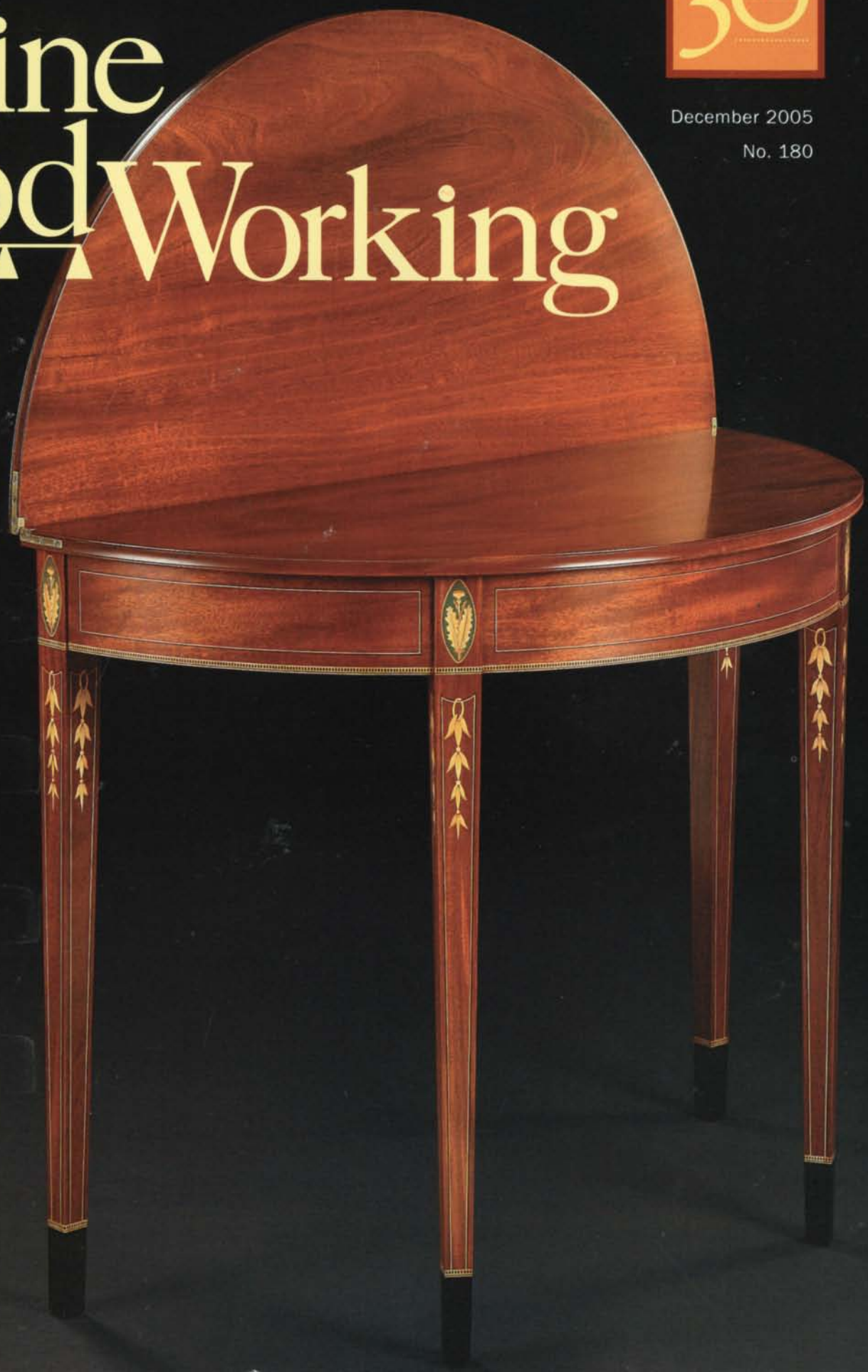
30TH ANNIVERSARY ISSUE

CELEBRATING 30 YEARS

TAUNTON'S

Fine WoodWorking

December 2005
No. 180



Foldout plans:

Federal card table

5 essential bandsaw jigs

Sand, scrape, or plane — which is best?

Tool tests: Brad-point bits, 8-in. jointers

Antique finish for tiger maple

Simple, elegant wall cabinet

U.S. $7.99/Canada $8.99

12

0 94115 56525 7

POWER IS NOW ON REBATE

LOOK FOR THE "POWER DOLLAR$" TAG AND SAVE BIG!

The Gold Standard Since 1921.® POWERMATIC®

powermatic.com

SELECT POWERMATIC PRODUCTS ON REBATE. See participating stores for details. Purchase must be made between September 1, 2005 and March 31, 2006 to qualify.

READER SERVICE NO. 129

Fine WoodWorking

contents

NOVEMBER/DECEMBER 2005 ■ ISSUE 180

features

38 BANDSAW JIGS

Cover photo: Scott Phillips

up front

in the back

The Taunton Press
Inspiration for hands-on living®

finewoodworking.com

contributors

Lonnie Bird (*"An Antique Finish for Tiger Maple"*) is a frequent contributor to *Fine Woodworking* and is the author of five books, including *The Complete Illustrated Guide to Using Woodworking Tools* (The Taunton Press, 2004). He and his family live in the foothills of the Smoky Mountains near Knoxville, Tenn., where they enjoy the outdoors and have a number of cats, dogs, and horses, including a new foal, Classical Jazz. In the school attached to his house, Bird teaches woodworking courses for all skill levels. You can view his class schedule at www.lonniebird.com.

Matthew Teague (*"Buying Old Tools"* and *"Wall Cabinet in Cherry"*) is the former managing editor of *Fine Woodworking* and the author of *Getting Started in Woodworking: Projects for Your Shop* (The Taunton Press, 2005). The bulk of his work is contemporary versions of Shaker and Arts and Crafts designs. He's spent lots of energy making his one-car garage workshop into an efficient workplace for himself and his two hound dogs.

Ari Tuckman (*"Sand, Scrape, or Plane?"*) lives in Fairfax, Va., with his wife. He makes his money as a psychologist and spends it as a woodworker. The opportunity to use his hands on weekends provides a welcome balance to the work that he does all week. He recently completed a large decorative screen made of mahogany with inset stained-glass panels made by his father.

Michael Fortune (*"Five Essential Bandsaw Jigs"*) has been designing and making furniture for homes across North America since 1975. He also provides design and manufacturing expertise to international development agencies. His work is included in the collections of The Canadian Museum of Civilization, the Claridge Collection, and the Royal Ontario Museum.

Steve Latta (*"Federal Card Table"* and *Master Class*) teaches furniture making at Thaddeus Stevens College of Technology in Lancaster, Pa., and is pursuing a master's degree at Penn State. A regular contributor to *Fine Woodworking*, he has made multiple appearances on PBS's *The Woodwright's Shop* and has lectured on the topic of inlay at Colonial Williamsburg, the Milwaukee Art Museum, Winterthur Museum and Gardens, and other schools and guilds. He and his wife, Elizabeth, live in rural Pennsylvania with their three children.

Fine WoodWorking

EDITOR-IN-CHIEF **Anatole Burkin**
ART DIRECTOR **Michael Pekovich**

EXECUTIVE EDITOR **Asa Christiana**
SENIOR EDITORS **Andy Engel, Mark Schofield**
ASSOCIATE EDITORS
Thomas G. Begnal, Thomas McKenna, Steve Scott
COPY/PRODUCTION EDITORS
Elizabeth Healy, Julie Risinit
ASSOCIATE ART DIRECTORS
Rodney Diaz, Kelly J. Dunton
SHOP MANAGER **John White**
ADMINISTRATIVE ASSISTANT **Betsy Engel**
CONTRIBUTING EDITORS
Christian Becksvoort, William Duckworth, Mike Dunbar, Garrett Hack, Roland Johnson, Mario Rodriguez, Gary Rogowski
CONSULTING EDITOR **Chris A. Minick**
METHODS OF WORK **Jim Richey**
INDEXER **Harriet Hodges**

GROUP PUBLISHER **Tim Schreiner**
ADMINISTRATIVE ASSISTANT **Christina Glennon**
SINGLE COPY SALES MANAGER **Mark Stiekman**
SENIOR PUBLICITY MANAGER **Tonya Polydoroff**

ADVERTISING DIRECTOR **David Gray**
ADVERTISING MANAGER **Linda Abbett**
NATIONAL ACCOUNT MANAGER **John Lagan**
ACCOUNT MANAGER **Susan Warren Abrams**
CRAIGER MEDIA MANAGEMENT
Fritz Craiger, 515-279-0889
SENIOR AD SALES SUPPORT ASSOCIATE
Christina Kryzanski

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. Ride-along insert enclosed in version AGW1. 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., 2744 Edna St., Windsor, ON N8Y 1V2, or email to mnfa@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.

letters

From the Editor

ON THE ROAD FOR THREE DECADES

If we crafted all of our articles in-house, our jobs would be easier. But we've never taken the easy way out. *Fine Woodworking*'s founder, Paul Roman, realized that a magazine written by its readers will never be wanting for fresh perspectives. For 30 years our editors have traveled the globe to bring you original content. If only we could trade in our frequent-flier miles for new tools.

Along the way we build relationships with our authors, many of whom have written for us for a decade or more. Steve Latta ("Federal Card Table," pp. 54-63) was first published in 1994, but his woodworking career dates back to the first issue.

With its elegant lines and excellent craftsmanship, Steve's table is as close to perfect as any piece I've seen. Still, he could not resist pointing out a thing or two that he might do differently the next time he builds one.

That sort of attitude is both a blessing and curse. Those not of our ilk are amused by our antics. When I recently showed a builder friend my latest home-improvement project, he was incredulous at the tight fit between the sheets of drywall I had hung. He pointed out with a smirk that drywall tape is 2 in. wide. (Well, actually, it's 1⅞ in. wide.)

We furniture makers are obsessive about tolerances—in both our tools and our work. When I finish a piece, I get fixated on what I should have done differently, or executed with more skill. Some part of me is nagging away, wondering whether I have done the wood justice.

That notion reminded me of an essay *Fine Woodworking* published almost three decades ago. "The Wood Butcher" is one of the most enlightening pieces I've read about woodworkers, and worth reprinting (see p. 122).

To all those who have done their best not to butcher wood and to make *Fine Woodworking* a success, Happy Anniversary.

—Anatole Burkin
Editor-in-Chief

Editor at large. *Since the magazine was founded,* Fine Woodworking *editors have gone on the road to document talented craftsmen at work.*

The Taunton Press
Inspiration for hands-on living®

INDEPENDENT PUBLISHERS SINCE 1975

TAUNTON, INC.
Founders, **Paul and Jan Roman**

THE TAUNTON PRESS
President & CEO **John Lively**
Editor In Chief **Sue Roman**
Chief Financial Officer **Timothy Rahr**
Chief of Operations **Thomas Luxeder**
Publisher, Magazine Group **Jon Miller**
Publisher, Book Group **James Childs**

DIRECTORS
Creative Director **Susan Edelman**
Human Resources Director **Carol Marotti**
Technology Services Director **Edward Kingston**
Controller **Wayne Reynolds**
Advertising Director **David Gray**
Marketing Director, Magazines **Diana Allwein**
Fulfillment Director **Patricia Williamson**

TAUNTON TRADE COMPANY
Treasurer, **Timothy Rahr**

TAUNTON DIRECT
President, **Sarah Roman**

TAUNTON INTERACTIVE
Publisher, **Thomas Falconer**

THE TAUNTON STAFF

Books: *Marketing:* Melissa A. Possick, Audrey Locorotondo, Susan Straub. *Publicity:* Nicole Radder, Janel Noblin. *Editorial:* Maria Taylor, Helen Albert, Kathryn Benoit, Peter Chapman, Steve Culpepper, Robyn Doyon-Aitken, Julie Hamilton, Pamela Hoenig, Carolyn Mandarano, Jennifer Peters, Amy Reilly, Erica Sanders-Foege, Kathleen Williams. *Art:* Chris Thompson, Nancy Boudreau, Kathy Kelley, Sandra Mahlstedt, Wendi Mijal, Lynne Phillips, Carol Singer. *Manufacturing:* Thomas Greco, Laura Burrone.

Business Office: Holly Smith, Gayle Hammond. *Legal:* Carolyn Kovaleski. *Magazine Print Production:* Philip Van Kirk, Nicole Anastas, Jennifer Kaczmarcyk.

Distribution: Paul Seipold, Frank Busino, David DeToto, Leanne Furlong, Deborah Greene, Linnea Ingram, Frank Melbourne, Reinaldo Moreno, Raymond Passaro, Thomas St. Cyr, Alice Saxton, Nelson Wade.

Finance/Accounting: *Finance:* Kathy Worth, Brett Manning, David Pond. *Accounting:* Patrick Lamontagne, Dorothy Carbone, Lydia Krikorian, Judith O'Toole, Elaine Yamin, Carol Diehm, Dorothy Blasko, Susan Burke, Lorraine Parsons, Larry Rice, James Tweedle, Priscilla Wakeman.

Fulfillment: Diane Goulart. *Fulfillment Systems:* Jodi Klein, Nancy Knorr, Dawn Viglione. *Customer Service:* Ellen Grassi, Michelle Amoroso, Bonnie Beardsley, Deborah Ciccio, Katherine Clarke, Alfred Dreher, Monica Duhancik, Kimberly Eads, Eileen McNulty, Patricia Parks, Deana Parker, Patricia Pineau, Betty Stepney. *Data Entry:* Melissa Dugan, Anne Champlin, Mary Ann Colbert, Maureen Pekar, Debra Sennefelder, Andrea Shorrock, Marylou Thompson, Barbara Williams, Brian Wilcox.

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

Photo: Mark Schofield

Information Technology Services: *Applications Development:* Heidi Waldkirch, Carole Ando, Frank Miller, Robert Nielsen, Linda Reddington, Lawrence Sullivan, John Vaccino, Daniel Woodhouse. *Desktop and Network Support:* Kenneth Jones, Michael Colonari, Gabriel Dunn, Michael Lewis, Jay Ligouri, Joseph Manganello.

Marketing: Wendy Hensel, Marissa Latshaw, Karen Lutjen, Dennis O'Brien, Jeanne Todaro. *Public Relations:* Tonya Polydoroff, Rebecca Murphy

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

Promotion: Mary Beth Cleary, Michele Mayernik, Sandra Motyka, William Sims. *Promotion Print Production:* Diane Flanagan, John Cavallaro, Sandra Hannan.

Taunton Creative and Editorial: *Creative:* Robert Goodfellow, W. Kathy Martin, Sarah Opdahl, Pamela Winn. *Editorial:* Jefferson Kolle. *Photography:* Scott Phillips. *Video:* Gary Junken. *Prepress:* Deborah Cooper, Richard Booth, William Bivona, David Blasko, James Chappuis, Richard Correale, William Godfrey, Brian Leavitt, Chansam Thammavongsa. *Advertising Production:* Laura Bergeron, Lisa DeFeo, Tracy Goodpaster, Steven Molnar, Patricia Petro, Kathryn Simonds, Martha Stammer.

Taunton Direct: Donna Capalbo, Nicole Carpenter, Robert Harlow, Michele Ladyko, Laurie Schmidt.

Taunton New Media: Jodie Delohery, Michelle Rutkowski, Matt Berger, Rafael Cardoso, Stace Caseria, Christopher Casey, Mark Coleman, Jennifer Wheeler Conlon, Ruth Dobsevage, Joshua Katinger, Eric Passero.

Taunton Trade Company: Kevin Hamric, *Director;* John Bacigalupi, John Hofstetter, Allison Hollett, Elizabeth Quintiliano. *Single Copy Sales:* Mark Stiekman, Valerie Droukas.

TAUNTON MAGAZINES

Fine Woodworking • *Fine Homebuilding*
Threads • *Fine Gardening*
Fine Cooking • *Inspired House*

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 e-mail us at tauntonjobs@taunton.com or visit our website www.taunton.com. You may also write to The Taunton Press, Human Resources, 63 S. Main St., Box 5506, Newtown, CT 06470.

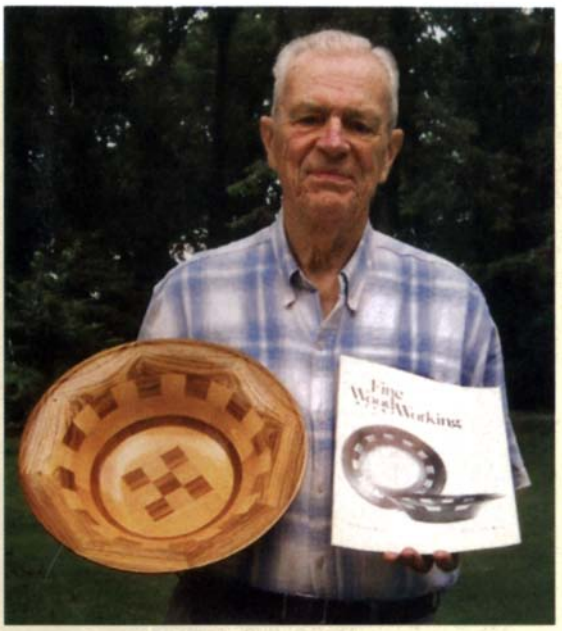
CUSTOMER SERVICE

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 800-888-8286.

Still using *FWW* #1

I still treasure my copy of Volume 1, Number 1, of *Fine Woodworking*. About 20 years ago I made a version of the bowl that appeared on that cover. I've made a number of other pieces using the same technique illustrated in the article. Here's a recent picture of your first issue and the checkered bowl it inspired me to make. I added five checkers to the base and turned the piece on my Shopsmith.

—CHARLES E. POYER
Woodbine, Md.



Dangers of black walnut

Great article by Boyd Hutchison on black walnut (*FWW* #178, pp. 50-53). The last paragraph really caught my eye, as a friend in the woodworking business has spent time and money seeing various doctors about her dermatitis while working in a woodshop. No one in the medical profession had the answer. On her own, she traced her serious condition to black walnut she had worked with and to the walnut dust made by other craftsmen in the shop.

Is there any publication that covers the various woods and precautions one should take while working with them?

—DON HAMILTON, via email

Editor replies: Here are two Web sites that are good sources of information on wood toxicity: www.woodturner.org/resources/toxicity.cfm and www.saw-online.com/tips/hazard.htm.

Show some restraint

I've been a regular reader of both *Fine Woodworking* and *Fine Homebuilding* magazines since the beginning. As a cabinet maker, carpenter, and general contractor, I have purchased and used a wide variety of Stanley tools. You could say that to this point I have been loyal to both Taunton and Stanley because of the quality of their products. That said, I doubt that I have any kind of leverage or power to put behind this request, so I make it as someone who strives for a certain level of decency. I refer to the FatMax tape-measure advertisement (*FWW* #179, p. 109: "Stays rigid to 11 feet. No little blue pill needed.") Please don't do this. For some of us, certain areas in our lives are very private and even sacred. Please have the restraint to not go where so much of our society has gone. Keep your respective companies first-class and above reproach. The attempt at humor and cleverness on the above mentioned page is low class and not befitting influential organizations such as yours.

—DEAN A. DAVIS, via email

Conquering crown molding

A disclaimer before I begin: I have never installed a single piece of crown molding in my life. I claim no higher knowledge of the subject than what I have read, and I certainly defer to the real-world experience of Gary Katz (*FWW* #178, "Conquering Crown Molding," pp. 73-77). Nevertheless I am puzzled that the author chose to miter rather than cope the inside corners on his project. I have always understood that it is well accepted that coping inside corners produces a tighter fit at installation and a superior joint over time. It sounds like Katz has installed a great deal of crown molding and has had good results with his method, but I hope for a brief explanation of the pros and cons of his choice to deviate from convention.

—JON SHAKESPEAR
Milwaukee, Wis.

Author Gary Katz replies: Good question! I cope all my inside corners, if I can't preassemble them. That means longer pieces of crown installed on longer walls get coped. Short pieces, running around columns, bookcases, nooks, etc., are preassembled. Preassembling crown is stronger than coping because you can glue and cross-nail all inside-corner joints from the back. Plus, and this is a really big plus, when you're running small pieces of crown around a bookcase, mantelpiece, armoire, etc., it's very easy to install the corner joints out of square. First because you're concentrating mostly on the joint itself, so you don't see whether the pieces are square; and second, when you're installing small pieces of crown on a wall, bookcase, mantel, etc., it's difficult to really check for square. But by preassembling the pieces in a set-up table, you can get them perfectly square.

Clarifications

Due to an editing error, Tom Christenson's name was misspelled in Readers Gallery (*FWW* #179, p. 86). Also, his table is not called "Elusive Legend."

For more information on the hardware and techniques featured in "Choosing Door Hinges" (*FWW* #179, pp. 72-77), or on other types of hardware for cabinetry and furniture, consult author Robert J. Settich's book on the topic, *Taunton's Complete Illustrated Guide to Choosing & Installing Hardware* (The Taunton Press, 2003).

Photo: Charles E. Poyer

AIRgrip MultiTASKit™

Handy tools, plus a no-hands way to stick them just where you need them. That's MultiTASKit™. At last, there's something even better than working with your own two hands. Working with three.

www.ryobitools.com

RYOBI

Pro Features. Affordable Prices.™

Hold it. Level it. Measure it. Light it.

MultiTASKit™.

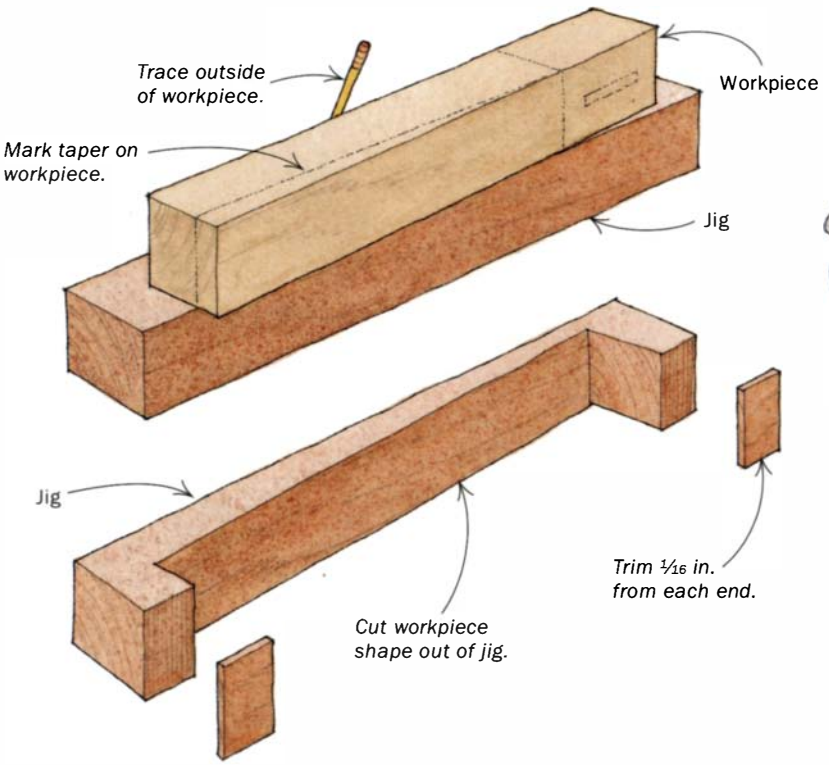
THE HOME DEPOT

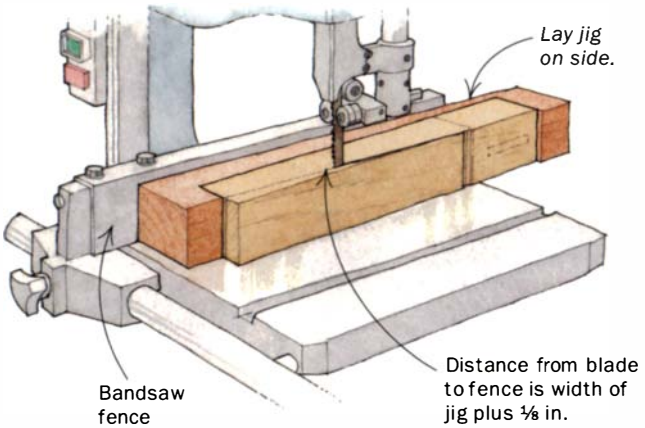
You can do it. We can help.℠

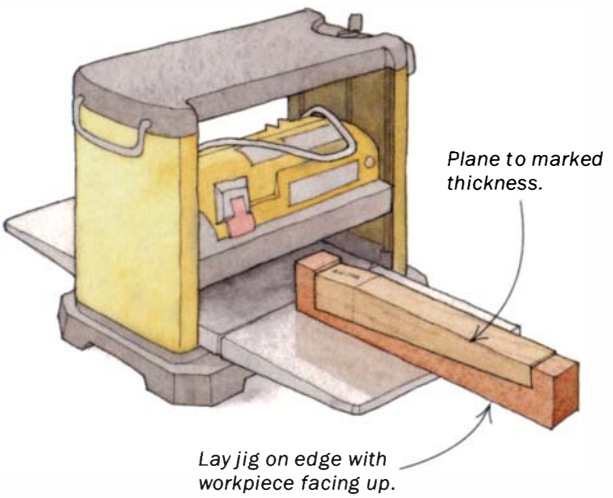
Visit www.homedepot.com for more information.

READER SERVICE NO. 144

EDITED AND DRAWN BY JIM RICHEY







Best Tip

Taper jig combines bandsaw and planer

Michael Fortune was the first woodworker to win the Saidye Bronfman Award, Canada's highest recognition of excellence in fine crafts. He designs and builds furniture in Lakefield, Ont.

This jig makes tapered parts accurately and safely. To begin, cut the workpiece to size, making sure all the face and end surfaces are planed flat and square. Then cut the jig from a piece of scrap that's about the same thickness as the workpiece. Cut the scrap about 3 in. longer and 1 in. wider than the workpiece.

Next, mark the taper on the workpiece. Place the workpiece on the jig, centered end to end. Line up the taper marks along the edge of the jig, then trace around the workpiece with a sharp pencil.

Use a bandsaw to cut the jig along the marked line. As you cut, stay slightly on the waste side of the mark. Use a block plane, or sandpaper wrapped around a hard wood block, to straighten and smooth the cut until it meets the line exactly. The workpiece should fit snugly into the cavity.

With the workpiece removed from the jig, use the bandsaw to trim about 1/16 in. from the face of the jig's two end sections. This provides clearance for the jig as the workpiece is run through the bandsaw and will help you set up the planer for the final cut.

On the bandsaw, set the fence to make a cut about 1/8 in. wider than the jig, then run the jig and workpiece through the blade. For a workpiece with a taper on two adjacent sides, rotate the part 90° and cut again.

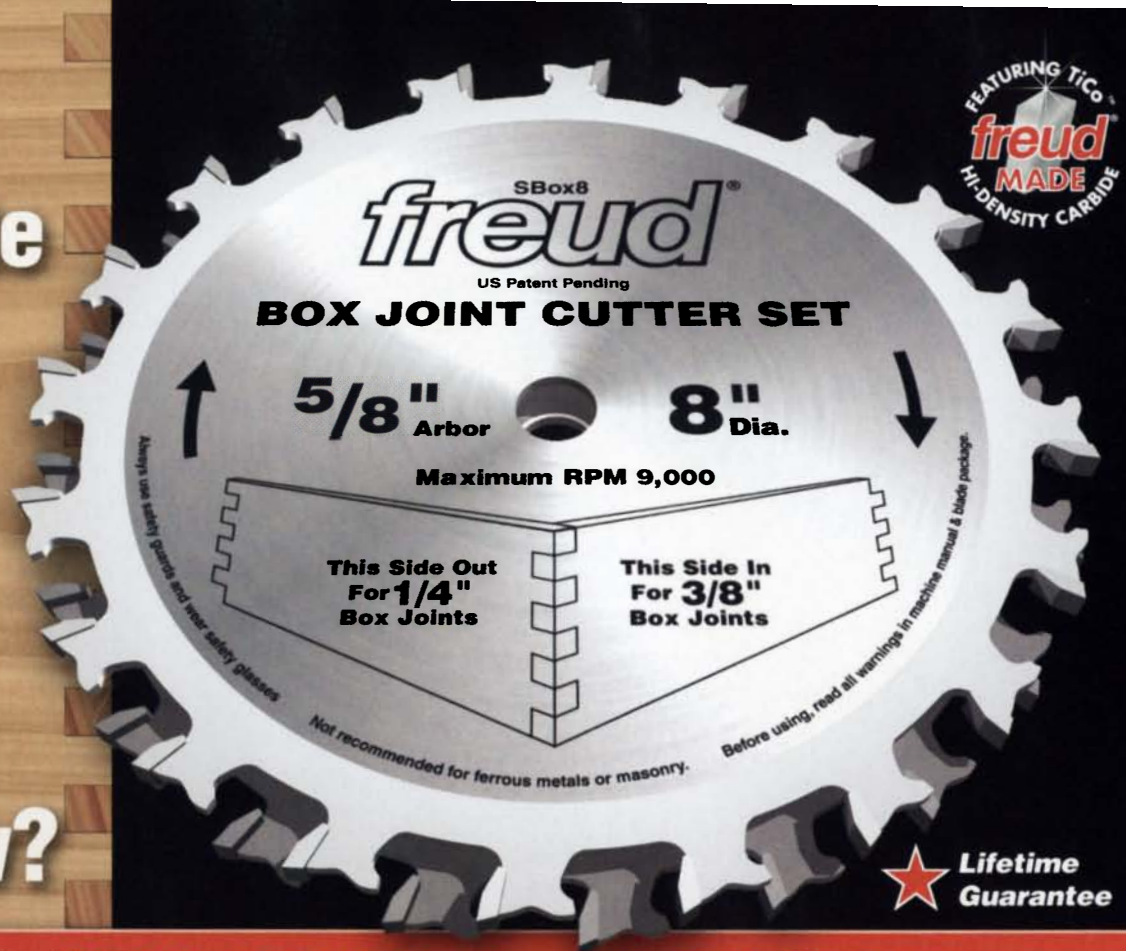
The next step is to run the same jig through a thickness planer with the depth set to clear the jig by 1/16 in., giving the desired dimension. To minimize tearout along the taper, the thicker end of the workpiece should go into the planer first. If the workpiece has adjacent tapers, rotate the stock 90° and send them through the planer again.

—MICHAEL FORTUNE, Lakefield, Ont., Canada

A Reward for the Best Tip

Send your original tips to Methods of Work, *Fine Woodworking*, PO Box 5506, Newtown, CT 06470. If published, we pay $50 for an unillustrated tip; $100 for an illustrated one. And if your tip is the best, you get a pair of 14-in. tenon saws made by Adria Toolworks.

How Do You Create Flawless Box Joints On A Table Saw?



With Freud's NEW SBOX8 Box Joint Cutter Set

Freud's engineers have done it again. They have invented a new cutter set that provides a simple and accurate way to cut perfectly square, chip-free, flat-bottom box joints, without shims or awkward adjustments.

Square Box Joints Every Time

A precision box joint is ideal for drawers, jewelry boxes, humidors and other projects where strength and appearance are critical. In the past, creating box joints usually required a dado set, router bit, or several cuts with a single flat-top saw blade, which are all time consuming, expensive and don't guarantee flawless results. Freud's new **Box Joint Cutter Set** features a unique tooth rake design that cuts perfectly square, clean pins and slots through the end grain. Plus, Freud's unique TiCo™ Hi-Density Carbide was developed and manufactured by Freud specifically for the box joint application ensuring a perfect finish and extra long cutting life.

Fast, Easy Set-up

Simply install the 8" diameter, 5/8" arbor blades on your table saw back to back for 1/4" box joints, or face to face for 3/8" box joints. Follow the instructions included to build a jig to use with your table saw's miter gauge for completing finished joints. Just cut, flip, glue and clamp and you're done...it's that easy.

Choose the ONLY table saw box joint set on the market today—choose Freud. Whether you're a woodworking enthusiast or full-time professional, Freud's new Box Joint Cutter Set is the fast, easy, accurate solution.

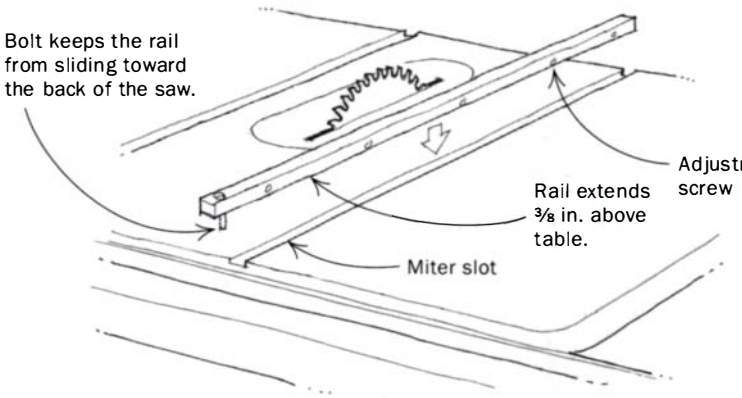
ISO 9001
VISION 2000
CERTIFICATE REGISTRATION # 50 100 4138

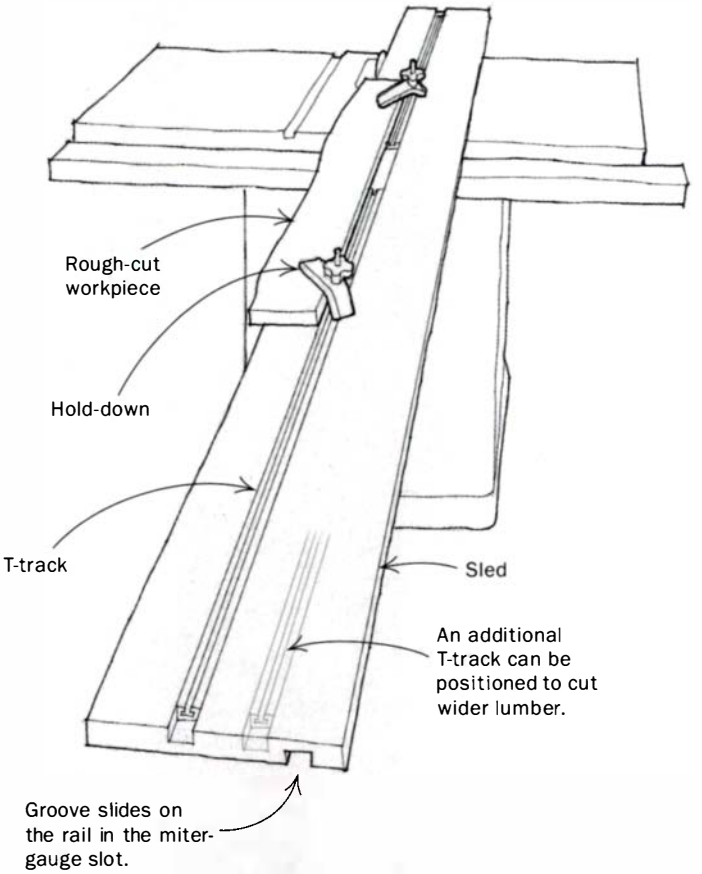
freud®
Precisely what you need.

To find a dealer near you visit: www.freudtools.com (US) 1-800-472-7307 (Canada) 1-800-263-7016

READER SERVICE NO. 137

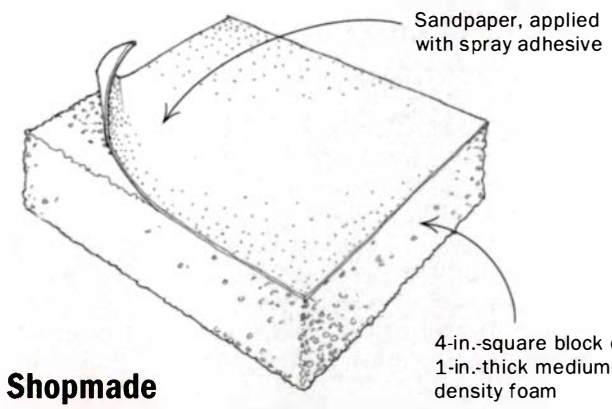
Creating a straight edge on a piece of rough lumber





This jig is great for creating a straight edge on a rough piece of lumber. The main part of the jig is a 1x8 pine sled a few inches longer than 8 ft. The sled slides on an oak rail that locks into the miter slot on a tablesaw. Countersunk screws in the side of the rail can be adjusted in or out to ensure a snug fit in the miter-gauge track. A groove cut along the full length of the underside of the sled allows it to slide on the rail. On top of the sled I installed two 4-ft. sections of T-track (available at most retail or mail-order woodworking outfits) and a pair of hold-downs with T-bolts.

—PAUL COMI JR., San Gabriel, Calif.



Shopmade foam sanding pads

When hand-sanding curved surfaces, I often use one of those hardware-store-variety foam sanding pads. Essentially, these pads are relatively soft foam embedded with abrasive grit. I find them easier and more economical to use than regular sandpaper.

Now I've found a way to make my own. First, cut a 4-in. square from a piece of 1-in.-thick medium-density foam. Use spray adhesive to attach a piece of 220-grit paper to the foam.

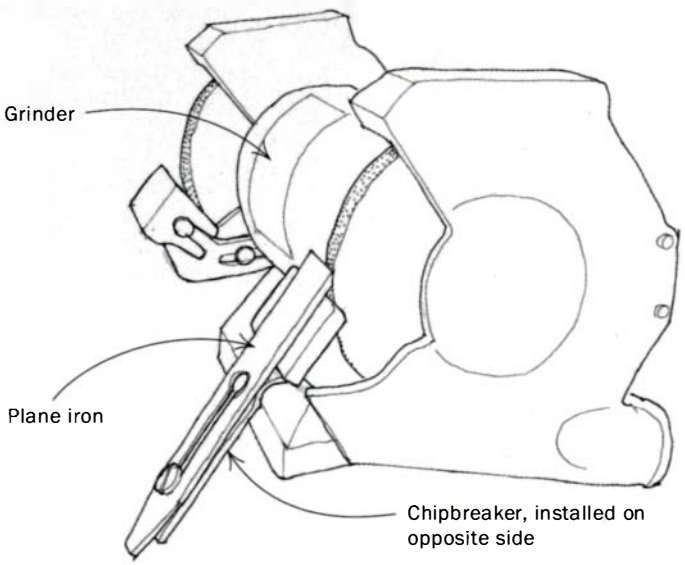
To my delight, the shopmade block works like a dream. I don't think I will be buying the pads any longer.

