (..) C (..) K (..), as in Garrett Hack.



readers gallery

JANEL JACOBSON

Harris, Minn.

Jacobson finds the inspiration for her tiny sculptures in the natural world surrounding her home. This one is a mere 1¼ in. deep by 5¼ in. wide by 1½ in. tall. She roughed out the shape with a microgrinder and used files and small carving tools to create the details. To raise the bumps on the frogs' skin, Jacobson compressed tiny dimples in the surface, scraped the entire surface level with the bottom of those dimples, and then immersed the piece in hot water. The boxwood piece is finished with artist's oil paints.



DOUG KING

Missoula, Mont.

King made this madrone and claro walnut curved-top box for his mother, and the feet were inspired by period antiques in her house. In keeping with the rest of the box, the frame-and-panel lid is solid wood, shaped with a spokeshave and a round-bottom plane. The finish is shellac; the box is 9 in. deep by 15 in. wide by 7 in. tall.

KERRY MARSHALL

Mendocino, Calif.

Living and working in wine country, it's only natural that Marshall would incorporate that tradition into his work. This chair (24 in. deep by 24 in. wide by 36 in. tall) is made from a reclaimed oak wine barrel. After five years of use, the wood stops imparting desirable flavors to the wine and the barrels are discarded. The natural curve of the staves drove the chair design, and Marshall left the barrel's existing grooves and other details on the leg pieces. The Bordeaux-soaked color on the inside of the staves (apparent on the seat and back rails) is sealed in with shellac and a finish coat of Bioshield resin oil.



JOHN McALISTER

Charlotte, N.C.

McAlister, the 2001 recipient of the Society of American Furniture Makers' Cartouche Award for lifetime achievement, made this mahogany and poplar Newport clock for his eldest daughter. The dial was painted by Chad and Kay Mitchell of Rock Hill, S.C., who paint and repair dials for museums. It is true to the period, except for McAlister's name in script (the maker of the movement might have his name there, but never the cabinet maker). Also on the dial, hidden in the thistle foliage in each corner, are the initials of McAlister's daughter, her husband, and their two daughters. The clock, finished with varnish, is 13½ in. deep by 24 in. wide by 96 in. tall.

PHOTO: PAT SHANKLIN



SETH DEYSACH

Chicago, Ill.

This table (22 in. deep by 18 in. wide by 18 in. tall) was built to sit next to an original Eames lounge chair. Deysach was commissioned to design a table to complement the mid-20th-century style of the iconic chair. He used MDF and poplar as substrates under the Santos rosewood veneer and lined the drawers with leather. The finish is catalyzed lacquer and wax.

SCOTT GUTIERREZ

Heber City, Utah

The design for this padauk and wenge hall table came as Gutierrez thought about the architecture (particularly the bridges) and countryside of Vietnam and Thailand, which he finds particularly appealing. These influences are apparent in the faux bamboo legs and arches. Finished with Waterlox polyurethane, the table is 16½ in. deep by 68 in. wide by 30 in. tall.



HIKMET C. SAKMAN

Victoria, B.C., Canada

Sakman's interpretation of this Arts and Crafts dresser includes graceful elements that break up the typically rectilinear style, such as a tapered carcass and curved corbels. The dresser (25 in. deep by 66 in. wide by 46 in. tall) is made primarily from quartersawn white oak. The curly white oak side panels have wenge details, and the drawers have yew sides and are lined with Tennessee cedar bottoms. Sakman finished the piece with aniline dye, orange shellac, glaze, and hand-rubbed varnish.



GREGORY STODDARD

Gansevoort, N.Y.

Stoddard refers to this chest (28 in. deep by 58 in. wide by 28½ in. tall) as "The Phoenix." About 30 years ago, an antiques dealer photographed a number of sale pieces. One was a 400-year-old dowry chest with brass images of Judgment Day. Shortly afterward, a fire destroyed everything except the brass and the photos. Years later, Stoddard was given the hardware and was commissioned to reproduce the original. He used Honduras mahogany, finished with an oil varnish, and aromatic cedar.

PHOTO: STOCK STUDIO



ANDY WARD

Ophir, Colo.

The geometric shapes in this veneered blanket chest (14 in. deep by 40 in. wide by 26 in. tall) were inspired by the mountains that surround Ward's Colorado home. The peaks and valleys are English walnut, the horizontal lines and base are Macassar ebony, and the interior is pearwood. Unlike a traditional blanket chest, this one has a top that lifts like a piano lid and is secured by a hand-braided silk cord. Ward finished the piece with Liberon finishing oil.

PHOTO: DAVID WELTER

DUFF THURY

St. Paul, Minn.

This black walnut "Jax" table (inspired by the children's game) is Thury's version of the modern trestle table. Thury developed a technique to invisibly reinforce the mitered corners with welded steel. The table, finished with fortified tung oil, is 42 in. deep by 72 in. wide by 30 in. tall.



2007 DESIGN IN WOOD EXHIBITION, SAN DIEGO COUNTY FAIR

This international juried competition, organized by the vibrant San Diego Fine Woodworkers Association, draws roughly 300 pieces each year to the Del Mar Fairgrounds. *Fine Woodworking* magazine has the honor of choosing the best piece in the show. PHOTOS: ANDREW E. PATTERSON

GARY CLARK

Hermosa Beach, Calif.

Maloofallac

Third place, art furniture; first place, excellence in finishing

This chair (38 in. deep by 26 in. wide by 42 in. tall) is a blend of one of the most famous American chairs, the Maloof rocker, and one of the most classic of American cars, the 1959 Cadillac. The Maloof part of the chair is curly teak finished with an oil polyurethane. The car part is MDF finished with a two-stage automotive paint with a base coat and a clear coat.



CRAIG THIBODEAU

San Diego, Calif.

Gardenia sideboard

Best of show, *Fine Woodworking*; first place, veneering/marquetry

Thibodeau's sideboard (16 in. deep by 72 in. wide by 36 in. tall) combines marquetry with bent laminations on a curved front. Finished with varnish, the piece is primarily figured anigre, wenge, and maple. The marquetry is dyed poplar, holly, pau ferro, mother of pearl, and abalone.



KEN COWELL

Yorba Linda, Calif.

Vessel 701

First place, wood turning

Cowell spent 98 hours making this vessel (8 in. dia. by 9½ in. tall). He says 10% of the time was spent designing and creating a scale drawing, and 10% was turning and finishing. The rest was cutting and assembling the 1,145 pieces.



ADRIAN SANDU

La Mesa, Calif.

Steps in time

First place, clocks

Sandu knew he wanted to make a clock for this show, and he has always been drawn to spiral staircases. This original design (22 in. deep by 46 in. wide by 96 in. tall) merges those elements. The black walnut is finished with a hand-rubbed oil finish.



Drying freshly cut lumber

Q: I recently found a treasure trove of fresh-cut curly maple. It's mostly 4/4 and 5/4, with some 6x8s that I will cut into 3x8s to encourage drying within my lifetime. Aside from painting the ends with shellac and stickering it, how should I go about drying it?

—STANLEY JETT,
Warren, Mich.

A: I AIR-DRY A LOT OF WOOD and it isn't difficult. The key is to get air moving through the pile, so all surfaces of the boards dry evenly. I don't bother to paint the ends, since end checks will still happen and I'd rather know where these natural weaknesses are and cut around them later.

Build your pile in an airy location, either outside or in an open shed. Get the base well off the ground, so air can circulate around the bottom as well as the sides. Place 1-in.-sq. stickers no more than 3 ft. to 4 ft. apart. Line these up vertically and over the main timbers of the base. (Offsetting them can dry a sag in the boards.) Put a sticker close to the end of each board, even if it means adding an extra one. Keep the ends of the stickers within the overhang of the covering so that they

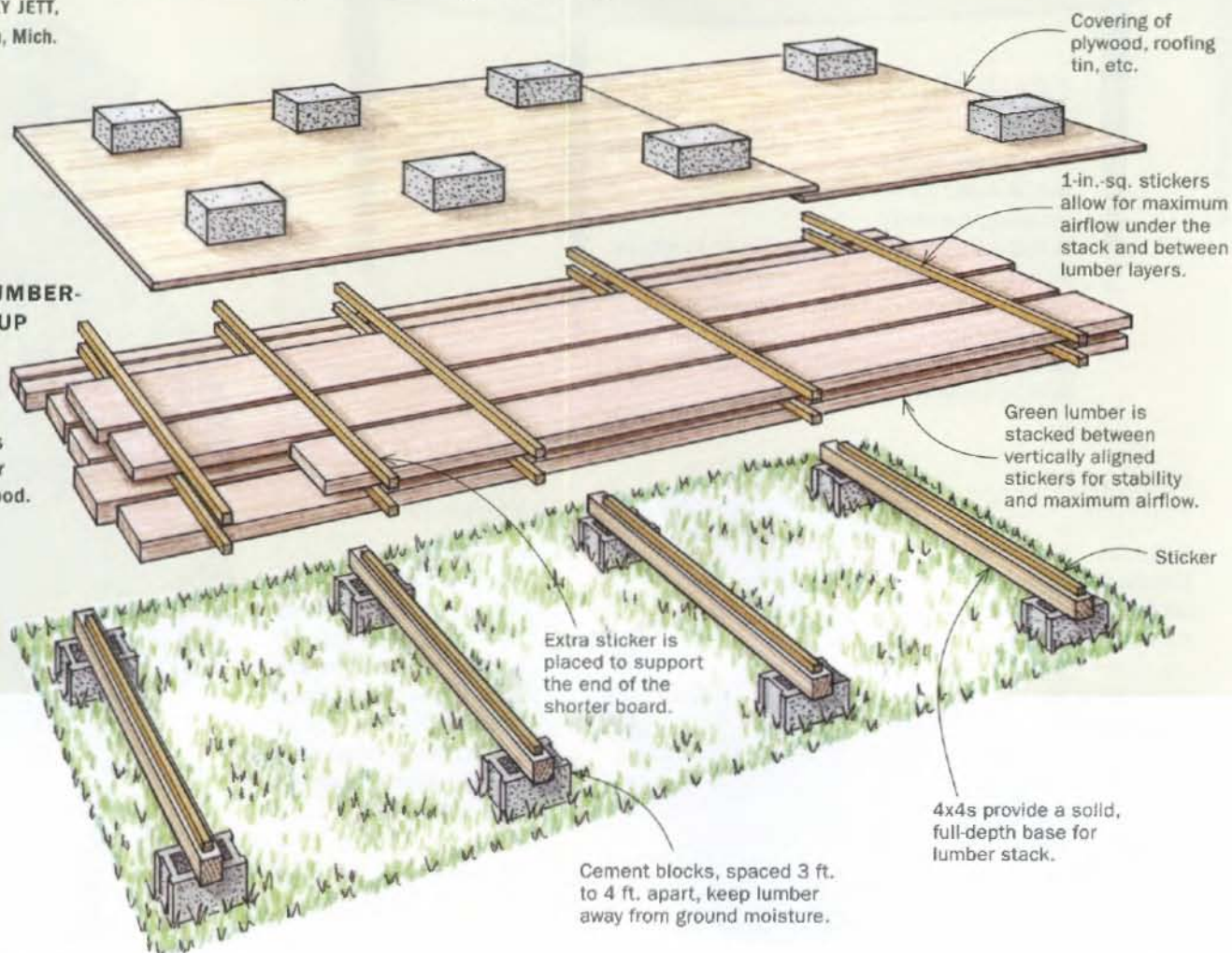
don't catch rain and drip it into the pile. The best covering is old roofing tin or plywood acting as a roof to shed rain and/or snow. Don't use plastic or any other cover that drapes down on the pile; it will cut off air circulation and lead to mold. Dry the wood at least a year per inch; 12 to 15 months or longer for your 4/4 and 5/4 stock, and at least three years for your 3x8s.

Check the wood often for any signs of bugs, such as tiny holes with fine sawdust surrounding them. If you do find holes, apply a liberal wash of paint thinner to them.

—Garrett Hack is a contributing editor.

OUTDOOR LUMBER-DRYING SETUP

A simple setup of cement blocks and lumber provides an airy place for drying green wood.



WOOD MOISTURE METER

The mini-Ligno E/D
High Performance
Low-cost

For hobbyists,
woodworkers and
industrial applications,
to avoid frustrating
moisture problems.

