

AMERICAN WOODWORKER™

FEBRUARY 1996 #50

Make Perfect Edge Joints

SHOP TEST
Dovetail Jigs

**FINISH
REMOVERS**
Tips For
Taking It Off

PLUS PLANS
Puzzle Box
Breakfast Table
No-Bend
Windsor Chair

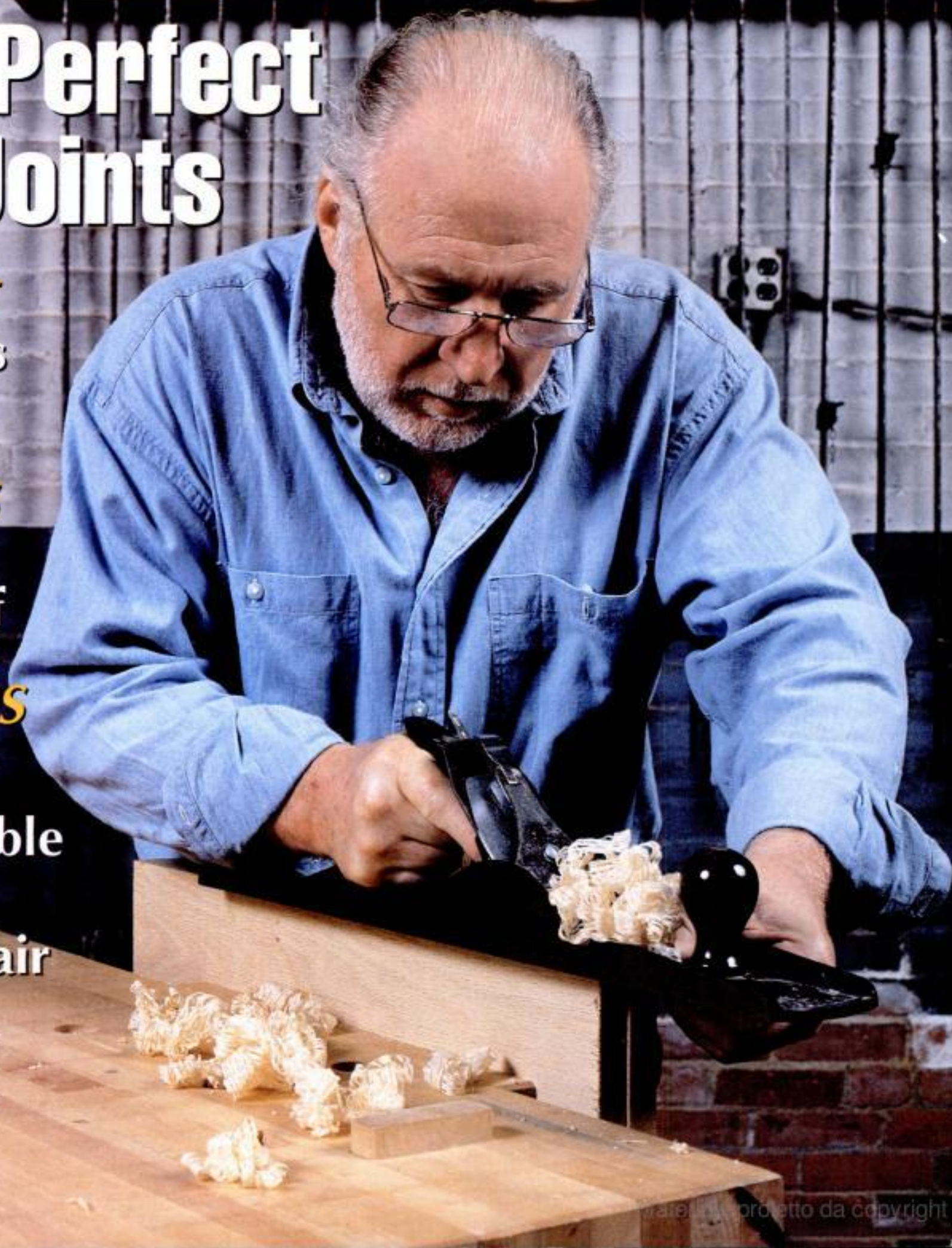


Photo: [unreadable] photo by [unreadable] da copyright

"Good Afternoon, Grizzly Imports - How May I Help You?"

Great Grizzly service starts as soon as you dial our number. Our friendly and knowledgeable customer service operators and experienced service technicians are specially trained to make your call their first concern. Placing orders, coordinating delivery, or answering technical questions, Grizzly customer service representatives will go out of their way to make you their #1 priority!

10" Super Heavy-Duty Tablesaw

G1023 **\$799⁰⁰**



- 3 H.P., 220V motor
- Table & wings are precision ground cast-iron & measure 36 1/2" x 27"
- Table has T-slots, miter gauge & rip fence
- Large handwheels & magnetic switch
- Shipping weight approx. 425 lbs.

10" Heavy-Duty Tablesaw

G1022 **\$375⁰⁰**



- 1 1/2 H.P., 110V/220V motor
- 2 cast-iron extension wings
- Table size with extension wings 27 1/2" x 40 1/2"
- Table top & wings are precision ground cast-iron
- Table has T-slots & miter gauge
- Shipping weight approx. 270 lbs.

16" Drum Sander

G1079 **\$795⁰⁰**



- Single phase, 220V, 1 1/2 H.P. motor
- Separate 1/4 H.P. belt-feed motor
- Dual belt-driven sanding drums
- Heavy-duty steel cabinet
- Built-in dust collection ports
- Shipping weight approx. 325 lbs.

1 1/2 H.P. Shaper

G1035 **\$425⁰⁰**



- 1 1/2 H.P., 110V/220V motor
- 2 spindle speeds with 3" spindle travel
- 2 spindles: 1/2" & 3/4"
- 21 1/2" x 18" precision ground cast-iron table
- All ball-bearing construction
- Shipping weight approx. 225 lbs.

15" Planer with Stand

G1021 **\$795⁰⁰**



- 2 H.P., 220V motor
- Capacity: 14 1/4" W x 6" thick stock
- Infeed & outfeed rollers are chain driven
- 3-knife cutterhead
- Cast-iron table: 15" x 20" with 15" extensions on each side
- Shipping weight approx. 475 lbs.

12" Planer

G1017 **\$399⁰⁰**



- 2 H.P., 110V motor
- Dual-knife cutterhead
- Maximum cutting height: 5 1/2"
- Optional dust hood available
- Shipping weight approx. 90 lbs.

Oscillating Spindle Sander

G1071 **\$495⁰⁰**



- 1 H.P., 110/220V
- Ten Spindle sizes: 1/4", 3/8", 1/2", 5/8", 3/4", 1", 1 1/2", 2", 3" and 4"
- Cast-iron 25" x 25" table tilts to 45°
- Built-in 4" dust collection port
- Floor-to-table height of 35 1/4"
- Shipping weight approx. 345 lbs.

16" Bandsaw

G1073 **\$575⁰⁰**



- 1 1/2 H.P., 110V/220V motor
- One piece cast-iron body
- Dust collection port & rip fence
- Micro-adjust blade guides upper & lower, takes up to 1" blade
- Table tilts 45° right and 10° left
- Shipping weight approx. 450 lbs.

Dust Collector

G1029 **\$255⁰⁰**
Reg.: \$275⁰⁰



- 2 H.P., 220V motor
- Two 4" outlets
- 1182 C.F.M.
- Height: 76"
- Shipping weight approx. 140 lbs.

6" Jointer

G1182 **\$375⁰⁰**



- 1 H.P., 110V/220V, ball-bearing motor
- Exclusive 47" bed length
- 3 knife ball-bearing cutterhead
- Shipping weight approx. 250 lbs.