—K. RASMUSSEN, Bakersfield, Calif.

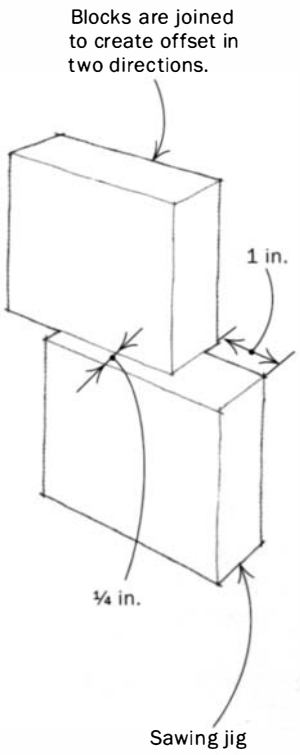
Built-in grinding jig for plane irons

When you need to regrind a plane iron, remove the chipbreaker and install it on the opposite side of the iron with the upcurved edge facing out. Now register the chipbreaker edge against the grinder tool rest. The setup will enable you to grind a perfect bevel easily. Adjust the breaker up or down as needed.

—RUSSELL MARTIN, Sparta, Wis.



Handsaw guide for tenons

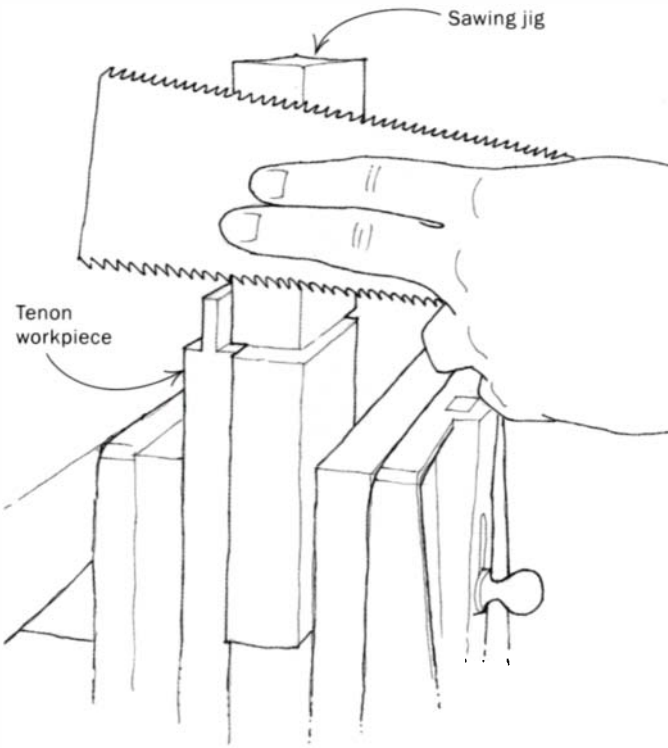


Here is a simple jig that takes only minutes to put together and can make you look like an expert with a handsaw. Use it to cut the waste off the edges of tenons after the two long shoulders and cheeks have been cut on a tablesaw. It allows you to rip perfectly perpendicular to the shoulder of the tenon and to crosscut flush to the shoulder quickly and easily with one setup.

The jig is two 4-in.-square blocks of 1¼-in.-thick hardwood scraps. Align biscuit slots into both squares so that the blocks will overhang each other by an inch or so. Use a ¼-in. piece of plywood as a spacer when biscuiting one of the blocks so that the blocks will be offset ¼ in. when you glue them together. You will have two blocks forming two Ls, offset from each other by ¼ in. and 1 in.

To use the jig, place the lip of the offset onto the shoulder of the tenoned piece and line up the long part of one of the Ls with where you want to cut. Clamp the whole thing into a vise. Use your finger to hold the saw against the jig as if you were going to flush-cut a dowel. Saw down to the bottom of the L, then flip the saw to the short part of the L to finish removing the waste.

—JEFFREY COOK, Plaistow, N.H.



Dial indicator improves tenon-jig accuracy

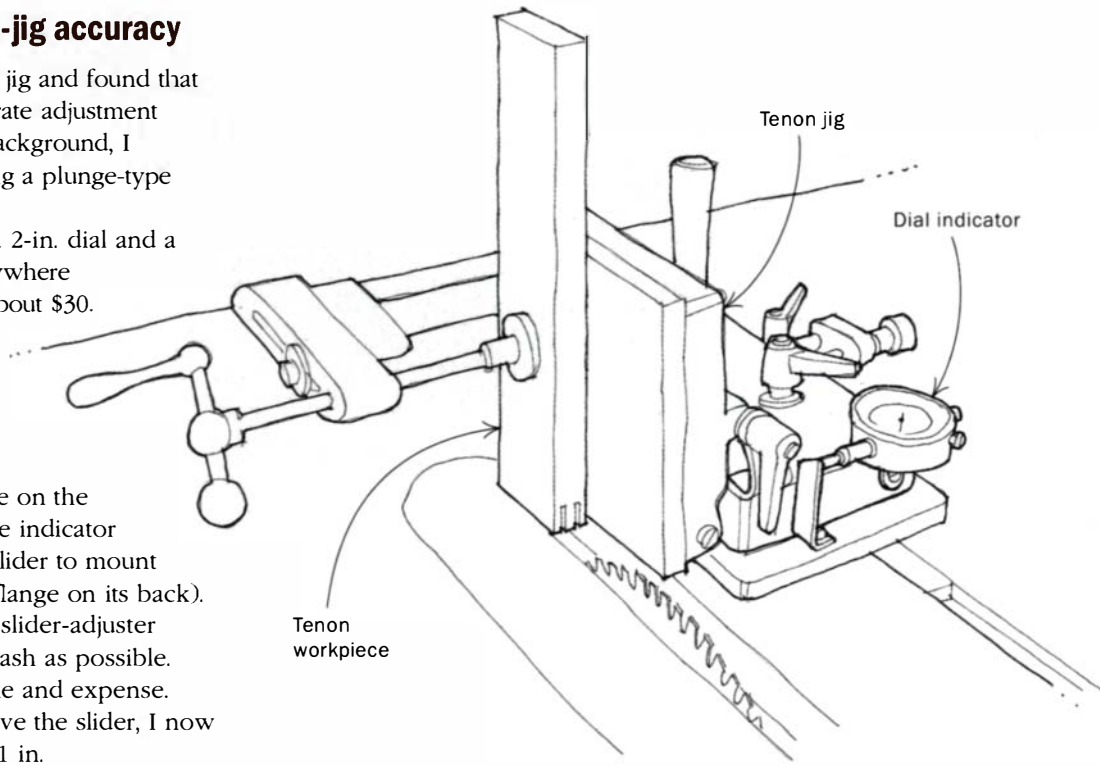
I recently purchased a tablesaw tenon jig and found that it, like other such jigs, lacked an accurate adjustment system. Thanks to my machine-tool background, I quickly saw the advantages of adapting a plunge-type dial indicator to work with my jig.

I use a Teclock dial indicator with a 2-in. dial and a 1-in. stroke. You can find it almost anywhere machinist's tools are sold. It sells for about $30.

I was able to reuse the red flag that was originally part of the jig's scale-measurement system by straightening the bend. The upgrade was just a matter of drilling and tapping two holes in the castings: one on the base to reposition the red flag that the indicator would push against, and one in the slider to mount the dial indicator (it has a mounting flange on its back). I also readjusted the two nuts on the slider-adjuster mechanism to remove as much backlash as possible.

The results were well worth the time and expense. Instead of guessing how much to move the slider, I now know the exact measurement to 0.001 in.

—MATT BAER, Salem, Ore.



A BIT SMOOTHER THAN THE REST.

INTRODUCING THE NEW WAY PROFESSIONALS GET THEIR EDGE. For smoother performance and best-in-class results, use new PORTER-CABLE® router bits. Our latest full line of professional-grade bits are truly advanced, with industry-proven innovations exclusive to PORTER-CABLE. Such as using MONSTER CARBIDE™ for safer, smoother cuts, and POZI STOP™ technology which drops bits to the same depth every time. To learn more and sign up for the Performance Crew™ visit porter-cable.com. **SMOOTHER MOVES. BETTER ROUTING.**

POZI STOP™

POZI STOP™ TECHNOLOGY MEANS OUR BIT DROPS TO THE SAME DEPTH EVERY TIME. NO MORE MEASURING OR TEST-CUTS NEEDED – IT'S PRECISION THAT SAVES YOU TIME.

MONSTER CARBIDE®

40% MORE CARBIDE THAN STANDARD BITS. YOU GET A MORE PRECISE FINISH, NOT TO MENTION A LONGER-LASTING, SAFER BIT.

PORTER-CABLE® PERFORMANCE CREW,™ POZI-STOP™ AND MONSTER CARBIDE™ ARE REGISTERED TRADEMARKS OF THE PORTER-CABLE CORPORATION © PORTER-CABLE CORPORATION 2005

PORTER-CABLE®

REDEFINING PERFORMANCE®

READER SERVICE NO. 128


ON
OFF
DELTA
INDUSTRIAL
The American Woodshop
THE NEW YANKEE WORKSHOP

DELTA's new hybrid saws are designed to make your heart race. Their powerful 1 3/4 HP motors are enclosed in full-size cabinets for enhanced stability and space-saving footprints. Additional features include a left tilting blade, fully integrated dust port, large table surface and your choice of three fences including Biesemeyer® or DELTA® UNIFENCE®. This is the saw to get your blood pumping. For more information about DELTA's complete hybrid saw line-up, visit deltamachinery.com/hybrid.

DUST PORT

ACCESSIBLE MOTOR

3 FENCE OPTIONS

DELTA®

YOUR ACHIEVEMENT. OUR TOOLS.

READER SERVICE NO. 86

Secondary wood is not second best

BY MARIO RODRIGUEZ

Dressing up a drawer. *Pins in cherry and tails in maple make a handsome dovetail. Using the right secondary wood can make your work more attractive.*

If you examine a Shaker cupboard or a Queen Anne lowboy, you'll notice that the interior framework, drawer sides, and back panels are made of different wood from the exterior.

Even two centuries ago, furniture makers used lesser, plainer wood for hidden or rarely seen parts. These "secondary" woods were cheaper, and they sometimes made the piece function—and look—better.

The practice saved money by conserving expensive material. Mahogany, in particular, was rare and costly. But even walnut was prized and not to be wasted.

Today, furniture makers still struggle with the economics of their craft. With hardwoods sometimes more than triple the price of pine or poplar, using secondary wood can provide the same practical advantages it did 200 years ago.

Wise use of secondary wood can make you a more efficient furniture maker; one who considers the conservation of time and effort, as well as natural resources.

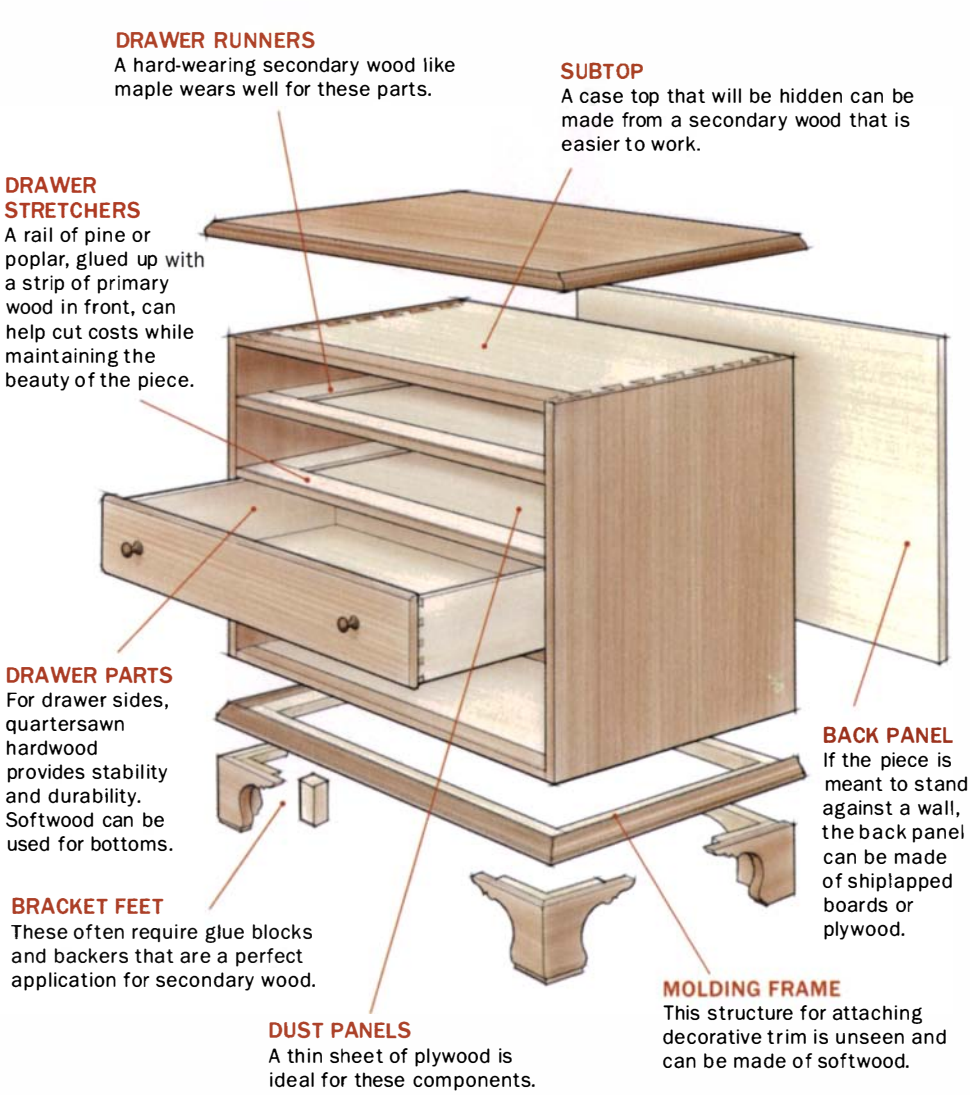
Many reasons to use secondary wood

In most cases, using secondary wood will reduce the cost of your project. In the Northeast, No. 2 pine sells for about $1.35 per board foot compared to about $7.50 for mahogany. There's no point in using an expensive material for interior parts if a cheaper substitute will do just as well.

But there's also no point in trying to save money by using inappropriate material. Determine which secondary wood is most suitable to the design and

WHERE TO USE SECONDARY WOOD

The construction of a typical multi-drawer chest features secondary wood in a variety of supporting roles. In the end, it takes the place of many board feet of expensive primary wood.



Photos: Steve Scott; drawings: Chuck Lockhart

function of the piece. As an example, plywood drawer bottoms would not be suitable on a painstakingly crafted Federal-period reproduction. Solid pine or poplar, however, would be.

In some cases, a secondary wood will work better than the primary wood. Drawer runners made of maple, for instance, are sturdier than those of pearwood. Moving parts, such as knuckle-jointed drop-leaf supports on a mahogany table, are better made of hard-wearing woods like maple or oak. On the other hand, it isn't always necessary to use the strongest material. A pine molding frame will do as well as one made of oak.

Often, using secondary wood can save time and reduce wear on your tools. I think everyone would agree that making drawer bottoms out of pine, instead of oak, would reduce the toll on your blades and cutters.

The time and effort saved lets the maker devote more attention to the visible parts of the piece.

In at least one instance, you'll want to pay close attention to how your secondary wood was sawn. Particularly for drawer parts, buying quartersawn stock for secondary wood might be worth any extra expense.

Michael Podmaniczky, senior conservator at the Winterthur museum in Delaware, said that in the 18th and 19th centuries, soft secondary woods often were quartersawn for dimensional stability. "Constructed of quartersawn material, drawers would fit better and operate smoothly," he said, "panels would be less prone to warping or splitting, and load-bearing parts could better survive any strain."

In choosing a secondary wood, it is also worth considering whether a given species will enhance your project's appearance. A secondary material can create a pleasing contrast in color, figure, and surface texture. For instance, the contrast of a rich walnut drawer front against a light-colored pine drawer side is attractive and can help to highlight the joinery.

Many woods to choose from

When considering choices for secondary woods, remember that their application, prominence, and dimensions will be subordinate to the primary wood, and to the design of the piece. Joinery can be more difficult to execute with certain coarse woods like oak or ash, so I prefer to use smoother, tight-grained woods such as poplar, pine, and soft maple.

Each of these plentiful woods provides a few of the following advantages: appearance, stability, hardness, and good working properties.

Pine is the overwhelming favorite. It's easy to work both by hand and with machine tools. It looks good and it finishes well. Poplar rivals pine for all the same reasons.

Maple also performs nicely as a secondary wood. It is smooth and tight grained, good for joinery. The subtle grain patterns and muted colors of maple can enhance the intimate quality of a small piece.

Another intriguing choice, especially for drawer boxes, is butternut. It has a pleasing figure and warm color like its expensive cousin, walnut.

Alder, which is popular with Pacific Coast cabinetmakers, is lightweight and works easily. It is straight-grained, has a uniform texture, and is almost as soft as white pine. □

A trio of secondary woods. *Pine and poplar are the most popular for interior parts and panels. They are inexpensive and easy to work. Maple also works well, particularly for parts like drawer runners that have to stand up to more wear and tear.*

PLYWOOD AND MDF AS SECONDARY WOODS: MODERN MATERIALS FOR A TRADITIONAL PRACTICE

One material not available to 18th-century furniture makers was plywood. I would rate the invention of plywood right up there with the tablesaw. I couldn't imagine building furniture without it. Plywood offers a relatively flat and very stable material, available in an amazing range of veneers, with thicknesses from ⅛ in. to 1½ in. With the availability and selection of plywood, a furniture maker doesn't have to glue up and flatten an armful of 6-in. boards to get a 24-in.-wide panel.

Another useful material is MDF (medium-density fiberboard). Because it is homogeneous and uniform throughout, MDF machines and finishes more easily than solid wood or plywood. It makes an excellent substrate for veneering. It has no layers to disguise, no voids to fill, and no grain to telegraph through a finish. If the structural demands of the job are modest, MDF could be a great choice.

WOODCRAFT®

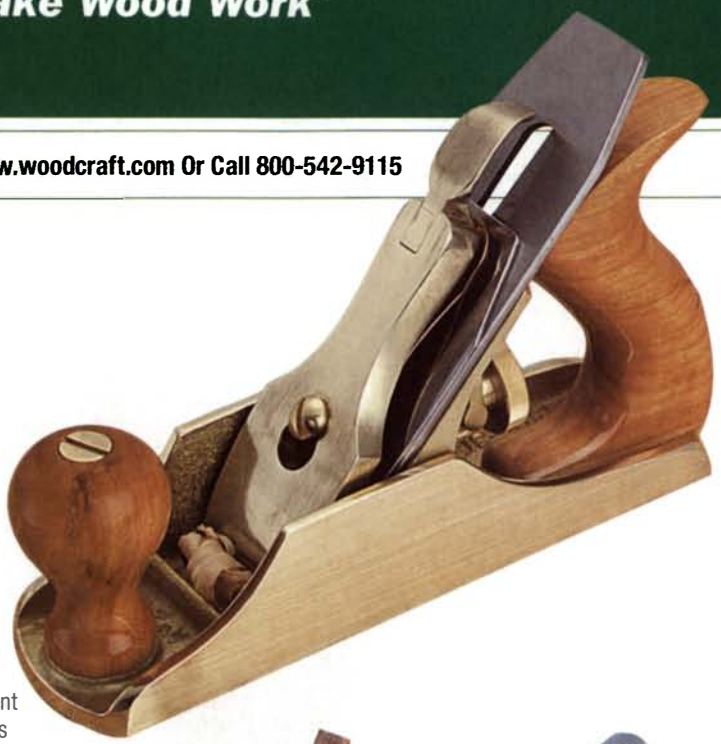
Helping You Make Wood Work®

For A Free Catalog Or To Find Your Local Woodcraft Store, Visit www.woodcraft.com Or Call 800-542-9115

When woodworking is your passion, woodworking tools, supplies and expert advice from Woodcraft can help take your woodworking to the next level.

PFEIL ® "Swiss Made" Carving Tools

Exclusive United States distributor of "Swiss Made" tools. For over 32 years we have offered our customers carving tools that we believe are the finest in the world. These tools are made with a dedication to quality unsurpassed in today's high-tech world.



Lie-Nielsen Bronze No. 2 Bench Plane

Offers a heavier, higher quality tool than Stanley's regular line of planes. With locking adjustment screws, precise frog adjustments can be made from the rear without removing the cap and blade.

CROWN Rosewood and Brass Marking Set

We've combined the beauty and reliability of imported rosewood and solid brass with these three classic bench tools.

Dept: 05WW12P

WOODWORKING TOOLS • SUPPLIES • EXPERT ADVICE

READER SERVICE NO. 117

Reclaimed walnut. *William Stranger's Monolith Bench was built from walnut salvaged from orchard trees.*

Wood turner wins Canada's Bronfman award

Color and form. *Hosaluk's work often features bright colors. He also frequently employs off-center turnings that appear precariously balanced, as in the twin pieces below.*

CANADIAN WOOD TURNER and furniture builder Michael Hosaluk has won that country's most distinguished arts prize.

Hosaluk joins a handful of woodworkers who have received the Saidye Bronfman Award since its inception in 1977. The award, presented by the Canada Council for the Arts and the Saidye Bronfman Family Foundation, recognizes artistic achievement and contributions to the Canadian arts community.

In the early 1980s, Hosaluk began a series of creative workshops that eventually grew into a biennial symposium at Emma Lake, Saskatchewan. He also helped found the Furniture Society, the American Association of Wood Turners, and the Saskatchewan Woodworkers Guild.

Hosaluk taught himself woodworking in his youth and began his professional career in 1975. The organic shapes and vivid colors of his pieces are inspired primarily by nature, he says, but also by his travels and the people around him.

He has made forays into other media, but wood remains central to his craft. "I'm comfortable with it, I understand it. I can do it without thinking about it," he says.

—Katherine Winick

Exhibit emphasizes eco-friendly 'Good Wood'

BEAUTIFUL WOODWORKING COMBINES thoughtful design, skilled craftsmanship, and carefully chosen materials. A recent California exhibition gave special attention to one of those elements, wood, without neglecting the other two.

The Good Wood exhibition, sponsored by the Furniture Society and the Woodworkers' Guild of Southern California, featured 42 pieces of furniture and other work.

At least 70% of each piece was wood from an alternative source such as salvaged, recycled, or reclaimed lumber, or offcut scraps. Other sources included wood from certified well-managed forests or boards made from wood alternatives such as wheat, sunflower seeds, or bamboo.

The show was juried by Sam Maloof; Jo Lauria, a curator and arts writer; and Hal Nelson, director of the Long Beach Museum of Art.

For more information on the exhibit, or on the Woodworkers' Guild, visit www.woodguildsocal.com.

—Steve Scott, associate editor

Saved from the landfill. *The heavily figured Claro walnut in Jared Rusten's Los Altos High Back Lounger was salvaged from a municipal tree destined for the landfill.*

Photos, this page: Grant Kernan (Hosaluk portrait and work); William Stranger (top right); Karen Rusten (bottom right)

The New Benchmark

The OF 1400 Router gives you 1400 W of power in under 10 lbs., takes 1/2", 3/8", 1/4" or 8mm bits to handle almost any project. It sets the new benchmark for top-quality routers:

NEW RATCHETING SPINDLE
Change bits in a flash.

NEAR-TOTAL DUST EXTRACTION
The new chip catcher helps you work super clean when used with a dust extractor.

DEEPER REACH
Category-beating 2 3/4" stroke lets you rout countersinks deep into rebates.

Call us or go online to find out more.

READER SERVICE NO. 195

NEW!

The OF 1400 EQ Router

A world first – the ratcheting spindle makes bit changes a breeze

A world first – the chip catcher adjusts to fit the work, for maximum dust control

Precise depth adjustment to the nearest 1/256", with easy zeroing

Festool CT Mobile Dust Extractors keep the air clean

FESTOOL 1+2

With Festool, you get a three year warranty - the strongest in the industry.

888-337-8600
www.festoolusa.com

FESTOOL

Period-furniture maker sweeps awards at AWFS student-design competition

TWO 18TH-CENTURY reproductions by a single craftsman swept the top awards in the biennial student-design competition at the 2005 Association of Woodworking & Furnishings Suppliers Fair. The period pieces by recent graduate Joshua Nickolds Williams, 25, stood out in a roomful of contemporary-style finalists.

Williams's Newport-style block-front desk took Best of Show, People's Choice, and a special "Craftsmanship" award from *Fine Woodworking*. The desk and his corner chair—also Newport style—took first prize in their separate traditional-furniture categories. The awards included $3,500 in cash and a trophy carved by Sam Maloof. Williams's school, Rockingham Community College in Wentworth, N.C., received $2,500.

Williams devoted 550 hours to completing the desk and spent 150 hours on the chair, working mostly with hand tools to produce the sinuous lines and complex carvings.

Williams left a bachelor's program in math and engineering unfinished at the University of Georgia to enter RCC's five-semester woodworking program. His initial preference for contemporary furniture changed after a field trip to the Museum of Early Southern Decorative Arts in Winston-Salem, N.C., and he has built nothing but period pieces since.

He initially pursued the Chippendale style for its technical challenges, but then became inspired by the early builders. "They were skilled designers, craftsmen, and businessmen," he said. "Finally, I began to appreciate the designs themselves and realized that the originals are true pieces of art."

Williams now works at a custom-cabinet shop and plans to launch his own furniture-making business.

For more information on the student-design awards, which have separate categories for high-school and post-secondary-school students, contact AWFS at www.awfsfair.org or 800-946-2937.

—Asa Christiana, executive editor

***Coincidence or fate?** Williams's Newport-style block-front desk was inspired by issue #23 of* Fine Woodworking, *which came out the month he was born.*

***A large and crowded place.** Thousands of trade-show attendees streamed into the Las Vegas Convention Center for this year's Association of Woodworking & Furnishings Suppliers Fair.*

AWFS move to Vegas pays off

THIS WAS THE SHOW'S first year in its new home, the Las Vegas Convention Center, where nearly 900 exhibitors covered close to 420,000 square feet. The move from Anaheim, Calif., netted the biennial show 20% more visitors, putting it on track to be the biggest AWFS show in the 48 years since the group held its first "Woodworking Fair" in the basement of the Ambassador Hotel in Los Angeles. Exhibitors ranged from manufacturers of industrial furniture-making equipment to makers of hobbyist woodworking machines, specialty hardware, and hand tools.

AWFS Vegas also expanded many of the programs featured at past fairs, including the student-design awards, a large slate of seminars and classes, and awards for innovation in the woodworking industry.

—A.C.

Photos, this page: Asa Christiana (top); Exposures Ltd. (bottom)

Forrest Blades

Quality Blades for America's Craftsmen

Serious woodworkers demand perfection. That's why so many of them choose Forrest saw blades.

Forrest quality is legendary. Our proprietary manufacturing process, hand straightening, and unique grade of C-4 micrograin carbide give you smooth, quiet cuts without splintering, scratching, or tearouts. In fact, independent tests rate our blades as #1 for rip cuts and crosscuts.

Forrest saw blades are simply the best that money can buy. They're made in the USA by the same family-owned business that's been producing and sharpening them for over 55 years. And they're backed by a 30-day money back guarantee. It's no wonder that serious woodworkers give them such high praise!

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

"These are the finest blades I have ever owned and you should be proud of your quality product."
Patrick T. Hankard–South Windsor, CT

"[Forrest blades] cut true, with no vibration. I was a carpenter by trade for over 60 years and continue to be an active woodworker. So, I can say with confidence that Forrest blades are the best."
Carl Stude–Burbank, CA

The message is clear. If you're looking for quality, performance, and value, it pays to choose Forrest blades every time.

Our Most Popular Blades:

Woodworker II – This award-winning, all purpose blade is the finest of its type. It turns big jobs into easy-to-handle ones.

Dado-King – The world's finest multi-tooth dado set. It works effectively in all directions—with the grain or across it.

Chop Master – Produces perfect miters every time—with no bottom splinters. You get smooth edges on all types of wood.

Woodworker I – Great for table and radial saws. It trims and crosscuts all woods up to 2" and is ideal for plywood.

Duraline Hi A/T – Our best blade for birch and oak ply veneers. It also delivers a clean cut on melamine and vinyl over particle board.

Forrest blades come in a wide variety of sizes and are available for practically every application. Call or send for our complete list of products.

Three Convenient Ways To Order

We back our blades with a 30-day money back guarantee. So, choose the method most convenient for you and order today:

- **Visit one of our fine-quality dealers or retailers.**
- **Call us toll free at 1-800-733-7111.** (In NJ, 973-473-5236) Ask about special discounts, free shipping on orders over $275, and discounts for blade sharpening.
- **Contact our internet store:** www.stores.yahoo.com/forrestman

FORREST

The First Choice of Serious Woodworkers Since 1946

Code FW

READER SERVICE NO. 14

Head to Head

Laguna and Jet improve their 18-in. bandsaws

LAGUNA TOOLS RECENTLY introduced a bandsaw that combines its 18 and 18SE models. The new saw (LT18) features heavier construction and a 19-amp American-made Baldor motor. With a maximum blade capacity of 1⅜ in., the power creates a resaw capacity that easily walks through wide hardwood.

Laguna increased the rigidity of the upper guide post by making it larger (1³⁄₁₆ in.) and using heavier steel in the frame (3.3 mm thick) to reduce flex in the post. I measured flex using 16 lb. of pressure against the guide assembly, duplicating the pressure of a heavy resaw cut.

The saw's resaw capacity is 18¼ in., and the maximum width of cut is 16¾ in. This saw has the same excellent ceramic upper blade guides as the previous model. The lower blade guide can be positioned close to the table for better support.

A 19-in. by 25-in. table provides more workspace than the previous model. This machine weighs a stout 510 lb., and sells for $2,595. For more, go to www.lagunatools.com.

JET JWBS-18X

The WMH Tool Group recently unveiled its redesigned 18-in. Jet bandsaw with a 12-in. resaw capacity. The saw has many significant improvements over the previous 18-in. model (JWBS-18).

A much stiffer frame and a beefier upper guide-post mount result in lower flex numbers. The lower blade guides have been redesigned to make adjustments easier and more accurate. All adjustments are toolless except for the thumbscrew that secures the thrust bearing, which requires pliers to tighten it sufficiently. Table flex has been improved through the use of heavier trunnions. The table locks in position more positively with large knobs.

Jet has increased the power to 1¾ hp, compared to 1½ hp for the previous model. With a maximum blade-width capacity of 1½ in., the power is welcome. A window in the upper wheel housing allows you to adjust blade tracking with the machine on and cover door closed. This saw weighs 493 lb. and sells for $1,250, including shipping. Distributors are listed at www.jettools.com.

—Roland Johnson is a contributing editor.

LAGUNA LT18

JET JWBS-18X

MODEL	SOURCE	STREET PRICE	GUIDE TYPE	MOTOR	RESAW CAPACITY	RESAW TEST	FRAME/POST DEFLECTION	FENCE ADJUSTS FOR DRIFT
Jet JWBS-18X	www.jettools.com 800-274-6848	$1,250	Bearing	1¾ hp, 115v	12 in.	Good	0.0293 in.	Yes
Laguna LT18	www.lagunatools.com 800-332-4094	$2,595	Ceramic	4½ hp, 240v	18¼ in.	Excellent	0.0321 in.	Yes

Photos, except where noted: Rodney Diaz; this page: Roland Johnson

PLANER ACCESSORY

DIGITAL READOUT ADDS PRECISION

THE WIXEY DIGITAL GAUGE, A DEDICATED electronic caliper for mounting on benchtop thickness planers, permits accurately controlled material removal, in repeatable stages as small as 0.001 in. or 0.01 mm. The inches setting displays the reading in decimals and fractions.

Installation wants some attention to the alignment, but on most planers it's a straightforward, quick bolt-on. In use, I found that the greatest cumulative discrepancy between the Wixey's measurements and my dial caliper's readings was 0.007 in. The Wixey gauge sells for $60 from www.wixey.com, or through some woodworking-supply catalogs.

—MICHAEL STANDISH is a woodworker and trim carpenter in Roxbury, Mass.

POWER TOOLS

DEWALT BEEFS UP ITS 5-IN. SANDERS

DEWALT HAS RELEASED A MORE ROBUST LINE OF 5-in. random-orbit sanders. I test-drove the D26453K, a variable-speed, hook-and-loop model, and was impressed with its performance. The new, hefty, 3-amp motor provided plenty of power with minimal vibration. The redesigned grip was an instant success when I first held the tool, and the pad brake slowed the pad rotation when the tool was off the work. Dust collection is also user-friendly—the easily removable bag proved quite effective, and a vacuum adapter is built in to the tool. The D26453K retails for about $90, which includes DeWalt's outstanding storage case.

—Andy Beasley lives and works on his home in the mountains of Colorado.

One of three new DeWalt sanders. *This top-of-the-line model has a more comfortable grip, better dust collection, a variable-speed motor, and a governing mechanism that slows the pad rotation when the tool is off the work.*

TRADE SHOW

NEW OFFERINGS FROM AWFS

Braving temperatures that exceeded 100°F for several days in late July, attendees to the Association of Woodworking & Furnishings Suppliers (AWFS) show in Las Vegas, Nev., were not disappointed. What follows is a sampling of new products that piqued the interest of staff and contributing editors who attended the show.

NEW POWERMATIC CABINET SAW TAKES ON THE VENERABLE PM66

At first glance, Powermatic's PM2000 10-in. tablesaw looks remarkably like the company's flagship PM66. It features a similar design: cast-iron trunnions, a 3-hp or 5-hp motor, a left-tilting arbor, and a Biesemeyer-style fence. But the new saw (designed in the United States by Powermatic engineers and built in Taiwan) also boasts a quick-release riving knife, a clever retractable caster system, and an arbor lock for quick blade changes.

The unit is priced at $2,200 (about $300 less than the PM66). For information, go to www.powermatic.com or call 800-274-6848.

JET IMPROVES PARALLEL-JAW CLAMPS

Parallel-jaw clamps are popular with woodworkers because their long, wide jaws remain square to a workpiece when pressure is applied. The new Jet Parallel Clamp promises a number of significant advantages over competing products. The handle is larger, allowing the user to apply more pressure. It sports a trigger that releases the sliding jaw and inch marks on the bar that serve as a positioning reference. The jaws are larger. Accessories for supporting the clamps include screw-on bench dogs, as well as 90° framing blocks. Prices range from $38 to $48, depending on length (www.jettools.com or 800-274-6848).

LEIGH DOVETAIL JIG IS MORE AFFORDABLE

A 16-in. version of the renowned 24-in. Leigh dovetail system provides the same ability to create variably spaced dovetails but at a lower price. A few new features include machined side stops to ensure perfect joint alignment and textured clamping

Photo, this page (right): Courtesy of Powermatic

SHARPENING

Diamond-coated crowning plates

ODATE CROWNING plates are a new product designed to make the task of putting a minute crown on handplane blades fast, easy, and utterly consistent. They are the brainchild of master craftsman Toshio Odate and are produced by Powell Manufacturing Co.

A slightly crowned handplane blade eliminates blade tracks and ridges where cuts overlap. The plate puts a crown just under 0.002 in. on a 2-in. smoothing-plane blade, for a very fine shaving that tapers to nothing at its edges. The four plates range from 60 microns to 9 microns and can be used dry or lubricated. They cut fast and wear well. The finest plate left a finish still in need of polishing on a 6,000-grit waterstone. For that reason, Powell makes a dressing plate that shapes a polishing stone to the same profile. At about $109 each, these plates would be a luxury for many woodworkers, but they make the whole process consistent. Call 781-237-4876 for information, or go to www.toolsforworkingwood.com.

—Chris Gochnour is a woodworker in Murray, Utah.

A perfectly crowned plane blade. *The four diamond-coated plates are dished a precise 0.0025 in. across their width, ensuring an equally precise crown on plane irons.*

CLAMPING

QUICK-ACTION HAND CLAMPS FROM IRWIN AND PONY

THERE'S NO SUCH THING AS TOO MANY CLAMPS, AND most collections include at least a few light-duty hand clamps. Both Irwin Industrial Tools and the Adjustable Clamp Co. have introduced a new type of locking hand clamp that offers a few advantages over more conventional styles.

Both the Irwin Quick-Grip Handi-Clamp and the Pony ISD Hand Clamp have swiveling clamping pads and quick-release locking mechanisms. They are easy to set and release with one hand. The clamping force is regulated simply by adjusting how hard you squeeze. Of the two, the Pony ISD (made in Taiwan) has the more comfortable grip, and the swiveling pads on its 2¼-in. and 4-in. sizes are riveted in place with metal pins. Pads on the Irwin clamps (made in China) are held in place by plastic clips. These clamps are available from both mail-order and online sources.

—SCOTT GIBSON is a writer and a woodworker in Maine.

Better than spring clamps. *New Irwin and Pony quick-action hand clamps create more pressure to fasten workpieces together or to the surface of a worktable or drill press.*

TRADE SHOW (continued)

surfaces for a firmer grip. The jig includes three cutters, a two-piece router-template guide, cam-action clamps, and a crosscut bar. The $320 price should make the D1600 an easier fit for many shops (www.leighjigs.com or 800-663-8932).