Lignomat USA
800-227-2105
PO Box 30145,
Portland OR 97294
503-257-8957 FAX 503-255-1430,
www.lignomat.com, sales@lignomat.com



READER SERVICE NO. 45

One of The Largest Selections of Whiteside Router Bits!



Whiteside 7pc.
Router Bit Set
#R401

\$79
Delivered



Your Source For Essential,
Unique, & Hard To
Find Tools Since 1972!

FREE! **CATALOG** **800-345-2396**
hartvilletool.com

READER SERVICE NO. 129

HEARNE HARDWOODS, Inc

Extraordinary Hardwood Lumber
www.hearnehardwoods.com
Internet Store

One of the Largest Specialty
Lumber Yards in the World!

~ Over 100 species in stock!
~ Domestic & Exotic lumber
~ Specializing in Cherry,
Walnut, European Lumber,
Burls, Figured Hardwoods,
Custom Flooring, Flitches,
Wide Slabs & rare wood!

Call Toll Free!
(888) 814 - 0007

200 Whiteside Drive
Oxford PA, 19363
info@hearnehardwoods.com

READER SERVICE NO. 80

PHASE-A-MATIC

NEED
3-PHASE
POWER for
your woodshop?

1-800-962-6976

CNC
available



PHASE CONVERTERS
www.phase-a-matic.com

READER SERVICE NO. 7

est. 1978

HIGHLAND Woodworking

fine tools & education

The Wood Slicer®

LEGENDARY RESAWING BLADE

- CUTS SMOOTHER
- STAYS SHARP LONGER
- WORKS FASTER
- SOUNDS QUIETER
- MAKES VENEERS

800-241-6748 "Best All-Around Performer"
Rated by Fine Woodworking
highlandwoodworking.com

READER SERVICE NO. 78



WOODCRAFT®

Helping You Make Wood Work®

For more information call 800 344-3348 or e-mail: bill_carroll@woodcraft.com

When woodworking is your passion, and owning your own business is your goal, Woodcraft can help you take your skill and expertise to the retail level.

David & Aaron Sapp
Nashville, TN Franchise Owners

"We're building a business that transcends generations. Having a Woodcraft franchise has helped us grow as a family while preparing our next generation for success."



Dept. F0/WW100

RETAIL FRANCHISE OPPORTUNITIES • SUPPORT • TRAINING™

ORDER ON-LINE

Our extensive offering of stock wood turnings,
custom quoting, and order tracking is available
24-hours a day, 7 days a week at:

www.OrderKitchenLegs8.com



ORDER ONLINE:
www.OrderKitchenLegs8.com
ORDER LINE:
800.849.8876
CALL FOR A CATALOG:
800.481.2307

4620 GA Highway 123 • Toccoa, GA 30577 • Email: info@osbornewood.com

READER SERVICE NO. 16

Best tabletop finish

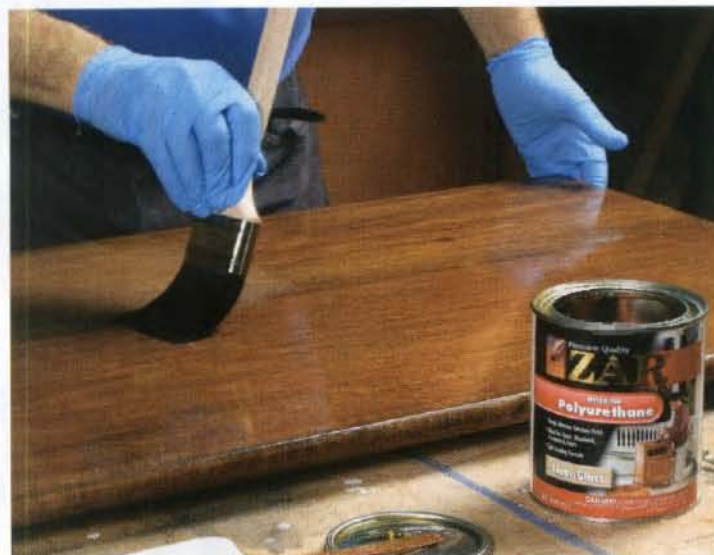
Q: I'm making a kitchenette table and want protection against watermarks. Is there a finish that comes close to the water resistance of Formica?

—JOHN WILLOZ,
Columbus Junction,
Iowa

A: YOU HAVE A CHOICE, depending on how proficient you are with spray equipment. A sprayed, two-part, catalyzed conversion varnish such as Duravar Plus will give you water and abrasion resistance approaching that of Formica laminate.

This type of finish is no harder to apply than any other spray finish; however, make sure you follow the finishing schedule printed on the can. Usually, two or three coats are needed to achieve maximum protection, and all coats should be applied within an 8- to 12-hour window. Before you start, make sure you have enough time to completely finish the project—and to clean your

Bulletproof, but at a price. A sprayed, two-part, catalyzed conversion varnish is the best defense against tabletop watermarks. However, it's expensive (Duravar Plus varnish, \$22/gal.; catalyst, \$30/gal.; www.mlcampbell.com), and it requires spraying know-how.



A user-friendlier finish. For the non-sprayer, the best tabletop protection is a brush-on polyurethane, either oil-based (above) or water-based.

spray gun after you're done. Any finish left inside it will turn to stone by morning.

If you're like many non-professional woodworkers, you probably don't have spray equipment. In that case, a standard brush-on poly-

urethane varnish is a good choice. While not as bullet-proof as a conversion varnish, it is more than adequate for most conditions. I finished my dining table in that way 30 years ago and, despite daily use, it still looks almost as good as the day I brought it into the house.

—Chris A. Minick writes frequently on finishing.



Is it a waterstone or an oilstone?

Q: I purchased some used sharpening stones, but I don't know if they are waterstones or oilstones. How can I tell the difference?

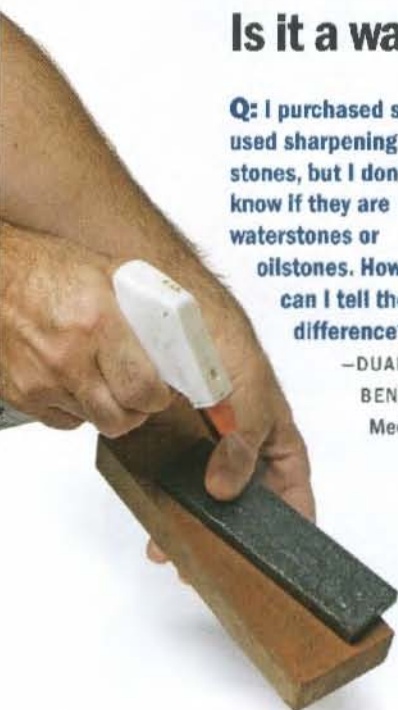
—DUANE C.
BENNETT,
Medford,
Ore.

A: UNTIL RECENTLY, MOST SHARPENING STONES were oilstones, so chances are, that's what you have. Yes, there were some natural waterstones to be found 30 or more years ago, but nothing like the variety and quality of the manmade and natural ones you can buy today. One way to check is to smell the stone and box

(if there is one) to see if there is any residue of oil. Also, if you find greasy sludge on the side of the stone, it probably was used with oil. To make sure, drop some water on the stone; if the water beads up, the stone definitely has been used with oil. If the water is absorbed readily into the stone, it was used with water.

Used stones probably will be worn out of flat. Flatten them against a diamond stone well lubricated with kerosene, or on coarse wet-or-dry sandpaper on plate glass. If you think you have waterstones, use water as a lubricant for this flattening. Otherwise, flatten and use them as oilstones.

—G.H.



To bead or not to bead. If you're unsure of whether a stone was used with water or oil, spray water on it. Water will bead up on an oilstone but will soak into a waterstone.

Ask a question

Do you have a question you'd like us to consider for the column? Send it to Q&A, *Fine Woodworking*, 63 S. Main St., Newtown, CT 06470, or email fwqa@taunton.com.

Forrest Blades

Experienced woodworkers know that Forrest blades are ideal for remodeling high-end kitchens and baths.

Forrest blades deliver smooth, quiet cuts *without* splintering, scratching, or tearouts. Our proprietary manufacturing process, hand straightening, and unique grade of C-4 micrograin carbide are perfect for cabinets, countertops, and flooring. In fact, independent tests rate us #1 for rip cuts and crosscuts.

"Your blades are without question the best by miles, and I have tried them all."
Bob Jensen, Fridley, MN



Order from any Forrest dealer or retailer, online, or by calling directly. Our blades are manufactured in the U.S.A. and backed by our 30-day, money-back guarantee.

Forrest Quality Shows

Duraline Hi-AT—Great for cutting two-sided veneers and low pressure laminates.

Woodworker II—Best rated, all-purpose blade for rips and crosscuts.

FORREST

The First Choice of Serious Woodworkers Since 1946

www.ForrestBlades.com
1-800-733-7111
(In NJ, call 973-473-5236)

© 2007 Forrest Manufacturing

Code FWW

READER SERVICE NO. 115

NEW!

Leigh Super Jigs

12" 18" or 24"!

Starting under **\$199**

Through, half-blind, sliding dovetails and box joints. **New** single pass half-blind dovetails! Includes bits, guidebush, DVD, etc. Shown with Vacuum & Router Support.

leighbjigs.com
800-663-8932

LEIGH
Leigh Router Joinery Jigs

LAGUNA TOOLS

THRIVING ON INNOVATION

"LEGENDARY BANDSAWS..."



Our legendary bandsaw product line offers the largest resaw heights found on any bandsaw worldwide. Our bandsaws come equipped with American-made Baldor motors and Laguna guides. Heavy-duty cast-iron tables provide excellent support while sawing wood. To view our latest Bandsaw accessories go to Lagunatools.com

"...UNBEATABLE QUALITY"

CALL 800.234.1976
LAGUNATOOLS.COM

17101 Murphy Avenue - Irvine - California - 92614

READER SERVICE NO. 139

Custom splitters for zero-clearance inserts

Q: Is it possible to use a splitter with a zero-clearance insert?

—LEO CHEE,
Southbury, Conn.

A: THE LONG SPLITTER SLOT at the back of a regular steel insert usually comes to within 1/2 in. of the blade slot. If you copy this in a zero-clearance insert made from phenolic resin, medium-density fiber-board

(MDF), or plywood, the insert probably will crack. Instead, I drill a 1/2-in.-dia. hole through the insert close to the back of the tablesaw blade slot (cut at full blade height) and insert a smaller, shopmade splitter like the one shown.

I made this splitter from aluminum sheet stock that I bought for \$7 a square foot (www.metal-supermarkets.com).

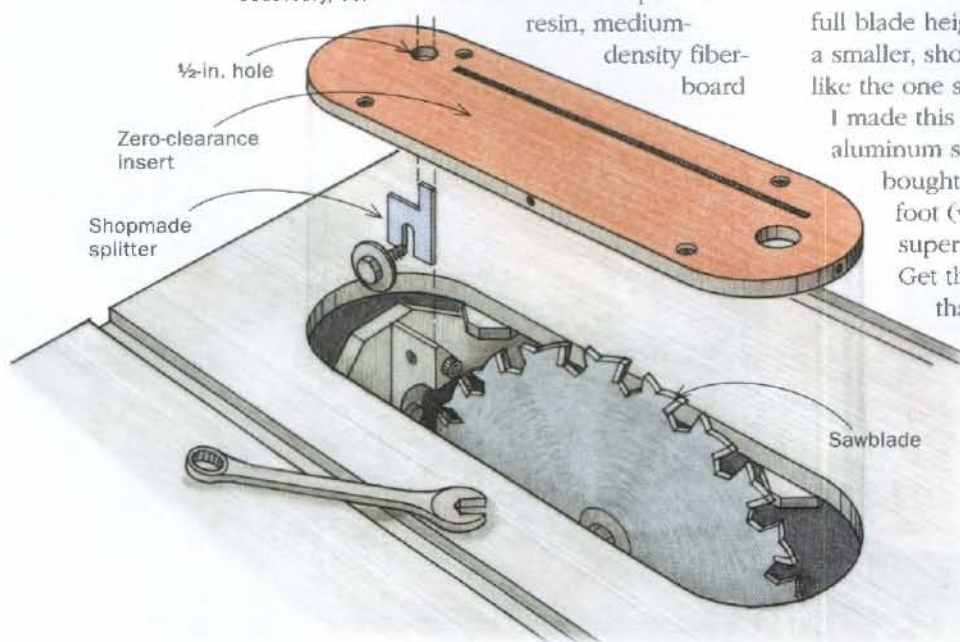
Get the thickness that matches the kerf of your blade—0.100 in. for most thin-kerf blades, around 0.125 in. for standard blades. To cut the aluminum

without damaging it, I attach it with double-sided carpet tape to

1/8-in.- or 1/4-in.-thick Masonite or MDF. I use a fine-tooth metal cutting blade in my jigsaw and it cuts like butter. Be sure to use a blade that can handle curves, and don't use the orbital action on the jigsaw, just the up-and-down motion. I cut the mounting slot by drilling a hole at the top of the slot and then cutting two straight lines up to the hole's widest points.