ALL ABOVE PRICES ARE F.O.B.
BELLINGHAM, WA OR WILLIAMSPORT, PA



**CALL FOR
A FREE
CATALOG!**

WEST OF MISSISSIPPI
1-800-541-4437

P.O. Box 2069
Bellingham, WA 98227
Customer Service: (360) 647-0801

EAST OF MISSISSIPPI
1-800-523-4777

2406 Reach Road
Williamsport, PA 17701
Customer Service: (717) 326-3806

AMERICAN WOODWORKER[®]

Issue No. 50 February 1996



Page 34 Breakfast Bar

DEPARTMENTS

[A Word from the Publisher.....2](#)

Letters

[Scraper Burnishing Advice.....6](#)

Q&A

[Planing Figured Wood12](#)

Offcuts

[Woodworking Stamps.....18](#)

Tech Tips

[Radial-Arm Angle Guide22](#)

Wood Facts

[Purpleheart.....70](#)

Just Finishing

[Strippers.....72](#)

Toolbox

[Shop Test: Delta Top-Turn Lathe.....76](#)

Calendar

[Workshops, Seminars, Etc.....86](#)

Gallery

[Far-Out Faceplate Turnings90](#)

Shop Solutions

[Upgrade Your Dust Collector.....96](#)

CONTENTS



Page 55 Dovetail Puzzle Box

FEATURES

Edge Joints By Ian Kirby and John Kelsey
[Making the Most of a Basic Woodworking Technique.....28](#)
[Getting Smooth, Square Joints.....31](#)
[Right-Angle Edge Joints33](#)

Breakfast Bar By Andy Rae
[An Easy, All-Purpose Table for Two34](#)

Buyer's Guide to Premium Dovetail Jigs
[Through Dovetails and More from Four Router-Based Jigs.....38](#)

Wooden Hand Plane By Yeung Chan
[Make Your Own from a Blade and a Block of Wood.....44](#)

No-Bend Windsor Chair By Robert Treanor
[The Curves in this Low-Back Classic Are Sawn, Not Steamed48](#)

Dovetail Puzzle Box By Mason Rapaport
[There Are No Locks to this Three-Key'd Box55](#)

Mitered Sticking By Lonnie Bird
[A Time-Honored Technique for Stronger Frames.....58](#)

Lovespoons By Trish Walters
[Traditional Carvings from the Heart62](#)

Easy Entry Door By Sven Hanson and Chuck Ring
[Build Your Own Front Door—With Biscuits.....64](#)



A RODALE PRESS PUBLICATION

On the cover: Woodworker and author Ian Kirby shows you how to make the most of a simple edge joint. See the article on page 28.

PHOTO BY TED SPIEGEL

A WORD FROM THE PUBLISHER

Winging It

We got a letter not long ago from a frustrated reader who criticized us for publishing furniture projects that called for tools and machinery he didn't own and couldn't afford to buy. "I don't have a machine-shop full of fancy, expensive tools," was the way he put it. I know how he feels.

I remember a time when my workshop consisted of a box full of hand tools and an old door thrown across a couple of oil drums in the roach-infested basement of a New York City brownstone. Urban woodworkers develop a keen eye for scrounging, and I was always on the lookout for choice bits of wood that someone had put out with the trash. One day I hit the jackpot—a broken chest of drawers with curly maple drawer fronts. I loaded up all I could carry.

A friend was about to be married that week and, at the eleventh hour, I decided to make her a dovetailed candlebox with a sliding lid. Those curly maple drawer fronts beckoned. The problem was that the 1/2-in.-thick candlebox sides were buried somewhere in the middle of those 3/4-in.-thick drawer fronts and all I had was hand tools. I had to get that box built fast so I grabbed a marking gauge and a hand plane and went to work. I got a few blisters and it took me a while, but I shaved that hard maple down to the thickness I wanted. As I grunted and pushed I kept thinking, "Back before power tools *everybody* worked this way." Good for the muscles; good for the soul.



Then there was the time I was visiting my brother, who lives outside London. I offered to repair his rickety antique kitchen table that wiggled and wobbled whenever you looked at it. I found out too late that my brother is one of those guys whose tool collection consists of a hammer, a drill and some rusty old screwdrivers. I saw no sense in buying tools he'd never use again (and I didn't want to carry home on the plane) so I decided to wing it.

I borrowed an old smoothing plane, sharpened it on a piece of fine sandpaper and managed to disassemble the table, clean up the joints and put it back together, ready for glue. Big problem: No bar clamps to glue up the top. I made a loop out of rope, stuck in a stick and twisted it tight like a tourniquet to pull the boards together. The table was fixed.

The point I'm trying to make is this. Nobody has every tool and machine we talk about in AW. Our articles are written by woodworkers who report on the methods they use to get a given result. That doesn't mean their way is the only way. If you don't have a tool that's mentioned in an article, you can nearly always find an alternative if you stop and think about it. No bandsaw? Try a bow saw. No jointer? Try a plane. Call it "winging it," improvisation, or good ol' Yankee ingenuity—it's a trait we woodworkers need to cultivate. It's good mental exercise, and it sure beats giving up.

David Sloan
Editor & publisher

PLAY IT SAFE

Woodworking can be dangerous. Safety equipment such as guards, hold-downs, goggles, dust masks and hearing protection can greatly reduce your risk of injury. But even the best guard won't make up for poor judgment. Use common sense and caution in the workshop. If a procedure feels dangerous, don't try it, no matter how many other folks work that way. Figure out an alternative that feels safe. Your safety is your responsibility.

AMERICAN WOODWORKER

EDITORIAL & ADVERTISING OFFICES

33 E. MINOR ST., EMMAUS, PA 18098

PHONE: (610) 967-5171

FAX: (610) 967-7692

EDITOR & PUBLISHER

DAVID SLOAN

EXECUTIVE EDITOR

ELLIS VALENTINE

MANAGING EDITOR

TIM SNYDER

ASSOCIATE EDITORS

PAUL ANTHONY, ANDY RAE

ASSISTANT EDITOR

JOE WAJSZCZUK

PRODUCTS COORDINATOR

DAVE SELLERS

WEST COAST EDITOR

SIMON WATTS

ART DIRECTOR

KITTY PIERCE MACE

ASSOCIATE ART DIRECTOR

MELANIE POWELL

COPY EDITOR

SUSANNAH HOGENDORN

OFFICE MANAGER

JULIE MILLER

DESIGN SHOP

PHIL GEHRET, FRED MATLACK

CONTRIBUTING EDITORS

LONNIE BIRD, STEPHEN BLENK, JIM CUMMINS,
MICHAEL DRESNER, MIKE DUNBAR, PETER KORN

ONLINE HOST

JIM CUMMINS

ADVERTISING DIRECTOR

DON SCHRODER

ADVERTISING REPRESENTATIVES

ROBERT F. IZARD, DIANE WALLBILICH

ADVERTISING PRODUCTION

COORDINATOR

LISA UNRUH

PROMOTIONS COORDINATOR

SHELLEY DROZD

PRESIDENT/MAGAZINE DIVISION

JOHN GRIFFIN

VICE PRESIDENT, SINGLE COPY SALES

RICHARD ALLEGER

DIRECTOR, RETAIL SALES

CHUCK TRIPP

NATIONAL MARKETING DIRECTOR

DIEDERIK TERLAAK POOT

CONSUMER MARKETING MANAGER

KEITH FOLLWEILER

ASSISTANT CONSUMER

MARKETING MANAGERS

LYNN HOWER, CHRIS KLIPPLE

DEALER INQUIRIES WELCOME

Sell AMERICAN WOODWORKER in your store, risk-free.
Call Ron Cowart at (800) 845-8050 for details.

SUBSCRIPTION QUESTIONS & ADDRESS CHANGES

At AMERICAN WOODWORKER, your satisfaction is important to us. For questions about your subscription and all address changes, please write to:

AMERICAN WOODWORKER Magazine

Box 7591

Red Oak, IA 51591-0591

Please include a recent mailing label
with all correspondence.

Fax: (712) 623-5731

Or call: (800) 666-3111

AMERICAN WOODWORKER (ISSN 1077-7997) is published seven times a year in February, April, June, August, October, November, and December by Rodale Press Inc., 33 E. Minor St., Emmaus, PA 18098, (610) 967-5171. ©1996 by Rodale Press, Inc. J.I. Rodale, Founder; Ardath Rodale, Chairman of the Board; Robert Teufel, President of Rodale Press. SUBSCRIPTION RATES: U.S. one-year, \$23.88; two-year, \$47.76. Single-copy, \$3.95. Canada, one-year, \$31.88; two-year, \$47.88 (Canadian funds) GST #R122988611. Foreign, one-year, \$35; two-year, \$70 (U.S. funds). U.S. newsstand distribution by Curtis Circulation Co., Hackensack, NJ 07610. SECOND-CLASS POSTAGE: paid at Emmaus, PA and additional mailing offices. POSTMASTER: Send address changes to AMERICAN WOODWORKER, P.O. Box 7591, Red Oak, IA 51591. CONTRIBUTOR GUIDELINES: Available upon request, (610) 967-8315. Printed in USA.



Veritas Tools Inc. is the manufacturing arm of Lee Valley Tools Ltd. The intense research and development activity of the retail firm, Lee Valley, naturally led to the creation of Veritas, the manufacturer.

The Pitch

You have seen Veritas tools in many places, but you may not have seen the 248-page Lee Valley catalog because we are better at filling woodworkers' needs than their mailboxes. Our full-color catalog has over 5,000 tools on its 248 pages and is filled with technical detail, shop tips, and hundreds of products you will find nowhere else.

The Catch

Since we do not believe in loading current customers with the costs of finding new customers, we send our catalog only to customers or to people who send us \$5. Of course, we give those people \$5 off their first order. This policy keeps our costs and prices down.

So, you can order any of the products shown here or in our other ads in this issue and receive a free catalog. Or you can call us and we'll charge your Visa or Mastercard \$5 and send you a catalog with a \$5 coupon in it.