DELTA 36-717 TABLESAW

Delta is the latest of several tool companies to offer a cabinet saw that is a cross between a contractor-style saw and a traditional cabinet saw. This left-tilt saw has a trunnion system with the motor mounted below the table, and an internal chute for dust collection through a 4-in. port. A 1¾-hp, 110v motor provides the cutting power, and a large paddle switch is well positioned for quick shutdowns. A 30-in. Biesemeyer fence is included for a street price of $950. For information, go to www.deltawoodworking.com or call 800-223-7278.

SMALL MITER SAW WITH BIG CAPACITY

Makita's new LS0714 sliding miter saw takes a 7½-in. blade and weighs less than 28 lb. (about half the weight of its larger cousins), but it can crosscut a 2x12. The innovation is a four-bar sliding mechanism that offers 11¾ in. of capacity in half the space. This saw seems perfect for trim carpenters, flooring installers, or hobbyists with small shops.

The saw has a lightweight aluminum base, with positive stops at nine angle settings, and it slides smoothly and solidly. The motor draws 10 amps, and the street price is $450 (www.makita.com or 800-462-5482).

Photo, this page (right): Courtesy of Makita

TURNING

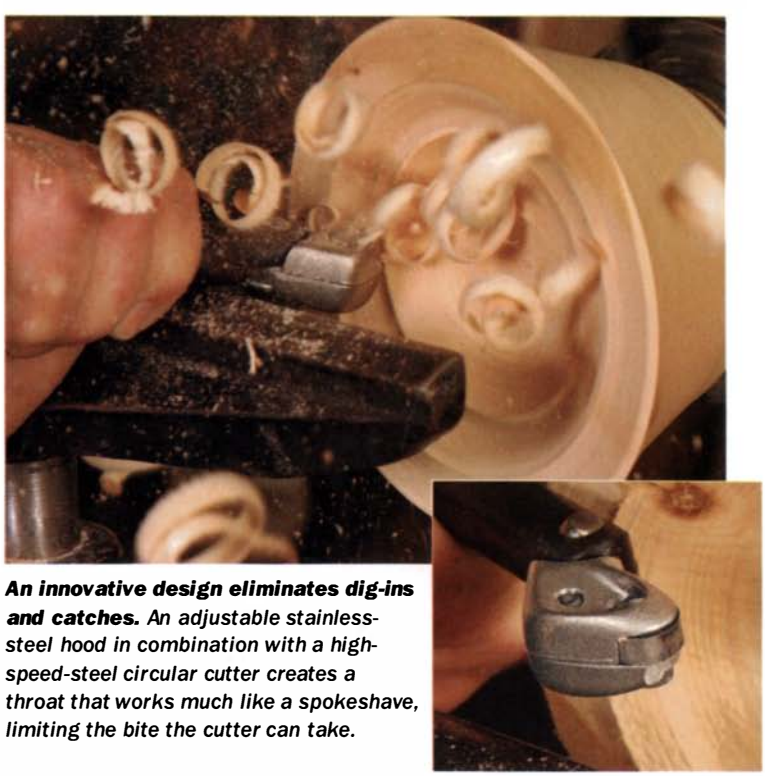
Hollowing tool won't catch

Hollow turning can be one of the more difficult skills for a wood turner to develop. Rolly Munro, a turner from New Zealand, has developed a tool that aims to change this. His new hollower tool, sold by Lee Valley, effectively eliminates the risk of dig-ins and catches—those annoying times when the tool snags and can ruin a workpiece. The tool uses an adjustable stainless-steel hood in combination with a high-speed-steel circular cutter, creating a throat or escapement that works much like a spokeshave, limiting the bite the cutter can take. You can adjust the hood to take a light or heavy cut, and change the cutterhead angle to get the best cut. An extension arm included with the tool allows it to reach inside larger vessels.

When one spot on the circular cutter gets dull, you can rotate it to expose a fresh edge, with no need to stop and sharpen the cutter in the middle of a project. The cutter holds an edge, and when it does get dull, a jig supplied with the tool makes easy work of sharpening. Two extra cutters are included with the kit.

In use, I found the hollow aluminum handle a bit lightweight, but the tool shaft is ⅝ in. dia. and more than 16 in. long, making the tool beefy enough for most hollowing needs. For turners who have shied away from hollow turning, the $235 price tag might be worth the investment toward mastering a new skill. You can find more information on Lee Valley's Web site, www.leevalley.com, or call 800-871-8158.

—Andy Barnum teaches turning to students at The Woodworkers Club in Norwalk, Conn.



An innovative design eliminates dig-ins and catches. *An adjustable stainless-steel hood in combination with a high-speed-steel circular cutter creates a throat that works much like a spokeshave, limiting the bite the cutter can take.*

TRADE SHOW (continued)

TWO LOW-COST CYCLONE DUST COLLECTORS

The cyclone-type dust collector is widely viewed as superior to the simpler type, because the cyclone collects everything but the finest dust before it hits the impellor, while allowing the use of a state-of-the-art pleated cartridge filter for the fine stuff. Before now, however, most cyclones had price tags over $1,000.

Both Grizzly (www.grizzly.com) and Oneida (www.oneida-air.com) are breaking that barrier with lower-cost, 2-hp cyclone systems capable of handling the needs of most small shops. The Oneida Dust Gorilla starts at $745, and the Grizzly G0440 is $745.

HAMMER RETOOLS ITS LINE OF COMBO MACHINES

Hammer USA, a division of the Felder Group, has retooled its entire line of European-style combination machines to make them more compatible with the North American market. Changes include beefier fences, reverse rotation for the shaper spindle, a dado system that keeps the blades at the edge of the sliding table, and a smoother-running saw with a stronger, 4-hp motor (other motors are 4 hp, too).

Hammer offers a variety of combinations and configurations in this heavy-duty line, including larger sliding tables for woodworkers who handle lots of sheet goods. Two notable combinations are the saw/shaper unit with a sliding table and the 12-in. planer/jointer combo that also accepts a horizontal-mortising table (www.hammerusa.com).

—FWW staff

Photos, this page: Matt Berger (left three); courtesy of Grizzly (right)

Make precise tapers, circles, wedges, and curves safely and easily

Five Essential Bandsaw Jigs

BY MICHAEL FORTUNE

The wall next to my bandsaw is festooned with jigs that expand the versatility of the basic machine. Though simple to build, each jig quickly and safely delivers the precise results I depend on. This article presents five of my favorites.

Build these jigs from Baltic-birch plywood or medium-density fiberboard (MDF), and adjust dimensions to fit your bandsaw. For the jigs to work correctly, the bandsaw's blade must cut parallel to the fence. To achieve this, I check that the bandsaw's tires are in good shape (no grooves or ridges), then set the fence parallel to the miter-gauge slots. Next, I adjust the angle of the upper wheel. If the blade's centerline aligns with the centerline of the upper wheel, it will cut parallel to the fence.

Check by ripping some scrap. You'll know it's right when the back of the blade is centered in its kerf. For more on bandsaw setup, see *FWW* #173, pp. 66-71.

Michael Fortune designs and builds furniture in Lakefield, Ont., Canada.

Photos: Marcia Ryan; drawings: Jim Richey

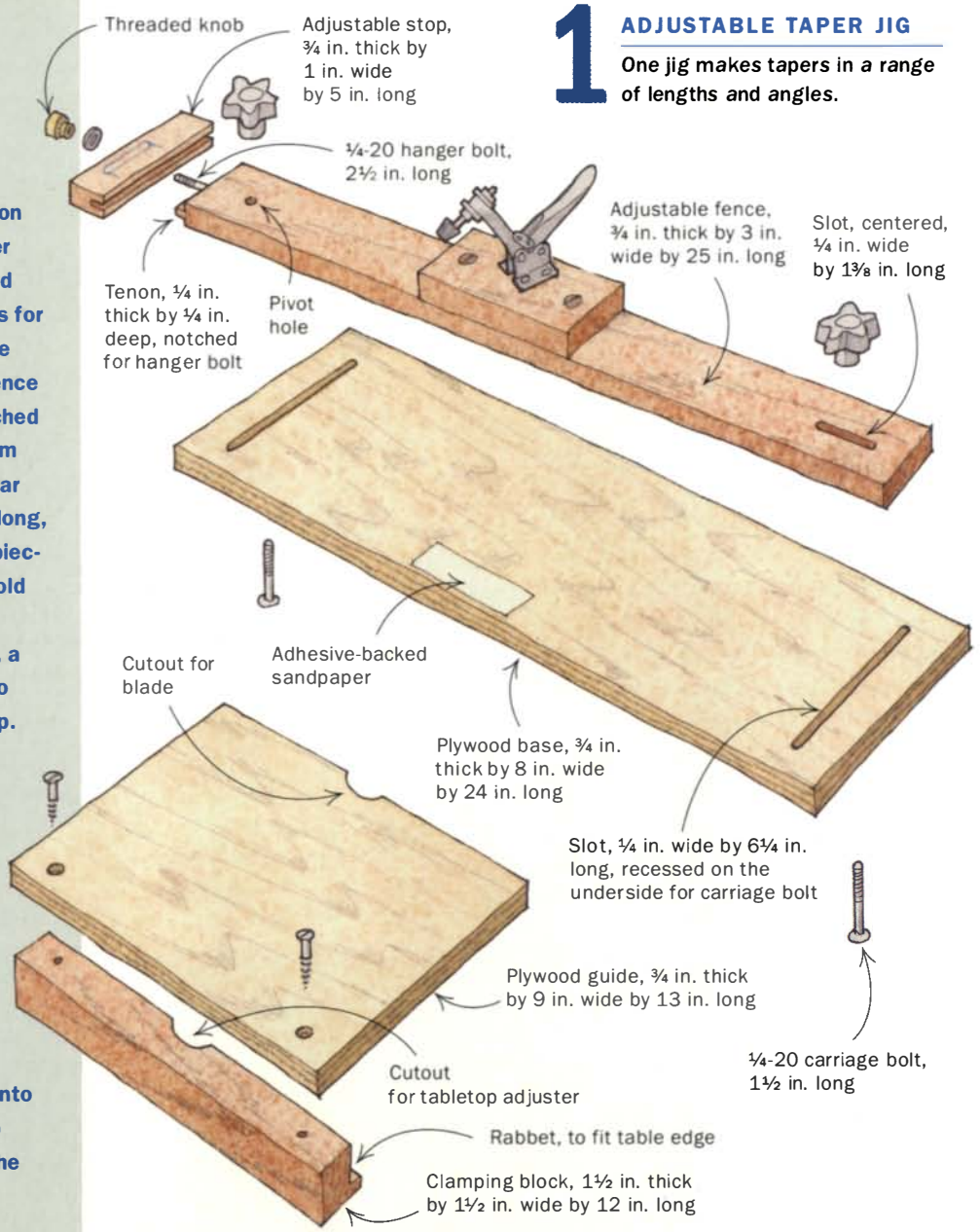
Rip tapers at any angle

A lot of woodworkers cut tapers on a tablesaw, but I think it's safer and just as fast on the bandsaw. And unlike a tablesaw, a bandsaw allows for stopped tapered cuts. My adjustable jig slides between the bandsaw's fence and a plywood guide, which is attached to the table and prevents the jig from wandering into the blade. Two similar jigs, one 24 in. long and one 48 in. long, accommodate different-sized workpieces. Toggle clamps can be used to hold any length of workpiece securely.

When tapering four sides of, say, a table leg, always rotate the stock so that the newly tapered side faces up. This way, for the first two cuts, the workpiece's flat sides bear on the jig and its fence. Rotating the leg for the third cut places a taper against the fence, but an offcut between the two will keep the leg straight. For the fourth cut, an offcut at the fence and another placed between the leg and the bed of the jig will support the leg. The offcuts are taped into position slightly forward of the stop to accommodate the wood lost to the bandsaw kerf.

1 ADJUSTABLE TAPER JIG

One jig makes tapers in a range of lengths and angles.



Jig setup. *Adjust the rip fence so that the jig is almost touching the blade. Then clamp down the plywood guide, which should just allow the jig to slide.*

Locate the taper's end. *Marks on the stock align with the edge of the jig, which is the cut line. After fixing the outfeed knob, adjust the stop to clear the blade.*

Locate the taper's start. *Align the beginning of the taper with the edge of the jig and tighten the infeed knob.*

Make circles of all sizes

This is a useful jig that's also fun. The workpiece turns on the jig's pivot point and cuts circles and arcs with a wide range of radii. I thread the jig with a ¼-20 tap, so it will accommodate any size pivot point I care to grind from a bolt. They can range from the full ¼-in. diameter for heavier pieces, to a needle point for delicate work. To avoid a center mark on the stock, attach a sacrificial surface to the underside of the workpiece with double-sided tape.

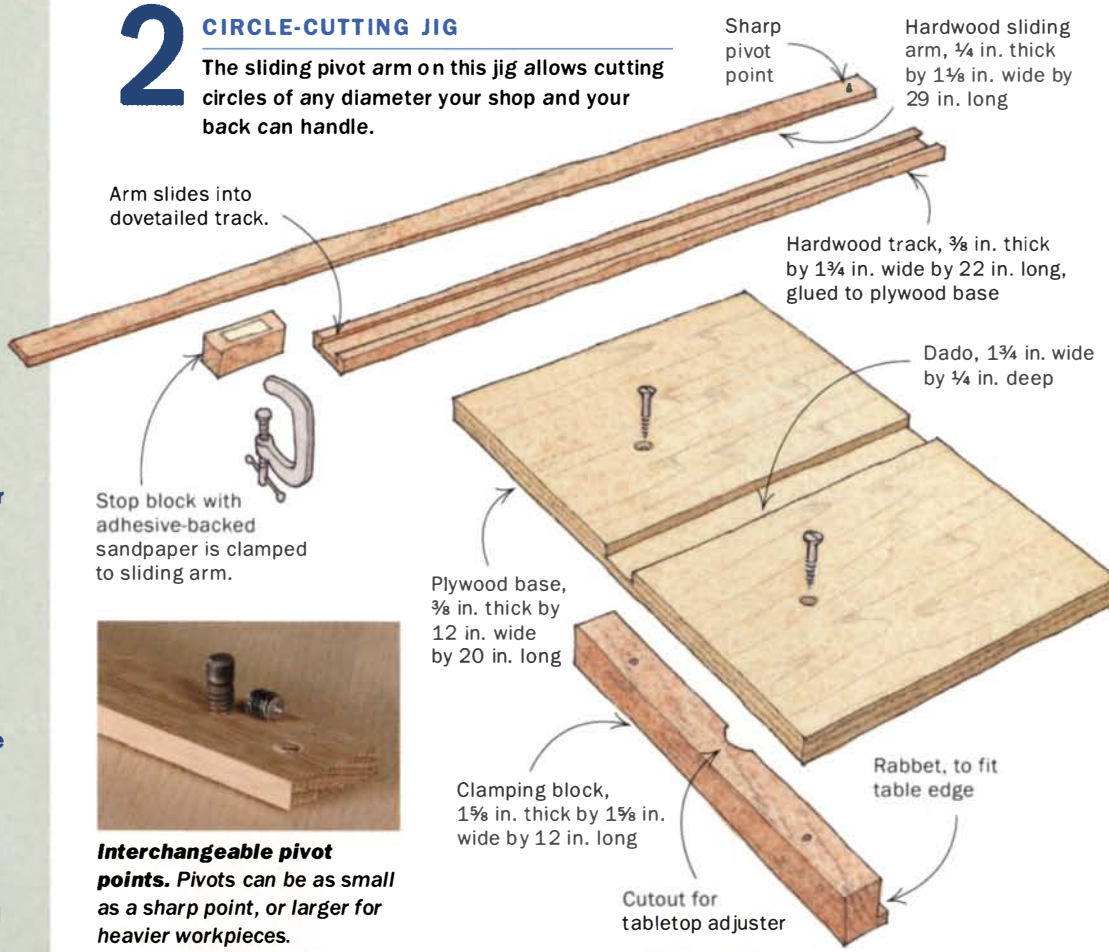
The pivot point is in a sliding arm dovetailed into the body of the jig. This arm can be moved gently forward while you rotate the stock into the blade, initially creating a spiral-shaped cut. A stop block clamped to the outboard end of the arm hits the body of the jig when you reach the correct radius, and only then does the blade begin to cut in a circle.

Make the track and sliding arm of a hard and stable wood. The sliding arm and track are dovetailed so that the arm does not tip out of the track, and the bearing surfaces are waxed. The track could be dovetailed directly into the body of the jig, but it is easier and will remain more accurate if a strip of hardwood is dovetailed, then set into a dado.

Keep in mind: The bandsaw blade must be narrow enough to cut the desired radius, and the cutting edge of the teeth must align with the centerline of the pivot point on the sliding arm. If the pivot is forward or back of the teeth, the blade will not cut freely and the circle will not be true.

2 CIRCLE-CUTTING JIG

The sliding pivot arm on this jig allows cutting circles of any diameter your shop and your back can handle.



Interchangeable pivot points. *Pivots can be as small as a sharp point, or larger for heavier workpieces.*

Attach the stop. *After measuring the distance from the pivot point to the blade (circle radius), clamp the stop on the underside of the arm at the end of the guide track (above left).*

Spiral into the circle. *With the saw running, gently push the arm forward while rotating the stock into the blade (above right). Once the stop reaches the end of the guide track, the blade starts to cut the actual circle (right).*

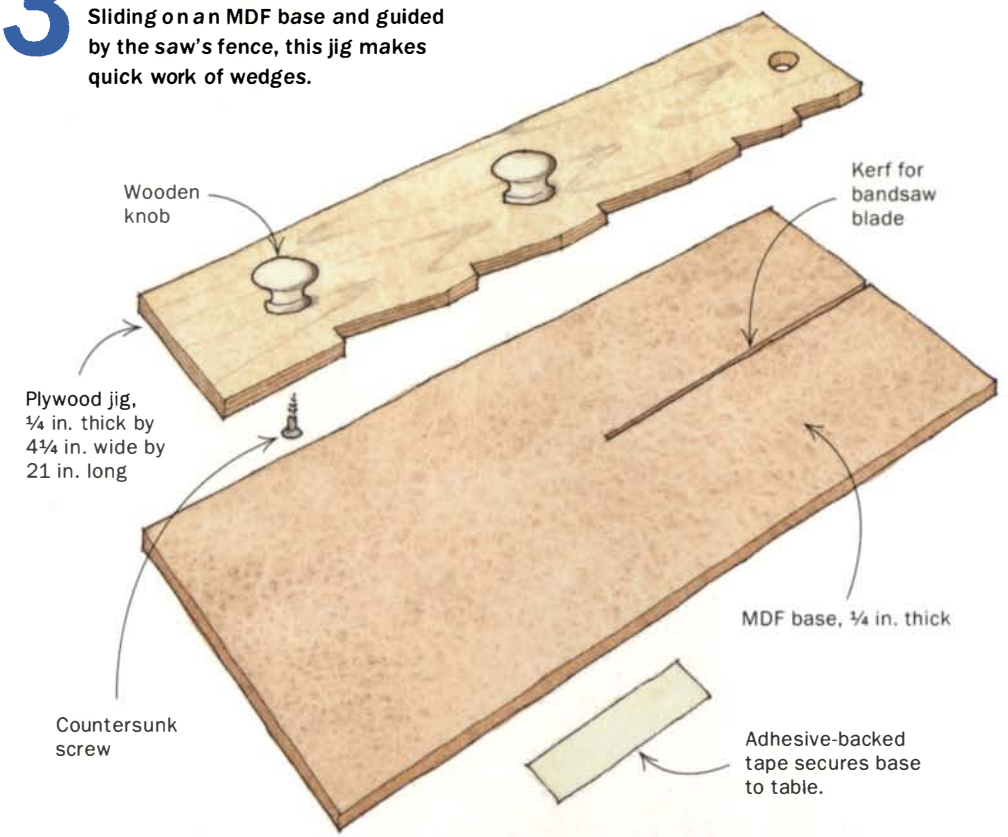
Cut small wedges safely

This simple and safe jig allows the cutting of identical wedges. The jig rides against the fence, which is set so that the blade just misses the jig. Notches the size and shape of the wedges are cut in the jig, and they hold the stock as it's cut. As a new size of wedge is needed, I add a new notch to the jig. For repeat projects, each notch is labeled with the project name and the dimensions of the wedge.

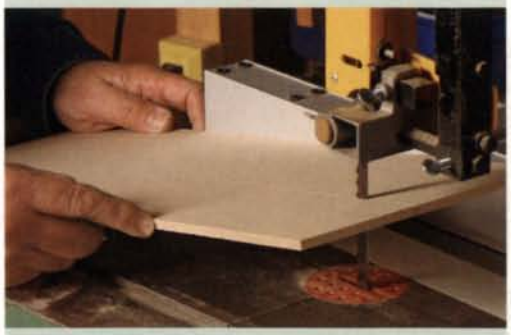
I start with a piece of stock that's crosscut to the length of the wedge, and flip the blank over with every cut. The MDF base serves as a zero-clearance throat plate that stops the wedges from binding in the bandsaw's more open throat plate. When the stock gets too small to handle safely, I switch to a new piece or use a push stick.

3 TENON WEDGE JIG

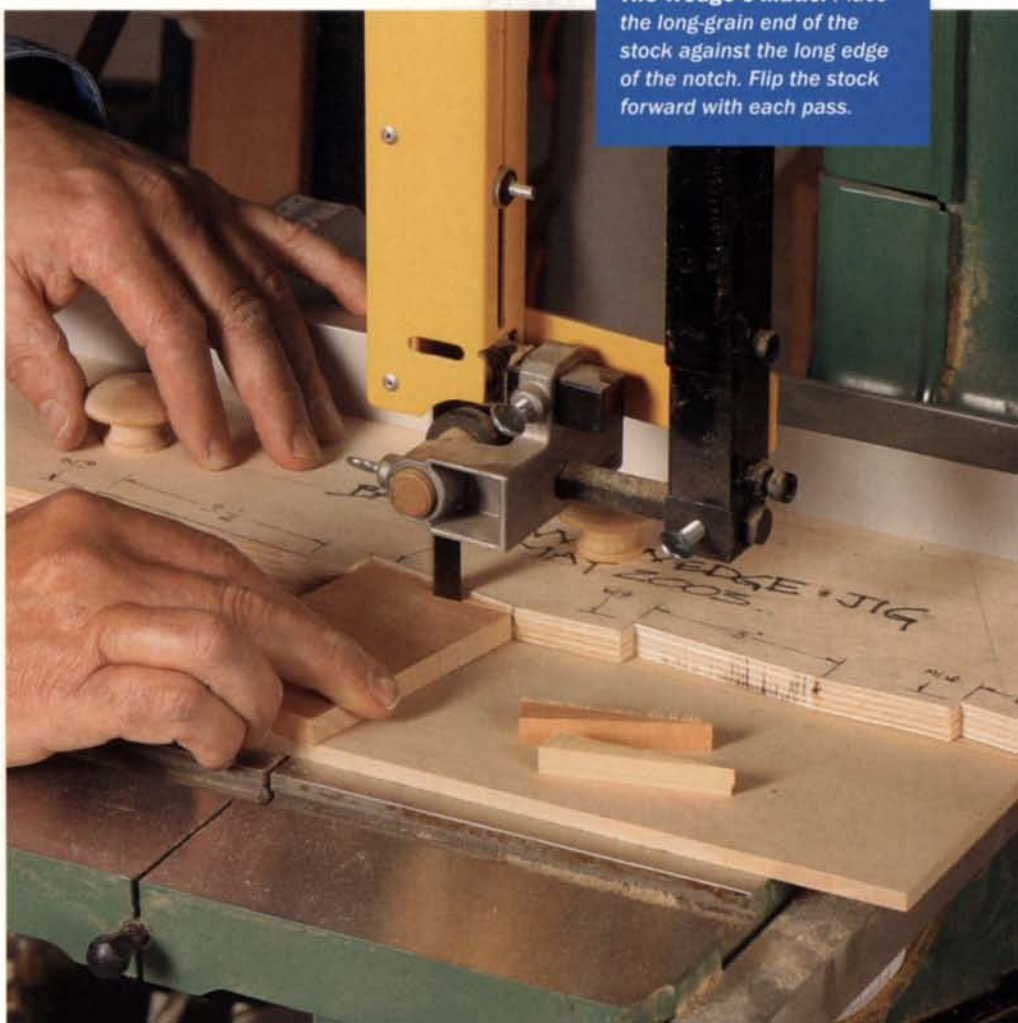
Sliding on an MDF base and guided by the saw's fence, this jig makes quick work of wedges.



Cut notches on the jig freehand. *Draw the wedge on the jig, by tracing it or by determining its angle or its length and width. Clearly mark these measurements on the jig.*



Small wedges require a zero-clearance throat plate. *Attach a piece of ¼-in. MDF on the table with double-sided tape to prevent pieces from getting trapped in the throat plate.*



The Wedge-o-matic. *Place the long-grain end of the stock against the long edge of the notch. Flip the stock forward with each pass.*

Safely reproduce curved shapes

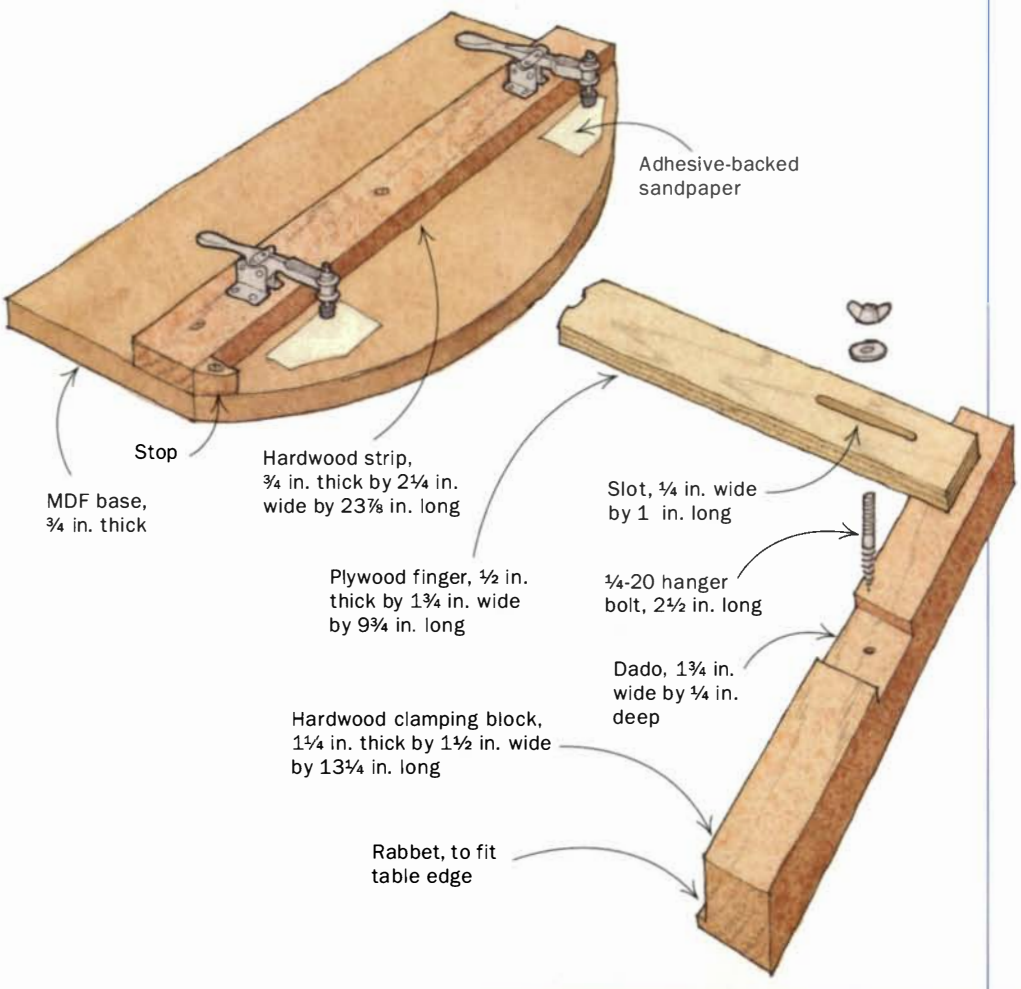
Finger jigs are used to guide carefully made patterns on the bandsaw. The finger spaces the pattern just slightly away from the bandsaw blade, leaving a small amount of material to be worked by hand, or as I frequently do, shaped by a router outfitted with a flush-trimming bit. The pattern works with both the bandsaw and the router. This is a great technique for making multiples of curved chair parts such as ralls or stretchers.

The blade is positioned within the notch at the end of the finger. The distance the finger protrudes past the blade determines the amount of wood overhanging the edge of the pattern when the cut is complete. The ends of the finger should be curved slightly tighter than any curve on the pattern.

Simple, shallow curves can be bandsawn by clamping the finger jig directly to the table, and affixing the stock above the pattern (4). For complex curves, it is better to position the pattern and the finger jig above the stock so that the contact between the finger and pattern is visible (5). It's a little trickier to secure the stock to the pattern in this case. If you don't mind the holes, screws through the face of the stock can be used. If holes are a problem, hold the stock to the pattern with wedges or dowels, as shown on the facing page.

4 JIG FOR SIMPLE CURVES

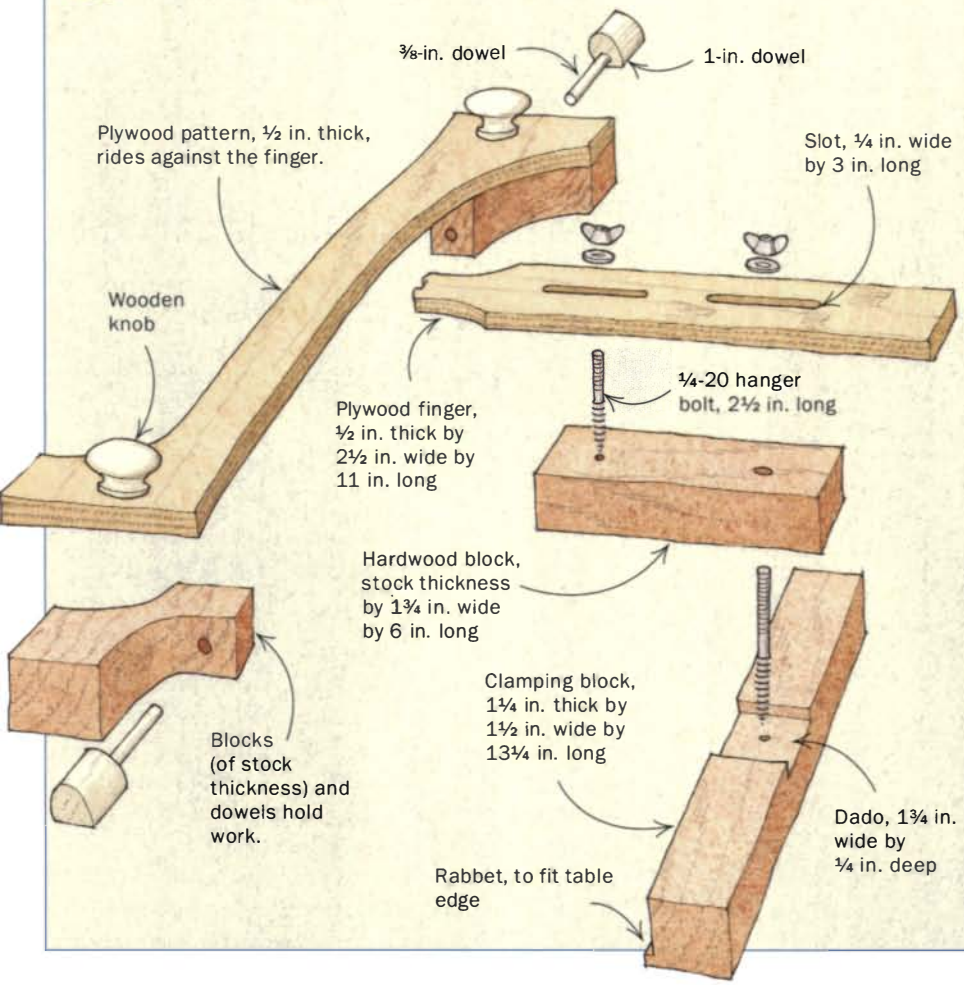
A notched plywood finger clamps to the table to guide a pattern, which has the workpiece clamped onto it.



The notched finger jig surrounds the blade. *For simple curves, the finger rests on the table, and a short bolt holds it in the dado of the clamping block.*

5 JIG FOR COMPLEX CURVES

Raising the guide finger and the pattern makes complex curves easier to cut.



Raise the finger to cut complex curves. *Adding a block to raise the finger jig, and placing the pattern atop the workpiece, makes it easier to keep the pattern on track.*

Quickly clean up the bandsawn edges. *A pattern-routing bit rides along the pattern, trimming the workpiece to its final shape.*

Toggle clamps secure the work. *The pattern rides along the finger jig to guide the cut. The notch in the finger jig accommodates the blade and protects the pattern from damage. The finished cut overhangs the pattern (above). The distance from the end of the finger to the teeth determines the width of the overhang.*

Wall Cabinet in Cherry

Power tools deliver easy, attractive dovetails and door joinery

BY MATTHEW TEAGUE

Most every home has a narrow wall—usually at the end of a hallway or beside an entry door—where nothing seems to fit. This piece was designed for such a space. I keep tall vases in the cabinet and candles in the lower drawer, but it can be adapted easily to all sorts of needs. Add a few drawers, and you have a good spot for sewing supplies. With more shelves, this piece makes a handsome spice cabinet; the lower drawer is perfect for storing teas or loose spices.

Instead of using elaborate moldings, raised panels, or an arched door, this cabinet design highlights the basic joinery that is the standard in quality woodworking. Traditional dovetail joinery holds the case together, while sliding dovetails lock the shelves into place. The door is a simple frame-and-panel assembly, but I chose bridle joints instead of traditional mortises and tenons because the exposed joinery complements the through-dovetails on the case. Instead of cutting a raised or fielded panel, I opted for the clean look of a flat panel.

An efficient method for dovetailing the carcase

I cut the dovetails with a combination of traditional methods and power tools. The tails are cut first, using a ½-in. by 14° dovetail bit and a shopmade sled that is run against a fence on the router table. The first and last pins should be inset about ⅜ in. from the ends, with the other three pins spaced evenly between them.

Using this cutting method, you need only mark the centerline of the cuts (see photo, p. 46) and set the router bit to the exact height of the mating stock. This

Photos, except where noted: Tom Begnal; this page: Kelly J. Dunton

CHERRY CABINET

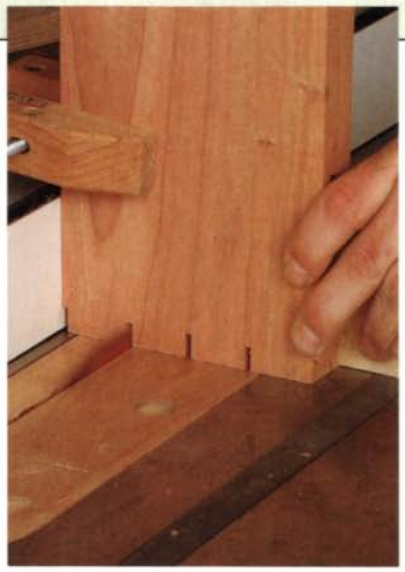
The small size of this project makes it ideal for practicing dovetails and learning a quick and handsome frame-and-panel joint.

Drawing: John Hartman

Router techniques speed dovetailing

CUT THE TAILS FIRST

After laying out the centerlines, remove some of the waste on the tablesaw and then use a router table setup to form the tails.



Lay out the tail centerlines. *A single line is all that's needed to mark the tail centerlines (left). On the tablesaw, use the miter gauge with a tall auxiliary fence to make a sawcut at each centerline (right).*

Cut the dovetails on the ends of the case sides. *Using the router table equipped with a dovetail bit, and a sled to support the stock, the dovetails are cut in short order.*

is a lot of material for the router bit to remove in one pass, so I remove a little at the tablesaw first. Holding the stock upright against the miter gauge or crosscut sled, I take a single pass split on each centerline at the tablesaw. The rest of the stock is cut with a single pass through the router bit. Be sure that you clamp the stock to the sled before routing, but don't worry if the tail spacing is slightly irregular; any irregularities in the work will actually do a better job of mimicking traditional hand-cut joinery.

To start cutting pins, use a marking gauge set to the thickness of the sides and mark both ends of the top and bottom to establish the baseline of the dovetails. Clamp the pin stock in the vise, align the ends squarely, and use a marking knife to mark out the pins from the tails (see photo, facing page). Then trace all the cut lines with a pencil so that they will be easier to see when cutting. Saw the pins by hand, then clean up the excess stock with a router set to cut as deep as the top and bottom are thick.

To rout out the bulk of the waste and establish a baseline for the tails, use a simple right-angle jig or large backer block clamped to the end of the stock; the block is used to help register the base of the router as you remove the waste (see photo, facing page).

Once the pins are cut, you'll probably need to trim a little here and there. It's best to trim the pins instead of the tails, which have a tendency to split as you pare them to size. Once trimming is complete, the pins and tails should fit together with firm hand pressure or a few light mallet taps.

If you've got the hinges in hand, go ahead and mortise the sides of the case to accept the hinges. You could do this later by hand, but it's easier to do now with a router.