Like any splitter, this one is designed to prevent kickback, not accidental blade contact. So be sure to use it with a blade guard.

—Hendrik Varju is a professional woodworker near Acton, Ont., Canada.



Reseating a socket chisel handle

Q: Humidity changes are causing my socket chisel handles to pop out. Rapping them back in is aggravating. Can I glue in the handles? If so, what type of glue should I use?

—GUY FORTHOFER,
Columbus, Ohio

A: IT IS OK TO GLUE THEM, and epoxy is the way to go. Marine epoxies such as West and System III, and gunsmith epoxies like Acraglass, work best. You'll need a container each of resin, hardener, and powdered high-adhesive thickener, along with a small amount of walnut or mahogany aniline dye.

Following the manufacturer's instructions, thoroughly mix a bit of the resin and hardener, and add a small amount of dye to reach the color you desire. Don't add thickener yet. Let the epoxy sit for 15 minutes, and in the meantime clean the chisel's socket and the handle's wood tenon thoroughly with

coarse sandpaper. Spread the unthickened epoxy on the tenon and let it soak in for a few minutes. Then add high-adhesive thickener to the remaining epoxy until it's the consistency of peanut butter.

Spread the thickened epoxy over the unthickened coat,

and set the handle into the socket using a light rap with a small hammer. Keep the chisel upright to cure overnight, and you can use it the next day.

—Bob Smalser is a woodworker and a boatbuilder in Seabeck, Wash.

Tap it together. Once mixed, spread the epoxy on the handle and in the socket, and seat the handle with the rap of a hammer. The chisel is ready to use the next day.



Perfect Joints the easy way



Whatever your project, the WoodRat gives you strong, elegant, well fitting joints. It's fast, accurate, fun and makes virtually any kind of joint without compromise.



Get the demo DVD today: \$7.00
1-877-WOODRAT www.woodrat.com

READER SERVICE NO. 87

The Burgess Edge

Pat. # 5,396,699



Introducing the innovative Burgess Edge Sheer-Cut Pattern Bit. Another solution from the folks who gave you the best edgbanding system available today.

210 Browns Rd., Lincoln, VT 05443
Phone: 802-233-1489 • E-mail: bmichael@sover.net
www.burgessedge.com

READER SERVICE NO. 153

4-WAY MONEY MAKER!

Molds • Planes • Sands • Saws



12", 18"
and 25"
Models
Available

FREE
30-Day
TRIAL!

Now, turn a \$5.00 rough board into \$75.00 worth of trim in just minutes! Make over 500 standard patterns, curved molding, tongue & groove, any custom design. **QUICKLY CONVERTS** from Molder/ Planer to Drum Sander or power-feed Multi-Blade Rip Saw!

Variable Feed Makes the Difference!

Just a twist of the dial adjusts the Woodmaster from 70 to over 1,000 cuts per inch. Produces a glass-smooth finish on tricky grain patterns no other molder/planer can handle. Plenty of American-made "muscle" to handle money-saving, "straight-from-the-sawmill" lumber. 5-Year Warranty.

Prouder than ever to be **MADE IN AMERICA!**

Call Today for **FREE FACTS!**

800-821-6651 EXT. PJ34

Woodmaster Tools, 1431 N. Topping Ave., Kansas City, MO 64120

READER SERVICE NO. 69

CENTER for FURNITURE CRAFTSMANSHIP

Teaching
Creative Excellence

WORKSHOPS

STUDIO FELLOWSHIPS

TWELVE-WEEK INTENSIVES

NINE-MONTH COMPREHENSIVE

Rockport, Maine

www.woodschoool.org



Are You Finished?

See us for your fine woodworking needs!

"Star Drive" Finish Screws

Yellow Zinc with a trimmer & self-countersinking head. Perfect for projects & finish work, this screw is also equipped with both a Knurl & Type 17 Auger Point.

"Star Drive" Cabinet Screws

Round washer head. Extra Sharp Point with Type 17 Auger Point, deep sharp threads, spiral cut thread, hardened steel, yellow zinc coated.

"Star Drive" Pocket Screws

Designed for maximum utility & function. Washer head & proper thread lengths, self-tapping type 17 Auger Point, dry lubed Bronze finish.

www.screw-products.com

**SCREW
PRODUCTS INC.**

888.888.3306

Free shipping on orders over
\$75 in the Continental USA!

READER SERVICE NO. 50

FELDER®



DE: 866-792-5288
CA: 800-572-0061

Enjoy Your Passion!
More choices, more features...
Felder simply offers you more!

The perfect combination built just for you!

- Austrian engineering
- Versatility for the best results
- Professional quality
- European safety standards

FELDER-Group USA

EAST 2 Lukens Drive, Suite 300
New Castle, DE 19720
866-792-5288 Toll free

WEST 1851 Enterprise Blvd.
West Sacramento, CA 95691
800-572-0061 Toll free



800-340-0233



Quality and
precision made in
AUSTRIA

www.felderusa.com

READER SERVICE NO. 72

Polishing wooden-bodied planes

Q: I am a user/collector of wood-bodied planes. Often the wood is very dry. How do I clean and preserve these wooden bodies so that they remain useful?

—JOHN MICHAEL,
Hickory
Creek,
Texas

Make your own polishing mix. Combine beeswax, turpentine, and boiled linseed oil to create a polishing paste.



A: MY SIMPLE METHOD FOR CLEANING and brightening up wooden planes is a mixture of beeswax (chipped finely or grated on a cheese grater), boiled linseed oil, and turpentine (a mixture the consistency of soft butter) rubbed on with 0000 steel wool and buffed dry. Go lightly, as there is a fine line between preserving the original patina and aggressive overcleaning.

—G.H.



Wax cleans and polishes. Rub the mixture onto the plane body with fine (0000) steel wool. Then buff to a final shine.

Introducing the next generation of multi-purpose power tools: The New FEIN MultiMASTER.

**One tool, a few attachments...
Thousands of projects!**

The universal tool for renovation and remodeling is more versatile and **40% more powerful!** Replace windows, flooring, and tile; repair furniture, refinish molding; work on cars, boats... the list is endless! The MULTI-MASTER oscillates for smooth running. A wide range of accessories are available.

MADE IN GERMANY



NEW QuickIn accessory changing! Now you can change accessories quickly and easily...without tools!

NEW star arbor mounting system locks accessories tightly in place.



For more information or a dealer near you, call 1-800-441-9878 or visit us online at www.feinus.com.



Look for the new FEIN infomercial starring Jodi Marks and Pat Simpson of HGTV!

FEIN. Powered by innovation.



Old School Cordless

100's of hand tools made in Sheffield, England.

Call for your free catalog.

(866) 588-0395



AFFINITY
AFFINITY TOOL WORKS, LLC
1161 RANKIN, TROY, MI
sales@affinitytool.com

READER SERVICE NO. 142

THE SOURCE FOR BANDSAW ACCESSORIES

Iturra Design : New 2007 Catalog

Free Catalog



- Introducing the **Quick Release** by Carter Products
- Our new **Blade Gage** bandsaw blade tension meter.
- **Lenox Pro Master** carbide-tipped and Bimetal blades
- **Bandrollers**, rip and re-saw fences, improved tension springs, tires, table inserts, circle jigs, and much more.
- History and comparison between **Delta** and **JET** bandsaws.

CALL 1-866-883-8064 or 1-904-371-3998

READER SERVICE NO. 29

Woods that are difficult to cut, drill, sand, plane, pronounce ...

are easy to bond using
Gflex epoxy.

Gflex is a tough, resilient epoxy engineered for a superior grip on metals, plastics, glass, masonry, fiberglass, wet and difficult-to-bond woods.

Visit your nearest WEST SYSTEM dealer, or contact us at 866-937-8797

West System Inc.
PO Box 655
Bay City, MI 48707-0655
westsystem.com

WEST SYSTEM
Safe, Strong & Reliable

READER SERVICE NO. 76



Go to our online store for our large selection of Powermatic merchandise items



www.PowermaticGearStore.com

READER SERVICE NO. 102

If you are in a woodworking business... this could be the most valuable tool in your office™.

Please call 1-800-321-9841 for your 742 page catalog.

FREE to woodworking businesses.

visit us at pro.woodworker.com

Woodworker's Supply

BIG BOOK OF WOODWORKING
WINTER 2007

- Handbook of New Products
- Expanded Quantity and Mix-on-Match Discounts
- Plus Woodworking Stuff to Aid You

pro.woodworker.com

READER SERVICE NO. 154

VAC-U-CLAMP

Superior products for the woodworking professional

NEW! Pro 6.0
Vacuum Pressing System



\$899.00

Our **NEW Pro 6.0** combines the best pump with the best bag!

Specifications:

- 6.5 CFM
- 27.5" Hg Vacuum Level
- 37 LBS
- Electronic Check Valve
- Powder Coated Steel Case
- All Controls And Vacuum Port Front Mounted
- In-line Cleanable Vacuum Filter
- Vacuum Hose
- 20 mil, 54"x108", polyurethane vac bag

visit: www.vac-u-clamp.com call: 888-342-8262

READER SERVICE NO. 74

The Keller Dovetail System:

"Your best choice"
- *Woodworker's Journal*

"The setup is easy, adjustments minimal and the joints perfect. It's the easiest of all the jigs to use and great for production use."

- *Woodworker's Journal*

"In a class by itself."

- *WOOD Magazine*

DVD OR VHS: \$8.95 + \$2 P/H
No test cuts. Fast setup. Unlimited widths. Precision joinery. Classic and variable spacing. Compound angles. Curved dovetails. Box joints. 20 year warranty. Made in USA since 1976.

To find out more, contact your Dealer or



KELLER & CO

1327 'T' Street, Dept. F97

Petaluma, CA 94952

1-800-995-2456

707-763-9336

www.kellerdovetail.com

Keller Dovetail System

Simply the best!

READER SERVICE NO. 46

Keep your *Fine Woodworking* back issues looking brand new.



Store your treasured copies of *Fine Woodworking* in slipcases for easy reference again and again! Bound in dark blue and embossed in gold, each case holds more than a year's worth of *Fine Woodworking*. Only \$8.95 (\$24.95 for 3, \$49.95 for 6).

Postage and handling additional. CT residents add 6% sales tax. Canadian residents please add 7% GST.

To place an order using your credit card, call **1-800-888-8286**. Outside the U.S. and Canada call 1-203-426-8171.

DOWELMAX

PRECISION ENGINEERED JOINING SYSTEM

GOLD MEDAL WINNER AT THE TOMORROW'S WORLD SCIENCE FAIR, LONDON, ENGLAND

We were wrong. A multi dowel joint is not as strong as a mortise and tenon...

IT IS STRONGER. Log on to www.dowelmax.com to see videos of the new tests.



Now available in metric.

For more information, or to order call **1.877.986.9400**
or log on to www.dowelmax.com

DESTRUCTIVE TEST	ALDER	OAK
Combination shear/pulout		
BISCUIT (#20)	325 lbs/square in.	325 lbs/square in.
MORTISE & TENON	525 lbs/square in.	600 lbs/square in.
MULTI DOWELS (4)	650 lbs/square in.	910 lbs/square in.

READER SERVICE NO. 24

Free-form steam-bending

USE A STANDARD STRAP TO PRE-BEND THE WOOD, THEN WRAP IT AROUND ANY FORM

BY MICHAEL FORTUNE

A LOOK INSIDE STEAM-BENT WOOD

Wood fibers are held together by a natural adhesive called lignin. The lignin bond can be loosened temporarily by heating the wood to between 190°F and 230°F, usually with steam. The heated wood can then be bent and will retain its new shape when cool.

The key concept here is that wood will only stretch about 2% of its length before the fibers begin to fall. But it will compress to a phenomenal degree before it fails—I routinely bend 1½-in.-thick hardwoods to as little as a 1-in. radius.