The Play

Our guarantee is excellent, but so are the guarantees of most other mail-order tool firms. Ours has one difference. When you return a product to us (any time in your life if it has a defect; any time in the first 3 months if you just don't like the color, size, shape, or smell), we refund everything you spent, not just the purchase price and the charge for shipping it to you, but also the cost of returning the product to us. All we ask is that you return it by mail or UPS, not by collect courier with a brick in it.

And that's our story.

Veritas® Grinder Tool Rest
05M23.01 \$35.95

Veritas® Sharpening System
05M02.10 \$32.95

Veritas® Bar Gauge Heads
05N31.01 \$9.95

Veritas® Beam Compass
05N30.01 \$79.95

Veritas® Flush-Cut Saw
05K36.01 \$17.95

(Shipping and handling extra; N.Y. residents add sales tax.)

Catalog is \$5 (redeemable on first purchase) or FREE with purchase. See other ads in this magazine for additional products.

CALL: 1-800-871-8158
media code LG67 **FAX: 1-800-513-7885**

Lee Valley TOOLS LTD. 12 East River St., Ogdensburg, New York 13669 — 1080 Morrison Dr., Ottawa, Ontario, Canada K2H 8K7

Materiale protetto da copyright

INCRA Jig ULTRA
The Ultimate Precision Woodworking System™

One-Man Cabinet Shop™

It's Micro Adjustable
Quick Action Cam Clamp
Five Sliding Scale/Template Channels
Right Angle Fixture
Extended Stop
INCRA Stop
Machine Shop Accuracy - Accurate to within .002" over full 16" or 24" range, and perfectly repeatable
Three-Point Tracking - For silky smooth carriage movement

INCRA Customers' Choice Precision Tools

Over 150,000 INCRA Jigs sold... and counting!

Over 150,000 woodworkers have chosen INCRA Jig because it's the most versatile joinery system available, AND the best all-purpose router table fence ever made. Our most advanced third generation ULTRA Positioning System shown here contains everything needed plus 51 templates for making every Dovetail and Box Joint imaginable, plus all of the famous exotic joinery that has made INCRA famous.
INCRA - We've revolutionized woodworking!

To learn more about this versatile joinery system, ask for our FREE brochure:
(214) 484-5570
Taylor Design Group, Inc.
P.O. Box 810262, Dept. A
Dallas, TX 75381
FAX: (214) 243-4277

© 1995 Taylor Design, Inc.

READER SERVICE NO. 17

Grip-Tite™ magnetic featherboard

3 second, one-handed setup
No clamping!

Lexan® springs push wood down and against the fence.

"Tremendous Power"
Fine Woodworking

Use it on tablesaws, jointers, shapers.

\$32.95 + S/H
Satisfaction Guaranteed
30 day full refund.

Mesa Vista Design • 804 Tulip Road
Rio Rancho, NM 87124 1-800-475-0293

READER SERVICE NO. 72

Supergrit® SANDPAPER
HOOK & LOOP

4 1/2"	8 Hole	\$10.00/50
5"	5 or 8 Hole	\$12.50/50
6"	6 Hole	\$17.50/50
5"	Solid "E"	\$15.00/50
6"	Solid "E"	\$18.00/50
12"	Solid "E"	\$12.00/6

BLUE ZIRCONIA
Best in the World

DISCS	BELTS
5" P.S.A. 35¢	1" x 42" \$1.75
6" P.S.A. 40¢	6" x 48" \$5.50

RED HILL CORP.
P.O. BOX 4234
GETTYSBURG, PA 17325

FREE 28 PAGE CATALOG
& incredible close-out sheets.
800-822-4003

READER SERVICE NO. 75

Give Yourself Some Breathing Room.



Recent medical studies show that breathing wood dust can be hazardous to your health. The JDS AIR-TECH 2000 will dramatically improve the quality of the air in your workshop.

Our model 350 delivers 350 CFM of filtered air. This will clean the air in a 20 x 20 x 8 foot shop six and a half times per hour. For larger areas, our dual speed model 8-12 will deliver 800 or 1,250 CFM of filtered air for only \$495. Our model 10-16 will deliver 1,000 or 1,600 CFM of filtered air for \$695.

The JDS AIR-TECH 2000 systems will remove 99% of dust particles as small as five micron and 80% of the particles as small as one micron.

Our unique design makes both ceiling installation and filter changing quick and easy. For the removal of odors, fumes and smoke, our optional charcoal filter is available.

Another quality product from
Manufactured in the U.S.A.

To place an order or for the dealer nearest you call us toll-free. And give yourself some breathing room.

JDS AIR-TECH 2000™
\$259.00
Model 350

JDS COMPANY
1-800-382-2637

The Great Rebate.

5th back.



Limited Time Offer

**\$30
Rebate!**

For a limited time only, Freud is offering incredible rebates on their best selling power tools. \$30 in Biscuit Joiners, or get a Free Edge Guide (list \$29.90) and a \$20 rebate on our professional router! This offer is valid through Freud participating dealers.

Freud machines are built though, for professional use. These are their features:

FT2000E Plunge Router

- 3 1/4 HP heavy duty motor.
- Constant RPM electronics.
- Soft start.
- Shaft lock.
- Plunge depth max 2 3/4".
- Variable speed control 8,000 to 22,000 RPM.
- 1 1/2" shank collet with 1/4" shank adaptor.
- Micro adjustment for depth.
- New plunge depth scale.
- 3 position depth turret (for multiple passes.)
- Depth lock lever.
- Limited time only: Edge Guide with Micro Adjustment.

**\$20 Rebate
plus a Free Edge
Guide!**

JS100 Biscuit Joiner

- 5 Amp heavy duty motor.
- 6-wing carbide blade with safety shoulder design.
- Dust collection with bag, vacuum ready.
- Reinforced aluminum fence with 2 positions: 45° or 90°.
- New depth adjustment for 00, 10, 20, A, B size biscuits.
- Machined aluminum base.
- Non-marring rubber positioning pins.
- Fence scale with inches and metric.

JS102 Biscuit Joiner

- Same as JS100 except:
- Aluminum adjustable fence for operation 0° to 90°.

freud®

Precisely What You Need.

For the name of your participating dealer or full details on the rebate call 800-472-7307.

*Rebates available only on Freud JS100, JS102 and Freud FT2000E purchased from participating dealers between September 1, 1995 and March 31, 1996.

Furniture Courtesy of Marshall-James

LETTERS

Williamsburg Coverage: Kudos and Criticism

My wife and I were in Colonial Williamsburg last fall and chanced to see Master Carpenter Mack Headley and his associates as they dismantled the antique tool exhibit. They were busy examining Duncan Phyfe's tool chest—taking measurements, scrutinizing and cataloging each tool as we watched. It was a fascinating display, and I strongly encourage everyone to visit the cabinet-making shop at Williamsburg.

Fred Brittle
Foster City, CA

I'm a lover of fine hand tools. I also do historical restoration for a living. Given this, it was only natural that I pounced on your August issue, with its cover story on 18th-century tools. I was disappointed to find such a short article. I have nothing against Williamsburg, but I would have preferred to hear from the craftsmen who are using these tools daily, or perhaps see a more in-depth look at a specific tool that has fallen out of everyday use.



Lughaid@aol.com
Michael Horgan
North Hills, CA

Thanks for the feedback. Rest assured: Traditional tools and techniques will never fall out of favor at AW. Check out Peter Korn's scraper article (AW #47), Mike Dunbar's "Drawknives," (AW #49), and the wooden hand plane project on page 44 of this issue.—Eds.

More on Workshop Heating

Concerning your article on heating a workshop (AW #47), I'd like to raise a point which may be relevant to your readers. In addition to being an avid woodworker, I am an insurance agent

here in Michigan. I have a difficult time placing insurance on outbuildings which have woodburning heaters in them, particularly if they are also used for woodworking. Most insurance companies are leery of dust build-up on the exterior of the woodstove and its vent pipes, or of build-up within the woodstove's jacket if it is a double-walled unit.

If you're considering using a wood-burning stove to heat your workshop, my recommendation would be to check with your insurance agent first. In my case at least, this shop heating option would be likely to void coverage on the building concerned.

Paul Atkins
Independent insurance agent
Imlay City, MI

Burnishing Advice

Peter Korn's article on scrapers (AW #47) was excellent, but there was one line in the text that made me cringe. This is the part where Peter says: "You can buy a burnisher, or make do with the back of a chisel or the shank of a Phillips screwdriver."

I have been on a minor crusade to stop the use of chisels and screwdrivers for burnishing scrapers. Using a screwdriver shank is acceptable if you have one of the softer scrapers—one with a Rockwell hardness (RC) of 40 or less. The Sandvik scraper that Peter mentions is a hard one (RC 48 to 52), and it's doubtful that a chisel would be harder once you get a couple of inches back from the blade's tip. (See the chart on page 69 of the same issue.) And by the time you get to the tang, hardness will have diminished considerably, to around RC 35 for many chisels.

Screwdriver shanks are a bit more problematic. The chrome plating on some shanks is sufficiently hard, but

perilously thin. Unfortunately, it is fairly easy to break through the chrome plating. When this happens, a hard scraper will groove the screwdriver shank rather than being formed by it.