Sliding dovetails secure the shelves

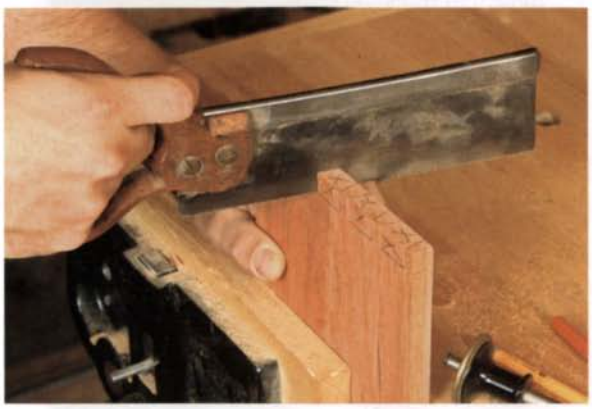
At this point, you're ready to cut the sliding dovetails that hold the shelves. Again, start by marking out the centerlines of the shelf locations on the case sides. It's a good idea to remove a little of the stock at the tablesaw before routing.

Cut the dovetail grooves first, then assemble the case—Because this is such a small cabinet, I cut the dovetail grooves on the router table. Use the same bit you used to dovetail the carcase. Position the bit in the router table so that about ¼ in. is exposed, and use a square backer board. The pusher board not only holds the case sides square to the fence, it prevents

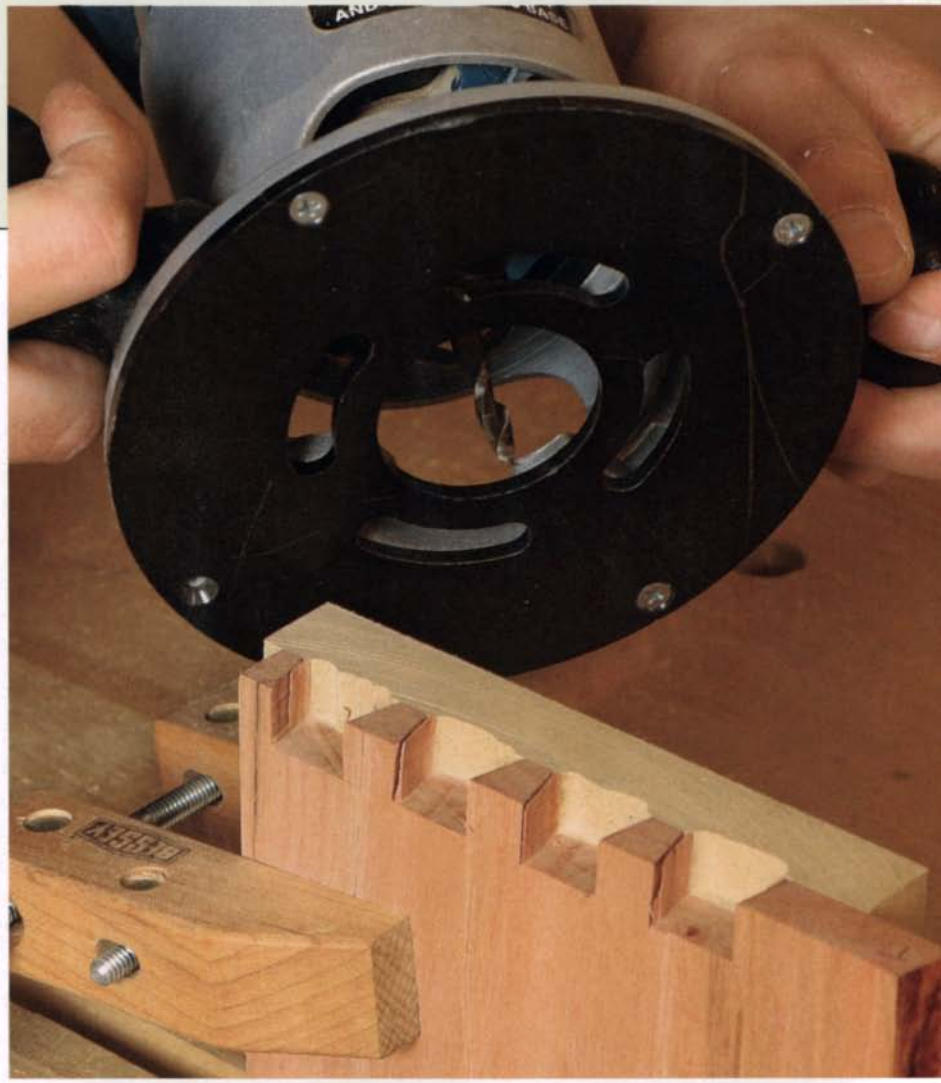
USE THE TAILS TO MARK THE PINS

Saw right to the lines and use a router freehand to remove almost all the waste. A bit of chisel work finishes the job.

Mark for the pins. *Use a marking knife to scribe the pin lines on the ends of the top and bottom.*



Hand saw the pin lines. *With the knife lines as a reference, use a dovetail saw to cut along each pin line.*



Rout away the waste. *After clamping a backer block flush with the top edge of the top or bottom piece, use the router and a straight bit to cut close to the dovetail-saw cut lines.*

tearout as you rout the tails (see photo, p. 48). Once the dovetail grooves are cut on the case sides, you can assemble the case. Be sure to glue it on a flat surface. After the clamps go on, double-check to make sure the assembly is square.

Cut the shelves to length and rout the dovetails on each end—With the case assembled, mark the shelf length directly from the case. Measure for a snug fit. Use the router table to cut the tail on each end of each shelf. There's no need to change the height setting from the dovetail-groove cut made earlier in the case sides.

Adjust the router fence so that only a small edge of the bit is exposed. Rout the tails on the ends by taking a pass on each face using the same jig you used to rout the dovetails on the case. Use a piece of test stock and adjust the fence in small increments to sneak up on a good fit.

When you're satisfied with the fit, rout each side of the two shelves and slide the shelves into place. A

Trim the excess. *After routing, a thin web of wood sometimes remains in the pin. Use a chisel to remove the web and shave away excess stock as needed.*

Test the fit. *Good-fitting dovetail joints should go together with only moderate hand pressure or a little persuasion from a mallet.*

Sliding dovetails are easy on a router table

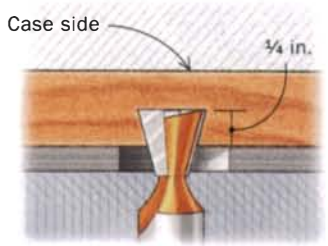
The router table and a single dovetail bit are used to cut the dovetail grooves in the sides and the dovetail on each end of the shelves.

Create the groove. *Cut the dovetail groove with the case side flat on the table. Use a pusher board to feed the workpiece and keep it square to the fence (above). Position the shelves vertically against the fence to cut the tails (below).*

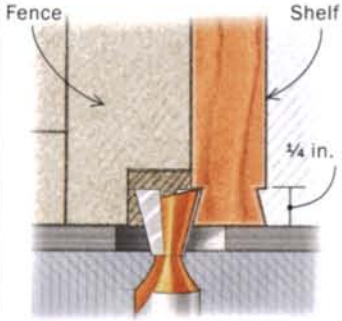
Add the shelves. *After the case is glued and clamped, the shelves are slid into the grooves (right). For easier assembly, Teague applies glue to the back half of the grooves and the front half of the dovetails.*

NO NEED TO CHANGE THE BIT HEIGHT

The router-bit height is the same no matter if you are cutting the dovetail groove in a side or the dovetail on the ends of a shelf.



ROUTING THE CASE



ROUTING THE SHELVES

drop of glue at the front and back of each shelf—applied as the shelf slides into the dovetail grooves—is all you need.

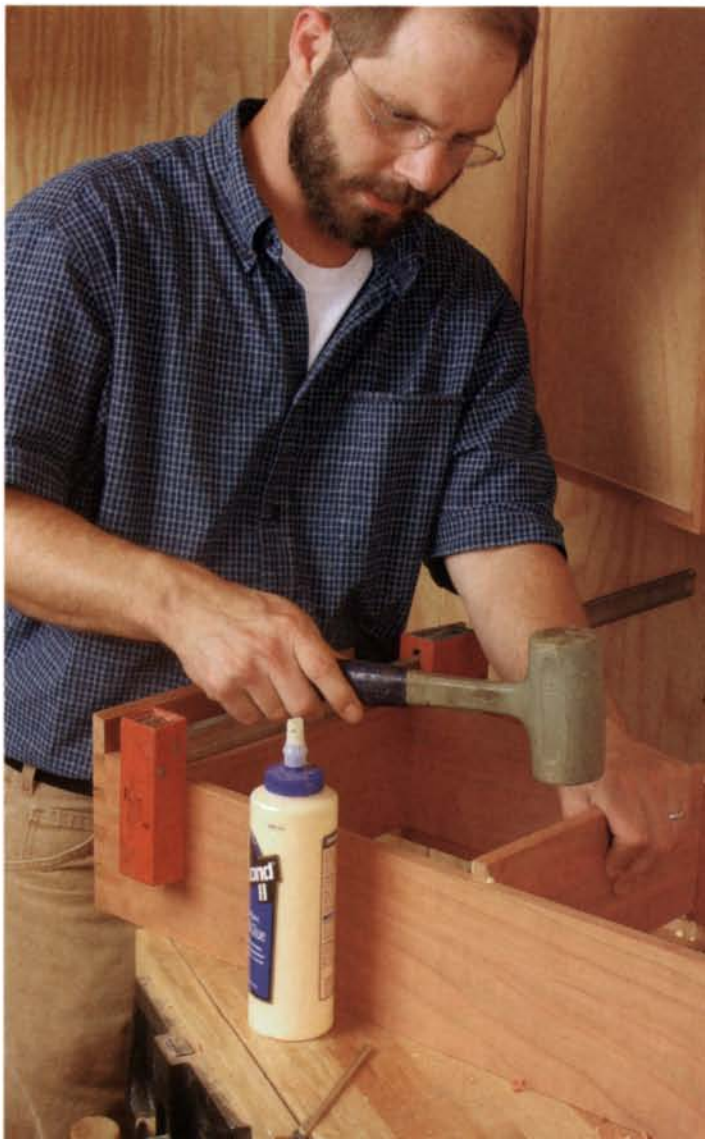
Rabbet the case to accept the back

After the case is glued up, I use a rabbeting bit on the router table to cut a ⅜-in.-wide by ⅝-in.-deep rabbet around the back of the case. To minimize the chance of splintering, stop the cut just short of each corner, then complete the rabbet with a bench chisel. Also, it's best to take about three light passes instead of trying to hog off all the stock in one pass.

The back is nothing more than a ¼-in.-thick panel glued and brad-nailed to the center of the top, bottom, and shelves. The back must be free to expand and contract with changes in humidity, so limit the glue to an area about 2 in. wide. Small strips of ⅜-in.-square stock are glued to the sides of the rabbets on the back of the case to secure the panel.

Mount case to wall with cleats—I used a simple two-piece cleat to hang the cabinet (see drawing, p. 45). When the cabinet is hung, the pieces interlock for a tight fit against the wall.

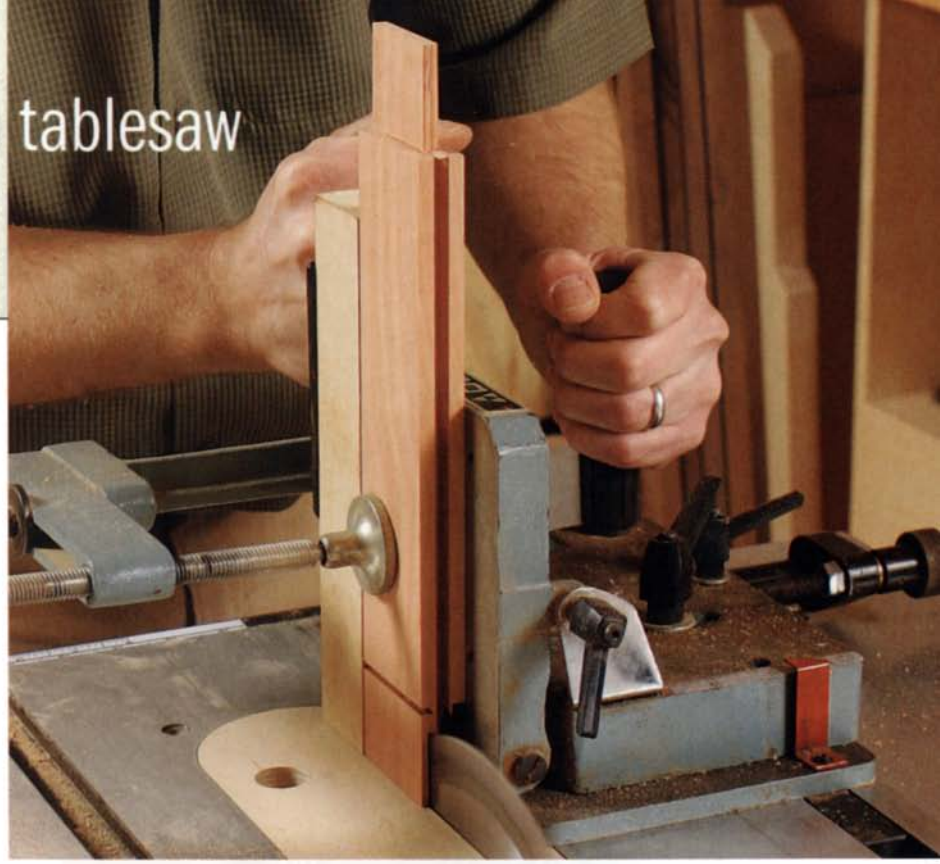
Attach one piece to the cabinet so that it butts against the underside of the case top. Use a couple of screws



Quick door frames on the tablesaw

With each stile and rail connected by a unique version of the mortise-and-tenon called a bridle joint, the door frame enjoys plenty of strength and good looks.

Cut the tenon shoulders on the rails. *After grooving the frame members and mortising the stiles, use the tablesaw to establish the tenon length on each rail.*



Cut the tenon cheeks. *With a tenoning jig supporting the rails on end, cut each tenon cheek. The jig also is used to cut mortises on each end of the stiles to accept the tenons.*

spaced about 2½ in. apart and drive them into the back edge of the cabinet top. Apply a coat of glue between the screws.

Shadowlines make a simple door interesting

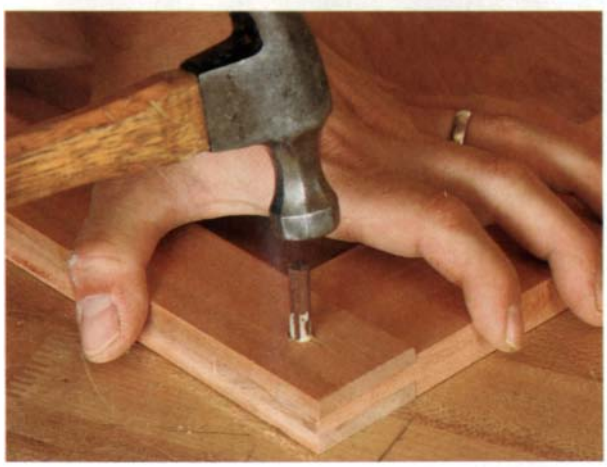
To build the door, the frame is grooved first at the tablesaw, and then the joinery is cut on the tablesaw using a tenoning jig. The jig can be either aftermarket or shopmade. I cut the open mortises on the stiles first, then cut the rail tenons to fit.

When the joinery has been cut, plane down the front face of the rails an extra ⅛ in. so that they will be slightly inset on the stiles.

The simple flat panel for the door is cut from ½-in.-thick stock, then rabbeted to fit into the frame. Start by gluing the center of the panel to the center of both rails. Add a few drops of glue to the mortises, then slide the stiles into place on the rails and panel.

Once the door is together, pegging the joints will strengthen the assembly and help frame the cabinet visually. For contrast, I used ¼-in. walnut dowel pins. To add the pegs, simply drill a ¼-in.-dia. hole just shy of the door thickness, then tap a length of dowel into the hole. The excess can be sawn off and then chiseled flush to the front of the door.

After assembling the door, test the fit against the case. If the assembly went together square, you should have a perfect fit. If necessary, trim it for a tight fit on the case using either a plane or the tablesaw. Since you've already mortised the case for the hinges, all that's left is to cut the mating hinge mortises in the door. I use a router to cut mortises, but a chisel works as well.



A dowel pin adds an interesting detail and a little extra strength. *Drill a ¼-in.-dia. by ⅝-in.-deep hole in the front face of the door, centered on the bridle joint, then glue a dowel pin into the hole.*

Adding a drawer

The lower drawer inside is joined using through-dovetails at both the front and back. You can use the same dovetailing method you used for the case.

I drilled an off-center ⅞-in.-dia. hole into the drawer face to serve as a finger pull. The hard edges on the finger pull are softened with a knife, and the whittled surfaces are a nice surprise when someone opens the drawer for the first time. Without fail, they pull out the drawer and take a closer look. That closer look is as near to a trophy as a woodworker gets. □

Matthew Teague lives in Nashville, Tenn., where he builds furniture and writes about woodworking.

What was tested

To test the drill bits' durability, the author drilled more than 1,000 holes with each brand in hard maple and particleboard. The bits also were tested for the accuracy of their stated dimension, the efficiency of their design, and their chip-clearing ability.

Brad-point Bits

Eight brands, 8,000 holes, surprising results

BY CHRIS A. MINICK

I learned long ago that when it comes to drilling wood, reach for a brad-point bit rather than a standard twist bit. The low-angled, blunt point of a twist bit can skate across the wood and leave a curled scar in its path, and makes it difficult to locate a hole accurately. The profile of a brad-point bit creates a much cleaner hole (except in end grain), while the brad in the center of the bit makes it easy to place the bit accurately on layout lines.

In my early woodworking days, I tried cheap bits with predictably bad results. Since then I've switched to medium-priced sets, but often wondered if budget-priced bits have improved, or if I should invest in a high-priced set. So I devised a test to find out.

How the bits were tested

I purchased eight brands of seven-bit sets ranging in price from $6 to $63. The bits increased in 1/16-in. increments from 1/8 in. to 1/2 in. Although I tested several sizes, I selected the 3/8-in. bit for the most exhaustive testing because it is the one most often used for dowel joints and screw-plug holes.

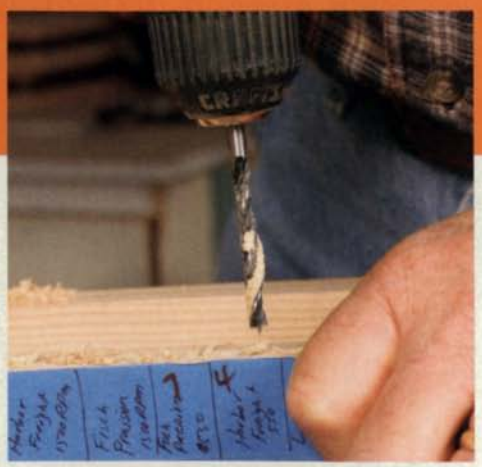
I drilled more than 1,000 holes with each brand to evaluate the bit's longevity, its chip-clearing ability, the crispness of the entry and exit holes it created, and the diameter of the hole it produced compared to the drill bit's diameter. I used both a benchtop drill press set at 1,550 rpm and a cordless drill operating at 500 rpm.

Testing for durability—To see how well the 3/8-in. bits fared over time, I used them straight from the package to drill two holes, 1/2 in. deep, into 3/4-in.-thick hard maple and lauan plywood. Then I drilled two holes through the same materials. At the end of the tests, I drilled a second series of holes adjacent to the first set to compare before-and-after performance.

In between, I drilled 100 holes, 1 in. deep, in hard maple; 875 holes, 1/2 in. deep, in particleboard; and another 100 holes, 1 in.

Checking the size. *Minick used calipers to check the size of each bit as well as the diameter of the hole that it drilled to test for runout.*

Drill bits get hot. *A temperature probe measured how hot the bits got when drilling into hard maple. Well-designed bits stayed coolest.*

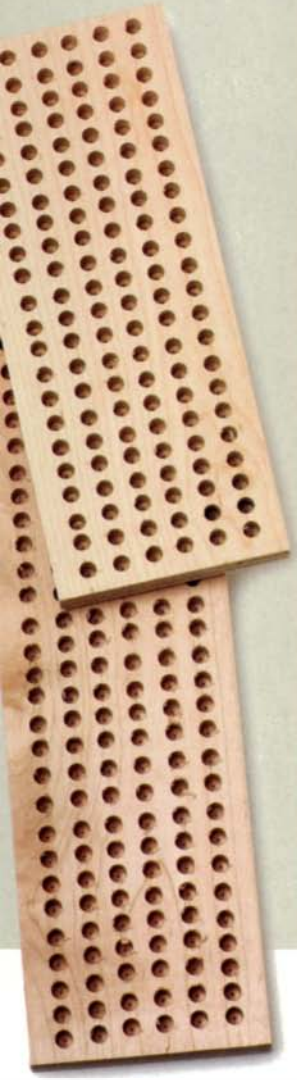


Clogged bits can't cut it. *Some of the less-expensive bits were unable to clear the chips when drilling into pine.*

Photos: Mark Schofield

Test results

The ⅜-in. bits were selected for the most rigorous tests, drilling 200 holes in hard maple and 875 in particleboard. The 3⁄16-in. bits were tested for clogging in pine; the ½-in. bits were tested on white oak.



BRAND	HARBOR FREIGHT	TOOL SHOP	FISCH PRECISION
SUPPLY SOURCE	www.harborfreight.com 800-423-2567	Menards stores (not available online)	www.7corners.com 651-224-4859
COUNTRY OF ORIGIN	China	China	Germany
PRICE (7-bit set)	$6	$8	$19
BIT TYPE	Spade	Spade	Spade
BIT DIAMETER (⅜-in. bit)	0.371 in.	0.371 in.	0.371 in.
HOLE DIAMETER (last hole)	0.375 in.	0.380 in.	0.372 in.
AVERAGE TEMPERATURE (first 100 holes / last 200 holes)	254°F / 268°F	157°F / 194°F	225°F / 244°F
ENTRY HOLE RATING (maple / plywood)	Good / Good	Good / Good	Fair / Fair
THROUGH-HOLE RATING (maple / plywood)	Poor / Poor	Good / Fair	Excellent / Good
CHIP CLEARING (pine, 3⁄16-in. bit)	Poor	Poor	Excellent
HOLE DEPTH (white oak, ½-in. bit)	0.010 in.	0.052 in.	2.000 in.

Incidentally, it takes almost two hours and one cup of coffee to drill 1,083 holes.

deep, in the maple for a total of 1,083 holes with each bit. Incidentally, it takes almost two hours and one cup of coffee to drill 1,083 holes.

How hot did the bits get? Heat is generated from friction and is directly related to drill-bit design. Generally, bits that drill by scraping or have poor chip ejection will get hotter and dull faster than those that cut instead of scrape. Drilling in hard maple, I evaluated the heat buildup by checking the temperature of each bit every 20 holes with a laboratory surface-temperature probe. I averaged the results from before and after I drilled the particleboard to see whether this material had dulled the bits and increased their temperature.

Testing drill-bit design—To see how the bits performed when underpowered, I used my cordless drill to test for chip clearing and maximum hole depth. I used each 3⁄16-in. bit to make a 1-in.-deep hole in pine. Clogged flutes will bog down an underpowered drill. I rated the bit excellent if no clogging was evident and poor if the flutes clogged before the bit reached the full depth.

I also drilled a hole in 2-in.-thick, rock-hard white oak with the ½-in. bit from each set. I recorded the depth of the hole where the drill quit cutting.

The design of the drill tips affected the results

The profile of the tips fell into one of three categories: spade-shaped, W-shaped, or spur-shaped (see photos and chart, above).

Spade-shaped bits performed worst—The least-expensive sets in this test, Harbor Freight, Tool Shop, and Fisch Precision, drill by a combination of cutting and scraping, generating more fine dust than the other shapes. The resulting holes were also more ragged. In the chip-clearing test, Harbor Freight and Tool

FISCH "VORTEX D"	WOLFCRAFT	CARBIDE TIPPED	LEE VALLEY HSS	FOREST CITY
www.toolcenter.com 888-778-9663	www.hardwarestore.com 800-282-4393	www.highland hardware.com 800-241-6748	www.leevalley.com 800-871-8158	www.highland hardware.com 800-241-6748
Germany	China	China	USA	USA
$63	$19	$25	$38	$58
W	W	Spur	Spur	Spur
0.375 in.	0.373 in.	0.375 in.	0.375 in.	0.376 in.
0.377 in.	0.375 in.	0.377 in.	0.376 in.	0.376 in.
146°F / 175°F	252°F / 281°F	154°F / 207°F	185°F / 192°F	178°F / 204°F
Good / Poor	Fair / Poor	Excellent / Excellent	Excellent / Excellent	Excellent / Excellent
Excellent / Good	Good / Fair	Good / Fair	Excellent / Good	Good / Fair
Excellent	Excellent	Excellent	Excellent	Excellent
1.266 in.	0.669 in.	1.856 in.	1.415 in.	1.068 in.

Shop were the only brands that clogged to the point where they stopped cutting. The ½-in. bit from each set barely made a dent in the white oak. The center point on the Harbor Freight ⅜-in. bit was so far off center that my test board shook violently when the bit engaged the wood.

The Fisch Precision bit was only slightly better; it was the only bit that could bore through the entire 2-in. thickness of white oak and the only spade-shaped bit to produce a clean exit hole in the through-boring test. However, the entry hole it produced was very ragged and trumped any advantages this set may have had.

As a group, this bit shape required more effort to drill a hole, so much so that my elbow hurt after 1,083 holes with the Tool Shop bit. The adage "You get what you pay for" rings true again.

W-shaped bits had mixed abilities—If chip-free exit holes, even in splintery plywood, are important to you, then the Fisch Vortex D is the set to buy. However, the Wolfcraft bit bored a hole almost as clean for about one-third the price. The entrance holes for both bits were slightly ragged, though. Chip clearing was excellent for both, but the Wolfcraft bit penetrated only about ⅝ in. into the white oak before the drill bogged down. The oak case for the Fisch set of bits is a nice touch but hardly justifies the high price, especially since the performance of these bits in the entry-hole test was worse than that of the less costly sets.

Spur-shaped bits were best overall—The carbide-tipped bits from Highland Hardware, Lee Valley's high-speed steel (HSS) set, and the Forest City brand all cut clean, accurate holes in maple and plywood. Chip clearing was not a problem and all drilled to a respectable depth in the white oak, leaving flat-bottomed holes similar to the Forstner bits that they resemble. The Lee Valley bits penetrated easily and produced a nearly chip-free exit in hard maple.

Highland Hardware's carbide-tipped bits have a slightly different design than the others. While the tip of the ⅜-in. bit measured 0.375 in., the shank was reduced to 0.350 in. This design gives excellent chip removal but is unsuitable for a doweling jig.

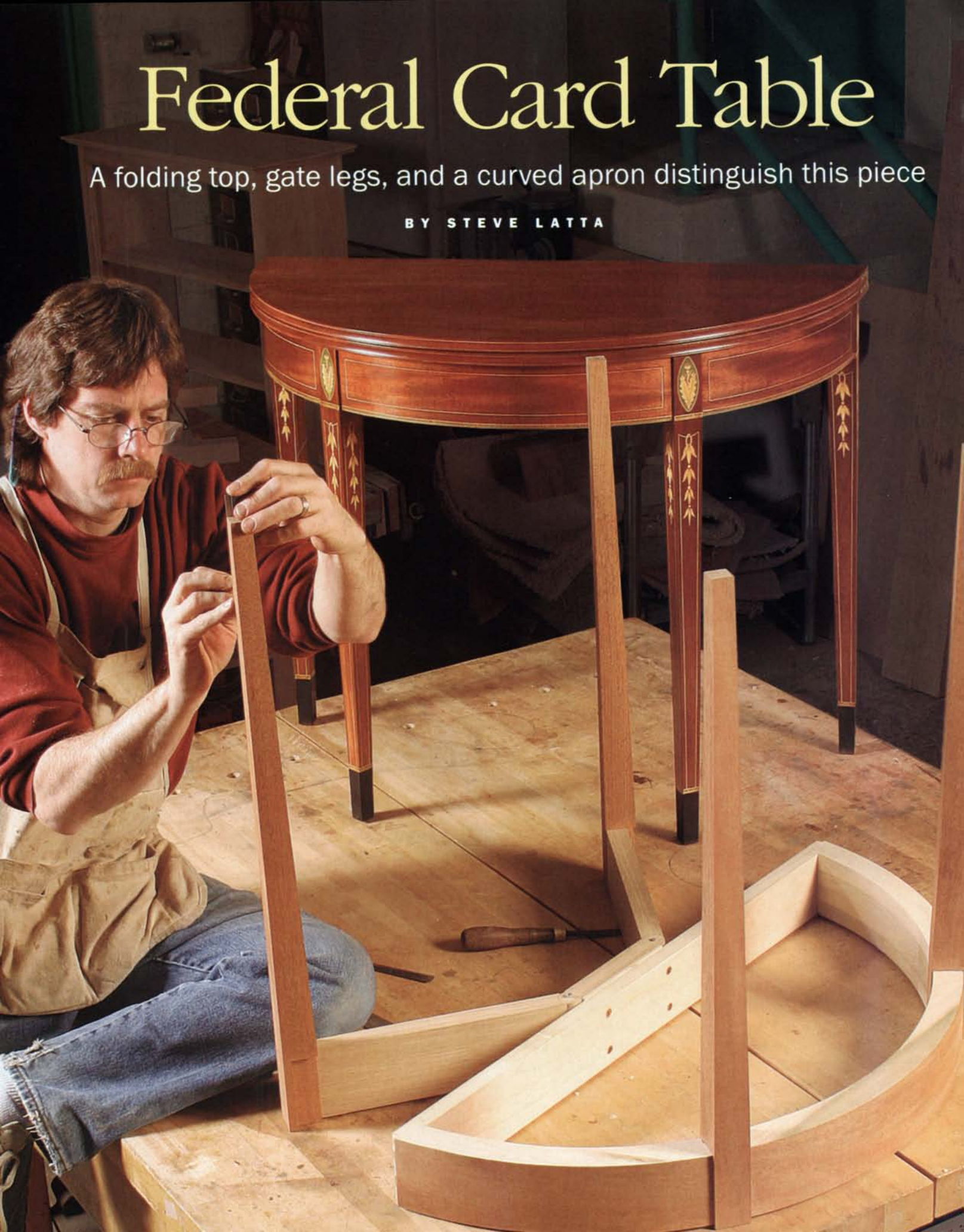
My curiosity is quenched. The Lee Valley HSS bits impressed me the most, with their clean cutting action and flawless holes. I now own a set of bits that cost less than $40 and should last a lifetime. If anybody has a use for lots of perforated boards, let me know. □

Chris A. Minick is a consulting editor.

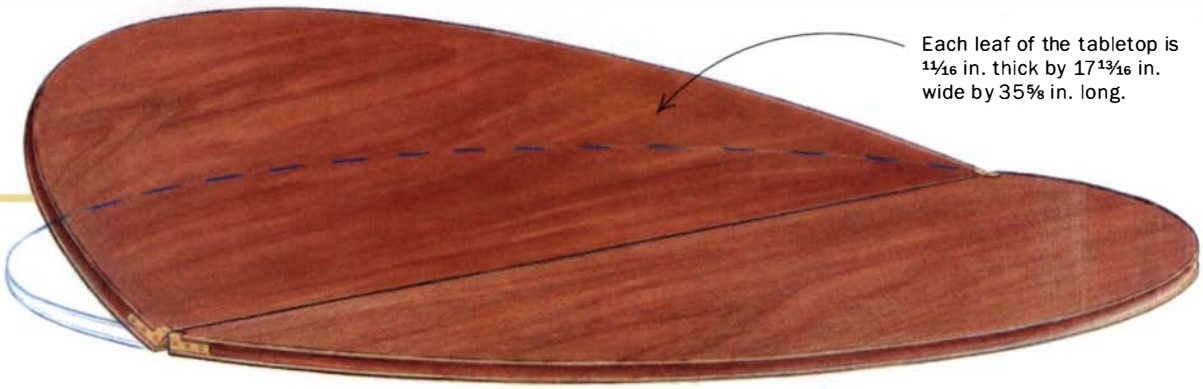
Federal Card Table

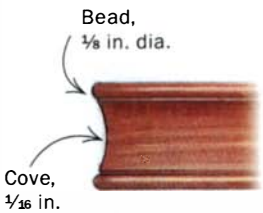
A folding top, gate legs, and a curved apron distinguish this piece

BY STEVE LATTA

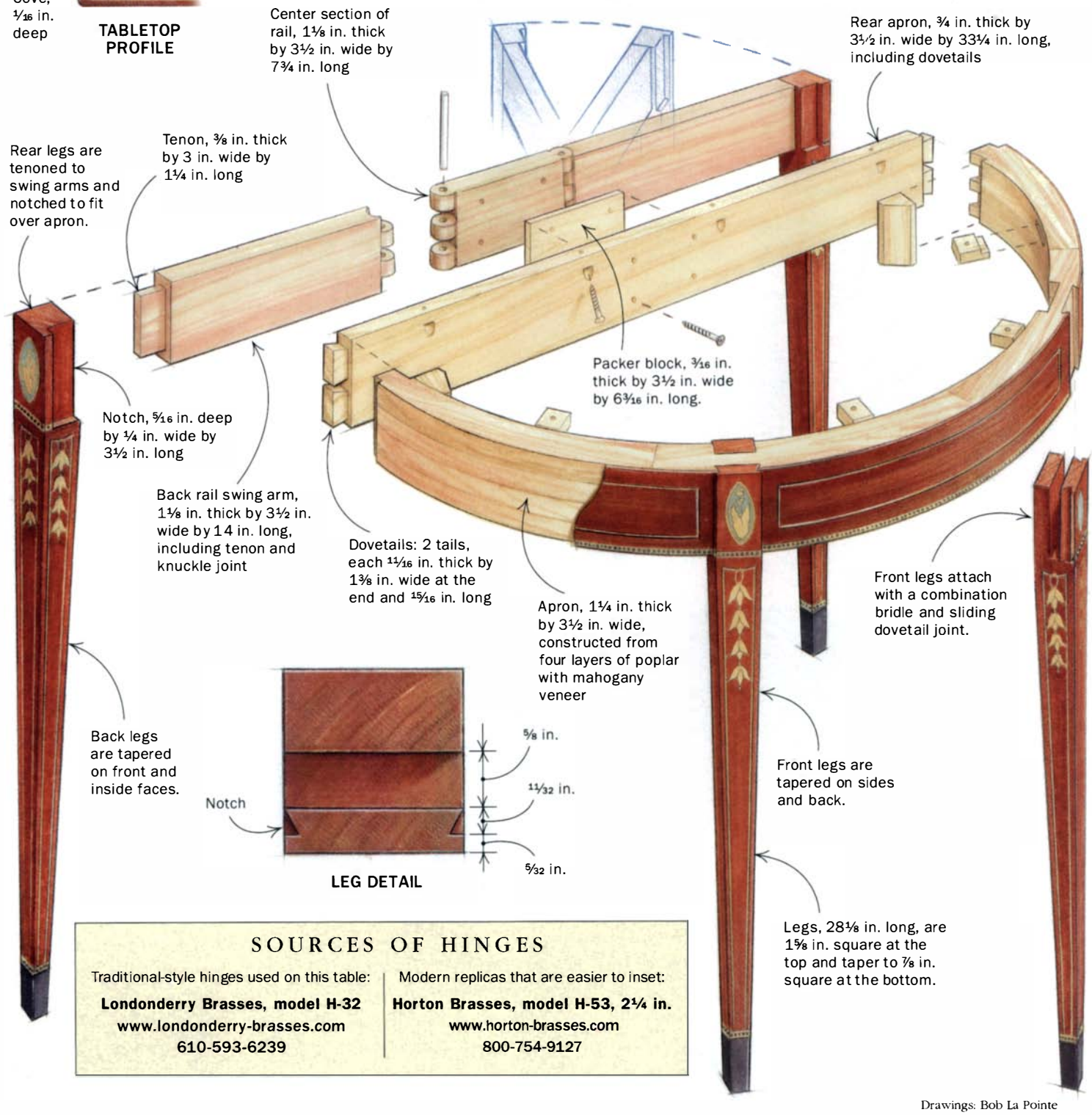


Gate-leg card table





TABLETOP PROFILE



LEG DETAIL

SOURCES OF HINGES

Traditional-style hinges used on this table:

Londonderry Brasses, model H-32
www.londonderry-brasses.com
610-593-6239

Modern replicas that are easier to inset:

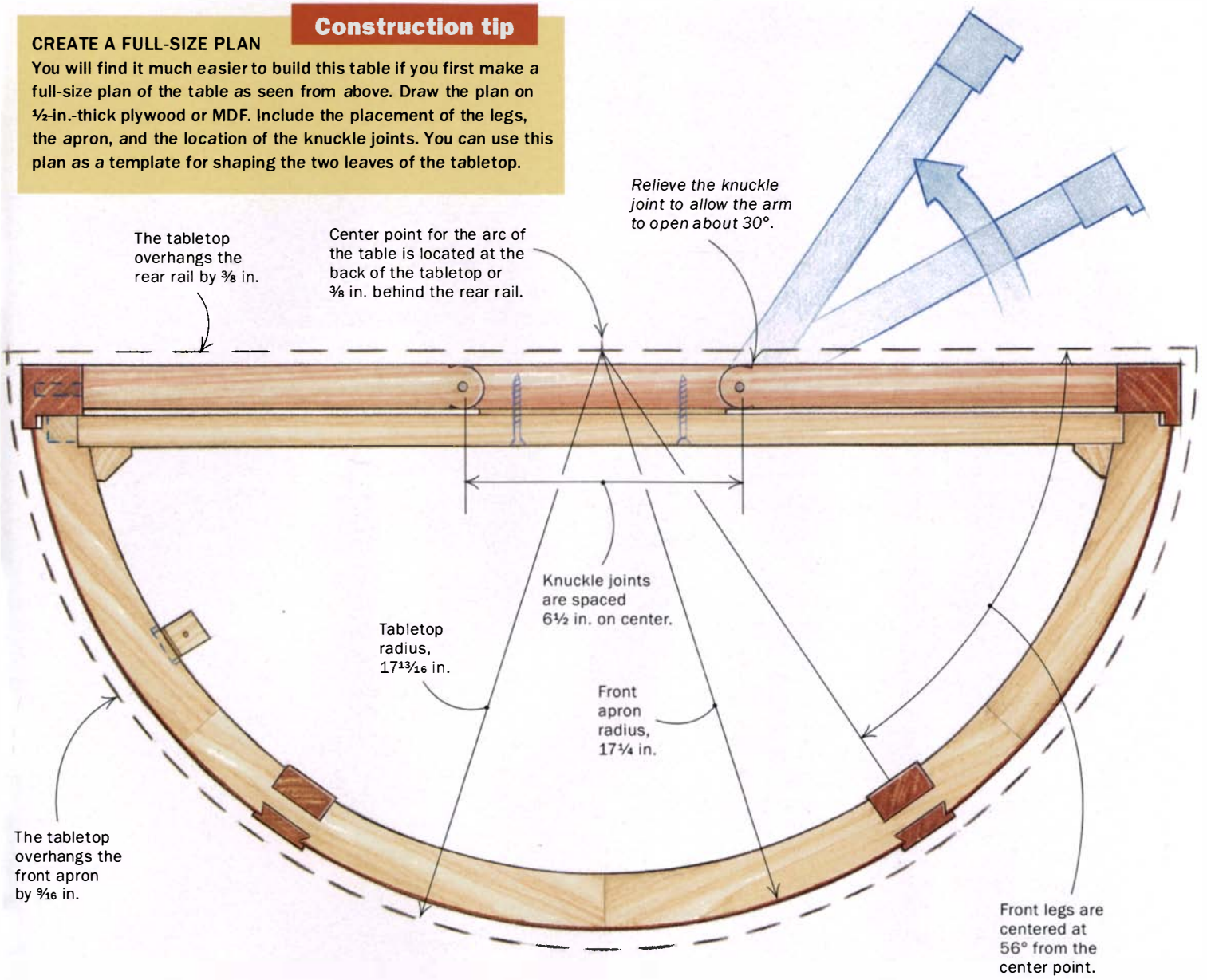
Horton Brasses, model H-53, 2 1/4 in.
www.horton-brasses.com
800-754-9127

Drawings: Bob La Pointe

Construction tip

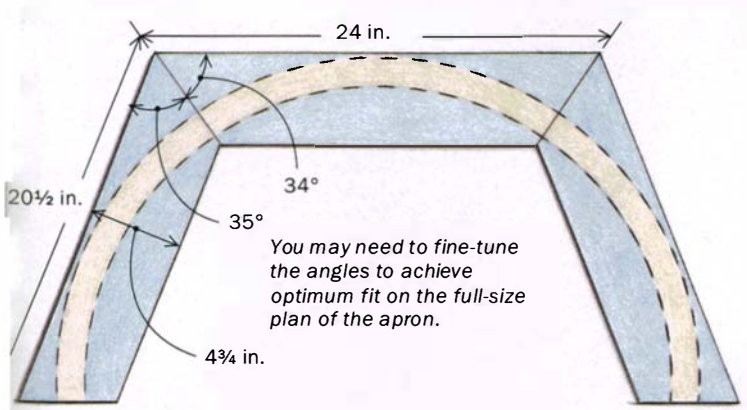
CREATE A FULL-SIZE PLAN

You will find it much easier to build this table if you first make a full-size plan of the table as seen from above. Draw the plan on ½-in.-thick plywood or MDF. Include the placement of the legs, the apron, and the location of the knuckle joints. You can use this plan as a template for shaping the two leaves of the tabletop.