The traditional solution is to use a compression strap. This has two drawbacks: First, complicated shapes are impractical for a metal strap. Second, there is no compression on the outside face next to the strap, so there is more chance of the shape springing back. However, if the wood is rolled 180° and immediately bent again, then the lignin bond is loosened throughout the blank. The wood can now be bent and twisted at will without a strap and with almost no springback.

If you can create a shape with a strip of paper without tearing or folding it, in theory you can bend wood to that same shape. However, because wood compresses much better than it stretches, conventional steam-bending requires the use of a compression strap (see below), and it can be difficult to create a compression strap for unusual shapes.

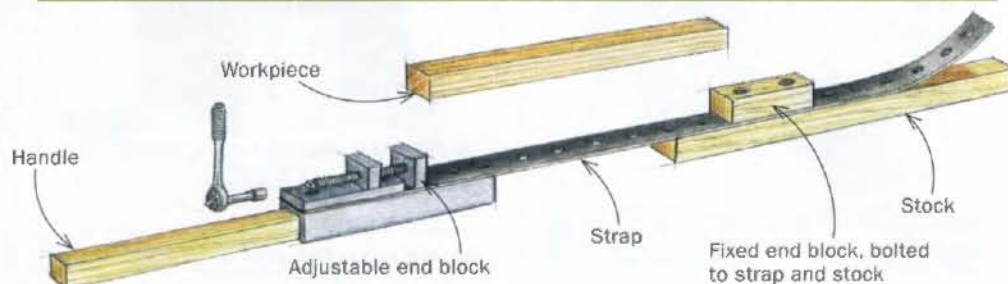
The method I'll describe uses a compression strap to pre-bend the wood, but does away with it when bending the desired shape, allowing you to bend wood through two planes at once and even twist it, adding a new dimension to your woodworking. For example, the table leg at left sweeps outward at the bottom along a 45° axis.

Bend the wood twice to make it pliable

The first step is to make a traditional bending form with a radius tighter than the desired final shape. This will allow the wood fibers to be compressed and the lignin bonds loosened in the areas that you will later bend free-form.

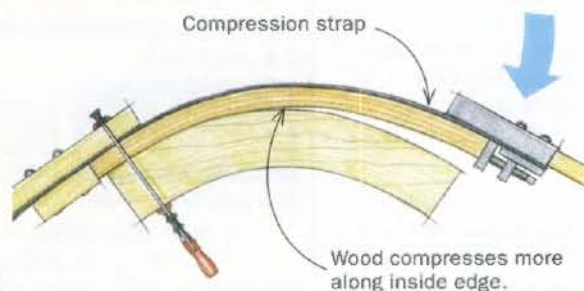
The blanks to be bent should be approximately ⅛ in. larger in thickness and width and about 4 in. longer than the final length. In this way, any torn

THE AUTHOR'S METHOD STARTS WITH A COMPRESSION STRAP



PRE-BEND WITH A COMPRESSION STRAP

After steaming, place the blank in a compression strap and bend it around a form. Then quickly remove the wood, roll it 180°, and bend it in the opposite direction.



THEN BEND TO DESIRED SHAPE

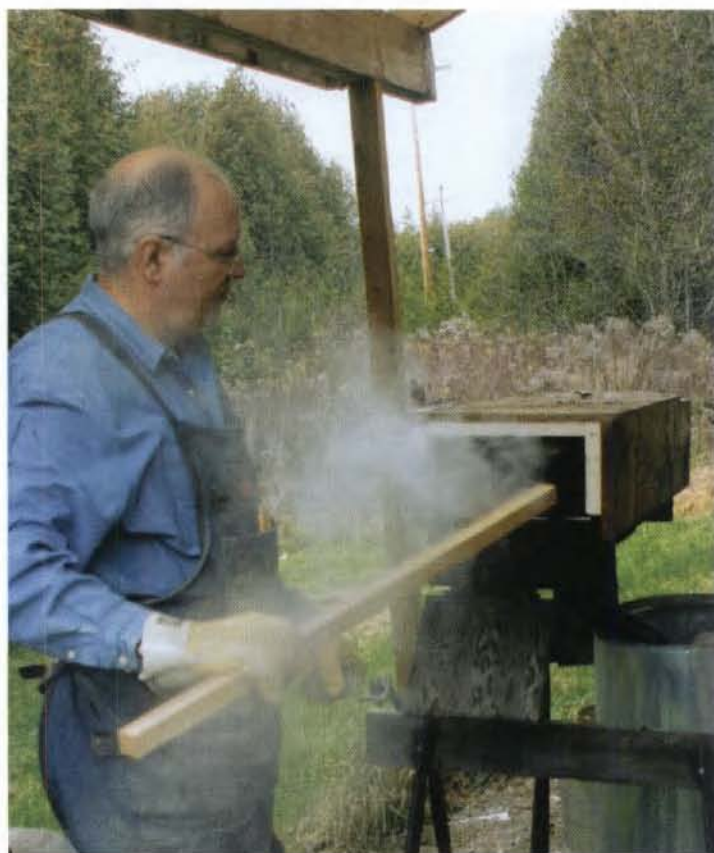
Now that all of the fibers are loosened, the blank can be easily shaped.

Workpiece can be clamped to complex form without compression strap.

Bending form



1 Steam the wood



In the box. Let the blank steam for an hour per inch of thickness. Use gloves when removing the hot wood.

wood fibers can be removed when the wood is shaped to the desired dimensions.

Steam the blank for an hour per inch of thickness, then take it from the steambox, secure it in the strap assembly, and bend it around the form. Almost immediately, straighten out the blank (holding one end in a vise if needed), roll it over face-for-face in the strap assembly, and bend it around the form again. Remove the blank from the strap and straighten it again. Now that the entire bent section has had the lignin loosened, the blank can be bent free-form without a compression strap.

Although the wood cools fairly slowly, complete all the steps as quickly as possible and get the blank clamped onto its final form. If it takes more than five or 10 minutes, the blank can be reheated in the steambox. This should take only five or 10 more minutes because the inside of the blank has remained hot.

Bend the softened wood into free-form designs

When you bend the wood a third time, without the compression strap, you'll be able to create shapes beyond the scope of traditional steam-bending.

Bend a leg that is strong and elegant—A leg that sweeps out near the bottom along a 45° axis usually must be cut from a large blank. This invariably leaves short grain, making the foot weak and unattractive. Steam-bending would make more sense as it consumes less wood and allows the grain to follow the shape of the leg, maintaining its strength and improving the look.

However, using a compression strap is impractical because there is only a corner of the blank for the strap to bear on. By double-bending the leg as described, you can then bend it along the edge without a compression strap. The first step is to build a V-shaped form made from two sections shaped with a

2 Double-bend the wood to loosen the fibers



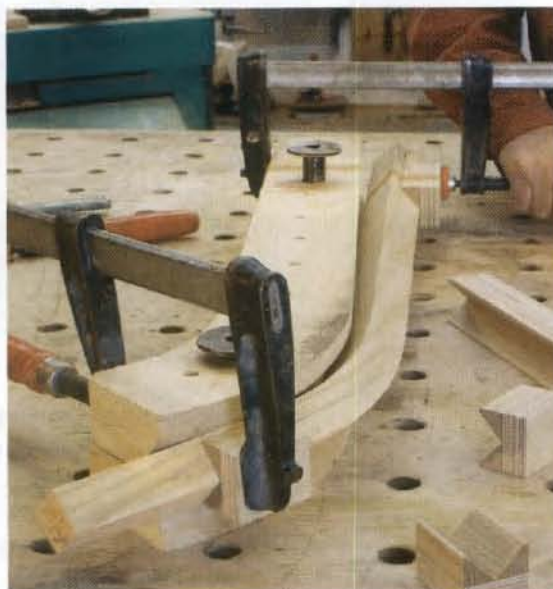
Bend, straighten, and bend again. Place the blank in the compression strap, tighten the end clamp, and then bend it around the form (left). Remove the blank from the strap, place it loosely in a vise, and lever it until it is almost straight (center). Flip the blank so that the face that was against the strap is now against the form, and bend it again. In this way the lignin that bonds the wood fibers is loosened across the width of the blank (right).



3 Bend the wood around a form...



Create an angled form. To make the bending form that holds the blank on its edge, use a 45° chamfer bit in a router table to shape the two halves of the form (above). There is no need to use a compression strap on the double-bent blank, but you do need "V"-shaped clamp blocks (right).



Wood that steam-bends well

When wood is kiln dried, the lignin is set permanently in place, so try to steam-bend only air-dried wood with a moisture content of around 15%. This is usually available from smaller sawmills and lumberyards. Among the best woods for steam-bending are ash, red and white oak, walnut, hickory, and elm. Slightly more difficult are cherry, maple, and birch. Woods that do not steam-bend include softer hardwoods like basswood and poplar, curly domestic hardwoods, all softwoods, and most exotic woods including mahogany and teak.

...or give it a twist



Twist the wood and preserve the new shape. With one end of the blank clamped in a vise, twist the wood 180° using a long board as a handle. To let the wood dry in its new shape without springing back, clamp the turning handle to a fixed object.

large chamfer bit. You'll also need to cut some clamping blocks with V notches. Clamp the double-bent blank into the form and leave it to dry. The drying time depends on the size of the blank and the temperature and humidity in the workshop. A 1½-in.-sq. piece of ash will take about a week to dry down to 7% to 8% humidity if there is a modest airflow across the wood.

A new twist on steam-bending—With conventional steam-bending, getting wood to twist is difficult and the results often are disappointing. You'd be lucky to achieve 90° of twist before the fibers separate, and then the shape will untwist even after the wood is dry because the lignin bond was not completely broken. Wood that has been double-bent can be twisted to around 180° before the wood fibers fail.

Square or rectangular cross sections work best for twisting. Before you start,

cut a hole that matches the end of the blank in the middle of a piece of wood 3 ft. to 4 ft. long and at least 3 in. wider than the blank. This will serve as a handle. Double-bend the blank around a form with about a 20-in. radius. Reheat it and then clamp one end of the hot blank in a heavy-duty vise and insert the other into the handle, applying a clamp on either side.

Twist the blank slowly. There will be some springback, so I recommend overtwisting by about 10° to 15°. When you've achieved the desired twist, clamp the handle to a stationary object and allow the blank to dry.

Variations on the twist include tapering the wood before it is twisted to cause the twist to "speed up" as the wood narrows. You also can rabbet the corners and inset a contrasting wood (use epoxy to withstand the temperature and moisture).

FineWoodworking.com

Michael Fortune demonstrates the double-bending process in a video.

FineHomebuilding.com

Expert help for woodworkers

Take a look at FineHomebuilding.com and discover more than 2,000 top home-building articles, tips, and techniques critical for projects, like these:

- built-in furniture and bookcases
- cabinetry for kitchens and baths
- custom wood paneling and doors
- moldings, trimwork, and more.

Learn trade secrets for mitering corners, hanging doors, or building a window seat and benefit from interactive features that include:

- instructive, on-demand videos
- helpful blogs from editors and authors
- online forums for exchanging ideas

Plus, FineHomebuilding.com is specifically designed to streamline search and deliver trusted answers fast.



Drill-down search locates the exact information you need quickly.



On-demand videos show how every step is done by pros.



See for yourself. Visit today!

FineHomebuilding.com/Explore



The Taunton Press
Inspiration for hands-on living®

© 2007 The Taunton Press

Fine
WoodWorking.com



INSTANT ANSWERS A CLICK AWAY

Over 1,300 articles

250+ skill-building videos

Over 200 furniture projects

Over 500 side-by-side
tool comparisons

Fully indexed,
searchable archive

Expert help for every skill level

Get instant access to the most dynamic woodworking site online. Our award-winning site is the perfect complement to your *Fine Woodworking* magazine. Enjoy it now at special subscriber-only savings.

It's always worth exploring FineWoodworking.com, because we add new content every weekday. Here you'll discover fresh, new ideas and know-how to inspire, instruct, and answer your questions.

And all of it is just a click away!



The Perfect Dovetail

SUBSCRIBER-ONLY OFFER

Save 57% on Charter Membership
Join today – only \$14.95 for a full year (regularly \$34.95).

Go to FineWoodworking.com/Dovetail

Offer good until 3/1/08



The Taunton Press

© 2007 The Taunton Press

Back by Popular Demand!