If you want to get by without buying a burnisher, try belt-sanding the teeth off a round file and then polishing the surface smooth, taking care not to overheat the file and draw its temper. Or you can burnish using the shank of a solid carbide router bit. Carbide router bits are usually very smooth and they're a quantum leap harder than any scraper.

Leonard Lee
Lee Valley Tools
Ottawa, Ontario, Canada

Smaller Top for Toshio's Toolbox

I liked Toshio Odate's traditional Japanese toolbox (AW #47), and decided to make one for myself. The idea of a top that can slide open and lock shut without any hardware whatsoever was intriguing to me.

When it came time to make the top, I discovered that the length given in the drawing (26 1/4 in.) is incorrect. If you build a box to the size shown in the drawing, the correct length for the top will be 25 1/2 in. Position the end battens with the same offsets shown in the detail drawing on page 59 (How The Top Works). One batten should be 1 in. from the end of the top; the other should be 3/4 in. from the opposite end.

A final note: The end of the top that swings past the top end of the box may catch on the top end board. If this happens, plane a chamfer along this end of the top. The chamfer will provide clearance to open and shut the top without affecting the slide-lock action.

Art Benson
Jackson, MS

STAY IN TOUCH! If you have comments, corrections or news to share, we want to hear from you.

- ❖ To write us, address letters to: **Editor, AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098.**
- ❖ You can fax us at **(610) 967-7692.**
- ❖ Too busy to write? Call our Letterline: **(610) 967-7776.**
- ❖ For e-mail correspondence, AMERICAN WOODWORKER's America Online address is: **AWLetters**
Through the Internet, use **AWLetters@aol.com**



= Electronic Mail

IT'S SORT OF A RADIAL ARM, MITER BOX, COMPOUND SAW, WORKBENCH KIND OF THING.

When it came to naming the latest addition to our Sidekick™ line of tools, we ran into a bit of a snag. It seems we'd come up with a tool that does so much, so differently, that it was nearly indescribable. But we took a shot.

The new Delta Sidekick 10" Sliding Compound Miter Saw is a mouthful, indeed. But then, it's also quite a "sawful".

Its large 19" diameter table with dual rod, linear ball bearing guide system sits atop a complete folding work station—with stock stops, work clamps and right and left table extensions that give you an amazing 59" of work space.

If you'd like to meet the best friend you may ever have on the jobsite, call for the name of your nearest Delta dealer.

Delta International Machinery Corp.:
800-438-2486.
In Canada, call:
519-836-2840.

Makes precision cuts, $3\frac{5}{8}" \times 11\frac{1}{2}"$ at 90° —or $3\frac{5}{8}" \times 8"$ at 45° miter—and 2" depth of cut at a 45° bevel. Carbide-tipped 10" x 40 ATB blade comes as standard equipment.

Equipped with 45° right and 57° left miter scales, ball detent stops, oversized numbers for easy reading and a quick-action miter lock for faster miter setting.



Other members of our Delta Sidekick Series include the $8\frac{1}{4}"$ Builder's Saw, Frame & Trim Saw, 10" Compound Miter Box shown mounted on our Kickstand™ Portable Workstand and 10" Miter Box. Plus a complete line of Sidekick Carbide-Tipped Saw Blades.



Our newest Sidekick is heavy on features, but weighs a mere 55 pounds. Folds down to the size of a small piece of luggage. A cinch to carry from jobsite to jobsite.

Delta funds these national PBS programs.

The New Yankee Workshop with Norm Abram.

The American Woodshop with Scott Phillips.



THE
POWER
OF THE
PROS

DELTA
WOODWORKING MACHINERY
A Pentair Company

READER SERVICE NO. 3

Materiale protetto da copyright

Ming Legacy on Shaky Ground

In reading "Chinese Chair Joints" (AW #47) I learned that most examples of Ming Dynasty furniture in China have been "lost forever to fires, floods, earthquakes and civil strife." Given this, is California the best place to be keeping the small remainder of this legacy?

Robert Thayer
Brewster, MA

Good point.—Eds.

Keep Those Tool Reviews Coming!

As an owner of a custom woodworking shop, I especially appreciate your product and tool reviews. I have followed your advice on tool selection, and have been extremely pleased with the tools that you recommended. Thanks.

Kevin Gent
Gentry Custom Woodworking
Tacoma, WA

Delta Unisaw Pricing

In "Tablesaw Showdown" (AW #49), we failed to mention that the Delta Unisaw is available in eight standard models, including several with the premium-quality Unifence we recommend. A 3-HP model with a 30-in. Unifence sells for as low as \$1,499.95 and a model with a 52-in. Unifence for as low as \$1,599.95. Dealer prices may vary.—Eds.

Revisiting Bench Chisels

The article on bench chisels (AW #47) was interesting and helpful. I was pleased to see that the hardening and tempering aspects of steel manufacturing were described correctly. I have read a number of articles and books by authors who were confused about these processes and their terminology. The one correction I'd offer is that the steels discussed in Rae's article contain "alloying elements," not "alloys." An alloy is a mix-

ture of metals and other elements.

I would also like to comment on Rae's contention that the Japanese chisels in the bench chisel article might be "too light for heavy chopping." I've found this not to be the case. The socket-and-tang construction of this type of chisel, combined with the steel hoop that encircles the top of the handle, enables this type of chisel to withstand considerable force. Makoto Imai, who was trained as a traditional Japanese temple carpenter and later came to the U.S. to teach this type of timber construction, regularly uses a hammer to strike his Japanese chisels.

Because of the brittleness of its hard edge, a Japanese chisel should not be used like a mortising chisel, to lever or pry chips free against partially cut wood. This practice could fracture the hard steel at the tip of the chisel. The chisel can, however, be used for heavy chopping in most other situations.

Milford S. Brown
El Cerrito, CA

More than six inches!

Isn't that every woodworker's dream? Our team of European Bandsaws give you almost twice the resaw capacity of our competitors, the innovations that go beyond your wildest dreams; dynamically balanced cast iron wheels, heavy duty cast iron tables and huge (well, actually large) blade capacities & professional guides. Our Bandsaws come in a size and budget to fit your needs. Call (800) 234-1976 today for your free demonstration video.

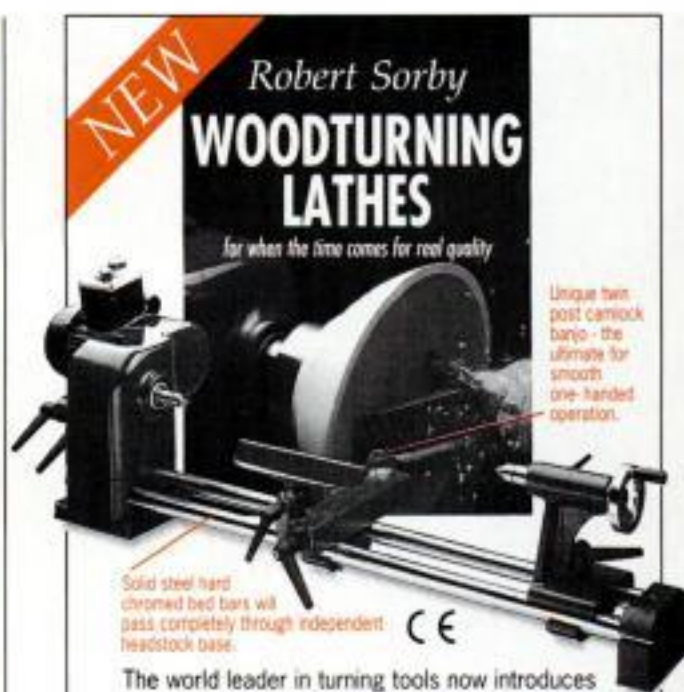
PS - For those of you that size is an issue, our Bandsaws range from 13" to 36" models.

LAGUNA TOOLS

2265 Laguna Canyon Rd., Laguna Beach, CA 92651 • FAX (714) 497-1346

Call today
for a
FREE video.

READER SERVICE NO. 26



The world leader in turning tools now introduces a new lathe designed to offer turners maximum versatility and uncompromising quality.

- Unbreakable Spheroidal Graphite Iron castings deliver an exceptionally rigid machine with vibration-free performance. Poly-Vee drive belts for maximum efficiency.
- Designed in cooperation with some of England's top professional turners.
- Available in three sizes (2ft, 3ft or 4ft between centers) and as a bowl lathe.
- Optional stands provide a solid foundation. Optional DC Variable Speed.

Robert Sorby

1206 Pavilion Drive, Grain Valley, MO 64029
1-800-95-SORBY (1-800-957-6729)

For more information on Robert Sorby Lathes, accessories and turning tools call toll-free or mail your enquiry today. Be sure to see us at The Woodworking Show near you.