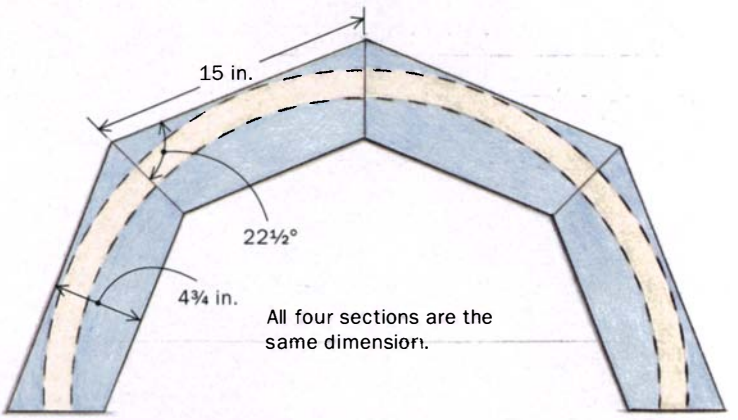


SEGMENTS OF THE BRICKLAID APRON

The semicircular apron of the table has a core of four layers of ⅞-in.-thick poplar laminated together. Each layer consists of three or four pieces, butted together and staggered in the manner of a mason building a brick wall. You will need templates for the three sizes of poplar sections needed to build the core. The first and third layers have three pieces: a long center section with two shorter side sections. The second and fourth layers are made of four equal sections. All the stock is 4 in. wide.



1ST AND 3RD LAYERS OF APRON



2ND AND 4TH LAYERS OF APRON

Demilune card tables are a favorite project of mine because building them involves tools and techniques both traditional and modern. Their ancestry dates to the early years of American independence when they were popular all along the Eastern Seaboard. True to the neoclassic passion for symmetry, they often were made in pairs and positioned to balance a doorway, alcove, or dominant piece of furniture.

During an age of newfound wealth and status, the nouveau riche used the level of ornamentation on their card tables as one way to flaunt their wealth. Price books and recovered invoices of the time set individual costs for stringing, bellflowers, ornamental ovals, and the like. With the intricacy of the inlay reflecting the status of the owner, the level of embellishment on period tables varies enormously. This table, based on Baltimore pieces, is stylish enough to remain unadorned, but the Master Class on p. 102 will guide you through adding stringing and banding appropriate to your tastes and skills.

The curved apron is bricklaid poplar

After you have made a full-scale drawing (see pullout), begin by building the core of the table's semicircular apron. This requires a full-size pattern made from ¾-in.-thick medium-density fiberboard (MDF). Cut the semicircle with a router mounted on a radius jig, taking the radius from your drawing. Remember to deduct the thickness of the outside veneer. Extend the curve well beyond 180°, then mark the location of the legs, the inside edge of the apron and the location of all of the bricklaid joints.

Cut the sections for the first layer (see photos, next page), and then reinforce the joints with double splines for extra strength. Because these joints will be hidden by the front legs, irregularities showing on the outside surface are not an issue.

Before gluing, stick a piece of 2-in.-wide clear tape on the pattern underneath the two joints to prevent squeeze-out from binding the apron to the pattern. Next, dry-clamp the three sections on the pattern, trace along the curve, remove the sections and cut off the overhang on a bandsaw, leaving no more than 1/16 in. to flush-cut later with a router. Having preglued the end grain to avoid starving the joint, glue the pieces together and clamp them to the pattern. Drill pilot holes and screw from the bottom of the template to hold this first layer in place, making sure that the screws are positioned on the inside waste. Trim the overhang by climb-cutting with a router and a flush-trimming bit guided by the pattern.

Repeat the process with the four sections in the second layer, gluing, clamping, and then pinning them to the first layer with a nail gun or screws, making sure the fasteners are in the waste area. When dry, flush-cut the overhang using the first layer to guide the router bit. Continue this sequence for the last two layers. When the core is dry, cut the inside edge on the bandsaw (see photo, next page).

Veneer the apron in sections

To measure the size of the veneer pieces, place the bricklaid core onto the pattern and position the veneer splices where they will be covered by the front legs. To achieve a good color and grain match, the mahogany veneer for the apron is resawn from the same 8/4 stock used for the legs. Select the blanks to yield veneer for the two side pieces and center section, mill them to 4 in. wide, then slice a heavy 1/16-in. piece on the tablesaw using a zero-clearance insert and a high splitter. Set the blade height to just under halfway, cut from both sides leaving a thin tab between, and carefully twist the veneer off the blank. Remove the remains of the tab in the middle with a chisel, making sure you don't tear any

Photos: Mark Schofield

Make and veneer the curved apron

Build the apron's core. *The poplar core is bricklaid by alternating three- and four-section layers. Use plenty of glue and clamps to ensure a solid bond between the layers.*

Use the pattern as a template. *After the first layer of the bricklaid core has been glued, trim the overhang with a flush-trimming bit guided by the full-size pattern.*

Flush-cut each layer. *After each layer is glued, flush-cut it to the rest of the core using the previous layer to guide the router.*

material below the face. Resurface the blanks and repeat the process several times to produce the material you need as well as some practice stock.

In this particular application, hammer veneering alone made me nervous: Because my veneers were sawn (and quite thick), they lacked much of the flexibility found in most sheared or sliced materials. Also, the design called for veneer with a horizontal grain rather than the vertical alignment that is common on aprons. Vertical veneers cup naturally to hug the core, and hammering them down is easy. Also, with the amount of stringing going into the surface, I worried about delamination along the edges.

To address these fears, I decided to clamp the veneer after hammering, to guarantee a really strong bond. Because the veneer was thick, I could dress its back side as well as the apron's core with a toothing plane. A cabinet scraper with a toothing blade also would work. Apply strips of clear tape where the seam will be to prevent glue from spreading into the next section. After a sizing of thinned hide glue has dried on the core, apply the first section of veneer using a traditional hammering technique (see Master Class, *FWW* #171 pp. 100-104). Because the bottom edge

Define the inside of the apron. *Use a trammel set and the full-size pattern to mark the inside edge of the apron. Use a bandsaw fitted with an auxiliary table to cut away the waste. When done, your core should be a heavy 1¼ in. thick by 3½ in. high and run long at both ends.*

Veneer the apron. *The author uses hide glue and a veneer hammer to apply each section of veneer to the apron. Because the grain of the veneer runs horizontally on the apron, reduce the risk of delamination by clamping the veneer using curved cauls.*

Cut the apron to length. *Use a straight-edged board screwed to the apron as a template to cut the ends of the apron on a tablesaw. The auxiliary fence is aligned with the left side of the blade.*

will be banded, position the material about ⅛ in. from the bottom and let it overhang the top by an equal amount.

When the veneer is down tight and the excess hide glue has been squeegeed away, place a foam pad on the veneer (to prevent adhesion, use a layer of clear tape on the surface that comes in contact with the wood). I used builder's sill seal, but thin packaging foam would work just as well. Back it up with a piece of ⅛-in.-thick bending plywood, two curved cauls, and cross blocks, then clamp.

If you remove the clamps and padding after about a half hour, the soft surface layer of glue will come off with a few strokes of a card scraper. Reapply the clamps and let the assembly sit for a couple of hours before starting the next section of veneer.

After all three pieces are down, trim the overhang at the top using a veneer saw and a block of wood to support the cut. With the veneering complete, a spokeshave and a card scraper make quick work of cleaning the bandsawn inside of the apron.

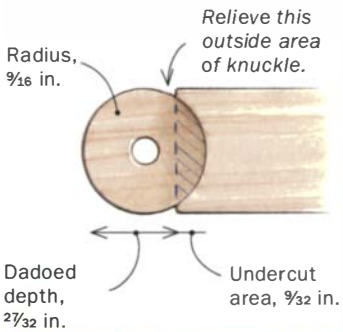
Cut the completed apron to size

Set the veneered core on top of the MDF pattern and mark the outside faces where the apron ends. Transfer those lines to the top, connect them with a long straightedge, and cut within ⅛ in. on the bandsaw. Take a piece of ¾-in.-thick stock that is

Notch the ends of the apron. *To create a flat surface to receive the rear apron, notch the inside edges of the back of the apron. Use a crosscut sled with an extended arm to support the apron (above). With the notch cut, use the tails on the back section of the apron to mark the location of the pins.*

Make a hinged apron for the rear legs

Cut the knuckles. *Using a cross-cut sled or modified miter gauge, remove the waste between each section of the knuckle joint with a dado head.*



Undercut the knuckles. *Remove wood between each knuckle to allow clearance for the matching knuckles.*

longer than the core and about 5 in. wide, line it up with the marks, and screw it to the core. Clamp a right-angled auxiliary fence to the rip fence. To prevent tearout of the face veneer, score a line just inside of the pencil line where the blade will exit. When the rear of the apron is notched to receive the leg, this mark will be removed.

Press the apron against the auxiliary fence and check that the blade is aligned with the pencil mark. Raise the blade to its full height and make a slow, controlled cut. A 10-in. saw will not reach the top, so unscrew the board, flip the apron over, reattach the board, lower the blade, and complete the cut.

After sizing the core, notch the back inside edges to receive the rear apron. Once this is cut, dovetail the rear apron into place (see photo, p. 59).

The back legs swing on knuckle joints

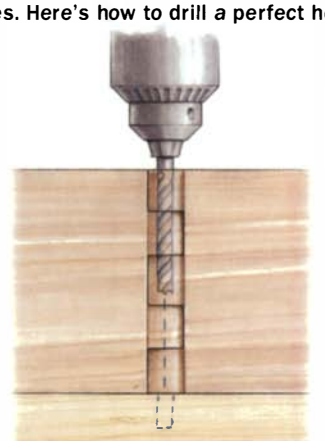
Because of its dimensional stability, quartersawn white oak was the traditional choice for the rail at the back of the table that forms the pair of knuckle joints. If the rail twists a little, the rear legs, because they are so much longer, twist a lot—enough to be very obvious.

Cutting the knuckles—Leave the back rail long and mark out both knuckle joints with the center of the inside circles spaced 6½ in. apart. Mark vertical lines to establish

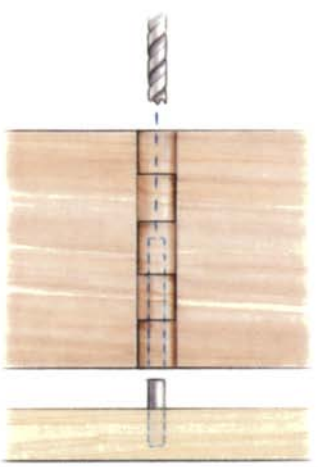
Gate-leg action depends on perfect hinge-pin holes

To operate correctly, the steel pin that runs down the center of the joint must be exactly parallel to the sides. Here's how to drill a perfect hole.

1. With a ¼-in. brad-point bit, drill ½ in. into the sacrificial table on the drill press.



2. To minimize drift by the bit, chuck the bit as deeply as possible and drill only slightly over halfway through the assembled joint.



3. Place a pin in the pilot hole, turn the knuckle joint over, and place the half-drilled hole onto the pin. Then finish drilling the hole.

where the undercutting that prevents the legs from opening beyond 30° will begin (see drawing, facing page, top). To start the circles, make 45° cuts using a miter saw, then finish rounding the ends with a block plane, files, and sandpaper. For the joint to operate correctly, the end must remain perpendicular to the edges.

Set two slicing gauges—one just under 11⁄16 in. and the other just under 1⅜ in. It will later be necessary to redefine the marks, and resetting the same gauge can lead to inaccuracies. Referencing off the outside edges, mark the five fingers of each knuckle joint, clearly indicating what stock stays and what goes. To prevent tearout, score a deep line where the knuckles end. I remove the bulk of the waste on the bandsaw, and then cut to the line using a dado head and a crosscut sled.

When the joints fit, undercut the spaces between the knuckles with a chisel. Be patient (this is white oak after all). A carving gouge with the right sweep makes quick work of the outside sections.

Steel pins complete the joints—The two halves of each knuckle joint pivot on a steel pin. Don't try to drill all the way through with an extralong brad-point bit because it will drift, causing the back legs to either rise up or drop down when opened. Attach a long, 3½-in.-high auxiliary fence positioned so that the bit hits the middle of the rail, and follow the steps shown in the drawings (facing page, bottom). Run a couple of waxed steel pins halfway in from both ends and make sure the joint is working. It will need a little tweaking with a chisel to control the amount of swing. Before tapping in the final 3½-in. waxed steel pin, disassemble the joints and tenon each arm to receive the rear legs. After final assembly, peen the ends of the pin with a few hard taps from a hammer.

The front and rear legs are tapered

On demilune tables, the leg tapers always begin at the bottom edge of the apron, and only those faces under the aprons are tapered. In this case, although all the legs taper to ⅞ in., the back legs are tapered on two sides and the front legs are tapered on three. Don't worry about this discrepancy; the eye does not catch it. Size the legs to leave ½ in. extra on top to be trimmed after the joinery is completed.

I taper the legs on the tablesaw using an adjustable carriage jig, and remove the sawmarks with a jointer plane. Flatness is critical, particularly if you plan to add inlay, as the stringing will magnify any irregularities. Because the legs are not identical, clearly mark them for inside faces and mortise locations.

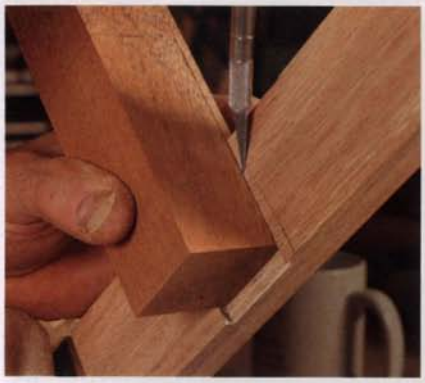
The rear legs are recessed into the apron—Lay out the joinery and mortise the rear legs. Fit the rails to the legs. With the apron resting on the pattern, clamp the back legs and rail assembly to the apron together with the packer block. The packer reduces the size of the notch in the rear legs and provides a buffer zone in case the fly rail twists, bows, or cups.

To cut the notch in the rear legs, take the measurements from the pattern and cut the recesses with a router and a chisel. The ends of the apron need a small notch as well where the legs meet. Refer to the pattern for the dimensions and score the borders of the notch with a marking knife. Remove the stock and dry-fit the rear leg assembly. Wait until the front legs are mounted and the top is attached before doing any fine-tuning. When satisfied with the fit and confident that adjustments could be made, screw the rear leg assembly to the rear rail using four No. 14 screws.

Attaching the front legs requires precision joinery—The front legs attach to the apron with a combination bridle

Attach the rear legs. *The back legs are mortised to the swinging rails, and both the legs and the back of the apron are notched to fit (above). With the knuckle joints temporarily pinned (right), dry-assemble the rear legs and packer block to the apron to check the clearance for the tabletop.*

A bridle joint attaches the front legs



Lay out the front legs. *Cut a recess in a piece of scrap and use it to establish the front edge of the sliding dovetail on the sides of the legs (above). You'll use the same piece of scrap when laying out the apron (far right). An angled block of wood guides the chisel when paring the sliding dovetails on the legs (right).*

Transfer the layout to the apron. *Transfer the outline of the dovetail and the bridle joint to the underside of the apron. The notched piece of scrap ensures the leg has an even reveal.*

and sliding dovetail joint. The overlap of the dovetail helps hold down the veneer on the core, and it allows for a little slop when fitting the leg because the shoulder will cover any gaps. Whenever trying a new joint, do a mock-up on scrap.

First, cut the dovetailed notch in the leg's two side faces from the top of the leg to the bottom of the apron. To establish the dovetail's front edge, take a piece of scrap and cut a recess as wide as the leg and as deep as the reveal, about 5⁄32 in. Use this template to scribe a line parallel to the front edge of the leg indicating where the flat will be.

Clamp an 11° angled guide block to the leg and use a sharp chisel to cut the dovetail-like notch. The leg also has an open mortise through its top. Hollow out the center of the mortise using a tablesaw tenon jig. If the blade won't go high enough, finish with the bandsaw and a paring chisel.

Use the pattern to mark the location of the front legs on the apron, and then take the same block you used to establish the leg's shoulders and clamp it to the front of the apron in the leg's location. Using this block assures an even reveal across the front of the apron. Fit the leg into the block and use a marking knife to score lines for the dovetail and the bridle joint onto the apron's bottom edge. Extend these lines across the face and back. Reposition the notched block onto the top edge of the apron registering off the lines carried across the face. Reinsert the leg and, this time using a pencil, trace out the lines again.

If everything works out, the lines should all register, top and bottom. If they don't, the front and rear recesses are out of alignment and the leg will bind seriously during fitting. Cut the recesses on the apron and slide the leg into place, trimming where necessary to get a fit that requires only modest hand pressure.

Complete the base before the top

To prepare for attaching the tabletop, gouge out recesses for pocket screws along the straight section of the apron, and cut four slots for buttons along the curved section to allow for seasonal movement.

Once certain that everything fits properly and the legs close tightly against the apron, disassemble the table and execute the inlay (see Master Class, p. 102). After that has been completed, glue the base together starting with the rear dovetailed rail. Using a thin film of slow-set glue, attach the front legs, sliding them on rather than pounding them. Once they are on, clamp the front and rear faces until the glue is dry. Use a handsaw and a chisel to trim the top of the legs flush with the apron. After gluing the rear legs, screw on the rear assembly to complete the base.

Cut the profiles for the two tops—On a bandsaw, cut the two top sections to size but leave some extra along the back edges in case a piece breaks off when you profile the edges. I use a template and a router to smooth the curved edges. To avoid tearout, you need to cut "downhill" in both directions from the apex of the curve. If you have only one flush-trimming router bit, you'll have to transfer the tem-

Scrapers shape tricky grain at tabletop edge

First, create a hollow. *Use a convex-profiled blade in a beading tool to scrape the concave profile in the center of the edge. If necessary, clean up the cut by hand with a slightly larger radius cutter.*

Cut the apron for the front legs. *After removing most of the waste on the bandsaw, pare the joint with a chisel until the legs slide in easily.*

plate from the top to the bottom of each leaf halfway through the cut. This can lead to problems. I've found that using a double-bearing, combination template and flush-trimming bit from Lee Valley is easier. Do the first half of the cut, flip the template over while still attached to the leaf, and cut the second half.

Detail the edge of the top—I establish the edge detail using three cutters and a beading tool, but a shopmade scratch stock would work. A router or a shaper would not achieve such a crisp line, which increases the risk of tearout. Start by scraping the central concave section, moving downhill from the apex with a cutter ground to shape the dish.

To facilitate a clean bead, first take a slicing gauge and score two lines to prevent the grain from tearing. After breaking the edges with a detail file, I use a pair of matched beading bits that I ground in reverse to scrape in the detail. Having two cutters instead of one allows me to always work downhill, or with the grain.

Attach the hinges and apply a finish

Once the front edge is profiled, cut the back edge to actual size and set the hinges. These are recessed into the sides of the top using a marking knife and chisels. They can be tricky, so practice on a mock-up.

Once the top is finish-sanded, keep it either open or stickered so that each half gets air on both sides and doesn't cup.

To darken the wood, I set the table in the sun. A few weeks' exposure oxidized the table to a much richer and deeper reddish brown. Following the advice of some furniture-restoration friends, I applied a golden stain to reduce the holly's contrast with the mahogany. Several coats of shellac followed by a good wax gave it both protection and presence. □

Steve Latta is an instructor at the Thaddeus Stevens College of Technology in Lancaster, Pa.

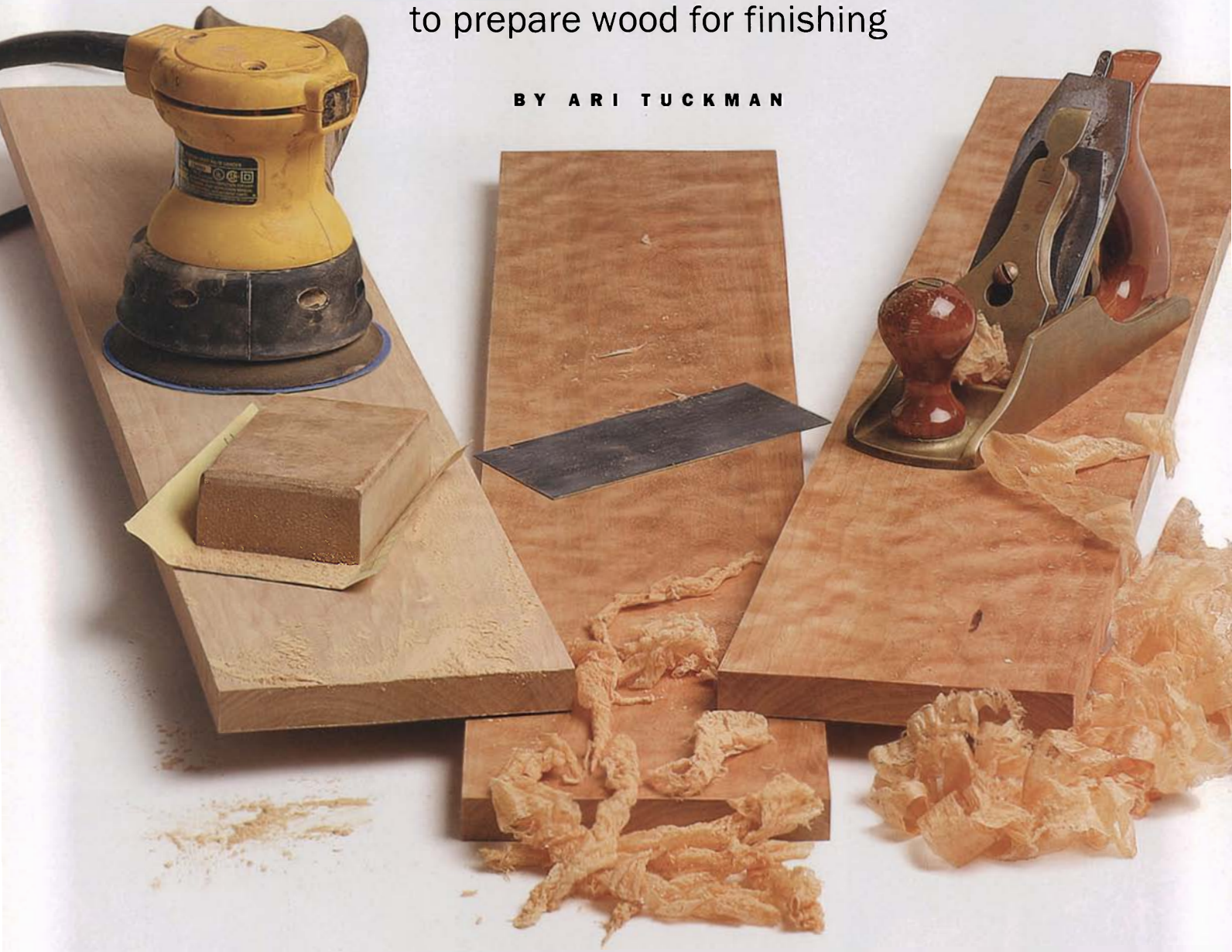
Define the edge of the bead. *Use a slicing gauge (left) to cut the fibers and prevent them from tearing out when cutting the beads on the top and bottom edges of the tabletop. To avoid having to scrape against the grain when forming the beads (above), use a pair of blades ground in reverse.*

Install the hinges. *The tabletop folds together using card-table hinges recessed into the edges of the two leaves.*

Sand, Scrape, or Plane?

In search of the best way to prepare wood for finishing

BY ARI TUCKMAN



Perhaps more than most woodworking topics, debates on surface preparation elicit strong opinions. No doubt handplaning takes more finesse and practice than sanding, and pushing out fluffy shavings with a card scraper takes practice. But which method produces the best surface for applying a finish?

When I started woodworking, I took a class on surface preparation. I remember the awe I felt as the instructor, with a few swipes of a well-worn Stanley No. 4 handplane, revealed the fire inside a piece of cherry—a staggering contrast to the slightly chalky, sanded surfaces I was used to. I was sold, and quickly bought a very used No. 6—in retrospect, a bit overenthusiastic for a starter plane.

Since then, I've added some better-quality handplanes and card scrapers. I have worked at mastering these techniques, and learned how to sharpen well, if not quickly. Thinking that I had discovered the secret to surface preparation, I was perplexed to see well-known woodworkers who sanded their work after handplaning and scraping, and still produced pieces that looked great after a finish was applied. Curious, I decided to test the three surfacing methods as objectively as I could.

A disclaimer is relevant at this point. I am a pretty good woodworker, but I am far from a master. This is not a test of each technique under laboratory conditions, but rather under conditions

Photos, except where noted: Mark Schofield; this page: Kelly J. Dunton

found in a typical home shop where a balance is struck between quality of work and speed.

Two types of wood were tested

To test whether the type of wood made a difference, I used cherry as a sample of a close-grained wood, and a particularly open-grained piece of mahogany. To minimize variation, I cut each board into three sections, one per method. Each board was jointed flat for a uniform starting position, using fresh jointer knives to minimize tearout and the pounding that dull blades can cause.

For the sanding test, I used a random-orbit sander starting with P120 grit followed by P150, P180, and P220 grits, vacuuming the surface after each. I then hand-sanded the board with the grain, using P220 grit. Finally, using a paintbrush to loosen as much dust as possible, I vacuumed the surface again.

I moved on to the scraper for the next board, choosing a 0.4 mm card scraper from Lee Valley, rounding the corners with a file to prevent damage to sharpening stones and fingers. I polished the flat faces and long edges of the card with a pair of 220/1000-grit and 4000/8000-grit combination waterstones, finishing with a green buffing compound. I used a block of wood to hold the card vertical when working the bottom edge, moving it around the stones to prevent it from gouging. Finally, I put a small hook onto the scraper with a burnisher.

The surface left by a well-tuned handplane is one of the reasons I enjoy woodworking. On the third board, I used a Lie-Nielsen No. 4 smoothing plane with the standard 45° frog, flattening the sole on a diamond plate. I touched up the back of the blade and used a honing guide on a 4000/8000-grit stone to sharpen the bevel. I also eased the corners of the blade, putting a gentle crown on it so that the corners wouldn't leave tracks on the board. I adjusted the frog to get the smallest mouth possible without binding the shaving, and then set the blade so that it just protruded.

The boards were judged before and after finishing

Once the boards had been surfaced, they were marked A, B, and C and sent to the *Fine Woodworking* staff for a blind judging before I applied finish. While it was easy to spot the two sanded boards because of their duller appearance, the scraped and handplaned cherry boards could be distinguished only when held up to a bright light. The scraped surface was slightly more irregular, while the planed board had one or two narrow streaks with a higher sheen caused when the plane's sole burnished the high points. On the mahogany boards, the planed and scraped samples were very hard to tell apart.

Three types of finish were applied—Most woodworkers don't leave their projects bare, so the real test of surface preparation takes place after finishing. I selected the three most popular types of finish—pure oil, an oil/varnish mixture, and shellac—to test whether any of these finishes would be more sensitive to the way the wood was surfaced. When the editors returned the boards to me, I used blue masking tape to divide each board into four sections, one for each finish and one left unfinished.

Boiled linseed oil: I applied Parks boiled linseed oil with a cloth, allowed it to soak in for several minutes, and then wiped

THREE WAYS TO PREP THE SURFACE

Few woodworkers enjoy the noise and dust of power sanding, but it takes little skill to get boards that are uniformly smooth (above). It takes practice to properly tune and use a card scraper so that it produces thin curls of wood and very little dust (left). Handplaning is traditionally viewed as the best method of surface preparation, but few woodworkers can achieve a flawless surface this way (below).

CHERRY SAMPLES

The finished results

Each sanded, scraped, or planed cherry and mahogany board was divided into four parts (above right and below). The first section was left unfinished, the second finished with boiled linseed oil, the third with shellac, and the last with an oil/varnish mixture. With all three finishes on all six boards, it was hard to tell how the surface had been prepared.

MAHOGANY SAMPLES

the surface with a clean cloth, wiping again after 10 minutes. I let the surface dry for 24 hours and then smoothed it with a gray abrasive pad. I repeated this procedure twice.

Oil/varnish mixture: I used the gloss version of Watco Wipe-On Poly, because a gloss finish provides greater clarity of the underlying wood than a lower-luster finish and therefore gives a more rigorous test of surface preparation. Following the manufacturer's instructions, I applied three coats with a rag, scuff-sanding the first and second coats with P220-grit sandpaper after they were dry.

Shellac: I used Zinsser SealCoat, a clear dewaxed shellac, in a 2-lb. cut. Several coats were brushed on until the surface started to become tacky. After letting it dry overnight, I smoothed the surface with a gray abrasive pad and repeated the process. Three applications were made with the last coat left untouched.

Can you tell the difference?

The editors and I examined the samples and concluded that there is very little difference between the three methods after finish has been applied. This was a real surprise, given the clear differences between the unfinished boards.

However, these results may not apply across all circumstances. Highly figured grain may be tamed only with a scraper, while some softer woods become fuzzy when scraped. I also did not test how the samples would react to stains and dyes.

Even so, I find the results liberating. Now I can choose a surface-preparation method based on the wood without concern for the final finish. Because I still get great satisfaction from watching shavings unfurl from a handplane, I'll hang onto my planes and scrapers. But I won't feel like I'm cutting corners and sacrificing results when I pull out the random-orbit sander. □

Ari Tuckman is a woodworker in Fairfax, Va.

Photos of sample boards: Kelly J. Dunton

8-in. Jointers Under $1,400

These machines have the width to handle almost any workpiece

BY WILLIAM DUCKWORTH

Whether you buy it rough or dressed, solid lumber is rarely flat and straight, and a jointer will flatten surfaces and straighten edges more efficiently than any other tool. After visiting dozens of shops over the years, I'm convinced that the jointer is one of the least understood and most underappreciated machines available to woodworkers.

People new to woodworking often ask me what machines they should purchase and, given limited budgets, in what order. A jointer is No. 2 on my list, right behind a tablesaw. The answer to the follow-up question, "What size do I need?" is simple: Get the biggest one you can afford and fit into your shop. For many woodworkers, an 8-in. jointer fits best into those constraints.

Anyone shopping for an 8-in. jointer won't suffer from a shortage of choices. My search for the most commonly available machines quickly added up to 11, ranging in price from $650 to $1,350. All have either 1½-hp or 2-hp motors. To com-

Photo, this page: Michael Pekovich

EXTENSIONS ADD LENGTH

Two approaches. *At 74¼ in., the Sunhill jointer (above) has one of the longer tables, but first you must bolt an extension to each end of the table. The General (right) uses pull-out roller extensions to add support for long boards.*

pare the jointers, I put each one through a series of inspections and tests.

I was not able to get the Grizzly G0586 in time for this review. It will be reviewed in a future issue. Also, this review doesn't include the pricier 8-in. machines on the market: The Delta 37-365X ($1,670), General 480-1 ($2,230), Grizzly G9859Z ($2,500), or Powermatic 1610079 ($1,570). Look for them in a future review.

As machines go, jointers are fairly simple in design. The bed consists of a cutterhead flanked by independent infeed and outfeed tables and a fence. The tables are basically wedges that ride up and down on a track of dovetailed ways. The bed rests on a base, which holds a motor that powers the cutterhead with one or more fan belts on pulleys. For the machine to work properly, the two table surfaces must be flat and parallel to each other, both front to back (parallel to the centerline of the cutterhead) and left to right. The outfeed table is flush with the top arc of the cutterhead knives. You adjust the depth of cut by moving the infeed table up and down.

Some assembly required

All the machines require some work before they can be used. You will have to bolt the bed to the base, adjust the motor mount, install the belts, and in many cases, wire the switch to the motor. After that, you'll need to install the fence. Given the weight involved, putting one of these machines together is a task that will require more than one person, unless your shop is equipped with a heavy-duty chain lift.

Some machines come prewired with a plug for either 110v or 220v circuits. Others come without a plug, and in most cases, you can choose the voltage level. If the choice matters to you, check with the manufacturer or dealer when you make the purchase.

The differences are in the details

The overall quality of these machines is good to exceptional. For the most part, the differences showed up only on close inspection.

The size and quality of the bed matters—Among these machines, the overall

TWO FENCE STYLES TO CHOOSE FROM

Easy-moving fence. *Thanks to a rack-and-pinion gear, the fences on the Delta 37-380 and the Yorkcraft can be moved easily back and forth by turning a knob.*

Nine of the 11 jointers tested use a fence guided by a square steel bar. *Of these, six have a locking handle that regularly gets hung up behind the bed. Craftsman and Grizzly avoid the problem by putting the lever on top.*

length of the bed varies from 66¾ in. to 76½ in. A longer bed is preferable to remove bow, crook, and twist in longer lumber. As a rule of thumb, multiply the bed length by two to determine the maximum length of stock that a jointer can flatten effectively.

The Sunhill jointer achieves extra length with a pair of 3¼-in. extensions. One extension bolts onto each end of the bed, effectively increasing the table length by 6½ in.

The General jointer offers an interesting detail not found on the other machines: pull-out roller extensions on either end of the bed. The rollers can be adjusted to align with the table surfaces, and they come in handy for supporting the weight of long boards.

Table widths vary little on these machines—from 8 in. to 9¼ in.—and the knives on all of them are slightly longer than 8 in., which is the widest board you can surface. One detail on all of the outfeed tables (except the Delta 37-680) that I view as anachronistic is the rabbeting ledge. I've met woodworkers who cut rabbets with handplanes, routers, and dado blades, but I don't know anyone who would use the jointer to cut a rabbet. (I expect to receive letters from all three of you when this article is published.)

As mentioned earlier, it is essential for the two table surfaces to be ground flat and aligned properly to each other. How flat is flat? One manufacturer demands a table surface with no more than a 0.003-in. variation across its width and 0.006 in. along its length. Most of the measurements on these machines fell well within those parameters.