The Studley Tool Chest Poster



The incomparable Studley Poster is once again available!

A masterpiece of design and fine workmanship, this supremely organized tool chest was handcrafted by piano builder Henry O. Studley from scraps of ebony, rosewood, ivory, and mother-of-pearl. It holds more than 300 tools, each in its own precisely fitted pocket.

Ready to frame, this striking poster is perfect for your shop, office, or den.

Size: 18" x 26", Product #011083
Only \$19.95 (plus S&H)

Call 800-888-8286 offer code: M180076
or go to FineWoodworking.com/Poster



© 2006 The Taunton Press

Perfect Tenons. . . Every Time.

CMT's New Tenon Cutting Router Bit easily cuts tenons from 3/16" to 3/8" thick to 1-1/16" long.



Item #800.627.11

CMT Tenon Cutting Bit includes 4 stackable slot cutters, spacers and shims, & 1/2 inch shank arbor.



2007 Catalog NOW Available

CMT ORANGE TOOLS™

Call 888-CMT-BITS (888-268-2487)
info@cmtusa.com or www.cmtusa.com

READER SERVICE NO. 20

WOODWORKERS MART

See ad index on page 109 for reader service number.

Dovetail Master, LLC

Custom Dovetails without a router

Use the Dovetail Master with your mortiser or drill press to create randomly spaced & sized dovetail joints. Low noise & dust. For more details & demo

go to: tjbcabinetry.com

Or write to

Dovetail Master, LLC
6837 Groveland Road
Pipersville, Pa. 18947

TOP-RATED SEA KAYAKS

Rugged, Ultra-Light, Beautiful

Leader in Kayak Kits Since 1986



PYGMY

CALL OR WRITE FOR OUR FREE COLOR CATALOG:
(360) 385-6143, P.O. Box 1529, Dept. 98
Port Townsend, WA. 98368
www.pygmyboats.com

WORLD'S LARGEST ONLINE SELECTION OF VENEER AND LUMBER



WWW.THEVENEERSTORE.COM

10% off \$100
use online coupon
code 10FW

Connecticut Valley School of Woodworking

Learning by Doing

Hands-on woodworking & furniture making classes for all skill levels—
Nights, weekends & week-long classes



249 Spencer St.
Manchester, CT 06040
860.647.0303
www.schoolofwoodworking.com

MISUGI DESIGNS



Japanese Tansu & Cabinet Hardware
Japanese Woodworking Tools
Japanese Paper

Visit us at:

www.misugidesigns.com

Tel: 707-422-0734 / Fax: 707-425-2465

Don't Be Fooled by Imitators

The Original **DIGI FENCE®**

Made in the U.S.A. for over 15 years.

Accurate TECHNOLOGY INC. 800.233.0580
www.digi-kit.com

Linear Digital Measuring Systems

HARDWOODS
Lumber • Veneer • Turning Stock

exoticwoods.net
800.423.2450
Wood Descriptions • Secure Online Ordering

WOODWORKERS
Source

18115 N. Black Canyon Hwy. • Phoenix, AZ 85023
645 W. Elliott Rd. • Tempe, AZ 85284
3441 S. Palo Verde • Tucson, AZ 85713

Design Intuition: CAD Redefined!



Create professional 3D blueprints for Mac and Windows

Version 2.0 soon!
fw.gizmolab.com/18

AFRICAN EXOTIC HARDWOODS

- BEST PRICES • DIRECT FROM SOURCE
- EXOTIC LUMBER, BLANKS, BURLS, AND SLABS
- LARGE OR SMALL ORDERS WELCOME
- SHIPPED PROMPTLY NATIONWIDE

CONTACT FABS OR JASON TODAY (828) 658-8455 TEL.
CORMARK INTERNATIONAL (828) 645-8364 FAX.
181 REEMS CREEK ROAD, WEAVERVILLE, NC 28787

Nation's ONLY source for
1.5" & 2" laminated
Bamboo Slabs

TOTALLY BAMBOO

Ideal for:

- Countertops
- Backsplashes
- Kitchen Islands
- Tables, Bookcases
- Custom Projects

www.totallybamboo.com
PH 818-765-9000 FAX 818-765-9001

Laugh, learn and laugh again
as you watch two of
the funniest internet
personalities demonstrate
your favorite tools online.

ALL ABOUT TOOLS LIVE!

www.allabouttoolslive.com
The Nation's first fully interactive live tool show on the net

SCHOOL OF WOODWORKING

DISCOVER the ART of
HAND TOOL WOODWORKING
3-Day Finishing & Restoration Courses
1-12 day Courses to Advanced Levels
Catalogue of Courses • (254) 799-1480

In Central Texas www.cieschool.com

WWW.MAKEPEMARKS.CO.UK

TRADITIONAL
BRONZE, BRASS &
STAINLESS STEEL
LABELS
NO MINIMUM ORDER

Diefenbacher 

800 • 326 • 5316 **Tools**

Free Hand Tool Catalog

www.diefenbacher.com

Dovetail - Tenon - Carcass Saws

Adria



BEST OVERALL
FWW #183
Page 64

www.AdriaTools.com

NORTHWEST SCHOOL OF WOODEN BOAT BUILDING

Port Hadlock, WA
360-385-4948
VISIT OUR WEBSITE
www.nwboatschool.org

Now offering a
CONTEMPORARY
wooden
boat building

Associates Degree in
Occupational studies*
Waterfront campus
*Accredited School, ACCSCT

DOVETAILED DRAWERS

Reasonably priced method to distinguish your cabinets.

- Custom-sized width and depth
- 1/2" solid maple, assembled and sanded
- 2-coat catalyzed finish available
- Quick service, shipped UPS

EAGLE WOODWORKING
678 Andover St. #1, Lawrence, MA 01843-1033
FAX (978) 681-6197 (800) 628-4849

Furnituremaking Workshops



Small, hands-on classes
Masterful instruction

1774 W. Lunt Avenue
Chicago, IL 60626
773.761.3311
www.furnituremaking.com

Jeff Miller, director

IMPORTED & DOMESTIC HARDWOODS
LUMBER • PLYWOOD • VENEERS • TURNING BLOCKS • BURLS

FINE WOOD CARVINGS
and ARCHITECTURAL MOLDINGS

Wood-Ply Lumber Corp.

Over 80 species of
hardwood in stock.

CALL FOR PRICE LIST:
866-378-2612
FAX 516-378-0345
www.woodply.com

100 Bennington Ave.,
Dept. FW
Freeport, NY 11520

GOOD HOPE HARDWOODS, Inc.
"Where Fine Woodworking Begins"

4/4-24/4 Custom Cut Wide Matched Sets
Custom Flooring Available

Specializing In:
Figured & Plain Cherry, Walnut & Claro Walnut,
Tiger Maple & 58" Wide Bubinga
Plus Many Other Species

1627 New London Rd., Landenberg PA 19350
Phone 610-274-8842/Fax 610-255-3677
www.goodhope.com
We Provide Personalized Service

Make Knives for Fun and Profit!

Texas Knifemaker's Supply has all the
supplies & kits for custom knifemaking.

- Easy transition from woodworking to knife making because you already have the tools
- Knife kits and blanks ready to assemble
- Exotic and stabilized woods for knife handles

Call 888-461-8632 www.texasknife.com

TILTBOX Reads relative angles to .05 degrees



Magnets on the sides cling to metal surfaces.

Also gauges actual level!

THE BEALL TOOL CO.
Toll Free 1-800-331-4718 Fax 1-740-345-5880
www.bealltool.com Dpt. FW

GILMER WOOD CO.
Quality Domestic & Exotic Lumber

- Logs, blanks, squares
- Over 50 species in stock
- Thin woods, Assortments, Books
- Musical Instrument woods

Phone 503-274-1271
2211 NW St. Helens Rd, Portland OR 97210
Fax 503-274-9839 www.gilmerwood.com

Profitable Beaded Face Frames? You Bet!

HOFFMANN



No more tedious filing, grinding and routing of beaded molding for such a fast opening!

No more open glue joints.

Beveled, matched pieces glue fast joint.

No more complicated hand routing.

A stile is routed and a rail is shaped with a manual routing machine in about 15 seconds.

Automatic routing and faster still.

This system pays for itself in just a few jobs!

Hoffmann Machine Company, Inc.
1-866-248-6100 info@Hoffmann-USA.com
www.Hoffmann-USA.com

St. James Bay Tool Co.

Joiner Fence \$89.95 + s/h

800-574-2589

stjamesbaytoolco.com



Hands-on Furniture Making

In beautiful northern Vermont
Weekend workshops and week-long intensives

(802) 985-3648

www.shelburneartcenter.org



INCH AND METRIC COMPONENTS

- Leveling mounts - Plastic, steel, stainless steel
- Adjustable levers - Tapped and stud type, metal and plastic

18,000 parts. 3D-CAD. eStore.
Find it all at www.jwwinco.com.

J.W. WINCO, INC. Phone 800-877-8351
Fax 800-472-0670



DIMITRIOS KLITSAS

LEARN WOOD CARVING
Learn the skills to be a wood carver with a European master. From basic to advanced levels in two week programs. Visit our website for more info about our class schedules.

Fine WOOD SCULPTOR

(413) 566-5301 • Fax: (413) 566-5307 • www.klitsas.com



WOOD PORN

www.furnitureporn.com
Tel: 610-711-1111

WOOD, TALARICO AS GOOD AS IT GETS HARDWOODS



www.cabinetparts.com

Leading Internet Distributor of Cabinet Hardware & Accessories

Next Day Shipping
All major brands

Vast selection
Cabinet Hardware
Hinges - Drawer Slides
Locks - Knobs & Pulls - Lighting
Veneers - Laminates and more



Our name says it all...

woodfinder

Over 400 suppliers! 35 ways to search!

www.woodfinder.com

SINCE 1998



Philadelphia Furniture Workshop

Hands-On Instruction: All Levels
Mario Rodriguez, Artist in Residence

www.philadelphiafurnitureworkshop.com

215-849-5174

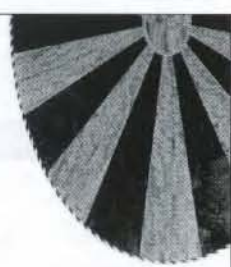


"We specialize in the finest examples of domestic and exotic veneers as well as burls, crotches and highly figured woods."

berkshire veneer
COMPANY INC.

Selling The World's Finest Veneers Isn't Our Job, It's Our Pleasure.

29 LOCUST HILL ROAD | GREAT BARRINGTON, MA 01230 | info@berkshireveneer.com
TOLL FREE: 1-877-836-3379 | FAX: 413-644-9414



Direct Importer of Fine Exotic Lumber & Turning Stock. Specializing in Luthier Grade Figured Lumber, Live-edge boards, unique pieces.

Order Online: www.westpennhardwoods.com

Walk-ins Welcome
117 South 4th Street
Olean, NY 14760
716-373-6434

WEST PENN HARDWOODS, INC.



CROWN PLANE

CROWN PLANE COMPANY

TRADITIONAL BENCH MADE PLANES
JACK...SMOOTH...SCRUB...SCRAPERS...BLOCK
CHAIRMAKERS TRAVISHERS...COMPASS PLANES

18 Chase Street South Portland, ME 04106
(207) 799-7535

Order Online www.crownplane.com



Blue Spruce Toolworks

Beautiful hand tools for precision joinery

www.BLUESPRUCETOOLWORKS.com



Build Your Own Windsor Chair

Beginner to advanced 3 Day weekend classes
Taught at your local Woodcraft store

(614) 258-1546
www.colonialchaircompany.com

Colonial Chair Company



mafell

ZSX 400 HM
15-3/4" Chain
Beam Saw

- Powerful motor
- Carbide tipped chain
- Cuts large timbers in one pass

800-869-4169
timberwolftools.com

TIMBERWOLF TOOLS



Nutcaps and Screwcaps are machined metal, polished or not, screw & nut covers that thread onto washers and produce strong but attractive joints on wood and metal. Available in 1/4", 5/16", 3/8", 1/2". Visit at storageconcepts.bigstep.com Call/write for brochure

Storage Concepts,
4111 Placid Stream Ct.
Houston, TX 77059, 281-286-0881

Threaded Caps
Screw Head
Threaded Washer



IMPORTING FINE QUALITY HAND TOOLS

PECK TOOL
SUPERIOR QUALITY SINCE 1929

SHOP ONLINE AT WWW.PECKTOOL.COM



CARVEWRIGHT™
WOODWORKING SYSTEM

Simple to use
Computer Controlled
Woodcarving Machine

Call us at **713.473.6572** or
Visit us at www.carvewright.com



FROM THE HEART OF BIRDSEYE MAPLE COUNTRY

PRIME QUALITY LUMBER & FLOORING
Direct Importers of
hardwood flooring and lumber worldwide

Over 80 species in stock

RARE EARTH HARDWOODS
"The best flooring on earth"

Ph: 800-958-0274 Fax: 800-958-0284
Website: www.rare-earth-hardwoods.com
E-Mail: rar@rarewood.net



ADJUST-A-BENCH

RAISE YOUR WORK TO A NEW LEVEL

The Noden Adjust-A-Bench is the ergonomic solution for your workshop. Made of steel, it is solid in all positions. Need an assembly table? Drop the Adjust-A-Bench to its lowest position. Routing dovetails? Raise it up. You're always comfortable, regardless of the task.