READER SERVICE #103

HARDWARE Reproduction Brass and Iron Hardware



- Lighting Fixtures • Fireplace Accessories •
- Furniture Hardware • Builder's Hardware •



Call or write for details
or send \$7.00 for our
108 page catalog.
(Catalog purchase
refunded on 1st order.)

463 W. Lincoln Highway • Exton, PA 19341
Phone: 610-363-7330 • Fax: 610-363-7639
Orders: 1-800-257-3711

FREE Woodworking Supplies Catalog

Quality Woodworking Supplies
Hard to Find Items
Legendary Service
Home of the Square Drive Screw



"On a scale of 1 to 10, I rate doing business with
McFeely's an easy eleven." N.M. Elmont, NY

McFEELY'S PO 11169 • Lynchburg • VA • 24506-1169
SQUARE DRIVE SCREWS 1-800-443-7937 • FAX (800) 847-7136

READER SERVICE NO. 52



**A MONKEY IS
NOT A GORILLA**
DON'T BE FOOLED BY UNPROVEN
WANTA-B'S. GORILLA GLUE IS THE ONLY
TIME TESTED PREMIUM POLYURETHANE

NOW AVAILABLE AT YOUR LOCAL HARDWARE STORE

If not, tell the big ape who runs the place to get it for you.

100% WATERPROOF, SOLVENT FREE POLYURETHANE
BONDS WOOD, STONE, METAL, CERAMICS & PLASTICS, & MORE

1-800-966-3458 24 Hr. or 805-963-2234 TRADE DIRECT
THE GORILLA GROUP 122 Powers Ave. Santa Barbara CA 93103

READER SERVICE NO. 38

INTRODUCING... THE NEW SUPERABBET™ by Amana

Patent Applied for

The most versatile and ingenious rabbeting bit ever!
Will cut up to **17*** different rabbet depths including
1/16" through 3/4" by 1/16" increments, and five
sizes for undersized plywoods and metric sheets.
Particularly useful for large stock or
when a precise depth is

required (23/32" plywood for example). In addition
to the basic rabbet cuts, you can also accomplish
other joinery tasks such as half-laps, ship-laps and
tenons, thus making this tool the '**Jack
Rabbet™**' of all trades.



*Using optional bearing rub collars

See your local **Amana** dealer today or call 800-445-0077
for a dealer nearest you.

©1995 Amana Tool Corp. All rights reserved.

Amana Tool Corp.

READER SERVICE NO. 11

LETTERS

At Bat

I enjoyed the article on the bat house (AW #46), and I plan to build one. However, as a veterinarian, I must disagree with the point the author made about rabies being just as prevalent in dogs as it is in bats. Please let readers know that bats and skunks are the most prevalent carriers of rabies.



Imavet@aol.com
B. Pattberg
Hernando, MS

Corrections on Kiera's Desk

I've had a few problems in building the base for Kiera's desk (AW #44). I found that the side tenons do not interfere with the back tenons where they join the back legs of the base. I also found that the length of the back piece is not 28 1/4 in., as indicated in the drawing on page 45.

Could you also address a problem I had with the drawer dividers? The dimension given for the height of the dividers is 4 3/4 in. This turned out to be

too high. I would appreciate it if you could review these problems and let me know what you find. Let me also say that I enjoy your magazine and look forward to every issue.



BOB100@ix.netcom.com
Kurtis Huggins

You're right about the error in the joint where the desk side and back join the back leg. The back legs are square in section (1 1/4 in. by 1 1/4 in.). They don't measure 1 1/4 by 1 1/2 as labeled in the drawing on page 45. The correct back length (including the two tenons) is 27 3/4 in. The tenons in the back legs won't interfere with each other, provided you stick with tenon lengths of 3/4 in. and 1/2 in. as indicated in the drawings.

The 4 3/4-in. height given for the drawer dividers may not jibe with the measurement you get when building the base, mainly because of slight variations in the angle cut on the desk side and in the top of each front leg. Here, the secret to correctly

sized parts involves the order of construction and the necessity of cutting to fit at certain critical points. Author Ron Layport, who designed and built the desk, stresses these issues in the article. An improved order of work for completing the base would be to save cutting and installing the drawer dividers and beads until after the rest of the base is together. Then you can cut the dividers to fit between the top and bottom front rails, slide them into their dados, and glue the beads in place.—Eds.

Dedicated to AW

I can no longer afford to subscribe to the five woodworking magazines I've been receiving, but I will not let this subscription run out. I really enjoy it very much. I have been participating in AMERICAN WOODWORKER's online "chat rooms" on America Online; I find them a lot of fun. Keep up the great work.

Mike Mihich
Merrillville, IN

NOW THERE'S A FINE LINE BETWEEN PR



If bargain tools do less than you bargained for, and high-end tools cost more than you want to pay, there's a fine line between price and performance. Ryobi - so much precision and performance for your money. Suddenly,

This brad nailer was made to order.



Introducing the tool that makes your life easier. The new Senco® SLP20 Brad Nailer. Designed by people who use brad nailers to make their living. That's why it has the most impressive power-to-weight ratio in the business, to let you drive fasteners from 5/8" to 1 5/8" in length into hard woods. Why it has a grip that fits your hand better. Superior balance for more comfortable operation. Easier loading. And a lack of recoil you have to experience to believe. Stop in and ask for a free SLP20 demonstration.

For additional information on how Senco fastening systems will save you time, reduce costs, and increase quality, call your nearest Senco Authorized Dealer or Distributor listed in the Yellow Pages under "Staples," or call our toll-free Action Line: 1-800-543-4596.

SENCO
FASTENING SYSTEMS

READER SERVICE NO. 33



Get your **FREE** copy **THE WOODTURNERS CATALOG**

Craft Supplies USA offers the best in woodturning tools and supplies available.

Artisan™ brand pen turning supplies, letter openers, key rings and Mont Blanc® style pen kits are only a few of the many turning projects available.

Choose from:
Woodfast Wood Lathes
Axminster Chuck System
Henry Taylor Tools
Sorby Tools

Artisan™ Project Kits
Dymondwood
Corian Turning Squares
Ray Key Videos
Dale Nish Workshops

For a **FREE** copy of **The Woodturners Catalog**

Call toll free **1-800-551-8876**

Write to: Craft Supplies USA

P.O. Box 50300 Provo, UT 84605-0030

READER SERVICE NO. 36

CE AND PERFORMANCE. AND THIS IS IT.



ay, check out Ryobi®. A complete line of power tools with pro features
other tools either cost too much or do too little.

RYOBI
Exceed Your
Expectations™

AT BETTER HOME CENTERS AND HARDWARE STORES • CALL 1-800-525-2579 FOR INFORMATION • TWO-YEAR WARRANTY

READER SERVICE NO. 18

© 1995 Ryobi America Corp.

"Free" Edges à la Nakashima

Q I'd like to build a table with natural edges like those on George Nakashima's work. How did he make his edges so smooth to the touch?

Scott Braun
New York, NY

A Working "free" edges is an art requiring the patience and lyrical judgment of a sculptor. It involves carefully removing the bark, and then scraping and sanding the sapwood without destroying the wood's natural contours.

Air drying a slab for several years allows much of the bark to loosen naturally. It is then carefully pried off using

strong tools thin enough to insert into the gap between bark and sapwood. Various prybars, screwdrivers and hammer claws will work for this, but great care must be taken not to scar the underlying sapwood.

Bark on burls can be particularly difficult to remove because it clings to many small projections on the surface. Because it's difficult to judge the varying thickness of burl bark, you may have to remove it little by little to prevent tearing off the sapwood protrusions underneath.

When the majority of the bark is off, you can remove remaining shreds and small pieces on smoother areas with a drill-mounted fine wire wheel. For get-

ting into crevices on more erratic surfaces, rifflers and dentists' burrs and picks can be helpful. It's difficult to describe a particular approach because every surface is different. You'll have to use your judgment.

Dark splotches on the sapwood must be painstakingly scraped or sanded through until the color of the wood is uniform. Small bits of sanding belt are useful for getting into tight spaces. Sand to at least 150 grit before finishing. We use a wiping varnish, sanded and buffed between coats.

Mira Nakashima-Yarnall
Nakashima Studios
New Hope, PA

Controlling Planer or Jointer Tearout on Figured Woods

Q I've started working with curly maple recently, and I'm getting frustrated by grain tearout when I run the figured boards through my jointer and planer. I keep my blades well-sharpened and adjusted, and I take light passes. Do you have any suggestions for minimizing tearout on figured woods?

Jack Arnold
Madison, WI

A The blades on most planers and jointers meet the wood at an angle between 50° and 60°. (See drawing.) This cutting angle—designed more for cutting softwoods than hardwoods—produces an aggressive cut that tends to tear out the contrary grain on highly figured hardwoods.

Figured hardwoods cut much more cleanly with a scraping action, so I modify my planer and jointer blades to reduce their cutting angle. This involves back-beveling the blades as shown in the drawing. The back bevel results in a thicker cutting edge, which stays sharp longer. I send my blades and a drawing of the desired profile to Forrest Manufacturing (800-733-7111) for back-beveling. They do an excellent job.