Using a high-quality 36-in. straightedge and feeler gauges, I checked for flatness on the infeed and outfeed tables in seven locations (two places across the length, three across the width, and two across the diagonals). On a few of the machines, I found dips in the ground surface as much as 0.007 in. Is that enough to prevent the jointer from providing an adequately flat surface on a piece of lumber? I doubt it. I calculated an average from the 14 table measurements taken on each machine. The Delta 37-680, General, Grizzly, and

HANDLES, WHEELS, AND LEVERS

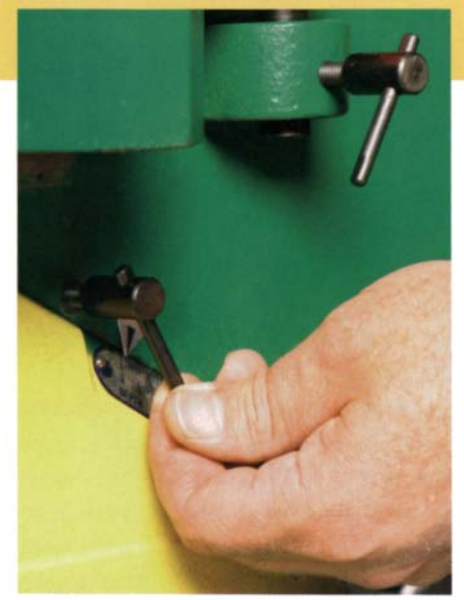


Table-locking handles aren't all the same. *Most of the jointers have table-locking levers too small to be finger friendly (left, Woodtek shown). Grizzly and Powermatic do a better job by making the handle a little bigger. Both Delta jointers and the Yorkcraft (right) have the best handles; the threaded shank is thicker than the others and the handle is more comfortable.*

Table-adjustment options. *When setting table heights, some woodworkers think a wheel (above, left) provides the most precise control. The author prefers the convenience of a lever (left). Powermatic combines both features in a lever with a handle that twists to provide quick micro-adjustment (above).*

finewoodworking.com

Visit our Web site to see the author demonstrate what to look for when buying an 8-in. jointer.

Photos, except where noted: Tom Begnal

Cutterhead options: how they stack up

Three or four knives?

The Bridgewood, Grizzly, and Sunhill machines have cutterheads with four knives; all the rest have three. Is there a difference in the quality of the cut?

Given equal feed rates and equal rpm values, that extra knife translates into one-third more cuts per inch or an additional 1,500 or so cuts per minute on the workpiece. More cuts per minute mean a smoother surface. To find out if the difference is noticeable, I made similar cuts on a three-knife cutterhead and a four-knife cutterhead. I couldn't see or feel a difference in smoothness or quality. An extra knife, however, means extra changing time. And you'll need more time to sharpen the knives or a few more bucks to have them sharpened. That said, a knife on a four-knife cutterhead should last longer between sharpenings, in theory anyway. That's because in a single revolution of the cutterhead, a knife in a four-knife cutterhead cuts less material than a knife in a three-knife head, given a constant feed rate. All things considered, for a home shop or a small, one- or two-man professional shop, I think the distinction between a three- or four-knife cutterhead is a non-issue.

Yorkcraft machines stood out, with nearly perfect tables.

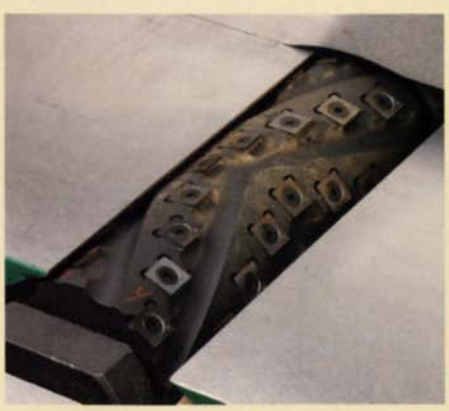
I also used the straightedge to determine whether the infeed and outfeed tables on each machine were parallel (see Table Alignment in chart, p. 73), both front to back (width) and left to right (length). My measurements showed that four of the machines were less than ideal. Some discrepancy can be fixed by shimming the errant table, but if I had just spent $1,000 or more on a machine, I would not be happy about having to correct this problem.

Some machines came with nicked knives—One thing that surprised and disappointed me was that the cut quality on several jointers was less than I expected. Some of the machines (Bridgewood, Craftsman, General, Jet, Sunhill, and Woodtek) left telltale veining marks on the surface, indicating that the knives had slight nicks and needed honing. On a brand-new jointer, you shouldn't have to hone the knives before you use the machine. Once the knives were honed, though, the cut quality on all 11 jointers was very good.

Are upgraded cutterheads worth the money?

For $250 to $400 more, most jointers are available with a cutterhead that produces an angled, or bias, cut. Manufacturers say bias cutterheads produce smoother cuts, run more quietly, and create less tearout in figured woods. Also, those with carbide inserts last longer between sharpenings.

Bias cutterheads fall into four main types: a chevron pattern with carbide inserts at a right angle (left), a spiral pattern with carbide inserts at a shear angle (center), a spiral pattern with carbide inserts at a right angle (not shown), and a spiral pattern with three high-speed-steel (HSS) knives (right). I made test cuts on several boards, including bird's-eye maple, with the three cutterheads shown below. The HSS knives produced very smooth cuts, but I was disappointed with the quality of cuts made by the carbide inserts. All three ran 5 db. to 10 db. quieter than straight-knife heads. For a shop where the jointer sees occasional use, I'd stay with the less costly straight knives.



Carbide-insert blades. *Both of these cutterhead designs feature more than four dozen individual carbide cutting knives, each with four usable edges. When they get dull, simply loosen each screw and rotate the knife to a fresh edge. Replacement inserts cost $2 to $3 each.*

Spiral knives. *This spiral cutterhead has narrow, high-speed-steel knives. A replacement set of three knives sells for about $30.*

Photos, this page, facing page: Kelly J. Dunton

In addition to the standard straight knives on these machines, some of the manufacturers (at the time of this writing, Bridgewood, General, Grizzly, Sunhill, Woodtek, and Yorkcraft) offer an alternative bias cutterhead. The samples we looked at were of three different designs (see sidebar, facing page).

Knife changing—Sooner or later, depending on use, you will have to sharpen the knives. To do that, the knives must be removed, resharpened, and reinstalled perfectly parallel to the top surface of the outfeed table. The process can be fussy, so any jointer that makes knife changing easier gets a thumbs-up from me.

Most manufacturers include a little jig to help simplify knife installation. The jig rests on the cutterhead at four points, and the knives are raised until they just touch the center of the jig. It works, but only if the cutterhead is perfectly parallel to the outfeed table, which is not always the case. If you use the jig, and the cutterhead and outfeed table aren't parallel, the knives won't be parallel to the outfeed table. I prefer to skip the factory-made jig and make my own (see sidebar, right).

Some of the jointers have a jack-screw system to adjust the knives parallel to the outfeed table; others use a spring. The knife-changing time is about the same.

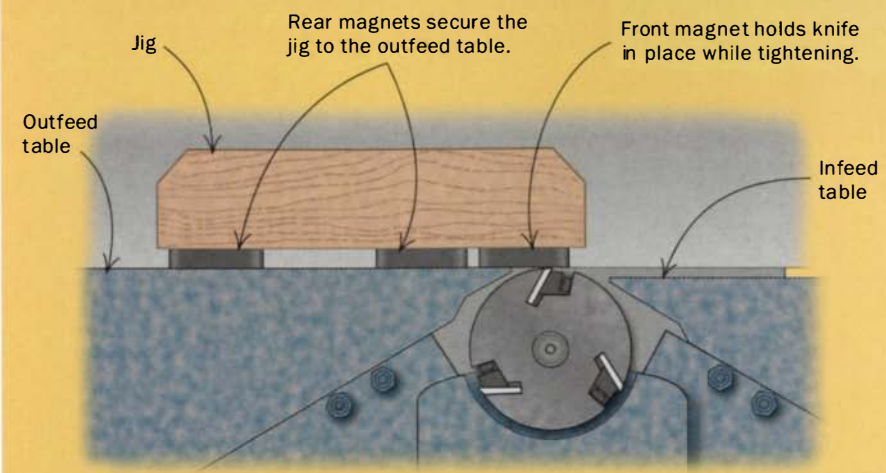
Two basic fence designs—Nine of the jointers (Bridgewood, Craftsman, Delta 37-680, General, Grizzly, Jet, Powermatic, Sunhill, and Woodtek) have similar heavy cast-iron fences that ride front to back on a square steel bar mounted in the bed. You can adjust the fence angle with positive stops for 90° and 45° (or any angle in between), and you can lock in its location above the cutterhead wherever you want it.

The Bridgewood, General, Jet, Powermatic, Sunhill, and Woodtek have a locking lever in the back that locks the fence in place. Often, however, when I wanted to slide the entire assembly forward, the fence wouldn't move because the lever had slipped down and gotten hung up on the back edge of the bed. Craftsman, Delta (on the 37-680), and Grizzly solved the problem and put the locking mechanism on top.

Two machines, the Delta 37-380 and the

Shopmade jig eases blade changes

Several of the jointers include a knife-setting jig that registers off the cutterhead (right), but if the cutterhead isn't parallel to the outfeed table, you won't get an accurate setup. A better option is to use a simple jig (below) to register the knives to the outfeed table. The jig consists of three small bar magnets glued with silicone adhesive to a pair of boards. The magnets secure the jig to the outfeed table and hold the knife in position for tightening.



Drawing: Kelly J. Dunton

BRIDGEWOOD
BW-8J

CRAFTSMAN
21703

DELTA
37-380

MODEL/SOURCE	PRICE	NET WEIGHT	BED SIZE	FENCE SIZE	MOTOR SIZE (CLAIMED)	NO. KNIVES	OPTIONAL CUTTERHEAD
BRIDGEWOOD BW-8J 800-235-2100 www.wilkemachinery.com	$950	388 lb.	9 in. by 67 in.	3⅞ in. by 38¼ in.	1½ hp	4	Yes
CRAFTSMAN 21703 800-697-3277 www.sears.com	$1,150	422 lb.	9¼ in. by 71 in.	4⅞ in. by 40 in.	2 hp	3	No
DELTA 37-380 800-223-7278 www.deltawoodworking.com	$1,050	432 lb.	8⅞ in. by 72½ in.	4⅞ in. by 35 in.	1½ hp	3	No
DELTA 37-680* 800-223-7278 www.deltawoodworking.com	$1,350	490 lb.	8 in. by 76½ in.	4⅞ in. by 35¾ in.	1½ hp	3	Yes**
GENERAL 80-200 819-472-1161 www.general.ca	$1,300	432 lb.	9 in. by 67 in. (not including extensions)	3⅞ in. by 38¼ in.	1½ hp	3	Yes
GRIZZLY G0500 800-523-4777 www.grizzly.com	$875	432 lb.	9¼ in. by 75½ in.	3⅞ in. by 38¼ in.	2 hp	4	Yes
JET JJ-8CS 800-274-6848 www.jettools.com	$1,050	404 lb.	9 in. by 67 in.	3¾ in. by 38¼ in.	2 hp	3	Yes**
POWERMATIC 60B 800-274-6848 www.powermatic.com	$1,150	393 lb.	9 in. by 72¼ in.	4¾ in. by 38¼ in.	2 hp	3	Yes**
SUNHILL CT-204L 800-929-4321 www.sunhillmachinery.com	$795	402 lb.	9 in. by 74¼ in. (including extensions)	3⅞ in. by 38¼ in.	2 hp	4	Yes
WOODTEK 907064 800-645-9292 www.woodworker.com	$920	391 lb.	9 in. by 66¾ in.	3⅞ in. by 38¼ in.	1½ hp	3	Yes
YORKCRAFT YC-8J 800-235-2100 www.wilkemachinery.com	$650	449 lb.	8⅞ in. by 72½ in.	4⅞ in. by 35 in.	1½ hp	3	Yes

*Formerly DJ-20, 37-750A **Available from Byrd Tool, 800-441-2973, www.byrdtool.com

Yorkcraft, have a fence that moves on a rack-and-pinion gear. I prefer this type of fence because it's easier to use. It takes one hand to turn the adjustment knob and effortlessly move the fence back and forth.

Table adjustments—Table adjustment is via a wheel or a lever. Proponents of the wheel argue that it's more accurate if you want to fine-tune a setting. They may be correct, but I prefer the convenience of a lever; I've never had any trouble using one to tweak a table setting 1/64 in. up or down.

The Powermatic jointer provides the best of both options—a lever with a built-in dial that makes it easy to fine-tune the table adjustment.

By the way, to minimize splintering, the Delta 37-680 incorporates a parallelogram design. When you lower the table, it follows the radius of the cutterhead, so the gap never changes.

Screws to tighten table settings—After you adjust the position of the tables, you'll need to lock them into place. On the Bridgewood, Craftsman, General, Jet, Sunhill, and Woodtek, the table can be locked in position with a single 5/16-in. machine screw tapped into the dovetailed way located on the front of the machine. However, the screws are topped with a flimsy little handle that scores low on the comfort scale. The Grizzly and Powermatic have a bigger swivel handle made of round bar stock that's a little easier on the fingers.

The Delta and Yorkcraft jointers feature screws designed with a much more substantial lever that locks the tables in place

DELTA
37-680

GENERAL
80-200

GRIZZLY
G0500

AVG. TABLE FLATNESS	TABLE ALIGNMENT (width/length)	NOISE LEVEL	COMMENTS
0.002 in.	0.000/0.007 in.	85 db.	Handwheel adjustment; knives came nicked; lightest weight; locking lever sometimes hangs up fence
0.002 in.	0.004/0.017 in.	83 db.	Handwheel adjustment; knives came nicked; smallish table-lock lever; longest fence
0.002 in.	0.0025/0.013 in.	79 db.	Lever-infeed, handwheel-outfeed table adjustment; easiest fence to move; sturdy table-lock lever
0.001 in.	0.000/0.008 in.	81 db.	Lever adjustment; parallelogram design a plus; sturdy table-lock lever; longest bed; extralong (42 in.) infeed table
0.001 in.	0.000/0.0025 in.	93 db.	Handwheel or lever adjustment; knives came nicked; locking lever sometimes hangs up fence; smallish table-lock lever
0.000 in.	0.000/0.000 in.	82 db.	Handwheel adjustment; dead-flat and perfectly aligned tables; sharp knives perfectly aligned
0.002 in.	0.001/0.0015 in.	90 db.	Handwheel adjustment; knives came nicked; locking lever sometimes hangs up fence; smallish table-lock lever
0.004 in.	0.000/0.002 in.	90 db.	Lever with dial adjustment; locking lever sometimes hangs up fence; switch conveniently placed
0.003 in.	0.000/0.0015 in.	92 db.	Handwheel adjustment; knives came nicked; locking lever sometimes hangs up fence; smallish table-lock lever
0.002 in.	0.000/0.000 in.	86 db.	Handwheel adjustment; knives came nicked; locking lever sometimes hangs up fence; smallish table-lock lever
0.001 in.	0.002/0.000 in.	82 db.	Lever-infeed, knob-outfeed adjustment; rack-and-pinion gear makes fence easy to move; sturdy table-lock lever

JET
JJ-8CS

POWERMATIC
60B

SUNHILL
CT-204L

WOODTEK
907064

YORKCRAFT
YC-8J

with a ⅝-in.-dia. thread. This table-lock style is not only stronger, but it's also more comfortable to use.

To provide increased locking strength, the Delta 37-380 and the Yorkcraft have an additional screw on the back of each infeed and outfeed table.

Choosing favorites

The Grizzly jointer stood out from the pack as the best-overall choice of the 11 machines I tested. It was shipped in the sturdiest crate and had the best fit and finish and the flattest tabletops. The well-sharpened knives on the cutterhead made smooth cuts right from the get-go.

If I were shopping for an 8-in. jointer on a tight budget, I'd buy the Yorkcraft. It has the lowest price, a sturdy pair of table-locking screws, and a rack-and-pinion fence that I like a lot. Plus, it was the only jointer in this group that included a rolling base. All that made it my choice for best value of the bunch. □

William Duckworth is a contributing editor.

An Antique Finish for Tiger Maple

Four hand-applied steps give your piece a period look

BY LONNIE BIRD

I've always admired the distinctive stripes, three-dimensional depth, and rich amber color of antiques made from tiger maple. The challenge is to replicate this century-old appearance on creamy-white, fresh-cut maple. The steps I take to transform tiger maple aren't difficult and can be done by hand, but the process will stretch over days as you wait for each step to dry. Of course, that's a lot quicker than waiting for the piece to become an antique.

The finish rewards good surface preparation

It's important to remove all marks left by saws, planers, and jointers because this finish will display them prominently. A bench plane is the fastest way to get rid of these marks and beats the tedium, dust, and noise of machine sanding. However, be cautious when hand-planing tiger maple as the dramatically figured grain tears out easily. I avoid this problem by using a razor-sharp plane equipped with a high-angle frog to give a cutting angle of 50°, sometimes referred to as a York pitch. You can achieve the same angle by grinding a 38° edge on a bevel-up low-angle plane.

Sometimes, despite your best efforts, you still will get minor tearout. I use a sharp card scraper to smooth it away and blend the area with the surrounding surface. Of course, some surfaces, such as curved legs and moldings, can't be planed. I scrape these areas and then lightly hand-sand with P220-grit sandpaper to smooth the surface further and remove any facets left by the scraper. I use the same paper to lightly sand the flat areas that were planed; otherwise they'll accept the dye differently than the sanded areas.

Dye and then oil the wood to develop the figure

The widest selection of dye colors comes in powder form in formulas that can be mixed with water, alcohol, or oil. I use water-based dyes because they make it easier to control lap marks and streaking than faster-drying, alcohol-based dyes, and they are reportedly more lightfast than oil-based dyes. The disadvantage is

Photos: Mark Schofield

STEP 1

Pop the figure with dye

RAISE THE GRAIN

To prevent a water-based dye from raising the grain, pre-raise it by wiping the wood with a damp cloth (right). After the wood is dry, lightly sand the surface (far right).

APPLY THE DYE

A quick way to test how the dye will look is to use a stirring stick made from the same wood as the workpiece (below). Then brush on the dye (right) and wipe with a clean cloth while still wet.

A tip for end grain

To keep the end grain from absorbing too much dye and becoming too dark, wet it first with water and immediately apply the dye. This will dilute the color.

STEP 2

Add luster with oil

Apply a generous amount of oil to the wood, let it soak in for a few minutes, and then wipe off the surplus. This gives greater depth to the appearance of the wood.

that the water in the dye raises the grain, so I pre-raise the grain by wiping the wood with a damp cloth. Once the surface is dry, I lightly sand the wood with worn P220-grit or P320-grit sandpaper to smooth the fuzzy grain before applying the dye.

Another advantage of powdered dyes is that you can control the intensity of the color. The manufacturer recommends 1 oz. per quart of warm water, but I start with half that strength. Experiment on scrap tiger maple until you find a color you like. Two of my favorites from the Moser brand (www.woodworker.com; 800-645-9292) are russet amber maple and honey amber maple. Both yield the golden color of old maple furniture. For this project, I prefer the redder tones of the russet dye.

I dye the edges of floating panels before inserting them into their frames. This way, if seasonal movement causes a panel to shrink, I'm spared the embarrassment of undyed edges appearing. To reduce the chance that drips or runs will go unnoticed, I dye small areas one at a time and wipe spills immediately. If you do have faint drip or lap marks, go over the entire piece with a damp cloth when you've finished dyeing it. Don't get the wood dripping wet, as too much water can cause surfaces to warp and panels to swell. When satisfied, let everything dry overnight.

One reason oil finishes are so popular is that they enhance wood's natural appearance. They have the same effect on dyed wood. I flood the surface with an oil finish such as Waterlox or Formby's Tung Oil, making sure to cover all the crevices and details. After a few minutes, wipe away the excess. Let the finish cure overnight and dispose of the oily rags in a safe manner.

Amber shellac topcoat adds more color

The amber shellac I use is made by Zinsser and comes as a 3-lb. cut. I reduce it to a 1-lb. cut by combining one part shellac with

STEP 3

Seal with shellac

Use several coats of thin shellac to give the wood a thinner, more natural topcoat (left). After the shellac has dried, smooth the surface with 0000 steel wool (below).

STEP 4

Bring out the details with glaze

Use the pigment from oil-based stain as a glaze (above). Push the glaze into all the corners and crevices of the workpiece with an artist's brush (right). Wipe away the surplus before it dries (far right). If the glaze becomes too tacky, dampen the cloth with mineral spirits or turpentine.

two parts denatured alcohol. Adding more alcohol will allow the finish to flow out better before setting up. It also lets the shellac flow into the grain, giving more of an in-the-wood finish, which I prefer over a film finish.

After each coat of shellac has dried, I rub the finish with 0000 steel wool, being careful not to rub through the finish. I then vacuum the surface thoroughly. Two or three coats of shellac are usually enough. Any more and the finish may begin to look thick, especially in crevices and details.

Glaze, shellac, and wax complete the finish

It's the details that often make a piece of handcrafted furniture successful. Moldings, corners, and even simple carvings catch light and create interesting shadowlines for a visual treat. Glazing can accentuate these details even when the lighting doesn't cooperate. Although you can mail-order ready-made glaze, an easier source is an oil-based stain from the local paint or hardware store.

It's important to choose a stain that is darker than the dye yet complements its color. For my maple finishes, I use Moorish Teak stain from Zar. With the contents unstirred, pour off the excess oil, leaving an oil and pigment mixture with the consistency of mud at the bottom of the can.

Apply the glaze to the moldings, carvings, and other details with a small artist's paintbrush. Long before the glazing dries, wipe away the excess. A cloth moistened with mineral spirits or turpentine speeds the process or enables you to wipe away all traces of the glaze should you change your mind. Because the shellac is dissolved with alcohol, the mineral spirits will have no effect on it.

After the glaze has cured overnight, I apply another coat of shellac for a protective seal. Finally, I rub out that coat using 0000 steel wool and complete the finish with a coat of paste wax. □

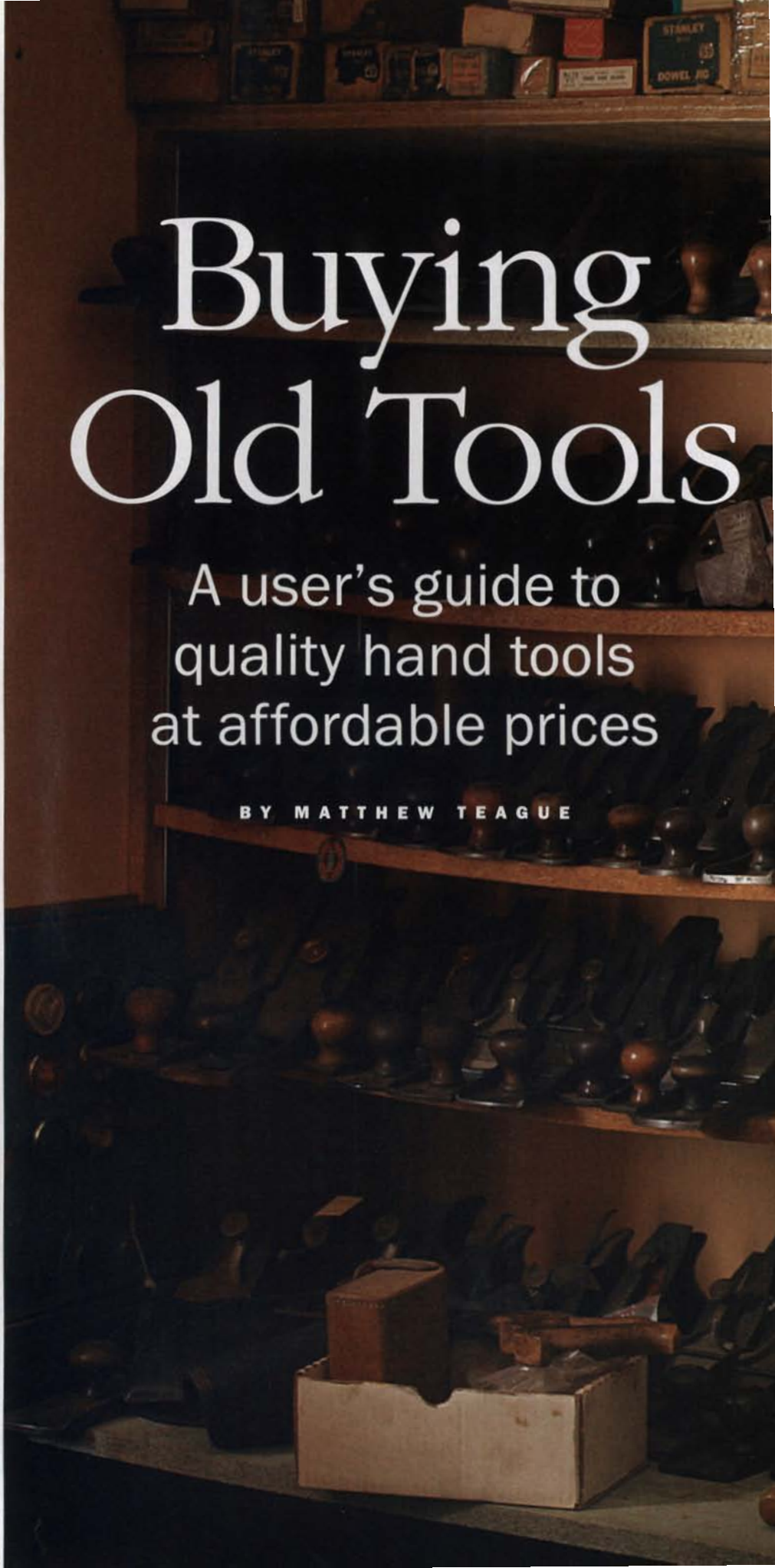
Lonnie Bird teaches woodworking at his shop in Dandridge, Tenn. For information on classes, go to www.lonniebird.com.

A final coat of shellac. *After the glaze has cured overnight, seal it with a final coat of thin shellac. Finish with a coat of wax.*

Buying Old Tools

A user's guide to quality hand tools at affordable prices

BY MATTHEW TEAGUE



If you're in the market for decent hand tools, you have two options: Pay high prices for top-of-the-line new tools (such as those made by Clifton, Lie-Nielsen, or Veritas), or start searching the used-tools market. You may have to remove a little rust and do some tuning up on old tools, but dollar for dollar, they're hard to beat.

Everyday tools such as basic bench planes, chisels, spokeshaves, and marking and measuring devices were made in abundance during the first half of the 20th century. While the antiques market looks for expensive collectors' tools to trade, a woodworker more concerned with a tool's usability than its historical value can choose from a wide variety.

I've been to auctions, bought tools online, and dug through boxes of rust at antiques stores in about every town I've visited. After finding some good deals and being dealt a few disappointments, I've learned what to look for and what to avoid. I've also talked to well-known furniture makers—Garrett Hack, Lonnie Bird, Phil Lowe, and Chris Gochnour among them—who rely on vintage tools in their everyday work to find out what they look for when buying old tools.

Get to know styles and prices before you pay up

Before you go hunting old tools, it pays to know a bit about what you're looking for. You can buy reprints of old tool catalogs and browse the Internet to become familiar with what is available and what it is worth (see "Where to find old tools," p. 85). If you register on the online auction site eBay, you can view past auctions of tools and the prices they sold for. For instance, if you're in the market for a Stanley-Bailey No. 3 bench plane, simply run a search on "Stanley Bailey No. 3," select "show completed listings," and you can scroll through old auctions. If you see one that sold for $125, chances are it is an impeccable model with all original parts, full japanning (the black enamel finish), and little or no use under its belt. A model for $25, on the other hand, may have missing

Buyer beware. *Carefully inspect a used hand tool before buying it. Check for flatness, pits, cracks, and missing parts. Where there are adjusters, check to make sure they work.*

Photos, except where noted: Marcia Ryan; this page: Michael Pekovich

Bench planes

Though I'd stay away from their household tools such as the Four-Square models, well-tuned Stanley-Bailey bench planes (No. 4, 5, etc.) are a good addition to any workshop. Stanley's more refined Bedrock designs (No. 604, 605, and so on, mimicked by Lie-Nielsen and Clifton) allow you to adjust the frog without removing the blade assembly but have become rather pricey. Some of the bench planes made by Keen Kutter are based on the Bedrock model. You can get them for about half the price of the Stanley planes. The key is to look for models marked with a single "K" instead of the "KK" models, which were based on regular Stanley-Bailey designs. (Look closely, as not all "K" models are Bedrock designs.) Millers Falls, Sargent, and others made quality planes as well. Familiarize yourself with the Stanley-Bailey design, and use it as a benchmark for rating other planes.

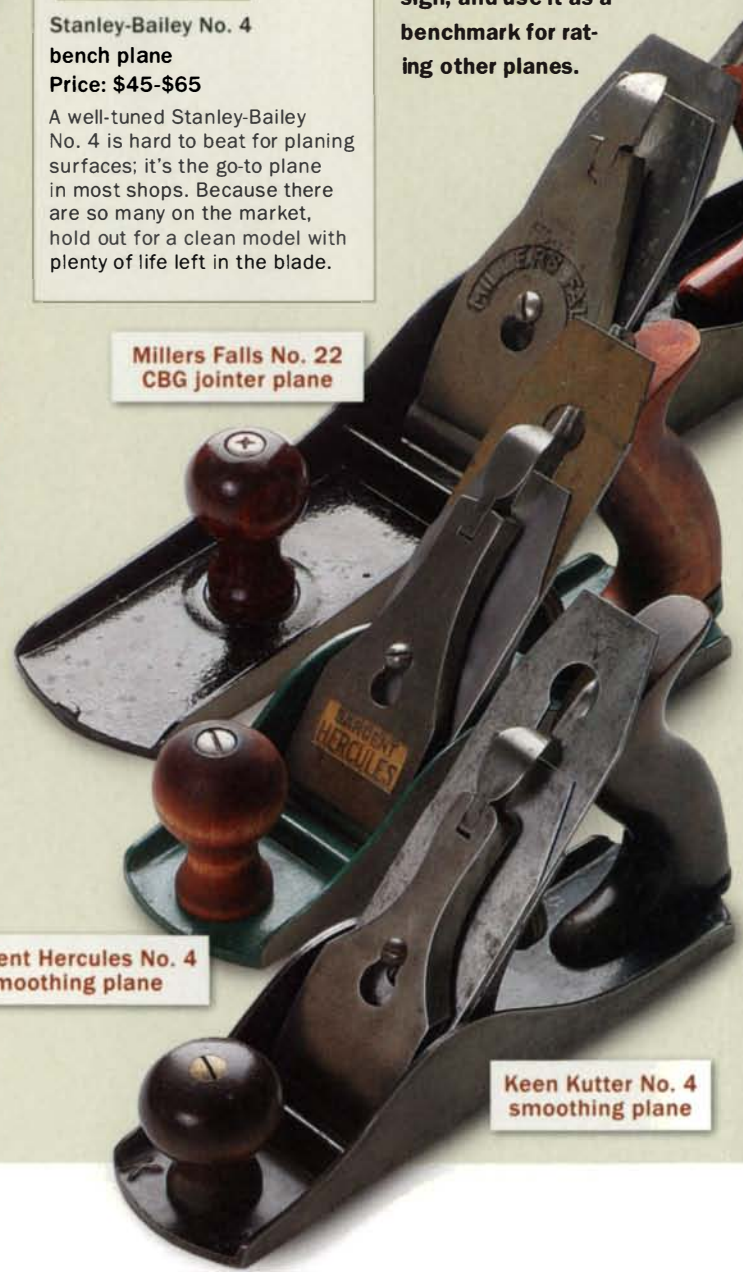
BEST BET

Stanley-Bailey No. 4 bench plane
Price: $45-$65

A well-tuned Stanley-Bailey No. 4 is hard to beat for planing surfaces; it's the go-to plane in most shops. Because there are so many on the market, hold out for a clean model with plenty of life left in the blade.

or replacement parts, a pitted sole, or worse. While you will want tools that aren't pitted from extensive rust, a little surface rust wipes off with only steel wool and wax. If a handle has been replaced, collectors will stay away from the tool, but it will work just as well in your shop.

Advantages of a corrugated sole. *The corrugation on a plane's sole reduces suction between the sole and the workpiece, thereby requiring less effort behind the stroke than with a uniform sole.*



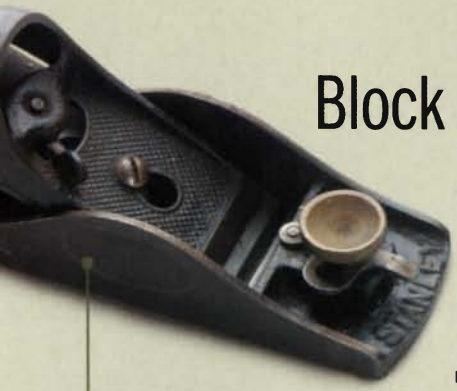
Handplanes need a flat sole and all of their adjusters

Buying a basic set of used bench planes is a good way to get started. Your first plane should be a No. 4 smoothing plane or a No. 5 jack plane. After that, you'll want to look for a good block plane. As for the rest of the bench planes, fill out your collection as you find them.

If you are buying at a store, an auction, or a flea market, use a straightedge to check the sole for flatness. Be sure that all the adjusters are present and in working order because there is a good chance that they are nonstandard and hard to replace. The lever cap should be in decent shape, as replacing it will mean tracking down spare parts. Don't worry if the sole is a little rusted or even pitted, but the blade and chipbreaker (or cap iron) shouldn't

Block planes

You'll run across good block planes from numerous manufacturers—Craftsman, Keen Kutter, Millers Falls, and Sargent—but you'll see only a few of those as compared to the number of Stanley planes you'll find. Stanley made so many block planes that even many collectors can't keep them straight. A few stand out as easy to find and good workers. Look for an adjustable throat and convenient adjusters to set the blade depth. The No. 9½ is a good plane to start with, but some users prefer the No. 18, which is the same but has a two-piece "knuckle-joint" lever cap rounded to fit your hand. Expect to pay $30 to $50 for the No. 18.

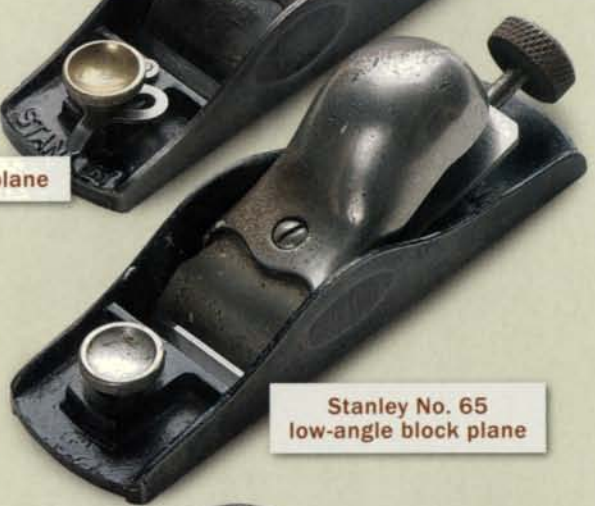


BEST BET

Stanley No. 9½ block plane
Price: $20-$30

This basic model is readily available. The adjustable mouth makes it handy for either rough or fine work, and it's as comfortable in your hand as any plane out there.

Stanley No. 18 block plane



Stanley No. 65 low-angle block plane

Stanley came out with several versions of the hinged lever cap. *The Stanley No. 18 is one of the later versions. Before purchasing one, be sure all the parts are present and in working order.*

Millers Falls No. 7 skew block plane with removable side plate

be, unless you plan to replace them with new ones. Good-quality replacement blades made by Hock or Lie-Nielsen are available in various sizes and thicknesses, but you should factor their cost into the overall price.

Chisels should have handles and a flat back

There's really not much that can be wrong with chisels as long as you buy a reputable brand and the tool is in good shape. Avoid chisels without handles, unless you are prepared to spend time fitting them with new ones; perfectly good chisels with handles are readily available. When buying in person, carry a small straightedge to check the back of the blade for flatness. Stay away from chisels with backs that aren't flat—some have been tuned on a curved stone. A little surface rust can be removed easily, but you'll be unable to sharpen a chisel with a pitted back until you grind the pits away. Also, because chisels work like an extension of your hand, make sure the tool is comfortable to hold and is well balanced.

If you find a full set of quality bench chisels, it's probably worth spending an extra few bucks. My preference is to have chisels with the same weight and handle so that I can use the same technique and grip as I switch mid-task from one size to the next.

Better marking and measuring tools have etched graduations

When I go out looking for marking and measuring tools, I'm likely to pick up any reputable brand. I also may buy off-brands, as long as the graduations are finely etched and not painted or stamped on. Generally, if a measuring tool is from a reputable manufacturer and the used tool is cheaper than a new version, I go with the older tool, as long as it's in good shape (which includes making sure that squares are actually square). For marking gauges, I prefer older tools that have measuring graduations on the arm of the gauge.

Keep an eye out for these

If you don't have a spokeshave, or are frustrated with a newer model, you probably will have better luck with an older Stanley (those numbered No. 51

Chisels

Buck Brothers, D.R. Barton, Stanley, Swan, and Witherby all made excellent chisels, but some of them are becoming pricey. Early Stanley chisels are easier to find and more affordable. I like their "Everlasting" chisels, the old 750 series (¼ in., ½ in., ¾ in., and 1 in.), as well as the longer, paring-style 720s. But don't get too hung up on brands—look for chisels made during or prior to World War II, and choose those with plenty of life left in the blade. Off-brands often cost only a few dollars, so there's little risk.

Loose handles are common. *Quality chisels such as the Stanley No. 750 (above) are worth buying even if the handles are loose.*

BEST BET

Stanley No. 750 chisel Price: $10-$15

The balance of the Stanley No. 750 chisels is near perfect—so much so that the new Lie-Nielsen chisels are based on this very design. If possible, buy a whole set: The series is still affordable and available. If not, pick them up piece by piece, and in larger sizes. Either way, expect to pay $32 to $60 for a set.

through No. 55 have slightly different adjusters or soles, but each is reliable). Besides, older spokeshaves are often cheaper than new models—I've never paid more than $25 for one. Just make sure that the mouth isn't chipped or cracked, the blade has plenty of life left in it, and all the adjusters are in good working order.