Leg sets and accessories to retrofit your existing bench or complete workbenches available.

www.adjustabench.com 609-882-3300

CUSTOM BRANDING IRONS

HIGH QUALITY, DEEP ENGRAVED BRONZE DIES
LONG LASTING - INDUSTRIAL DUTY HEATERS
**NOT THE CHEAPEST - QUALITY COSTS MORE
FREE BROCHURE AND SAMPLE BRANDS**

ENGRAVING ARTS 800-422-4509 fax: 707-984-8045
P.O. Box 787 www.brandingirons.net
Laytonville, CA 95454 e-mail: clem@brandingirons.net

Andrews Toolworks, Inc

Custom router bits
and shaper cutters.

www.routerbitsonline.com
800.821.8378



Cabinet Hardware, Glass Mosaic Tile, Ceramic Sink

* High Quality Stainless Steel Bar Pull, Bin Pull and Cabinet Knob



Contempo Living Inc
1220 Santa Anita Ave Unit A, South El Monte CA 91733
Order Online or Call 626-450-0560
www.contempolivinginc.com

www.curiouswoods.com



**SUPERIOR QUALITY HARDWOODS...
FOR SUPERIOR RESULTS.**

Hand selected native and imported hardwoods, turning stock,
burls, furniture grade plywood, veneers, and fine finishing oils.

23 Gauge Pinner & Brad Nailer

Super630

- Shoots Pins and Brads from 1/2" to 1 3/16"
- Excellent for: Cabinets, Decorative molding

Call 800-930-3998 Trident Associates Company




TEAK & WOODS OF DISTINCTION

Toll Free: (866) 535-0116
Promotion Code: FWW
teakandwoods.com

WOODJOY® TOOLS

New #85 Spokesbave

See FWW #190, pg 26
P.O. Box 204
Swanton, MA 02777
508-669-5245
woodjoytools.com




THE FURNITURE INSTITUTE of MASSACHUSETTS

Study with *Fine Woodworking* author
Philip C. Lowe • Classes range from 1 day
to 1 week to 2 and 3 year mastery programs.
• See new class schedule on:
(978) 922-0615 **www.furnituremakingclasses.com**

VISA **Oregon Black Walnut** MasterCard

GOBY WALNUT PRODUCTS

5016 Palestine Rd.
Albany, OR 97321

Wide lumber - 4/4 through 16/4
Turning • Carving Stock
Gunstocks • Veneer
Instrument Grade Lumber
No Minimum Order

VIEWING BY APPOINTMENT ONLY
(541) 926-1079 Web Site: **www.gobywalnut.com**

SMALL ADS YIELD BIG RETURNS

for advertisers featured in the
Woodworker's Mart
and Classified sections
of *Fine Woodworking*.
For more information call
800-309-8954

INTERNATIONAL YACHT RESTORATION SCHOOL

Launch a Boatbuilding Career

Learn to build, restore & maintain classic wooden
boats in our full-time program. Shorter-term
continuing education courses in wood-
working, marine systems, &
metalworking are
also available.

Newport, RI
401.848.5777 x203
www.iyrs.org




Old English Academy of Fine Woodworking

Michael J. Gray Master
Learn from an Old World Master the Fundamentals
& Traditions of Fine Woodworking
Hands on instruction for Groups & Individuals
Weekend Classes Year Round
P.O. Box 773 Indiana, VT 05375
www.oefcc.com



NORTH BENNET STREET SCHOOL

AN EDUCATION IN CRAFTSMANSHIP

Craft your own career

in: • Cabinet & Furniture Making • Carpentry
• Preservation Carpentry • Piano Technology
• Violin Making & Repair

Financial aid for
qualified students.
Accredited member
ACCSC, Non-
accredited workshops
1 week to 3 months
also offered.

Boston • (617) 227-0155 • **www.nbss.org**

Fine WoodWorking

SUBSCRIBER LIST SERVICE

Occasionally, we make
our subscriber list
available to companies
whose products we think
might be of some interest
to you. If you prefer not
to receive this mail, just
send a note with your
mailing label (or an exact
copy) to the address
below. We'll take care of
the rest.

Subscriber Service Dept.
The Taunton Press
P.O. Box 5506
63 South Main Street
Newtown, CT 06470-5506

The Chicago School of Violin Making

welcomes inquiries into its three-year
full-time program in violin making and repair.



Instruction is based on traditional hand methods and
emphasizes the achievement of quality craftsmanship.

3636 OAKTON STREET • SKOKIE, ILLINOIS 60076 • TEL 847-673-9545
FAX 847-673-9546 • **www.csvm.org** • **info@csvm.org**
Approved by Illinois State Board of Education

Gemini Carving Duplicator

"The Professional's Woodworking Secret"



Fast Rugged Accurate

Visit our extensive website:
www.wood-carver.com
serv@wood-carver.com

Allred & Associates, Inc.
2 South Street
Auburn, New York, USA 13021
+1 315 252-2559 fax: 252-0502

Videotape demo available. Call for details.

COOK WOODS cookwoods.com
TOLL FREE 877.672.5275

110 SPECIES OF EXOTIC AND DOMESTIC BLOCKS AND LUMBER

BARR SPECIALTY TOOLS



www.barrtools.com
1-800-235-4452
CALL FOR FREE CATALOG

accurate and tear out free system/shelf pin holes in all materials with your plunge router professional appearance 32mm European system or traditional 1" centers



phone/fax 609-587-7187
9 John Lenhardt Road
Hamilton Square, NJ 08690
www.megproducts.com

HIBDON HARDWOOD, INC.
www.hibdonhardwood.com

Direct Importers of
Central American Exotic Hardwoods

St. Louis, Missouri (314) 621-7711

TIMBER WOLF™
Band Saw Blades



Swedish Silicon Steel ~ 1/8" - 2"
www.suffolkmachinery.com
Free Catalog ~ 800-234-7297

lmi.com

- Fine woods and parts for instrument makers
- Customizable Guitar Kits
- Specialty tools and finishing supplies found nowhere else.
- Helpful Staff... Quick Delivery

800-477-4437
LUTHIERS MERCANTILE INTERNATIONAL, INC.

WINDSOR CHAIR WORKSHOPS

Courses teaching a variety of styles offered throughout the year.

Call for Class Schedules

Jim Rendi, Tel: 610-689-4717
www.philadelphia-windsor-chair-shop.com



NEW! Two Cherries Butt Chisels



Same high quality blades, new shorter size with wooden handle. Made in Germany.

Robert Larson Company
www.rlarson.com • 1-800-356-2195

HARDWOOD LUMBER

Lumber • Plywood • Burls
Veneers • Turning Blocks

Any length, any width, any thickness
Rough cut or milled to spec

Call for a FAST, FREE QUOTE

FREE Lumber Catalog!



M.L. London COMPANY, INC.
248 Ferris Avenue, White Plains, NY 10603
Phone: (914) 946-4111 • Fax: (914) 946-3779

Groff & Groff Lumber

Exceptionally Fine Furniture & Instrument Grade Woods

PREMIUM WALNUT, CHERRY, CURLY CHERRY, BIRDSEYE AND TIGER MAPLE

Sawmill Direct • Slabs to 40" Wide • 75+ Unusual Native & Imported Species • Matching Plitches • Burls & Turning Blocks

Order 75 Domestic and Imported Species 4/4 - 16/4 • Custom Flooring & Wainscoting • No Order Too Large or Too Small
858 Scotland Road, Quarryville, PA 17566
www.groffslumber.com
1-800-342-0001 • 717-284-0001 • Fax 717-284-2400

National & International Shipping

CraftsmanStudio.com
Fine Tools • Fair Prices • Fast Shipping

HNT Gordon Special

Free ground shipping to lower 48 on HNT Gordon & Lie-Nielsen Planes



A55 Smoothing Plane

MENTION FWW-193 IN ORDER FORM. Offer expires 10-1-07

Online orders for in-stock planes only. Accessories and upgrades not included.

4846 Ronson Ct • Suite L • San Diego, CA 858-500-9093

GUILLEMOT KAYAKS
WOODEN BOAT PLANS BY NICK SCHADE



WWW.KAYAKPLANS.COM/F

Your place for perfection.



A MIRACLE TRUSS pre-engineered steel building and some help from your friends or family is all you need to construct that workshop you've been wanting.

SAVE \$4,500 | **36' x 48'** Reduced from **\$19,519** NOW ONLY **\$15,019**

MIRACLETRUSS®
1-866-981-0689
www.miracletruss.com FWD

Craftsman Workshops

Hands-On Furniture Making Courses in Oregon

DISTANCE & RESIDENT MASTERY PROGRAMS with Gary Rogowski

Study Design - Practice Skills - Learn the Craft

503.284.1644
www.northwestwoodworking.com

NORTHWEST WOODWORKING STUDIO

When Only The Finest Veneer Will Do...



Certainly Wood

Phone: 716-655-0208 Fax: 716-655-3446
www.certainlywood.com

The Fine & Creative Woodworking Program at ROCKINGHAM COMMUNITY COLLEGE

is an internationally recognized associate degree & certificate program. Instruction in hand-tools, furniture, construction, shop start-up, operation & much more.

PO Box 38, Wentworth, NC 27375-0038
Phone: (336) 342-4261, ext. 2178.
www.rcc.cc.nc.us/woodwork/homepage.html
AAEEOC

finish line

Original Arts & Crafts

BY NANCY HILLER



Whenever clients want cabinets to look original to a late-19th- or early-20th-century-style home, I use this finish. I have borrowed techniques from two well-known finishers to create a period look. While the five steps to this Arts and Crafts finish may seem daunting, the execution is actually quite painless.

Dye and stain increase color and contrast

Before applying any finish, sand all parts to P180-grit, then use water to raise the grain and gently sand again with P180-grit.

Jeff Jewitt introduced me to using dyes under oil-based stains to bring out the contrast between the basic grain and the ray-fleck patterns of quartersawn oak ("Safe and Simple Arts and Crafts Finish," *FWW* #157, pp. 42-45).

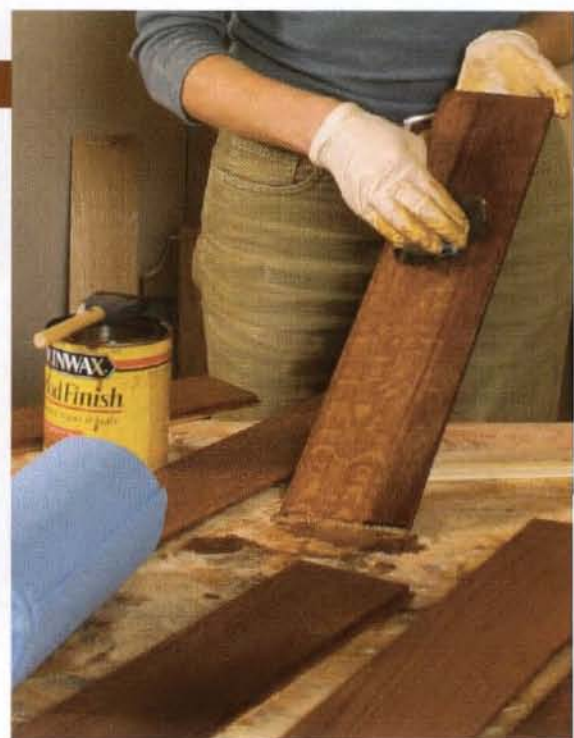
First, dye the oak with a water-based dye solution (I use TransTint's honey amber, dissolved in water at the ratio of 1 oz. to 1 qt.), applying it quickly and liberally with a foam brush and wiping off the excess with a lint-free cloth. During this step and the next (depending on the woods used), it may be necessary to block out and/or stain the inlay to maintain contrast. In this case, I carefully placed a sealer coat of clear shellac over the inlay after it had been glued in place and sanded, but before applying the amber dye. To knock back any raised grain, lightly sand with P320-grit paper.