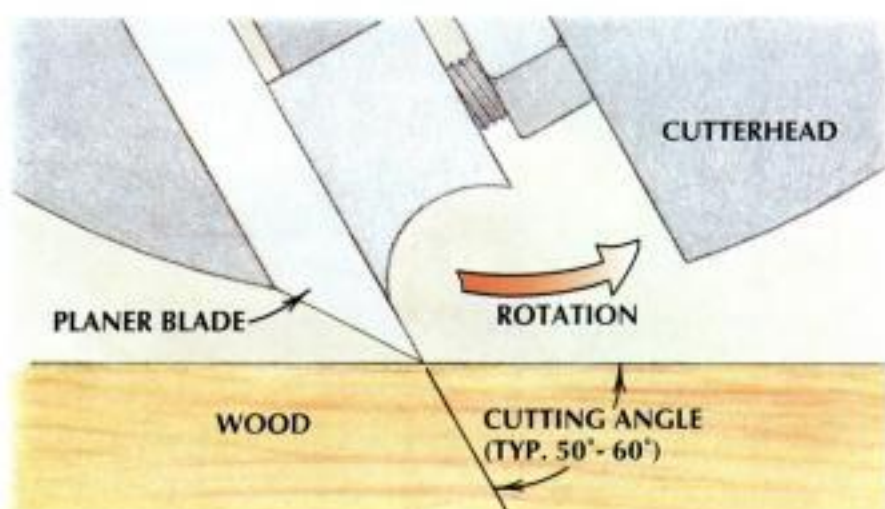
When I get my blades back, I hone just the primary bevel (not the back bevel) with my 6,000-grit waterstone. This removes the wire edge and makes the blades sharp enough to cut hairs.

The reduced cutting angle does limit the amount of wood you can take off in one pass, so take lighter cuts. It also helps to feed stock at a slower rate and at an angle to the cutterhead.

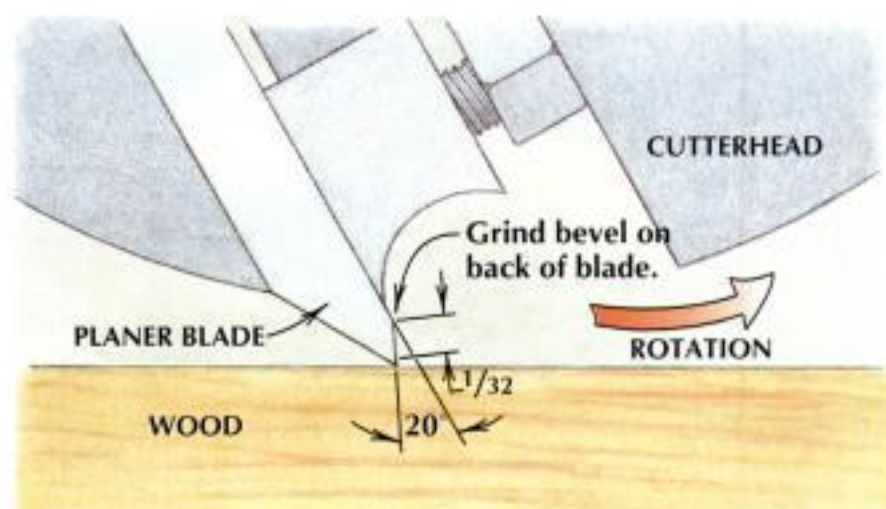
Another trick for reducing tearout on difficult figure is to wet the wood before planing it. The water swells the wood fibers and packs them tightly together, providing better support against the cutting edge. Using a plant mister or sponge, thoroughly wet the wood, and allow the water to soak in for a minute or so before planing. Adding one or two tablespoons of glycerin (available at drugstores) per pint of water softens the fibers further, making them even less brittle and prone to tearout. The water shouldn't create any warpage problems, as most of it is planed away. You may want to wipe off your blades and cutterhead to prevent rust, though.

David J. Marks
Designer/craftsman
Santa Rosa, CA

BEFORE BACK-BEVELING



AFTER BACK-BEVELING



Fits all lathes!

\$266
incl. postage

Size: 300 x 300 x 100

All these roughed out bowl blanks from this block using...

The Kel McNaughton Centre Saving System

"The beauty of the Kel McNaughton System is that it does its job more easily and safely than any other tool I've used."
- Al Stirt, U.S.A.

"Using the tool was a breeze... The Kel McNaughton System saves timber, time & money... one of the most significant advances in woodturning development."
- Jack Williams, Australian Woodworker Magazine.

Top View Full Set Shown

For further information, contact:
Kelton Industries Limited
PO Box 58870, Greenmount, Auckland, N.Z.
Ph +64-9-273-9170 Fax +64-9-273-9173

READER SERVICE NO. 56

BUILD YOUR OWN GAZEBO AND SAVE \$1000's

If you can use a skill saw, this do-it-yourself video shows you step-by-step how to build your own beautiful gazebo for about \$1,250.00 to \$2,800.00.

- Includes blueprints & materials list (specify 10', 12', 14' or 16' dia.)
- Choose Country or Victorian Style blueprint, many custom detailing options

Video & Blueprints \$29.95 + \$5.95 S/H.
Visa, MC, Discover & Am. Ex.
Call for \$2 Brochure

BETTER BUILT & AFFORDABLE GAZEBOS
11905 E 23rd St. • Spokane, WA 99206
1-800-225-0341
Fax: 1-800-225-0340

READER SERVICE NO. 203

Van Dyke's

Presents a **Catalog** with supplies for upholstery, antique restoration, wood working, caning, brass hardware, carvings and many related trades!

46 Years in Creative Arts & Trades
Many Hard-To-Find Items!

SEND \$1.00 FOR CATALOG TO:
VAN DYKE'S RESTORERS
Dept. R8299A6, P.O. Box 278
Woonsocket, SD 57385

READER SERVICE NO. 77

Oscillating Spindle Sanders
for discriminating woodworkers who demand the best

FREE Color Catalog
1-800-971-5050

CLAYTON™
MADE IN USA

READER SERVICE NO. 64

SHAPE CUTTERS • SAW BLADES • MORE! • JOINTERS • PLANERS • SHAPERS • CUT OFF SAWS • POWER FEEDERS • TABLE SAWS • BANDSAWS • DUST COLLECTORS • WIDE BELT SANDERS • EDGE SANDERS • MOULDERS

RUB YOUR PALMS TOGETHER 3 TIMES AND SAY, "THERE'S NOTHING LIKE A WIDE BELT SANDER."

SEE US IN ACTION.
Call for a schedule of trade show dates in your area.
1-800-929-4321

CONTINUOUSLY OSCILLATING 16" x 48" STANDARD BELT

PNEUMATIC TRACKING CONTROL

28" MAX. WIDTH, 6" MAX. DEPTH

ELECTRONIC EMERGENCY BRAKE FOR MAXIMUM SAFETY

POWERFUL 5 HP 1 PHASE OR 7.5 HP 3 PHASE MARATHON MOTOR

Your dream of running sander couldn't be any you begin sanding the first of your little palm sander. Well, maybe it could be a little clearer. It could tell you how you can afford one and where it's going to fit.

Suddenly, your dream becomes a reality as you remember Sunhill Machinery's 15" OPEN END production wide belt sander. "Sunhill," you think, "they have quality machines at reasonable prices. Yeah." You pick up the phone, dial 1-800-929-4321, and talk to one of our sales representatives, whose sole purpose is to help you obtain the equipment you need. Your palms feel better already.

SUNHILL MACHINERY **RESELLER INQUIRIES WELCOME**

Quality woodworking machinery. Reasonable prices.
Sunhill Machinery, 500 Andover Park East, Seattle, WA 98188 Phone 1-800-929-4321 Fax (206) 575-3617

SAWBLADES • WIDE BELT SANDERS • EDGE SANDERS • CHISEL MORTISERS • ROUND POLE SANDERS • DRILLING EQUIPMENT

READER SERVICE NO. 34

TOOLAND, INC.