Old wooden molding planes are worth considering because they often have a more refined profile than you'll get from a router bit. Among other tasks, I rely on them for dressing up door frames and skirts on tables. Make sure the irons fit the profile of the plane, and stay away from anything with rotten wood, a cracked body, or a missing wedge. For starters, track down basic cove and bead profiles with sizes ranging from 3⁄16 in. to 3⁄8 in. Prices for wooden molding planes can vary greatly based on the maker, but I've found that my $15 models from unknown makers work fine when sharpened and adjusted well.

For saws, whatever brand you choose, take a pair of calipers along and look for a thin blade—about 0.020 in. for dovetail saws and 0.025 in. for tenon saws. Old saws likely will need sharpening, a task you can tackle yourself (see vintagesaws.com or *FWW* #125, pp. 44-47) or farm out to a professional service; the charge is usually $20 or less.

Sources for used tools

The Internet has multiple sources for buying vintage tools: dealers, collectors associations, and auctions on eBay and other sites, some specifically focused on hand tools. There are also general auctions, tool auctions, tool shows, and local sales. And if you have the time, garage sales and junk and antiques stores often offer the best deals.

The Internet is a good place to buy run-of-the-mill used tools—A number of dealers have Web sites or send mass email lists of available tools (you can sign up on their Web sites). The prices vary greatly from one dealer to the next, so compare them, and look closely at the photos of the tools. And don't hesitate to call or email

Measuring and marking tools

Though they often sell for half the price, older marking and measuring tools were made to the same exacting tolerances as today's top-of-the-line tools. If you find squares and rules from reputable manufacturers—Brown and Sharpe, Goodell-Pratt, Lufkin, and Starrett among them—they're almost always a safe bet. Many of the Stanley tools were also very good. Antiques stores (and even some collectors) seldom separate the good models from the bad, so you can pick up high-quality measuring tools for almost nothing. You also can find quality tools from manufacturers you've never heard of—look for etched graduations and a good price.

questions to the dealer, even on eBay.

The bidding process on eBay and other auction sites is usually straightforward: You register, enter the highest price you're willing to pay, and if it's higher than the other bidders' highest prices, you get the tool. Just because your maximum bid was $50 doesn't mean you'll pay that much. If the second highest bidder was only willing to pay $25, then you'll pay $25.01.

General auctions and tool auctions are a sure bet—Most of the general auctions that you find listed in your local newspaper will feature a cache of tools, often pulled out of an old-timer's workshop. Tools usually are sold in lots rather than one by one.

Tool auctions, which you can discover through newspapers or various collector groups and Web sites, are much more abundant than they once were. At auction, you have the chance to evaluate tools beforehand, and then bid on them when they come up for sale.

The great secret of tool auctions are the tool sales that are set up beforehand or spring up in the parking lots and in nearby hotels. In these spots, dealers sell directly to the public, without bidding and totally separate from the auction.

Larger auctions publish catalogs, and so do a few of the larger tool dealers. The

catalogs are available prior to the auction and enable you to bid on tools without being present—through email, by phone, or even through old-fashioned mail.

When buying at auctions, make sure you decide what you're willing to pay for a tool before it goes up for bid. Otherwise, it's too easy to get competitive with other bidders and end up paying way too much.

Local venues are full of surprises— Throughout the country, local woodworking guilds or tool-collectors' associations host tool shows and sales, or publish small guides or Web sites that allow woodworkers and dealers to list tools for sale. It's a good idea to get in touch with them because if they have collectors' tools, chances are they bought them in lots and ended up with leftover user-quality tools. They usually want to get rid of these tools about as badly as you want to add them to your tool kit.

There are also tool dealers who don't send out lists. To order from them, you may have to depend on the description given to you over the phone. That said, those listed on the facing page have solid reputations for representing their tools accurately and standing behind them after the sale.

Some of my favorite finds came from antiques shops. I recently came across an entire 1920s set of Stanley-Bailey handplanes tucked away in a shop corner. All seven were in good working shape, and I bought the lot for less than $300.

I also go to the occasional yard sale or estate sale and find good tools. I once found a set of Craftsman chisels that I got for almost nothing, and they turned out to be as fine as any chisel in my shop. □

Matthew Teague lives in Nashville, Tenn., where he builds furniture and writes about woodworking.

Miscellaneous tools

Whatever you're up against, chances are good that at some point a tool was designed for the task. For shaping and smoothing curved surfaces, there's no better tool than a spokeshave. Dadoes, rabbets, coves, and beads all can be cut by hand with specialty planes or tools—and it's often quicker and less expensive than buying and setting up a power tool. Many users of old saws claim they're unrivaled by anything made today.

BEST BET

Stanley No. 51 spokeshave
Price: $15-$30

Stanley made almost two dozen different spokeshaves, each with slightly different handles, soles, or adjuster caps. The No. 51 is a straightforward and common tool that does excellent work.

Where to find old tools

AUCTIONS

For a calendar of auction events, go to www.eaiainfo.org/eaiayp.htm.

CATALOGS AND PRICE GUIDES

A Price Guide to Antique Tools by Herbert Kean, Astragal Press, 2005. An updated version of the original 1998 guide sells for $17.95 (www.astragalpress.com).

Annual Subscription Auction Catalog 2005, Martin J. Donnelly Antique Tools. This package comes with five color auction catalogs, five listings, and seven CDs for $75 (http://mjdtools.com).

Antique and Collectible Stanley Tools, 2004 pocket price guide, by John Walter. Guide is updated annually and costs $12. Box 6135, Akron, Ohio 44312. Also available at www.oldtools.com.

Fine Tool Journal, www.finetoolj.com. The magazine offers numerous tools for sale, or you can contact Clarence Blanchard at 800-248-8114 or ceb@finetoolj.com to inquire about specific tools. A one-year subscription costs $29.

Images from old tool catalogs such as Buck Brothers, Millers Falls, Stanley Tools, and Starrett Tools can be found at www.roseantiquetools.com.

TOOL COLLECTORS ASSOCIATIONS

There are smaller groups out there (see www.oldtools.com/clubs.html), but the larger ones listed here monitor events, put on sales and auctions, and provide a wealth of information.

Early American Industries Association, EAIA; www.eaiainfo.org, $35/year.

Mid-West Tool Collectors Association, M-WTCA; www.mwtca.org, $25/year.

TOOL DEALERS AND OLD-TOOLS STORES

M.S. Carter Antiques in Portsmouth, N.H., 603-436-1781. Although they don't have the largest inventory, they have at least one of almost anything you'd be looking for.

Pete Niederberger in Larkspur, Calif, pniederber@aol.com, 415-924-8403, after 6 p.m. Niederberger has a huge collection of tools and all are priced fair. If he doesn't have it, he can probably tell you who does.

William "Bill" Phillips in New Tripoli, Pa., 610-285-6290. As far as a standing store where you can actually handle the tools you're considering, this is as good as you'll find.

John Walter, the Tool Merchant, Akron, Ohio, toolmerchant@sprynet.com, 330-734-0404. Though he doesn't publish a list of tools for sale, chances are he has what you're looking for at a reasonable price.

Philip Whitby, the New Boston Tool Room in Kingston, N.H., 603-642-4054, www.newbtr.com. This store has a large number of Stanley products and many useful publications.

WEB SITES FOR AUCTIONS, DEALERS, AND HISTORICAL REFERENCE

Bob Kaune Antiques and Used Tools, www.antique-used-tools.com. The tools may be priced a little higher than other sites, but this is a good source for hard-to-find and top-notch tools; it also offers old catalogs and a wealth of information on old tools.

Jon Zimmers Antique Tools, www.jonzimmersantiquetools.com. Zimmers offers a good collection of handplanes and saws at moderate prices.

Sydnas Sloot, www.sydnassloot.com. Dealer Sandy Moss offers good tools at reasonable prices.

AUCTION SITES

eBay, www.ebay.com. Prices range from the best deals to the worst. Make sure to examine photos and check the seller's past history for a good reputation.

Falcon-Wood, www.oldtools.com. Reasonable prices on old tools, as well as a good source for links to other old-tool sites.

Martin J. Donnelly Antique Tools & Books, www.mjdtools.com. Though the prices are at the top of the market and the tool descriptions are reliable, you'll have better luck with prices buying through the online auction. The site has an abundance of literature for sale on old tools.

INFORMATION SITES

Patrick's Blood and Gore, www.supertool.com. This site offers a thorough history and descriptions of Stanley planes, and also has an email sign-up option for tools-for-sale lists, which have reliable descriptions and fair prices.

Museum of Woodworking Tools, www.antiquetools.com. Online resource for finding reference books and links to helpful sites.

The Disstonian Institute, www.disstonianinstitute.com. This is a good source of reference on the history of the Disston saw.

The Galoot's Progress, homepage.mac.com/galoot_9/galtprog.html. Online discussions on old tools: a good place to seek advice from experts, collectors, and others just starting out.

The Old Tools Mailing List, www.brendlers.net/oldtools/oldtools.html. This site offers a wealth of information and links on vintage tools and their use.

Vintage Saws, www.vintagesaws.com. A good place to learn about and buy old handsaws online; the site also offers sharpening products.

Contact tool dealers. *Tool shops such as William Phillips' in Pennsylvania offer a wide range of usable tools.*

Photo, this page: Michael Pekovich

readers gallery

TONY KUBALAK
Eagan, Minn.

Kubalak learned to build this Chippendale-style chair in a class taught by Gene Landon at the Olde Mill Cabinet Shoppe in York, Pa. It took five years to construct, during which time Kubalak refined his carving skills enough to execute the intricate details. The chair (24½ in. deep by 28¾ in. wide by 41⅛ in. tall) is made of mahogany and upholstered with cotton damask. The finish is walnut dye, oil stain, shellac, and wax.

CHARLES WIEDMAN
Norfolk, Neb.

Wiedman's piece is a contemporary dresser with hints of the Arts and Crafts style. The dresser (21 in. deep by 72 in. long by 48 in. tall) is made of cherry, with quartersawn white-oak drawer fronts and book-matched end panels. The pulls are hand-carved from Honduras mahogany. The top panel and diamond-shaped inlay in the backboard are made from patinated 16-ga. sheet metal. The piece is finished with hand-rubbed oil and several coats of wax.

JOHN ADELMANN
Stratford, Conn.

Adelmann built this blanket chest as a wedding gift for his son and daughter-in-law. His first major furniture-making project, the cedar-lined chest (19 in. wide by 46 in. long by 20 in. tall) features frames of Honduras rosewood, legs of Bolivia rosewood, and panels of bird's-eye maple. The finish is a blend of tung oil and polyurethane.

JAMIE PAPPAS
Montville, Queensland, Australia

A restorer of antique furniture, Pappas borrowed design elements from the many pieces he had worked on over the years to build this Regency-style chessboard. It is constructed from solid mahogany, and the game board is veneered with satinwood and palisander squares. The piece also is elaborately decorated with scroll-cut brass inlay set into palisander, ebony, and amaranth veneers. Much of the intricate scrollwork was done on a treadle-operated jigsaw.

BRUCE PETERSEN
Canby, Ore.

This mahogany chest of drawers was Petersen's final project for the Mastery Program at The Northwest Woodworking Studio in Portland, Ore. Made for his first child, Silas, the chest is 19 in. deep by 36¼ in. wide by 37 in. tall. The tree inlay, inspired by a simple design Petersen had seen on an old folk piece, is made from holly and yellowheart. The pulls are bronze, set into a circle of holly inlay. The piece, which took about 100 hours to build, is finished with shellac.

RICH CHAPPLE
West Vancouver, B.C., Canada

Chapple, who has been building Craftsman-style furniture for six years, stumbled upon this uncommon piece while flipping through *Making Authentic Craftsman Furniture* (Dover, 1986). The chest (25 in. deep by 44½ in. wide by 56 in. tall) is made of quartersawn white oak, poplar, and mahogany, with aromatic cedar for the drawer bottoms. It required 228 pieces of wood and took approximately 260 hours to build. It is finished with aniline dyes, pigment stains, shellac, and wax.

PHOTO: GLEN ERIKSON PHOTOGRAPHY

COSMO A. BARBARO
Edinboro, Pa.

Good jazz can affect us in all sorts of positive ways, including how we design things made from wood. Indeed, Barbaro told us the Benny Goodman tune "Don't Be That Way" was the inspiration for this whimsical lamp. The piece is 19 in. deep by 17 in. wide by 25 in. tall. It's made from redwood burl, cherry, and ebony and finished with Bartley's gel varnish.

CINDY VARGAS
Glendale, Calif.

This cabinet was inspired by the landscape of northern New York, where Vargas was living when she made it. "We had great sunsets up there," she said. Vargas, who often combines her love of the fiber arts with her passion for woodworking, used both mahogany and silk in the construction of this piece (15 in. deep by 45 in. wide by 40 in. tall). The colorful silk panels in the doors and drawers were assembled from 2-in. and 4-in. sections of dyed fabric, and padded to give the cabinet softness. The two doors in the center open to reveal a carved center divider. The mahogany was darkened with potassium dichromate. The finish is oil-based polyurethane.

JAMES MURSELL
West Sussex, England

This Windsor reading bench, what Mursell calls a "five-cheek design," was made for a family of three. The bench accommodates two-and-a-half people: two adults and a child. Made of English oak with an elm seat, the bench (19 in. deep by 66 in. wide by 28 in. tall) was sized to fit in an alcove. The piece was ammonia-fumed for 15 minutes and topcoated with an oil/varnish mixture.

ALAN TURNER
Haverford, Pa.

This Newport-style kneehole desk is modeled after an original attributed to John Townsend (circa 1780s). As on Townsend's piece, pulling out the top drawer on Turner's version reveals a hidden writing surface and gallery. All of the carving and dovetails were done by hand, as were some of the moldings. The desk is 20½ in. deep by 36 in. wide by 34½ in. tall and is made of mahogany, with quartersawn sycamore, hard maple, and poplar as secondary woods. The finish is yellow dye, lime, shellac, and lacquer.

PHOTO: LOREN HEINLE

TERRY AND MARY ANN LUTZ
Dryden, N.Y.

This interpretation of an original clock made by Jeromes and Darrow of Bristol, Conn., circa 1830, was a team effort. The Lutzes' version (5 in. deep by 12 in. wide by 19 in. tall) is made of basswood with curly maple veneer. The columns are solid maple. Terry performed all of the woodworking tasks, while Mary Ann stenciled the columns and lower glass panels, inked the dial, and gilded the top and bottom of the columns, the top of the clock, and the dial. The finish is varnish and wax.

Submissions

Readers Gallery provides design inspiration by showcasing the work of our readers. For consideration, send entry forms (available at www.finewoodworking.com) and photos (unaltered digital images, prints with negatives, or slides) to Readers Gallery, *Fine Woodworking*, 63 S. Main St., Newtown, CT 06470. If you want materials returned, you must include a self-addressed envelope with appropriate postage.

ROUTER BIT
DEPTH-STOP

ALIGNMENT
LINES

INCREASED
CAPABILITIES

THE CURE FOR PERSISTENT JOINT PROBLEMS.

FAST. EASY. ACCURATE. PORTER-CABLE's new dovetail jigs take all the traditional headaches out of cutting perfect dovetails every time. With patent-pending alignment lines and router bit depth-stop, set-up and adjustments are painless. Both features enable you to create more precise joints with a professional look. Plus they're ready to go right out of the box with no dreaded assembly. Dovetails just don't get any simpler. For more information and video tips, visit porter-cable.com/jigs today.

PORTER CABLE®

REDEFINING PERFORMANCE®

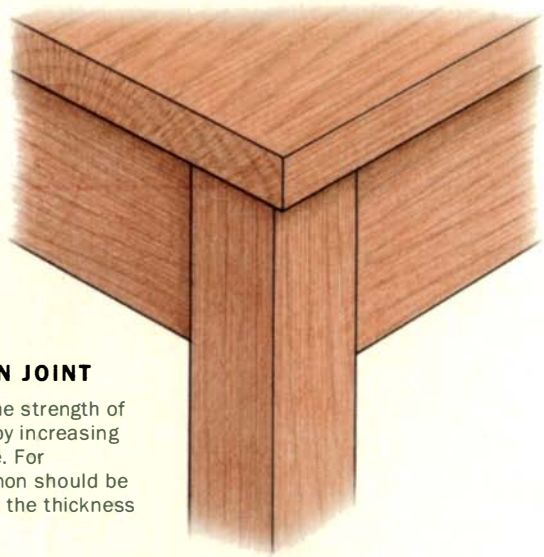
READER SERVICE NO. 134

Q&A

Mitered tenons in table construction

Q: I'm planning to build a dining table (4 ft. by 8 ft.). A friend suggested that I miter the apron tenons for strength. Does a mitered tenon really add strength, and how do I lay it out?

—LANCE MATHENY, St. Louis, Mo.



MAKE A STRONGER MORTISE-AND-TENON JOINT

Mitered tenons increase the strength of a mortise-and-tenon joint by increasing the long-grain glue surface. For maximum strength, the tenon should be about one-third to one-half the thickness of the apron stock.

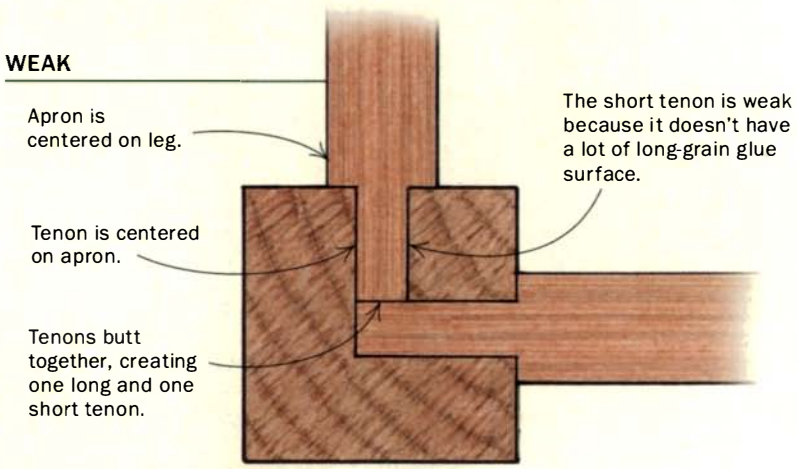
A: AN 8-FT.-LONG DINING TABLE IS A PRETTY LARGE table. And with only eight leg-to-apron joints holding the table off the floor, you want to make sure these joints are as strong as they can be.

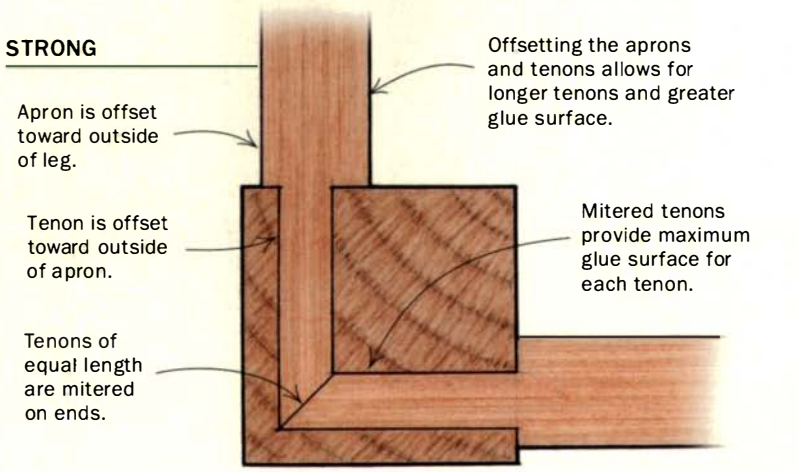
The first instinct is to join the table as you would a door—with tenons centered on the aprons, and mortises centered or slightly offset on the legs. But if you follow this logic, your tenons will butt together and one or both of them will be very short and thus weak (the longer the tenon, the stronger the joint). Mitering the tenons where they meet inside the leg increases strength by allowing more glue surface on the outer cheeks of the tenons. Mitering the tenons also provides more room for pegs to reinforce the joint.

Another trick to getting longer tenons is to offset the tenons toward the outside of the aprons—a ⅛-in. shoulder is more than enough to register the outer face of the apron against the leg. Offsetting the tenons will call for an extra setup at the tablesaw when you cut the tenons, but it's worth the trouble. To keep the top of the leg strong, the tenon should stop ½ in. or ¾ in. short of the top end, though you can leave a short haunch there.

Once the tenons have been cut, trim the ends to 45° using a handsaw, which causes less tearout than a tablesaw or miter saw. Don't bother trying to get the miters to meet up exactly inside the leg; it won't add significant strength to the joint.

—Matthew Teague, woodworker and author





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.

Drawings: Vince Babak

The difference between polyurethane and PVA glues

Q: Your Q&A "Which glue to use?" (*FWW* #162, p. 106) recommends against the use of polyurethane glues on dadoes and in mortise-and-tenon joints. Could someone please explain why?

—MARC KANE, Concord, Calif.

A: POLYURETHANE GLUE PROVIDES a strong bond when it is pressed into a thin, solid glueline between tightly clamped gluing surfaces, such as in an edge joint or face lamination. However, it does not develop enough cohesive strength as it cures when used in structural joints such as the ones you mentioned. This is because the long-grain gluing surfaces in mortise-and-tenon joints and dadoes are not pressed directly against each other. Instead, there is space to allow room for the glue and to allow the joints to be assembled without too much pounding.

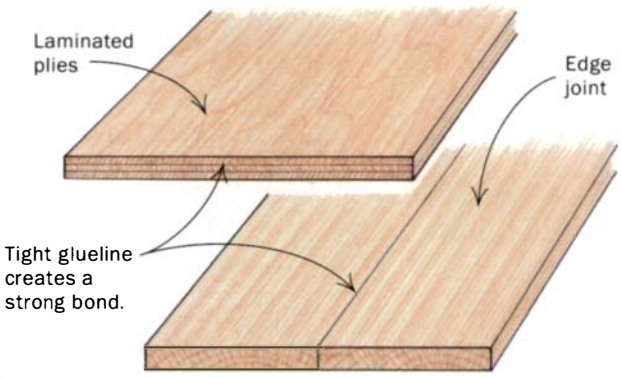
If polyurethane glue were used for these joints, it would expand into the empty space as a foam rather than a hard, solid bond line. Polyurethane foam, unfortunately, has very little structural strength. Polyvinyl acetate (PVA) glue, on the other hand, develops ample cohesive strength as it cures and can fill small gaps.

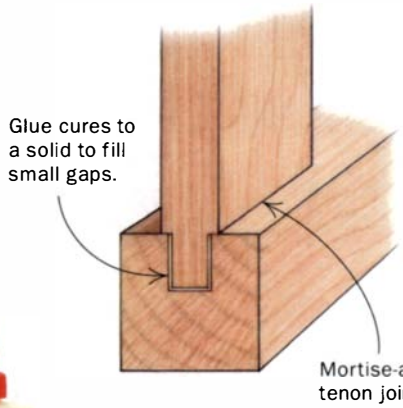
If in doubt about how big the gap is in a joint, use epoxy, which has structural gap-filling ability.

—William Tandy Young, author of The Glue Book *(The Taunton Press, 1998)*

CHOOSE THE RIGHT GLUE FOR THE JOB

Although neither polyurethane nor PVA glue has true structural gap-filling properties, PVA is more appropriate for applications in which there may be small gaps.





POLYURETHANE

Polyurethane glue is a strong adhesive that provides good creep resistance and durability, so it works well for laminating and edge-gluing. However, its cured foam has no structural value, so polyurethane is not a good choice for joints that may have gaps.

PVA

Versatile PVA glue is suitable for a variety of jobs, such as laminating, edge-gluing, and structural joinery. PVA glue cures into a solid, so it's more suitable than polyurethane when it comes to joints that may have small gaps, such as mortise-and-tenon joints and dadoes.

Food-safe woods

Q: I do a lot of turning of bowls and platters. Which woods are safe for contact with food, and which should I avoid?

—ROBERT BALL, Rochester, N.Y.

A: THERE ARE VARIOUS LEVELS of toxicity and various allergic reactions that make it difficult to categorize just how poisonous a wood really is. It often depends on how the food will be exposed to the wood. It is typically far more dangerous to use a wood that contains toxins if you are making stirring utensils or long-term storage containers than it is if you are making cutting boards. This is because heat, moisture, and the amount of time that the food is exposed to the wood all contribute to how much of the toxin gets transferred to the food.

To help you become familiar with the more dangerous species, you may want to read *A Guide to Useful Woods of the World* edited by James H. Flynn and Charles D. Holder (Forest Products Society, 2001). Another good source of information is the Web site of the American Association of Wood Turners (www.woodturner.org); look under "resources."

Generally, you can't go wrong with hard maple, *Acer saccharum*, which is perfect for making food-related items or toys for young children.

—Jon Arno, a frequent contributor, passed away Dec. 1, 2004.

Photos: Kelly J. Dunton

AUTON Motorized Systems

World Famous IN-VIS-O-TRAK™

celebrating 50 years 1955~2005

Member

CEDIA

CUSTOM ELECTRONIC DESIGN & INSTALLATION ASSOCIATION

For 50 years, AUTHENTIC AUTON™ products have been specified by world-class architects, fine furniture makers, interior designers, and builders. When designing for the most discriminating environments, they appreciate the flexibility that only AUTON products provide. Featuring systems that can be used in virtually any design application, AUTON provides both standardized and custom-built motorized systems.

AUTON SENT THE DUMBWAITER TO COLLEGE AND OUT CAME THE ALL-NEW SMARTWaiter!™ NO MORE STAIRS!

AUTON Motorized Systems are installed **throughout the world** in fine homes, offices, hotels, yachts, motor coaches, and aircraft. Thousands of AUTON products are installed in luxury suites at some of the world's greatest hotels including the Mirage, MGM Grand, and Bellagio in Las Vegas. Major studios like MGM, Walt Disney, and Universal use AUTON products and so do some of the most recognizable celebrities in the world. And because only an **AUTHENTIC AUTON**™ system would be appropriate for America's greatest home, **THE WHITE HOUSE** chose an AUTON Motorized System. Shouldn't you?

Fabulous! 2005

Plasma Lift

THE WORLD'S OLDEST AND LARGEST MANUFACTURER OF TV LIFTS

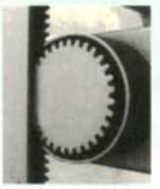
Panel Lift

Ceiling Flip-Down

Pop-Up Bar

Pop-Up Safe

Plasma Pop-Up



Rack & Pinion Drive

SMARTWaiter™

AUTON MOTORIZED SYSTEMS

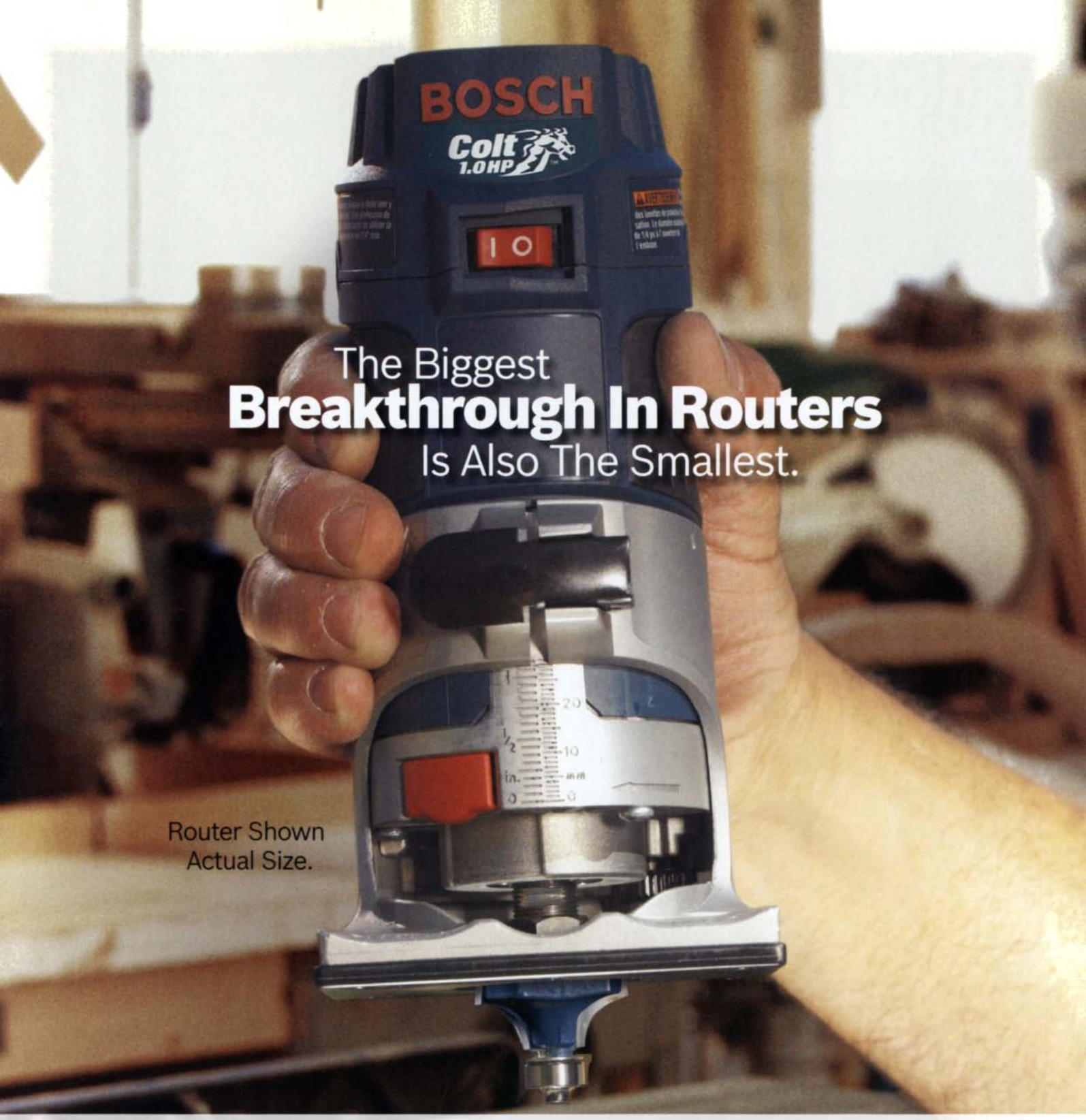
REQUEST OUR FREE CD!

Motorized Systems for Pop-Up TV'S • Pop-Down Monitors • Pop-Down Projectors • Plasma Lifts
Pop-Down Speakers • Lifts & Swivels • Extend & Swivel • Panel Lifts • Table Lifts • SmartWaiter

WORLD HEADQUARTERS • Valencia, California • P.O. Box 802320 • 91380
www.auton.com • tvlifts@auton.com • phone (661) 257-9282 • fax (661) 295-5638

THE WORLD KNOWS AUTON™

READER SERVICE NO. 98



Introducing the Versatile 1.0 HP* Colt™ Palm Router.
Power and Precision in the Palm of Your Hand.

Powerful enough to tackle a wide array of routing tasks. Small and light enough to do jobs big routers can't. The new Colt Palm Router combines precision and versatility – in an easy-to-handle size with wide bit capacity and an electronically-controlled motor for smooth, accurate routing.

Bigger isn't always better. Get your hands on a Colt Palm Router at a dealer near you or visit boschtools.com.

*Max. tool output

BOSCH
Invented for life

READER SERVICE NO. 200

boschtools.com

Federal-style stringing and banding

BY STEVE LATTA

The card-table project in this issue (pp. 54-63) contains many of the finest motifs from Baltimore Federal-style furniture. In this Master Class I'll describe how to veneer the feet of the table; how to add banding to the apron and the feet; and how to inlay black-and-white stringing in the apron and the legs. In the next Master Class (*FWW* #182, February 2006), I'll guide you through inlaying the bellflowers and the thistle oval paterae that adorn the pilasters of the legs.

You can inlay the lower part of the legs before or after you fit them to the apron. But you must fit the legs before you add the banding and the oval paterae, because their location will be determined by the location of the leg in conjunction with the apron. For more on creating the oval thistles, see "Federal-Style Oval Inlays" (*FWW* #138, pp. 70-75).

Banding and stringing adorn the apron

Before creating the relief for the waist banding along the lower edge of the apron, I run a scoring line with my slicing gauge to prevent tearout. I then use a Dremel fitted with a purfling roller that comes with the Stewart MacDonald router base (see Sources of Supply, p. 106).

I make my own banding using similar methods to those shown in *FWW* #166, pp. 116-120, but you can buy it ready-made. To secure the banding, apply glue, tape it in place, and then use a caul made from a strip of ⅛-in. bending ply or a thin steel ruler covered with clear packing tape. Use several spring clamps

STRINGING AND BANDING

You can inlay just the front faces of the legs or, as in this case, include the side faces. The same stringing is used on the apron and the legs.

Band the apron

Rabbet the apron. *Using a Dremel tool with a router base and edge guide (above), cut away a ¼-in.-wide strip around the bottom of the apron to receive the banding (left).*

Apply the banding. *Glue the banding and hold it in place with strips of clear tape. Use a thin steel ruler as a flexible clamping caul, but cover the contact surface with clear tape to prevent it from sticking.*

spaced closely together. When the glue is dry, carefully scrape and sand the banding flush with the apron.

Match the leg banding to the apron—Slide on the leg. Referencing off the bottom of the apron, carry the lines for the banding across the sides and face of each leg. Remove the leg, score the outside lines with an X-Acto knife, pare away most of the recess with a narrow chisel, and use a router plane to take the channel to a final, uniform depth.

When fitting the leg banding, take your time and keep the pattern consistent. I miter the corners using a plane iron referenced off a 45° wooden block. Cut the long section that runs across the face and then add the two short returns. Put a thin film of glue in the channel and hold the banding in place with clear tape. After the glue has dried, level the banding flush to the surface of the leg.

Grooving the apron panels—Although I typically use hand tools to cut grooves for

Inset the apron stringing

Cut grooves in the apron. *Cut the grooves for the apron stringing using a Dremel fitted with a shopmade, concave base to match the curve of the apron. Use an attached fence for the horizontal stringing (left) and an auxiliary fence clamped to the apron for the vertical stringing (right).*

SHOPMADE STRINGING

Cut strips of veneer. *Use a slicing gauge guided by a fence to cut thin strips of the black-and-white stringing. Flip the glued-up veneer and slice from both sides.*

Draw it through a thicknesser. *Because the stringing is never a uniform thickness, pull it through a shopmade jig.*

Photos: Mark Schofield; drawings: Bob La Pointe

Veneer the feet

Set the jointer to cut the same thickness as the veneer. *Use a stop block clamped to the fence to limit the length of the cut.*

Clean up the cut. *Use a chisel to square the arc left by the jointer. Veneer the back of the leg first (right), then the two sides, and finally the front.*

stringing, the width of this particular black-and-white stringing caused me to change gears. I again used my Dremel fitted with the router base and a shopmade concave base. Made from ⅜-in.-thick medium-density fiberboard (MDF), the base doesn't have to match the arc of the apron perfectly; just so that it rides on each end and doesn't rock. I used a specially designed 1/16-in. spiral end mill with a very short cutting length to reduce chatter. I applied a fence to this base for the horizontal sections and then rode an auxiliary fence clamped to the apron for the vertical elements.

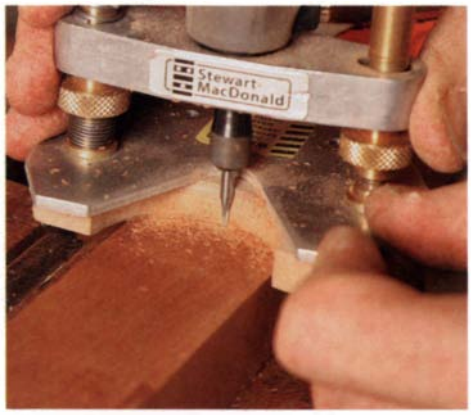
Creating the two-tone stringing—This is made by laminating 1/32-in.-thick layers of holly and ebonized pearwood veneer. Spread yellow or white glue with a paint roller and clamp firmly. I joint an edge on the jointer or with a block plane, and then slice off pieces of stringing using a shopmade jig and slicing gauge. The jig is simply a piece of ½-in.-thick MDF with a fence glued to one side that stands a little proud of the surface. This lip serves as a stop for the veneers.

Because the two-ply veneer often is erratic in thickness, I draw the stringing through a shopmade thicknessing tool (see photo, p. 103). This consists of a block of maple with about a ½-in.-deep sawkerf cut in the top. I rout a shoulder about ⅛ in. deep and ⅝ in. wide and insert a piece of scraper blade. This has two sets of oblong slots to make it adjustable and a 45° bevel returning back from the face. The thickness of the stringing is set by adjusting the blade in relation to the kerf.

The stringing is pulled through the slot and scraped to an even thickness on the edge of the steel. Once sized, the stringing fits easily into the groove.

Fitting the stringing—Because the stringing is two-tone, all corners must be mitered. Use a glue syringe to apply a fine film to each side of the recess and press the stringing into the channel. Be careful not to press the stringing below the surface of the apron. When the glue is dry, take a card scraper and scrape the inlay close to the surface.

Groove the legs



Groove the legs using a Dremel tool or laminate trimmer fitted with a router base and guided by a fence. Groove the arch at the top of the stringing by extending the bit out from the collet, which allows the shank to be guided by a template.

Leg inlay ends at cuffed feet

Apply the stringing in the legs in the same way as the apron. Ride a fence along the outside edge of the leg to cut the straight grooves. A pattern is used for the arch at the top of the column. Simply extend the bit out from the base and use the shank riding along the pattern to guide the cut.