Next, use an oil-based stain (in this case, Minwax's Early American) to bring out the wood's full figure. Apply the stain generously using a foam brush and leave it on for 5 to 10 minutes. Wipe off any excess stain using a clean, lint-free cloth and allow the piece to dry overnight. Make sure to check

Apply the dye and stain



Color the wood. Dyeing the wood adds color without accentuating the grain. Wipe off the excess dye. The wood is dry enough for the next step when a rag remains clean and dry after rubbing.



Pop the grain. Brush on and then wipe off a stain to enhance the grain and figure of the wood.

Seal, age, and topcoat



periodically for stain weeping out of the oak's open pores, removing any you find.

Seal in the previous steps with shellac

A professional floor finisher once advised me that I could get an old look on pine floors by adding amber shellac. So once the stain has dried, I brush on a thin coat of Zinsser's premixed amber shellac to achieve a look similar to the shellac-based varnish that was used in many older houses. The shellac also seals the piece before the aging steps. When the shellac has dried, scuff-sand with P320-grit paper and wipe off the dust with a tack cloth. Now you can judge the final tone of the finish and fill any holes with matching wood putty. Scuff-sand again.

Simulate signs of aging

Teri Masaschi's suggestion to use gel stain for shading ("Three Finishes for Bird's-Eye Maple," *FWW* #163, pp. 44-47) enables me to mimic signs of age without heavy-handed distressing, and make built-ins look like part of the original fabric of the home.

Apply gel stain in a compatible color (for this application, I used Old Masters' dark walnut) to areas where dirt would typically have built up, such as joints, crevices, and around hardware. Let the gel stain set for 10 minutes or so, then with a lint-free cloth, gently rub and feather out the shading to create a natural-looking patina. Allow the gel stain to dry overnight.

Two coats of oil-based polyurethane finish the piece. You can follow it with a generous application of paste wax, applied with 0000 steel wool and buffed out with a soft, lint-free cloth. □



Seal in the dye and stain. With a fine-bristle brush, apply amber shellac quickly in long strokes to avoid lap marks.



Imitate dirt buildup. Gel stain, applied with a rag and allowed to set 10 minutes, ages the finish easily.



Wipe off excess gel stain. If the stain sets too long, a rag with paint thinner will return the stain to a workable state.



Safeguard all the steps. Two coats of polyurethane seal and protect the piece. Rub out the topcoat with steel wool and wax.

CLASSIFIED

The Classified rate is \$9.50 per word, 15 word min. Orders must be accompanied by payment, ads are non-commissionable. The WOOD & TOOL EXCHANGE is for private use by individuals only; the rate is \$15/line, minimum 3 lines. Send to: *Fine Woodworking Classified Ad Dept.*, PO Box 5506, Newtown, CT 06470-5506. FAX 203-270-6310, Ph. (800) 926-8776, ext. 3310 or email to ads@taunton.com Deadline for the November/December 2007 issue is August 15, 2007.

Finishes

SELECT FINISHING SUPPLIES. Fiddes products. Varnishes, waxes, shellacs. Tools for elegant finishes. www.garywood.com (603) 523-4337.

Hand Tools

ANTIQUE TOOL AUCTIONS: We market tool collections. Call for free sample color auction catalogue and preview CD or for consignment information: (800) 869-0695. Martin J. Donnelly Antique Tools, Auction & subscription details at www.mjdtools.com/auction.

DLWS.COM Di Legno Woodshop Supply. Quality hand tools and accessories for woodworkers. 1-877-208-4298.

HIGHLANDHARDWARE.COM, the world's largest selection of hand planes, plus thousands more fine hand tools.

ANTIQUE & USED TOOLS. Hundreds of quality hand tools, Stanley planes and parts. Visa/MC. BOB KAUNE. www.antique-used-tools.com (360) 452-2292.

PETE NIEDERBERGER - Used and Antique tools and parts. A few just in - highly tuned Stanley planes. (415) 924-8403 or pniederber@aol.com Always buying!

Hardware

CABINET HARDWARE: Leading internet distributor of quality cabinet hinges, drawer slides, knobs, pulls, lighting, and more. European and traditional styles. Broad selection, excellent pricing, next day shipments. www.cabinetparts.com

Help Wanted

HIGH-END CUSTOM FURNITURE MAKER looking for experienced full time cabinetmaker. Benefits. Pay commensurate to ability. Andersen & Stauffer Furnituremakers, Lititz, Pennsylvania. (717) 626-6776.

VINTAGE AUTO RESTORATION: leading shop seeks talented woodworker for veneering and structural wood repair of Packard, Rolls-Royce, Mercedes, Ferrari, etc. We value quality, not quantity. Bridgeport, CT. (203) 330-9604. www.blackhorsegarage.com.

Instruction

WINDSOR CHAIR CLASSES: 1 week intensive. Also weekend turning classes. Lodging and meals included. Midwest. www.chairwright.com

NEW ENGLAND SCHOOL of Architectural Woodworking. 35-week career training in architectural woodworking or 6-week summer intensive for the serious enthusiast. (413) 527-6103. (MA) www.nesaw.com

PENLAND SCHOOL OF CRAFTS, in the spectacular North Carolina mountains, offers one-, two-, and eight-week workshops in woodworking and other media. (828) 765-2359; www.penland.org

COME TO LEARN IN SCOTLAND - The Chippendale International School of Furniture offers a 30-week intensive career program in Design, Making and Restoration. For further information phone: 011-44-1620-810680 or visit www.chippendale.co.uk

HANDS-ON COURSES in beautiful Maine. Beginner through advanced. Workshops. Twelve-week Intensive. Nine-month Comprehensive. Center for Furniture Craftsmanship (207) 594-5611. www.woodschooll.org

BENJAMIN HOBBS Furniture Making Classes. Queen Anne and Chippendale chairs, chests, beds, tables, more. Hertford, NC. (252) 426-7815. www.hobbsfurniture.com

MASTER CARVER Leonid Zakurdayev to teach a three day class at Long Island School of Classical Woodcarving & Woodworking New York. Visit www.homepage.mac.com/walterc530 Tel. (631) 225-1666.

1:1 TEACHER-TO-STUDENT RATIO at fine woodworking school. (519) 853-2027. www.passionforwood.com

Miscellaneous / Accessories

WOODEN BENCHVISE SCREWS, 2-1/2-in diameter, 24-in long in hard maple. Custom size available. Contact slee13@verizon.net

WOODSLICER.COM, resawing blade rated best-performing 1/2-in. bandsaw blade by *Fine Woodworking*. 800-241-6748.

Musical Supplies

BUILD YOUR OWN violin, guitar, or dulcimer! Free catalog featuring kits and all the tools, finishing supplies and instructions needed to build your own instrument. Stewart-MacDonald, Box 900-F, Athens, OH 45701. Call 800-848-2273. www.stewmac.com

Plans & Kits

FULL SIZE FURNITURE LAYOUTS Drawn by: Philip C. Lowe. Catalog #3. (978) 922-0615. 116 Water Street, Beverly, MA 01915. www.furnituremakingclasses.com

Power Tools

NAILERS AND STAPLERS at www.nailzone.com Top brands of tools and fasteners. Visit our website. 800-227-2044.

LAMELLO BISCUIT JOINERS and Accessories/Parts/Repairs. Best prices, most knowledgeable. Call us for all your woodworking & solid surfacing needs. 800-789-2323. Select Machinery, Inc. www.selectmachineryinc.com

CADEX & NIKLE pin nailers & pins, Hexcel air hose & fittings at www.floydtool.com

Wood

CAPEHARDWOODS.COM Teak, maple, oak, birch, sapele, cherry, plywoods & more. (508) 548-0017. West Falmouth, MA.

CURLY MAPLE \$3.99BF, figured and quartersawn domestic hardwoods. Worldwide shipping. www.crlumber.com. (937) 572-9663. (OH)

LARGE CLARO WALNUT book-matched slabs, turning stock, raw and paper-backed veneer of burl and crotches. www.walnutwoods.net online store. Newton Woods. (559) 277-8456. Fresno, CA.

WIDE SETS, QUARTERSAWN LUMBER Figured maple, claro walnut, Honduras rosewood, Cambodian padauk, Cambodian beng. www.pinecreekwood.com (541) 467-2288.

QUALITY NORTHERN APPALACHIAN hardwood. Custom milling. Free delivery. Bundled, surfaced. Satisfaction guarantee. Niagara Lumber. 800-274-0397. www.niagaralumber.com

COLLECTOR'S SPECIALTY WOODS "Rocky Mountain Dry" lumber, tops, burl slabs, flooring, blocks, bases-showroom/mill room/wood yard; www.cswoods.com (719) 746-2413. (CO)

DOMESTIC AND IMPORTED EXOTICS. For musical instruments, pool cues, knife handles and custom furniture. Price list. Exotic Woods, 1-800-443-9264. www.exoticwoods.com

SAWMILL DIRECT 100 species of exotics, turning, lumber, logs, slabs, musical instruments TROPICAL EXOTIC HARDWOODS OF LATIN AMERICA, LLC. Toll Free (888) 434-3031. www.anexotic hardwood.com

TIGER MAPLE, MAHOGANY, cherry, walnut; plain and figured. Wide boards, matched sets, 4/4 to 24/4. 200-ft. minimum. (570) 724-1895. www.ironlumber.com

FIGURED CLARO WALNUT slabs, planks, blocks, dimensions suitable for small to very large projects California Walnut Designs. 800-660-0203. www.woodnut.com

BIRD'S-EYE AND CURLY MAPLE, 4/4 to 12/4 lumber, flitches, turning squares and blocks. Black walnut, cherry/quartersawn, and curly oak lumber. Dunlap Woodcrafts, Chantilly, VA. (703) 631-5147.

EISENBRAND EXOTIC Hardwoods. Over 100 species. Highest quality. Volume discounts. Brochure. 800-258-2587; Fax 310-542-2857. eisenbran.com

MESQUITE LUMBER (915) 479-3988.

CLEAR ALASKAN YELLOW CEDAR vertical grain. Clear vertical Douglas fir and clear vertical grain western red cedar. www.EasyCreekLumber.com (541) 344-3275.

QUILTED, CURLY, SPALTED, Burl & birds-eye maple, figured claro walnut, figured myrtle wood, musical grade lumber and billets. Visit our online store at www.nwtimber.com or call (541) 327-1000.

NORTHWEST'S FINEST BURL, maple, myrtle, redwood, buckeye. Table, clock slabs, turning blocks. (503) 394-3077. burlwoodonline.com

WALNUT SLABS/CROTCHES Claro, myrtle, elm. Black acacia. 877-925-7522. From our sawmills. Gilroy, CA. www.bakerhardwoods.com

APPALACHIAN HARDWOODS direct from sawmill. Quartersawn, flitches, crotch lumber. Herbine Hardwoods, Leesburg, VA. (703) 771-3067. www.herbinehardwood.com

CLARO WALNUT, BAY LAUREL, pecan, redwood and maple burl. Large slabs and blocks. Peter Lang, Santa Rosa, CA. 1-866-557-2716.

LONGLEAF HEART PINE (antique). Flooring-lumber-millwork. Red cedar lumber & paneling. Lee Yelton: (706) 541-1039.

WOOD AND TOOL EXCHANGE

Limited to use by individuals only.

For Sale

Fine Woodworking issues 1-191 in slip cases, most in excellent cond. \$500 plus shipping. E-mail zeibon@aol.com (NJ)

Fine Woodworking 1-192 w/indexes. Excell. cond., most read once. \$350 + ship. (3 boxes approx. \$65 via Insured Media Mail). (530) 477-1258. chainsawchuck@jps.net

Fine Woodworking Issues 1-192, no missed issues. \$600. plus shipping. Morgan (408) 399-9028. (CA) morjane@aol.com

Fine Woodworking, full set, 01-191, \$550 includes USA shipping. Exc. Cond. *Wood Magazine*, full set, 01-177, \$200 includes USA shipping, exc. cond. (402) 694-2037 (NE) or (507) 282-3175 (MN)

Fine Woodworking issue #1 to present. Excellent condition, \$400. shipping included. rosswoodturns@yahoo.com or (717) 496-8487.