QUALITY TOOLS FOR LESS

1662 BROADWAY, REDWOOD CITY, CA 94063
800-722-2826 Fax: (415) 365-7055

PORTER-CABLE

330 Speed Bloc Finishing Sander \$ 58.00
8349 Saw Boss \$118.00*
87335 VS. Sander w/steel case \$118.00
505 1/2 Sheet Finish Sander \$127.00

333 5" Quick Sander \$ 74.00
8637 VS Tiger Saw \$148.00
352VS 3"x21" V.S. Belt Sander \$188.00
380 3"x24" Sander with bag \$208.00
382 4"x24" Sander with bag \$208.00

7348 VS Jig Saw \$132.00*
556 Plate Joiner w/Case and Tilt Fence \$138.00

550 Pocket Cutter \$185.00
690 1-1/2 HP Router \$139.00
691 1-1/2 HP Router D-Handle \$148.00
7536 2-1/2 HP Router \$204.00
7537 2-1/2 HP Router D-Handle \$214.00
7538 3-1/4 HP Plunge Router \$244.00
7518 3-1/4 HP 5 Speed Router \$268.00
7519 3-1/4 HP Router \$244.00

SYSTMATIC
30% OFF LIST on Carbide Saw Blade

PORTER-CABLE
30% OFF LIST on Carbide Router Bit
9444 New Profile Sander Kit \$118.00

DELTA
22-540 12" Planer w/extra set of knife \$399.00

DEWALT
DW891K 14.4v cordless Drill Kit \$188.00
DW882K Biscuit Plate Joiner \$228.00
DW421 5" Hook & Loop Random Orbital Sander \$74.00

POWERMATIC
66 3H.P. w/ acc. \$1,850.00
FOB Redwood City

HITACHI
C6FB2 8-1/2" Compound Miter Saw \$549.00
M12V 3-1/4HP VS Plunge Router \$232.00
NR83A Full Head 8D to 16D nailer \$399.00
C10FC 10" Compound miter saw \$248.00

SIoux
680 Air Finishing Sander \$132.00
680V Air Sander with Vacuum \$145.00
8030 3/8 R.A. Dr. keyless \$145.00

FREE FREIGHT in continental USA

with rebate

Quantities Limited - Prices Subject to Change Without Notice. Prices are Mail Order Only. Not Responsible For Typographical Errors

READER SERVICE NO. 27

Is It Safe to Burn Pressure-Treated Lumber?

Q I use a woodburning stove and frequently burn scraps from home repair projects. I have a lot of scraps left over from a deck project, but I've heard that you shouldn't burn pressure-treated lumber. Why?

Ian Hyding
Salem, OR

A Definitely do not burn pressure-treated lumber—much of which has been treated with arsenic compounds as well as other chemicals. Tests have shown that the arsenic is often released by high temperatures and is absorbed by people who have been exposed to the burning material. Dumping the scrap at a landfill is the only method of disposal approved by the Environmental Protection Agency.

You should also take precautions when working with pressure-treated lumber. Cut the wood outside or in a

well-ventilated area and wear a good dust mask. Be sure to wash before eating, drinking or using tobacco—and launder your work clothes separately from the rest of your wash.

Jerry Winandy
USDA Forest Products Lab
Madison, WI

Using Driers

Q None of the commercial Japan driers I've used recommend how much to add to finishes to hasten drying. I've tried adding Japan drier in various amounts to a tung oil/varnish/mineral spirits mix, but it doesn't seem to help. Can you give me some guidelines?

Don Berger
Oconomowoc, WI

A The use of driers (metallic salts) is a complex science. It's difficult to give exact specifications for all possible combinations of finishes. This may be the reason you don't find instructions

on the product labels. However, I suspect that you may be using the wrong drier with the wrong oil: Japan driers do next to nothing for tung oil. And they are only somewhat effective on linseed-oil-based finishes.

If you want to use an oil/varnish/solvent finish, I suggest using linseed oil instead of tung oil, and cobalt drier instead of Japan drier. Cobalt driers, usually sold in a 6 percent mixture in a carrier oil, are available at art supply stores (or by mail order from Pearl

WHERE TO FIND IT

1/8-in.-wide chisels are available from Garrett Wade Inc., 161 Ave. of the Americas, New York, NY 10013, (800) 221-2942.

Gold leaf supplies are available from Woodworker's Supply, 1108 N. Glenn Rd., Casper, WY 82601, (800) 645-9292.

CMT's Award-Winning Joint-Master Dado



"In terms of top performers CMT... got our Editors' Choice Award for making excellent cuts in all four test categories." *American Woodworker*, Dec., 1994.

CMT's 8" carbide-tipped Dado Set includes our 3/32" Ply-Groove Chipper for snug fits on undersize plywood, plus four 1/8" and one 1/16" chipper. The Joint-Master features anti-kickback design, four-wing chippers and 24 teeth that deliver incredibly smooth cuts, even in veneer plywood!

108-2405 8" Dado Set with free Dado Shim Set List: \$268.40

SALE: \$179.00

Call for our free catalog! It's packed with thousands of blades, bits, accessories and more!

Call toll-free 24-hours a day:

1-800-531-5559

Toll-free FAX: 1-800-870-7702

813-891-6160, FAX: 813-891-6259

(In Canada call 1-800-387-7005)

CMT TOOLS, 310 Mears Blvd,

Oldsmar, FL 34677

Shipping and Handling \$5.00

ARROWMONT School of Arts and Crafts

P.O. Box 567 • 556 Pkwy • Gallinburg, TN 37738 • 423-436-5060 • Fax 423-430-4101

WOOD - Clay Foster, Ray Key, Michael Hasaluk, Bonnie Klein, Rick Stewart/**CLAY/FIBER/FABRIC/METAL/ENAMEL/STONE/POLYMER CLAY/DOLLS/PAPER/MARBLING/WATERCOLOR**

Graduate/Undergraduate Credit
Assistantships/Scholarships
Residency Program
Elderhostel
Year-Round Gallery Exhibition Program

IDEAL OPPORTUNITY INSTRUCTION

One Week Workshops **MARCH 4-29, 1996**

READER SERVICE NO. 14

Horton Brasses

authentic reproductions
of period hardware



PO Box 120AW
Cromwell, CT 06416
203-635-4400
catalog: \$4.00

A
R
T
S
&
C
R
A
F
T
S

READER SERVICE NO. 35

READER SERVICE NO. 401

A Computer Cabinet

by
Southern Living



To order plans, send a self-addressed, stamped envelope and a check for \$3.50 (made out to Southern Living) to:

Computer Cabinet,
Southern Living Magazine, Dept. AW
P.O. Box 523,
Birmingham, AL 35201

READER SERVICE NO. 48

Lee Valley

Pinch Dogs

Pinch dogs are used for assembly and clamping. Traditionally, they were used by upholsterers as all-purpose gluing clamps. Regardless of the shape of two pieces, as long as a dog is tapped in directly across the glue line, it will hold everything without skewing until the glue sets. Pricing had driven these tools out of the market, but we made them in substantial volume allowing major price reductions. Sizes indicated are overall length, tip to tip.

05E10.01 1" Pinch Dog, pkg. of 6 \$ 4.95

05E10.03 1 3/4" Pinch Dog, pkg. of 6 \$ 6.75

05E10.05 2 1/2" Pinch Dog, pkg. of 6 \$ 8.75

05E10.10 Set of 18 Dogs (all of above) \$18.00

(Shipping and handling extra; N.Y. residents add sales tax.)

To order call: **1-800-871-8158**

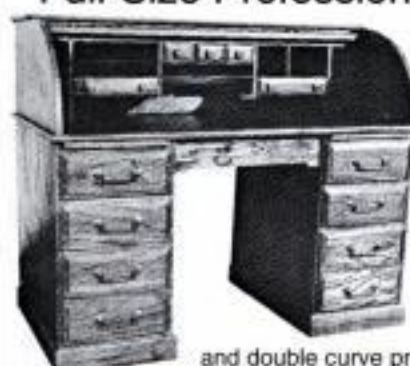
or fax: **1-800-513-7885**

Our 248-page catalog sent free with order.

Lee Valley Tools Ltd. - 12 East River St., Ogdensburg, N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7



Full-Size Professional Plan



ROLL TOP DESK

Authentic

Roll-top desk

30" deep

52" wide

44" high

Both single and double curve profiles included!

• Plan #139 (Double Pedestal Desk) \$14.95

• Plan #140 (Roll-Top Unit) 14.95

• Complete Desk Plans 28.00

• Catalog (free with order) 3.00

Fine Furniture Plans Since 1968

FURNITURE DESIGNS, INC., Dept. ND16

1827 Elmdale Ave., Glenview, IL 60025

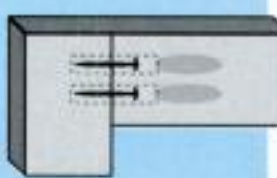
1-800-657-7692



The Kreg Jig

"Cuts project time in half, eliminates the need for an expensive arsenal of clamps and is simple to use. The Kreg Jig outperformed its competition by a wide margin. It's worth the investment." Wood Magazine, Jan. 1995

DISCOVER THE POCKET HOLE ADVANTAGE



THE POCKET HOLE PROFESSIONAL

Discover the pocket hole secret for yourself. 30 day trial. Order today! Free catalog!