The stringing for the arch is made from individual pieces of black-and-white

READER SERVICE NO. 4

READER SERVICE NO. 165

READER SERVICE NO. 126

READER SERVICE NO. 188

Inlay the leg stringing

Preparing curved stringing. *Because the pre-formed black-and-white stringing could snap when applied to a curve, the author glues the two colors of stringing and clamps them to a curved form while the glue is still wet.*

Level the stringing. *The cleanest way to bring the stringing level with the leg is to use a well-tuned card scraper (left). Corners are better pared flush using a chisel (right).*

veneer, sliced to width and glued up around a curved form. Insert the arched inlay first, mitering the ends, then cut and insert the long sections. Scrape the stringing nearly flush with the leg and pare the inlaid arch with a sharp chisel.

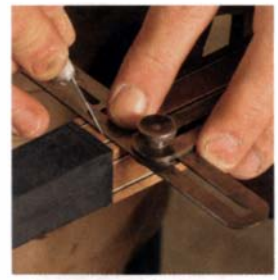
To avoid surface undulations, I don't do the final sanding until all the inlay in a particular section is in place.

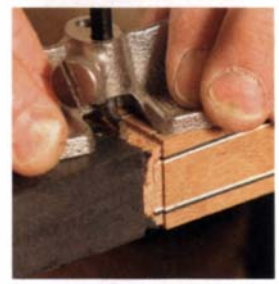
Veneer the black feet—Beginning with the rear of the leg, set the jointer to the thickness of the ebonized veneer. Remove the arc left by the cutterhead with a chisel, and glue and clamp the veneer.

When dry, cut the veneer flush to the sides of the leg with a veneer saw or knife, and repeat the process on the sides of the leg. Finish by facing the front of the leg. You can afford to be a little sloppy at the top because the cuff banding will cover the transition. Bevel the veneer at the base of the leg to reduce the risk of it catching on the floor.

Add the cuff banding—When laying out the cuff, use a bevel gauge but remember that all of the faces aren't tapered, so register off the end of the leg to avoid misalignment. Once you've recessed all four sides, miter the cuff segments, keeping the pattern continuous. Place a joint at the back of the leg in case the pattern doesn't quite line up. □

Cuff the feet





Lay out the cuffs. *Use a bevel gauge to lay out the cuff banding that transitions the legs to the feet (top). Set the bevel angle using the base of the legs. A router plane creates a uniform depth in the recess (middle).*

Wraparound cuff. *Miter each section of the cuff and try to keep the pattern consistent. Tape the sections together as you go.*

Sources of Supply

ROUTING ACCESSORIES

Stewart MacDonald
800-848-2273; www.stewmac.com
Model 5260 precision router base, $50.95; model 4324 precision router edge guide, $28.25. They also have an adapter to fit Foredom drills.

Drill Technology
616-676-1792; www.drilltechnology.com
Custom-made solid-carbide end mill: SAPFM 1/16-in. bit, $4.75. They make similar bits in other sizes.

VENEER AND INLAYS

Dover Inlay Mfg. Co.
301-223-8620; www.doverinlay.com
Veneers, banding, premade stringing, and ornamental ovals

Wood River Veneer
800-875-7084; www.woodriverveneer.com
Veneer only

Groff & Groff Lumber
800-342-0001; www.groffslumber.com
2-in.-thick holly for resawing as veneer

READER SERVICE NO. 56

READER SERVICE NO. 133

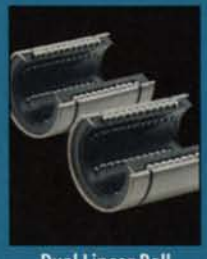
READER SERVICE NO. 143

READER SERVICE NO. 136

DEAD-ON ACCURACY.
GUARANTEED.

Photograph is for illustrative purposes only.
Read instruction manual before operating tool.

visit makitatools.com or call 1-800-4MAKITA



Dual Linear Ball Bearings

Dynamically Balanced Direct Drive Motor

PRECISION.

The new Makita 12" Dual Slide Compound Miter Saw (LS1214) delivers smooth, accurate and precise cuts - guaranteed each and every time. Equipped with two linear ball bearings, a single piece precision machined aluminum base that always remains true and a direct drive motor that never slips or bogs down - don't settle for less.

EXPERIENCE MORE.

READER SERVICE NO. 161

Makita®
INDUSTRIAL POWER TOOLS

Caring for brushes

USE AND CLEAN THEM PROPERLY, AND THEY WILL LAST FOR YEARS

BY DAVID SORG

It seems that most people would rather wash their house cat than their paintbrushes. Whenever I give a finishing workshop, I bring along some paint stripper to try to save the brushes that participants haul in; they're often as stiff as the last board they were used on. Oh sure, their owners apologize… maybe blame their kids. But I know.

You can start making cleanup easier before you ever open a can of finish. First, choose the right brush. I rarely use natural-bristle brushes anymore. Synthetics are easier to clean, and several manufacturers make synthetic-bristle brushes that apply oil-based and water-based finishes as well as natural bristles. I like Purdy's Syntox (www.purdycorp.com) and Wooster's UltraPro Soft (www.woosterbrush.com). Of course, these cleaning techniques will work on natural bristles, too.

Remembering a few things when using the brush will help when it comes time to clean it. Before it touches the finish, dip the dry brush about halfway into the appropriate solvent. This will coat the bristles with solvent instead of finish.

Try to keep the finish from creeping into the metal ferrule, where it will be hard to get out later. This is easier said than done when brushing undersides or upper vertical surfaces. Start with these surfaces before the brush becomes saturated with finish, or flip the work over.

When done for the day, take the time to wash up, or at least to put your brush into hibernation. Don't head off to watch a couple of innings of baseball before you clean; it will just make things harder.

Clean oil-based finishes after the final coat

Let's talk about cleaning oil-based finishes. (This is generally where the moaning begins.) The good

Cleaning starts before brushing

Newer synthetic brushes work with either water- or oil-based finish, but don't use one brush for both. Some resins will always remain and will gum up if you use the same brush for different products.

Solvent before finish eases cleaning. *Before finishing, dip the brush halfway into the appropriate solvent, then brush out the liquid onto a newspaper or a lint-free rag.*

Don't overload the brush. *To avoid loading the hard-to-clean ferrule with finish, dip the brush no more than halfway into the finish and press out the excess against the side of the container.*

Photos: Andy Engel

MAKE SOMETHING OF IT

at the Ultimate Woodworker's Week!

You Could Win a VIP Trip to The New Yankee Workshop to Meet Norm Abram
A One Week Class at the Marc Adams School of Woodworking
A DELTA®/PORTER-CABLE® Woodworking Shop Tool Pack and
A Woodworking Library from Fine Woodworking/Taunton Press

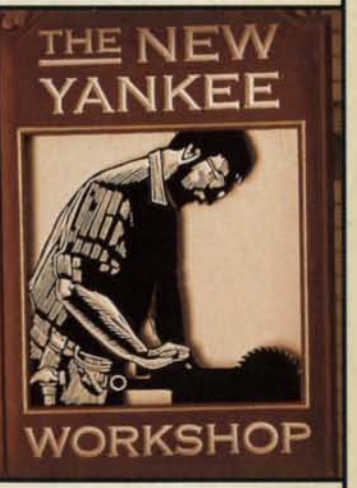
P L U S

20 Weekly Prizes will be Awarded: Choice of a DELTA® or PORTER-CABLE® Woodworking Tool and a Woodworking Library from Fine Woodworking/Taunton Press

Enter Online at: *www.UltimateWoodworker.com*

PORTER CABLE

DELTA



Fine WoodWorking

marc ADAMS

Oil-based finishes

1. THE COFFEE CAN TRICK

Don't clean oil-based finish from the brush between coats. Suspend the brush in a container of solvent, and wipe it off before the next coat. This doesn't work with water-based finishes.

2. CLEAN USING A SOLVENT

Save used mineral spirits, pour off the liquid, and use it for the initial cleaning. The final solvent rinse should be with virgin mineral spirits. Lacquer thinner works on oil-based finishes, too. It's quicker, cleans better, smells worse, evaporates faster, and is more flammable. Your choice.

3. FOLLOW THE SOLVENT WITH CITRUS CLEANER

Use household citrus cleaner after the solvent rinse. All brushes need a final water cleanup, and citrus cleaner helps the transition between oil and water.

news is that you don't necessarily have to clean the brush each time you use it. If I'm brushing a traditional, multi-layered varnish that is recoated each day or every other day, I don't wash the brush after each coat. I wipe the excess finish out of the brush with a lint-free rag, then store it in a coffee can filled with solvent (see photo 1, left). For most oil-based finishes, the solvent is mineral spirits. For lacquer, it is lacquer thinner. The method is the same for both.

The next day, I press out the extra solvent against the side of the can, and put on the next coat. After the final coat, you'll have to wash the brush; if left indefinitely in the solvent, the bristles will start to grow crystals of finish.

Start by wiping the excess finish from the bristles. The object is to carry away the finish by running as much solvent through the bristles as possible. Flushing it down the sink is expensive and unfriendly to the environment. There's an alternative: You can reuse solvent and lacquer thinner almost indefinitely by letting the solids settle out and decanting the liquid.

If you're an occasional finisher, a single coffee can or wide-mouthed jar is most of the cleaning setup you'll need. Fill the jar halfway with solvent and dip the brush in it, then wipe the brush semi-dry with paper towels. Repeat a time or two, especially if you got a lot of finish up in the ferrule. Then hold the brush a little above the container and dribble on some virgin solvent. Wipe. Repeat.

If you let the used solvent settle for a few days, you can pour it off into a fresh container from time to time. Frequent finishers use a two-can system starting with the "dirtier" can and proceeding to the "cleaner" can. The dirty can is replenished from the clean can, which is replenished with virgin solvent.

When you think you've got the brush clean enough, follow up with a water rinse. With one difference, this rinse is exactly the process used to clean up water-based finishes, as described below. The difference is that you should use a water-based orange cleaner, instead of detergent, for the first couple of rinses. The citrus cleaner seems to be more miscible with mineral spirits, easing the transition from the solvent you were using to water.

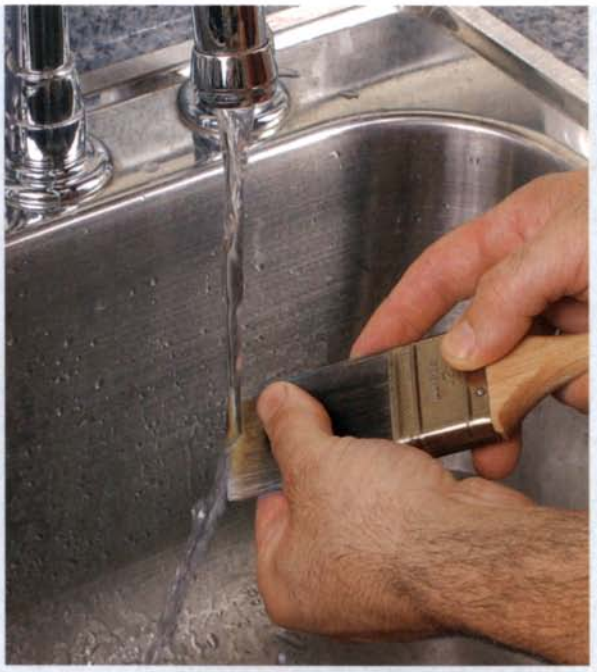
A little sludge is normal on the first rinse with the orange solvent. If you find a lot of sludge, you probably didn't rinse the brush enough in solvent.

Clean water-based finishes after every use

Brushes used with water-based products should be cleaned after each use. There's no excuse not to, because it is so easy. Start by pulling a paper towel

Water-based finishes

Detergent helps water do its job. *On a molecular level, detergent helps water to remove marginally soluble material. Without it, your brush will be grungy.*



Start with a massage. *Under warm, not hot, running water, use your fingers to massage the finish down. Using dish detergent, lather, rinse, repeat. A brush comb, available at paint stores, will ensure that all the old finish is removed.*

or rag downward along the brush to get rid of the extra finish. Try not to squeeze the finish up into the ferrule. Next, put the brush under the water tap with the bristles down and let cool or warm (not hot) water pull out more finish. Massage the bristles from the top down until most of the finish seems to be gone.

At this point, squeeze a little liquid dishwashing detergent (I like Dawn) into the bristles near the ferrule and work up a lather. Rinse well and repeat. This may be all that's needed if you started cleaning while the finish was still fresh. If things were getting a little gummy, do it again, and work the lather with a brush comb. I make my final determination by bending the bristles backward to see what comes out right at the bottom of the ferrule/top of the bristles. Nothing should emerge. If you see soap bubbles or a drecky film, keep going.

Once it's clean, I give the brush one good downward shake, then use my fingers to bring the bristles to their original shape and hang it on a nail to dry. The next day I replace the factory cover if I have one, or wrap the brush loosely in paper to keep out dust. Store brushes either hanging from the handle or up-ended in a jar or can so that no weight rests on the bristles.

Hang it out to dry. *Proper storage helps brushes retain their shape, and a newspaper wrap keeps the dust at bay.*

How about not cleaning?

There are two finishes that don't require cleaning at all: shellac and brushing lacquer. Both are permanently resolvable. Just soak the brush for a while in denatured alcohol or lacquer thinner, as appropriate, and it will be as good as new. This assumes that you're using a dedicated brush. If you spread your brush around different finishes, follow the same cleaning routine as for oil-based finishes, using the appropriate solvent.

I opened with a mention of paint stripper, and I'll close with it as a last resort. It's worth a try for that brush-wash job gone bad. It won't help much if there's a bunch of old stuff in the ferrule, and it might even ruin the brush, but what's there to lose? I have not found an "environmentally friendly" stripper that works. Use the kind with methyl ethyl ketone (MEK) in it. Somewhere on the label it will say: "Known by the State of California to cause..." various nasty things.

Or, you could just buy a new brush. □

Lacquer and shellac

Don't bother to clean brushes used with lacquer or shellac. These finishes always remain soluble in their solvents, so cleaning these dedicated brushes is a questionable practice at best.

READER SERVICE NO. 29

READER SERVICE NO. 16

WOODWORKERS MART

See ad index on page **121** for reader service number.

WOODWORKERS MART

See ad index on page **121** for reader service number.

WOODWORKERS MART

See ad index on page **121** for reader service number.

WOODWORKERS MART

See ad index on page **121** for reader service number.

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 January/February 2006 issue is October 25, 2005.

Business Opportunities

FOR SALE BY OWNER Complete Woodworkers store, in business for 20 years. Why pay high franchise fee? Fax inquiries to 800-243-0713.

Blades and Bits

HIGH SPEED STEEL PLANE irons. Tested longest lasting in world. Paul Williams, Academy Saws, Australia. Fax 0015 61 7 5437 2533.

Hand Tools

FREE WOODCARVING TOOL CATALOG 1-888-901-8099. stubaidirect.com Class info also available!

PETE NIEDERBERGER- Used and Antique tools and parts. Over 80 bedrocks in stock. (415) 924-8403 or pniederber@aol.com Always buying!

ANTIQUE & USED TOOLS. Hundreds of quality hand-tools. Stanley plane parts. Visa/MC. BOB KAUNE. www.antique-used-tools.com. (360) 452-2292.

Instruction

McLAUGHLIN WOODS, Canterbury, NH. "Best vacation I ever had!" Friendly, patient, professional. Classes with furniture making masters. Request brochure: www.mclaughlinwoods.com or (603) 783-9700.

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

1:1 TEACHER-TO-STUDENT RATIO with fine furniture designer/builder. (519) 853-2027. www.passionforwood.com

MASTERPIECE SCHOOL OF FURNITURE offers 1-3 year program in traditional furniture making. Mendocino Coast, California. Summer classes available. Ph/Fax (707) 964-8798. www.masterpieceschool.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

HANDS-ON COURSES in beautiful Maine. Beginner through advanced. Workshops, Twelve-week Intensive, Nine-month Comprehensive. Center for Furniture Craftsmanship (207) 594-5611, www.woodschool.org

BENJAMIN HOBBS Furniture Making Classes. Queen Anne and Chippendale chairs, chests, beds, tables, more. Hertford, NC. (252) 426-7815. www.hobbsfurniture.com

WOODTURNING INSTRUCTION: Russ Zimmerman's Punta Gorda, Florida workshop or yours. (941) 575-4337 or www.learntoturn.com

Miscellaneous / Accessories

GLASS SOURCE FOR WOODWORKERS. Glass and mirror custom cut, beveled, edged, grooved or fabricated to your specifications. Shipped direct from our shop to yours. For free brochure, inquiries, orders, call Glass Source: 1-800-588-7435. www.theglasssource.net

Help Wanted

FURNITURE MAKER WANTED. Small, friendly shop in Vermont. Custom hardwood furniture. Competitive pay and benefits. Call ClearLake Furniture (802) 228-8395.

FURNITURE MAKER and apprentice. Two positions in San Francisco shop. Visit www.artisticlicense.org. Email resume debeyzito@earthlink.net.

WOODWORKER/ACOUSTIC Guitar Builder. Fine woodworking experience. Teachable team player/positive attitude/exc. career opp. Relocate to Kona, Hawaii. Exc. pay based on skill/exp. + bene's. Email or fax resume to: ggibusoffice@hawaii.rr.com 808-329-2708.

Musical Supplies

GOT HARP? Build one from plans or kit -- beautiful! Musicmaker's Kits Inc. (800) 432-5487, www.musikit.com/fw

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

CARLYLE LYNCH MEASURED DRAWINGS—Museum and private collection furniture plans by Carlyle Lynch. Catalog $2. P.O. Box 13007, Arlington, TX 76094. (817) 861-1619.

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

Wood

TIGER MAPLE, MAHOGANY, cherry, walnut; plain and figured. Wide boards, matched sets, 4/4 to 24/4. 200-ft. minimum. (570) 724-1895. www.irionlumber.com

AUSTRALIAN BURLS www.australianburls.com Great selection of awesome Aussie burls. jsyvertsen@cox.net (757) 816-5622.

WALNUT SLABS/CROTCHES Claro, myrtle, elm. Black acacia. 877-925-7522. From our sawmills. Gilroy, CA. www.bakerhardwoods.com

LONGLEAF HEART PINE (antique). Flooring-lumber-millwork. Red cedar lumber & paneling. Lee Yelton: (706) 541-1039.

CLARO WALNUT, BAY LAUREL, pecan, redwood and maple burl. Large slabs and blocks. Peter Lang, Santa Rosa, CA 1-866-557-2716.

MESQUITE BOARDS (915) 585-7693.

FLORIDA—FROM ASH TO ZEBRAWOOD with milling available, including custom, antique restoration and curved moldings. Hardwood Lumber and Millwork. (863) 646-8681. FREE 877-710-3900.

NORTHWEST'S FINEST BURL, maple, myrtle, redwood, buckeye. Table, clock slabs, turning blocks. (503) 394-3077. burlwoodonline.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)

FIGURED CLARO WALNUT slabs, planks, blocks, dimensions suitable for small to very large projects. California Walnut Designs. 800-660-0203. www.woodnut.com

CLEAR ALASKAN YELLOW CEDAR CVG, clear Douglas fir vertical grain. www.easycreeklumber.com (541) 344-3275.

WWW.ALOHAWOODS.COM - Rare Hawaiian hardwoods - figured koa, mango, macadamia nut, etc. Toll free 1-877-HIWOODS.

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.anexotichardwood.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.

ATTENTION VA/MD AREA WOODWORKERS. K/D quartersawn sycamore, red & white oak. Cherry, walnut, elm, apple, and other domestic hardwoods. Herbine Hardwoods, Leesburg, VA. (703) 771-3067.

QUILTED, CURLY, SPALTED, Burled & birdseye maple, figured claro walnut, figured myrtle wood, musical grade lumber and billets. Visit our online store @ www.nwtimber.com or call (541) 327-1000.

QUALITY NORTHERN APPALACHIAN hardwood. Custom milling. Free delivery. Bundled, surfaced. Satisfaction guarantee. Niagara Lumber. 800-274-0397. www.niagaralumber.com

EISENBRAND EXOTIC Hardwoods. Over 100 species. Highest quality. Volume discounts. Free Brochure. 800-258-2587; Fax 310-542-2857; www.eisenbran.com.

WOOD AND TOOL EXCHANGE

Limited to use by individuals only.

For Sale

FW issues # 20 (1980)-#127 (1997) except 68, 90, & 109. Dallas, TX. Mike, phone (972)-733-0803. jms101237@aol.com

Fine Woodworking issues 1-179. $500 plus shipping. Robland X-31 combination machine with all aftermarket improvements in excellent condition. 27-in heavy duty bandsaw by American Sawmill Machinery. $3150 for both. (336) 877-2236.

Fine Woodworking 1-173, exc. cond. *Fine Homebuilding* 1-167, exc. cond. Some indexes. $400 plus shipping (each set). somers96@mac.com Steve Anderson.

FWW #1-120, mint condition, w/#100 index. $425 plus s/h of approx. 85#. Free delivery under 90 miles. (252) 441-1422.

Fine Woodworking issues Nos. 1-85, plus Design Book 1, nice shape. $275.00 + post. Poitras overarm router $250. Dave Smoot, (717) 284-5286. PA.

Fine Woodworking back issues 1-130 with 1-100 index-mint condition. $500 plus frt. (610) 269-4748 (PA).

Fine Woodworking issues, #74 thru 173, plus #43 & 4 specialty issues. $250.00, obo. (614) 457-5189. (OH).

Fine Woodworking #1-179 w/index & 180-185 when published; Woodsmith #35-142; ShopNotes #1-66 all mint condition. $650 plus shipping. (303) 740-8802. CO.

Felder KF700s pro saw & AD741 planer. New. Many extras. MN. (651) 454-3399. bluetail3@sprintmail.com.

Wanted

#171 FWW, July/Aug '04. Phone (603) 650-1701, or email Bill.Wickner@Dartmouth.edu

INDEX TO ADVERTISERS

Use reader service card - inside back cover.

For quick access to their websites, go to ADVERTISER INDEX at www.finewoodworking.com

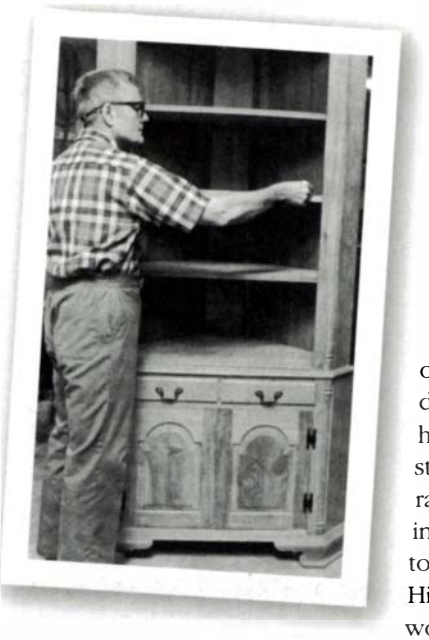
Reader Service No.	ADVERTISER, *page #*
148	Abacus Chair Parts, *p. 117*
	Abrasive Resource, *p. 117*
179	Accuride International, *p. 95*
15	Adams Wood Products, Inc., *p. 35*
39	Adria Toolworks, Inc., *p. 119*
10	Agazzani & Eagle Tools, *p. 108*
32	Airware America, *p. 119*
125	Alisam Engineering, *p. 117*
90	Allred & Associates, Inc., *p. 115*
163	Amana Tool Company, *p. 7*
164	Amana Tool Company, *p. 93*
110	American School of French Marquetry, *p. 116*
65	Ancientwood, Ltd., *p. 17*
60	Andrews Toolworks, *p. 117*
95	Australian School of Fine Furniture, *p. 97*
98	Auton Motorized Systems, *p. 99*
27	Ball & Ball Reproduction Hardware, *p. 92*
	Barr Specialty Tools, *p. 116*
6	Bear Mountain Boat Shop, *p. 119*
108	Bell Forest Products, Inc., *p. 117*
187	Berea Hardwoods, *p. 98*
182	Berkshire Veneer Co., *p. 119*
89	Blue Spruce Toolworks, *p. 117*
200	Bosch Tools, *p. 101*
38	Brookside Veneers, Ltd., *p. 97*
47	The Burgess Edge, *p. 108*
99	CMT USA, Inc., *p. 3*
100	CMT USA, Inc., *p. 113*
2	Cabinetparts.com, *p. 119*
19	Carter Products, *p. 9*
	Center for Furniture Craftsmanship, *p. 9*
21	Certainly Wood, *p. 118*
172	Chesapeake Light Craft, *p. 17*
62	Chicago Bauhaus, *p. 116*
185	Classic Designs by Mattbew Burak, *p. 9*
41	Clayton Spindle Sanders, *p. 115*
114	Cohasset Colonials, *p. 37*
135	College of the Redwoods, *p. 115*
	Colonial Williamsburg Conference 2006, *p. 108*
81	Connecticut Valley School of Woodworking, *p. 100*
175	Cook Woods, *p. 119*
40	Cormark International, *p. 117*
115	Craftsman Studio, *p. 116*
190	Crown Plane Co., *p. 119*
184	Cuban Mahogany, *p. 117*
152	Dakota County Technical College, *p. 17*
86	Delta Machinery, *p. 20-21*
149	DeWalt, *p. 37*
85	DeWalt, *p. 123*
103	Diefenbach Benches, *p. 116*
26	Dimitrios Klitsas, *p. 119*
141	Direct Sales, Ltd., *p. 93*
189	The Dogwood Institute, *p. 37*
91	Dovetail Restoration, *p. 119*
177	Dowelmax, *p. 98*
133	Duluth Trading Co., *p. 107*
57	Eagle Woodworking, *p. 118*
30	Edward Hamilton Bookseller, *p. 17*
18	Electrophysics, *p. 29*
	Engraving Arts, *p. 118*
50	EpoxyHeads, *p. 93*
195	Festool, *p. 27*
14	Forrest Manufacturing, *p. 30*
137	Freud, *p. 15*
59	The Furniture Institute of Massachusetts, *p. 118*
5	General Manufacturing Co., Ltd, *p. 12*
96	Gerstner & Sons, *p. 108*
73	Gilmer Wood Company, *p. 118*
77	Gladstone Tools, *p. 98*
78	Goby's Walnut Wood Products, *p. 116*
160	Good Hope Hardwoods, *p. 115*
4	Gorilla Tape, *p. 105*
72	Groff & Groff Lumber, *p. 118*
157	Guillemot Kayaks, *p. 117*
42	HTC Products, Inc., *p. 118*
173	Hartville Tool Woodworking, *p. 17*
52	Hearne Hardwoods, Inc., *p. 35*
111	Hibdon Hardwood, Inc., *p. 116*
33	Highland Hardware, *p. 97*
53	Hoffmann Machine Co., Inc., *p. 23*
146	ITP USA, *p. 3*
102	Infinity Cutting Tools, *p. 100*
165	Inside Passage School of Fine Woodworking, *p. 105*
	Internetlumber.com, *p. 116*
20	Iturra Design, *p. 100*
113	J.B. Dawn, *p. 119*
192	The Japan Woodworker, *p. 92*
159	JessEm Tool Co., *p. 92*
123	Jobmaster Magnets, *p. 115*
199	Journeyman Tool Co., *p. 35*
193	Kay Industries, Inc., *p. 37*
36	Keller & Company, *p. 93*
109	Klingspor Corporation, *p. 35*
178	Kreg Tool Company, *p. 31*
120	Kremer Pigments, *p. 116*
13	Kuffel Creek Press, *p. 23*
167	Laguna Tools, *p. 9*
168	Laguna Tools, *p. 17*
170	Laguna Tools, *p. 92*
169	Laguna Tools, *p. 100*
171	Laguna Tools, *p. 113*
48	Launstein Hardwoods, *p. 113*
	Leigh Industries, *p. 12*
54	Librawood, *p. 118*
94	Lie-Nielsen Toolworks, *p. 98*
12	Lignomat Moisture Meters, *p. 3*
158	Lowe Hardware, *p. 117*
28	Luthiers Mercantile Intl., *p. 35*
55	M.L. Condon Company, *p. 117*
142	MLCS, Ltd., *p. 31*
161	Makita USA, Inc., *p. 109*
88	McFeely's Square Drive, *p. 7*
83	Meg Products, *p. 117*
176	Miller Dowel Company, *p. 100*
156	Mini Max USA, *p. 35*
155	Mini Max USA, *p. 97*
79	Misugi Designs, *p. 117*
139	Montour Finishing Products, *p. 3*
31	Northwest School of Wooden Boatbuilding, *p. 118*
126	Northwest Timber, *p. 105*
180	Oneida Air Systems, *p. 29*
71	The Original Saw Company, *p. 98*
24	Osborne Wood Products, *p. 116*
16	Outwater Plastics Industries, *p. 115*
75	Ozark Folk Center, *p. 118*
105	Panoply Corp., *p. 98*
143	Penn State Industries, *p. 107*
154	Phase-A-Matic, Inc., *p. 7*
106	Philadelphia Windsor Chair, *p. 119*
128	Porter Cable, *p. 19*
134	Porter Cable, *p. 90-91*
129	Powermatic Tools, *p. 2*
138	Prairie Designs, *p. 117*
22	Pygmy Boats, Inc., *p. 115*
34	Quality Vakuum Products, *p. 92*
131	Rare Earth Hardwoods, *p. 116*
7	Red Top Screws & Stuff, *p. 118*
174	Redfish Custom Kayak & Canoe, *p. 118*
121	Restorco / Kwick Kleen, *p. 37*
136	Rikon Power Tools, *p. 107*
	Rosebud Veneer, *p. 116*
25	Rosewood Studio, *p. 23*
44	Rousseau Company, *p. 13*
97	Router Bits.com, *p. 9*
140	Router-Ease Guide, Inc., *p. 117*
147	Rudd Company, *p. 117*
144	Ryobi America Corp., *p. 11*
191	SATA, *p. 92*
162	SR Wood, *p. 119*
	The St. James Bay Tool Co., *p. 116*
76	Saw Center, *p. 119*
188	SawStop Smart Saws, *p. 105*
122	Scherr's Cabinet & Doors, Inc., *p. 13*
107	School of Woodworking, *p. 117*
51	Shaker Workshops, *p. 97*
8	Sharp Tools USA, *p. 119*
153	The Silky Store, LLC, *p. 116*
150	Speed-Cope, *p. 3*
80	Stratton Creek Wood Works, *p. 116*
118	Suffolk Machinery, *p. 116*
69	Sunhill Machinery, *p. 7*
82	Talarico Hardwoods, *p. 119*
29	Tech Mark, Inc., *p. 115*
186	Thebestthings.com, *p. 116*
84	Thewindsorinstitute.com, *p. 118*
	Thomas Flinn & Co., *p. 100*
68	Titebond, *p. 23*
67	Tools for Working Wood, *p. 37*
194	Trend, *p. 95*
132	Trident Associates Company, *p. 29*
	Ultimate Woodworker Sweepstakes, *p. 111*
49	Vac-U-Clamp, *p. 113*
130	Vacuum Pressing Systems, *p. 13*
	Vidi Visual Communication, *p. 116*
56	Virutex.com, Inc., *p. 107*
119	W. Moore Profiles, *p. 97*
124	West Penn Hardwoods, *p. 118*
45	West System, *p. 100*
3	Western Dovetail, *p. 117*
	Whitechapel, Ltd., *p. 113*
43	Wilke Machinery Co./ Bridgewood, *p. 31*
46	William NG Woodworks, *p. 113*
58	William NG Woodworks, *p. 117*
9	Williams & Hussey Machine Co., *p. 17*
17	Wood Artistry, *p. 119*
70	Wood Rat, *p. 113*
35	Wood River Veneer, *p. 119*
117	Woodcraft, *p. 25*
	Woodcraft, *p. 95*
	Woodfinder, *p. 119*
11	Woodmaster Tools, *p. 13*
1	Woodmaster Tools, *p. 95*
66	Wood-Ply Lumber Corp., *p. 119*
64	Woodworker's Depot, *p. 29*
145	Woodworker's Source, *p. 118*
127	Woodworker's Supply, *p. 29*
181	The Woodworking Shows, *p. 29*
74	Zar Wood Finishes, *p. 13*

looking back

The Wood Butcher

BY CARY H. HALL

Back issues of Fine Woodworking *are a treasured resource, partly because so much about the craft is timeless. Looking back over 30 years of the magazine, we found this gem from* FWW *#6. The author's observations about woodworkers in 1977 still ring true today.*



There is a class of woodworkers who read *Fine Woodworking* with all the yearning of the village idiot hopelessly in love with the village beauty, who fondle those photographs of unbelievable masterpieces with longing despair. These are the wood butchers. The wood butcher embarks on projects that are too advanced for his abilities. He aims too high and teeters always on the brink of failure—when he is not already wallowing in disaster. He is not of the home-improvement breed, those who saw weathervanes in the shape of camels and build lawn furniture from packing crates. His projects are Hepplewhite chairs and Goddard block fronts. He is like the high-school art student who copies the Mona Lisa.

The wood butcher always chooses the most difficult way to go, disdaining the obvious shortcut. If he needs to take two inches off a plank, he will plane with long, soul-satisfying strokes, glorying in the aromatic shavings that litter his workshop floor. He won't saw the piece in one pass through his tablesaw.

He reveres sharp tools. He has a collection of stones and special oils and gadgets to put the precise angle on plane irons. But he hates to sharpen tools. So he won't lend them, knowing, by looking into his own heart, that the borrower will dull them utterly—if he returns them at all. He is an insatiable tool collector, always hoping to find one that will cut cleanly forever without sharpening. He buys tools that he may use once, or not at all, and they litter his too-small workshop.

The most distinctive characteristic of the wood butcher is his cursing. When he saws a piece one inch short and it won't fit, he sincerely invokes the gods with a full and heartfelt desire for lightning to melt the ruler, vaporize the saw, and singe the arm that ruined a beautiful piece of wood. Then he splices and patches to make the offending piece do. A wood butcher's work, once finished, has unexpected joints and unexplained pieces of wood inlaid in odd places.

Patching is an art in itself, not often discussed at the more expert levels of woodworking. If you ask the expert what he intends to do about a flaw, he will respond, coolly, "Sand it out." But there's no way, when making a fluted column, to sand out the flute that winds into the next slot because the fitting wasn't properly clamped down before the errant flute was run. So the column becomes an exercise in patching, with carefully cut blocks squeezed into carefully cut grooves. What about a rabbet on the wrong side of the board? Saw off a sizable hunk of wood, make a lap joint, glue on a new piece, and start over on the rabbet, or else throw away those dovetails cut with fearful expenditure of time at the other end.

Just about anything can be patched. The expert says, disdainfully, "Dumb amateurs. Ought to start over and make a new piece." Easy for you to say. The wood butcher knows that if he starts over he'll make a different error on the new piece—and have to patch that.

But to make up for it all, there's the moment when the project is going together and it looks so good the wood butcher just can't believe his own two clumsy hands could possibly have turned out such beauty. He drags casual visitors into his shop, where they stare dumbfounded at raw wood and comment, innocently, "I see you took all the finish off." His voice trembling, the wood butcher replies, "I *made* it, the whole thing."

The wood butcher is thankful that few people know where to look for evidence of his failures and can see only the sanded wood, the chair or chest of drawers with a shiny lacquer finish that most think could come only from a furniture store. They are amazed, as when seeing a monkey painting a picture—not so much that the picture is beautiful but that the monkey can paint at all.

The wood butcher delights in seeing thin shavings peel evenly from his workpiece and in the crisp sharpness of a carving in good stock. Of course, the grain is usually crazy and there's a knot in the panel right where it hurts the most and there's cursing. But the wood butcher remembers only the beautifully grained stuff that works true and smells wonderful.

After all the tribulations, the pieces that were off a fraction, the saw that slipped so the corners aren't quite square, the unexpected splits, the gouges in the surface that was to have been so lovely, the wood butcher remembers the tenon joints he tapped in oh-so-gently with his mallet, the sanded surface that felt so smooth, like the finest fabric, and the curves that flow just right. Everybody has to see the completed work and they are expected—maybe forced—to marvel and to compliment, in strained voices, this miracle of the cabinetmaker's art.

Cary Hall, of Hampton, Ga., said he took up woodworking in 1953 because golf only made his ulcer worse.

CUT CIRCLES AROUND OTHER JIG SAWS.

All-metal lever-action keyless blade clamp for fast and easy blade changes.

6.5 Amp motor delivers the most power in class, enough power for the toughest applications.

Unique flush cutting blade cuts all the way to the front of the shoe.

Rubber grip provides better control and comfort in all applications.

INTRODUCING THE NEW PREMIUM JIG SAWS FROM DEWALT®.

Cut circles around other jig saws with the DW331K premium jig saw from DEWALT. Designed with productivity and accuracy in mind, the 6.5 Amp DW331K offers an all-metal gear case, all-metal keyless blade change, four-position orbital action and a unique flush cutting blade only offered by DEWALT. This new premium jig saw, available in corded and 18V cordless, allows you to make straight, radius, scroll and plunge cuts through wood, laminate, pressure treated lumber, sheet metal and plastics with more precision than ever.

For more information, call **1-800-4DEWALT** or visit our web site at **www.DEWALT.com**

DEWALT

READER SERVICE NO. 85

Small Treasures

For a quarter century, Philip Weber has confined his woodworking to the realm of the diminutive box. Within that scope his explorations seem limitless. Working principally in ebony—paired with black palm, spalted maple, Pacific yew, and sterling silver—Weber exhibits a jeweler's precision and a sculptor's fluency with invented forms. When he adopts the basic format of a box, Weber will articulate the lid, the corners, the feet, the hinge, the handle until the piece is telling a far-from-standard story. In other pieces, Weber abandons the rectilinear altogether in favor of arcs and ellipses. His inspirations are as disparate as the forms he creates, stretching from Asian architecture to the anatomy of insects. Whatever the route, he arrives at boxes that are at once unfamiliar and intimate, elegant and mysterious. *—Jonathan Binzen*

Photos: Michael Pekovich