The Classified rate is \$9.50 per word, 15 word min. Orders must be accompanied by payment, ads are non-commissionable. The WOOD & TOOL EXCHANGE is for private use by individuals only; the rate is \$15/line, minimum 3 lines. Send to: *Fine Woodworking Classified Ad Dept.*, PO Box 5506, Newtown, CT 06470-5506. FAX 203-270-6310, Ph. (800) 926-8776, ext. 3310 or email to ads@taunton.com Deadline for the November/December 2007 issue is August 15, 2007.

INDEX TO ADVERTISERS

Use reader service card - inside back cover.

For quick access to their websites, go to ADVERTISER INDEX at www.finewoodworking.com

Reader Service No. ADVERTISER, page #	Reader Service No. ADVERTISER, page #	Reader Service No. ADVERTISER, page #	Reader Service No. ADVERTISER, page #
97 Accurate Technology, p. 101	Eagle Woodworking, p. 102	138 Laguna Tools, p. 23	105 Router Bits.com, p. 9
35 Adria Toolworks, Inc., p. 102	145 Engraving Arts, p. 104	139 Laguna Tools, p. 91	121 Ryohi America Corp., p. 15
142 Affinity Tool Works, p. 95	94 Epilog Laser, p. 3	Leigh Industries, p. 91	
18 Allabouttoolslive.com, p. 102		103 Lie-Nielsen Toolworks, p. 17	13 SATA, p. 29
108 Allred & Associates, Inc., p. 105	125 Fein Power Tools, p. 94	45 Lignomat Moisture Meters, p. 89	The St. James Bay Tool Co., p. 103
19 Amana Tool Company, p. 33	72 Felder USA, p. 93	58 Luthiers Mercantile International p. 105	104 Scherr's Cabinet & Doors, Inc., p. 23
73 Andrews Toolworks, p. 104	77 Festool, p. 111		117 School of Woodworking, p. 102
	Fine Homebuilding.com, p. 99	111 MEG Products, p. 105	50 Screw Products, Inc., p. 93
62 Ball & Ball Reproduction	Fine Woodworking.com, p. 100	92 M.L. Condon Company, p. 105	120 Shaker Workshops, p. 29
Hardware, p. 19		Makers-Marks, p. 102	135 Shelburne Art Center, p. 103
Barr Specialty Tools, p. 105	115 Forrest Manufacturing, p. 91	47 McPeely's, p. 35	70 Space Balls, p. 13
61 The Beall Tool Co., p. 102	91 The Furniture Institute of	55 Mini Max USA, p. 19	137 Storage Concepts, Inc., p. 103
Berea Hardwoods, p. 17	Massachusetts, p. 104	93 Miracle Truss, p. 105	148 Suffolk Machinery, p. 105
8 Berkshire Veneer Co., p. 103	31 Furnituremaking Workshops, p. 102	107 Misugi Designs, p. 101	
3 Blue Spruce Toolworks, p. 103	28 General Manufacturing Co. Ltd, p. 27		109 Talarico Hardwoods, p. 103
95 Blum Tool Co., p. 33	110 German Timber, p. 9	116 Noden Adjust-A-Bench, p. 104	63 Teak & Woods of Distinction, p. 104
153 Burgess Edge, p. 93	100 Gilmer Wood Company, p. 102	124 North Bennet Street School, p. 104	144 Tech Mark, Inc., p. 35
	57 Gizmo Lab, p. 102	27 Northwest Woodworking	101 Texas Knifemaker's Supply, p. 102
20 CMT USA, Inc., p. 101	143 Goby Walnut Wood	Studio, p. 105	119 Timberwolf Tools, p. 103
122 Cabinetparts.com, p. 103	Products, p. 104	114 North West School of Wooden	75 Titebond Wood Glue, p. 13
65 Cape Cod Air Grilles, p. 13	14 Good Hope Hardwoods, p. 102	Boatbuilding, p. 102	99 Tools for Working Wood, p. 19
CarveWright, p. 103	60 Gorilla Tape, p. 33		51 Totally Bamboo, p. 102
Center for Furniture	23 Groff & Groff Lumber, p. 105	118 Old English Academy of Fine	130 Trend Routing Technology, p. 7
Craftsmanship, p. 93	9 Guillemot Kayaks, p. 105	Woodworking, p. 104	Trident Associates Company, p. 104
33 Certainly Wood, p. 105		146 Oneida Air Systems, p. 17	134 Triton Woodworking, p. 7
39 Chesapeake Light Craft, p. 9	129 Hartville Tool Woodworking, p. 89	151 The Original Saw Company, p. 29	
52 Chicago School of Violin	80 Hearne Hardwoods, Inc., p. 89	15 Osborne Wood Products, p. 27	74 Vac-U-Clamp, p. 95
Making, p. 104	141 HerSaf/Safraneck, p. 23	16 Osborne Wood Products, p. 89	The Veneer Store, p. 101
133 Classic Designs by Matthew	150 Hibdon Hardwood, Inc., p. 105	48 Outwater Plastics Industries, p. 31	132 Veto Pro Pac, p. 35
Burak, p. 7	78 Highland Woodworking, p. 89		
126 Colonial Chair Co., p. 103	81 Hoffmann Machine Co., Inc., p. 102	113 Peck Tool Company, p. 103	12 W. Moore Profiles, p. 13
106 Connecticut Valley School of	21 Holbren Precision Cutting Tool, p. 29	7 Phase-a-matic, Inc., p. 89	127 West Penn Hardwoods, p. 103
Woodworking, p. 101	22 Home Depot Business Card, p. 21	86 Philadelphia Furniture	76 West System, p. 95
152 Contempo Living, p. 104		Workshop, p. 103	Whitechapel, Ltd., p. 33
79 Cook Woods, p. 105	90 Inside Passage School of Fine	149 Philadelphia Windsor Chair, p. 105	68 William Ng Woodworks, p. 23
34 Cornmark International, p. 102	Woodworking, p. 29	102 Powermatic, p. 95	17 Williams & Hussey Machine Co., p. 29
25 Craftsman, p. 11	67 International Yacht Restoration	56 Pygmy Boats, Inc., p. 101	87 Wood Rat, p. 93
30 Craftsman Studio, p. 105	School, p. 104	Quality Vacuum Products, p. 17	37 Woodcraft, p. 25
5 Crown Plane Co., p. 103	29 Iturra Design, p. 95		38 Woodcraft, p. 33
88 Curious Woods, p. 104		64 Rare Earth Hardwoods, p. 103	Woodcraft, p. 89
	66 J.W. Winco, Inc., p. 103	140 RichLine Wood Working	Woodfinder, p. 103
71 Delmhorst Instrument	4 The Japan Woodworker, p. 23	Machines, p. 9	131 Woodjoy Tools, p. 104
Company, p. 27	40 JessEm Tool Co., p. 35	147 Rikon Power Tools, p. 31	69 Woodmaster Tools, p. 93
128 Delta/Porter-Cable, p. 2-3		82 Robert Larson Company, Inc., p. 105	98 Wood-Ply Lumber Corp., p. 102
43 Diefenbacher Tools, p. 102	6 Kay Industries, Inc., p. 17	112 Rockingham Community	10 Woodworkers Source, p. 102
32 Dimitrios Kiltsas, p. 103	46 Keller & Company, p. 95	College, p. 105	154 Woodworker's Supply, p. 95
96 Dovetail Master, p. 101	44 Kreg Tool Company, p. 19	41 Ronk Electrical Industries, p. 7	123 Wrist Writer, p. 9
24 Dowelmax, p. 95	54 Kuffel Creek Press, p. 33		

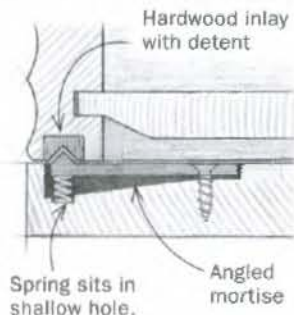
how they did it

Details make the difference

BY ANISSA KAPSALES

While a student in the College of the Redwoods Fine Woodworking Program, Kevin Kauffunger did what the school is famous for. He hyper-focused on design, hand skills, and carefully chosen grain.

However, rather than creating a Krenovian cabinet on a stand, as many students do, Kauffunger designed the contemporary coffee table seen on the back cover. Confining himself to handwork wasn't easy, especially when it came to fluting the drawer fronts and registering the two-way drawers consistently. □



Spring catch for two-way drawers

The through-drawers are accessible from both sides of the table. To keep the reveal consistent, Kauffunger made spring catches that register in notched hardwood blocks that are inlaid into the bottom edge of the drawer fronts.



Handmade plane for hand-fluting

Douglas fir can be difficult to work by hand, and Kauffunger could easily have taken the perfect fir drawer fronts to the router table for quick flutes. Instead, he made a plane with a radiused sole to create scallops that are uniform yet subtly maintain an organic, hand-cut inconsistency.

For the first groove, Kauffunger clamps a $\frac{3}{8}$ -in.-thick block of wood with a rounded edge to the side of the plane (1) with the block registering on the edge of the stock (2). All the subsequent grooves are made with the same block of wood clamped even with the sole of the plane (3) and riding in the previous flute.

Stop holding your breath.

*Breathe easier
knowing that Festool
CT dust extractors
eliminate up to
99.99% of dust,
improving safety
and efficiency.*

CT 22 and CT 33 come equipped with HEPA filters which reduce 99.99% of particulate matter down to 0.3 microns – an industry-leading performance figure. Though the CT MINI and CT MIDI do not come equipped with HEPA filters, they are capable of removing 99.90% of particulate matter, down to 1 micron – another industry-leading figure.



Securely attach Systainers to create a mobile tool cabinet



Parking brake for stable positioning



Large wheels easily navigate across job sites



Tool-triggered auto-start and variable power



Serious capacity – up to 8.7 gallons (CT 33 E)

CT Mobile Dust Extractors

CT 33 E 8.7 gal | CT 22 E 5.8 gal | CT MIDI 3.3 gal | CT MINI 2.6 gal

The brilliance of the Festool CT mobile dust extractor is in the details. The standard-equipped air filters keep floors and lungs dust-free by reducing up to 99.99% of particulate down to .3 microns. Meanwhile, the powerful CT motor is remarkably quiet, and the auto-start feature turns suction on and off in sync with whichever tool is connected. Large wheels, a parking brake and the ability to securely attach Systainers make the CT an incredible mobile tool cabinet. Special package pricing is available. Contact us or visit your local dealer to find out more.

Faster. Better. Easier.

FIND YOUR DEALER | www.festoolusa.com/dealers | 888-337-8600

READER SERVICE NO. 77



Add the new CT MIDI for near-total dust extraction and optimal jobsite performance.



FESTOOL

Masterful Apprenticeship

When designing this coffee table, Kevin Kauffunger was guided more by what he wanted to learn than by what he already knew. At 30, with experience in carpentry, cabinetmaking, and millwork, he had a desire to go deeper. "I wanted a Parris Island woodworking experience," he said, "in a place that would be obsessive about the craft." He found it at the College of the Redwoods in Fort

Bragg, Calif., in the program founded by James Krenov.

This table was Kauffunger's first major project at the school, and he used it as a vehicle for refining hand-tool skills. The fluted Douglas-fir drawer fronts offered a tutorial in planemaking: He custom-made a narrow, Krenov-style



wooden plane with a convex sole. By the way, the drawers can be opened on either side of the table. The table also provided a seminar on handcut dovetails—100 in all. And the 8/4 plank of Bulgarian walnut for the carcass presented lessons in resawing.



Even after it was done, the table had something to impart. On the drive home from the humid Pacific Northwest, Kauffunger visited bone-dry Zion National Park. When he unpacked the car in Pittsburgh, he found that the table's flatsawn top had curled up at the edges. Kauffunger accepted the mishap as another piece of his education.

—Jonathan Binzen

Photos: David Welter

How They Did It Turn to p. 110 to see Kauffunger's shopmade drawer stops and his method for shaping the drawer fronts.

Pro Portfolio At FineWoodworking.com, the recent College of the Redwoods graduate talks about getting started as a furniture maker.