800-447-8638

READER SERVICE NO. 61

♦ FASTENERS ♦

Boatbuilding And Woodworking Supplies

JAMESTOWN DISTRIBUTORS

SUPPLIERS TO BUILDERS, BOATYARDS AND BOAT OWNERS WORLDWIDE

PO BOX 348
JAMESTOWN, RI
02835

LOCAL 401-423-2520
FAX 401-423-0542

FREE
CATALOG

800-423-0030
FAX 800-423-0542
US & CANADA

RT 1, BOX 375
SEABROOK, SC
29940

LOCAL 803-846-9500
FAX 803-846-9005

READER SERVICE NO. 55

New Affordable Redi Clamp



Three Layup Tables in One

- Save time and increase productivity
- 6 heavy duty Taylor clamps
- 32" opening width
- 4 1/2" wide, 2" high jaws
- Save shop space - 5' wide x 2' deep when clamps are vertical

ONLY \$695.00
(Plus Freight)



(800) 660-3028
108-128 Parker Avenue
Poughkeepsie, NY 12601

READER SERVICE NO. 105

The MirroraTM Collection Beveled Mirrors

"Reflections of Quality"

Your beautiful handcrafted projects deserve the best... a beveled mirror from Shapes + Surfaces!

We carry over one million pieces in stock for quick shipment and can fabricate almost any shape, color or size of mirror you may need. Call today to place your order and to receive a copy of our color catalog.



Circles,
ovals, squares,
rectangles & octagons.

SHAPES + SURFACES

1-800-647-7670
1649 Sycamore Avenue
Bobemia, New York 11716

READER SERVICE NO. 58

Paint, 800-221-6845). Add about a quarter of an ounce of cobalt drier per pint of oil/varnish mix before adding solvent. In high-humidity conditions, you can easily double that amount of drier because cobalt is adversely affected by humidity. But don't go overboard; too much drier in a mix will inhibit, rather than promote, drying.

Michael Dresdner
Finishing consultant and
AW contributing editor
Tacoma, WA

Straightening Warped Stock

Q A while ago, I glued up and thickness planed some solid wood panels for a project which I then had to delay for a while. During my time away, one of the panels warped. Is there some way to eliminate the warp, or do I have to make a new panel?

Jeff Boyle
Greenville, SC

A You don't say whether the stock suffered cupping (warp across the grain), bowing (warp along the grain) or twist (propeller-shaped warp). Cup can be fairly easy to correct. Bow and twist present more difficult problems.

You can often remove cup by moistening the concave side to expand the wood cells, while heating the convex side to shrink the wood cells. I lay the wood, concave side down, on a damp towel, and suspend a floodlamp above it for heat. I allow the wood to cup slightly in the opposite direction because it often moves back toward the original warp a bit as it cools.

Often, the only thing you can do to salvage bowed or twisted material is to cut it into shorter lengths. There is one method, however, for straightening bow and twist that I've had some success with. Recently, some unattached drawer fronts bowed and twisted slightly when the relative humidity in my shop fell drastically. I placed them in a closed

room with a humidifier and, within 24 hours, they were flat again. A dehumidifier should yield similar results when the relative humidity rises. I monitor the relative humidity in my shop with an inexpensive hygrometer (available from Edmund Scientific Co., 609-573-6250).

If I'm going to be away from the shop for a while, I seal milled boards in a couple layers of plastic wrap to prevent them from warping due to humidity changes. Large rolls of plastic wrap are available at lumber yards and home improvement centers.

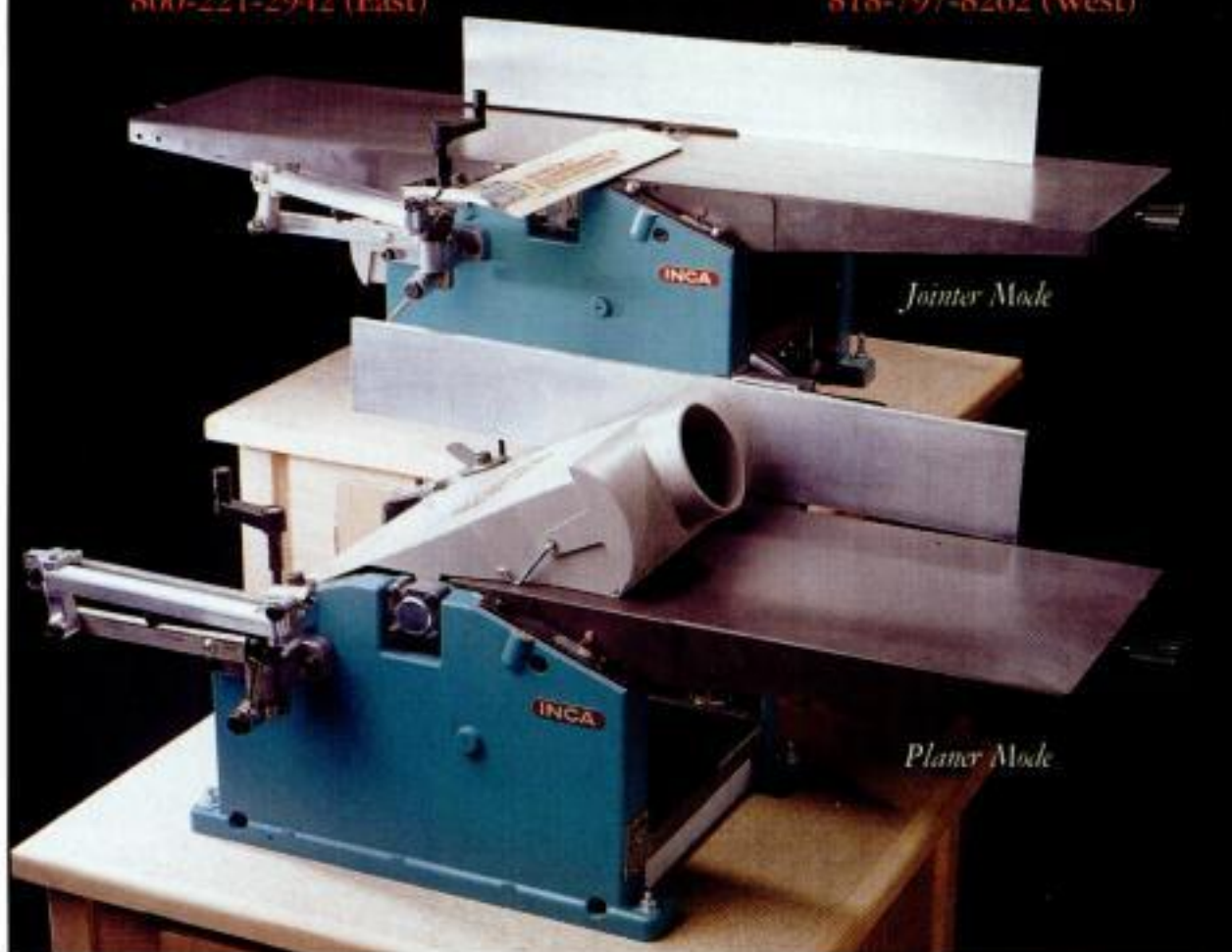
Lonnie Bird
Woodworking instructor and
AW contributing editor
Rio Grande, OH

WOODWORKING QUESTIONS?

Send them to: "Q&A," AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098. Or e-mail them to: AWQA@aol.com

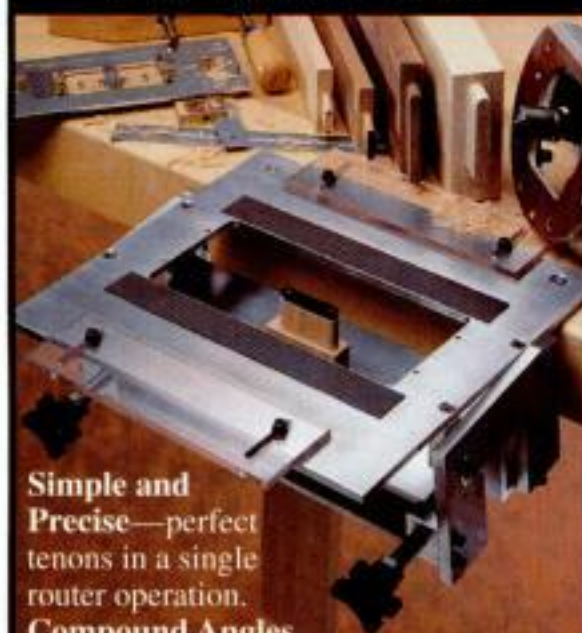
Inca... Simply The Best

Special Sale The Famous 10 1/4" Jointer/Planer including the 60 second blade change Tensa® Cutterhead. Regular list \$2,775. Sale Price \$2,295 (expires 2/28/96). Info. & sales call Garrett Wade & mention Dept. 1061. 800-221-2942 (East) 818-797-8262 (West)



READER SERVICE NO. 22

MORTISE & TENON



Simple and Precise—perfect tenons in a single router operation.
Compound Angles—don't hesitate to use them in your next project—great for chairmaking.

routerTrac

Precision Mortise & Tenon System

Call or write for free brochure

1-800-717-8722

CenterLine Tool

2518 Buckhill Court, San Jose, CA 95148

(408) 223-9903

PATENT PENDING

READER SERVICE NO. 44



The cutting tool source!

Carbide Tipped Blades

Item	Primary Function	No. of Teeth	List	Sale
10" diameter, 5/8" arbor:				
110-240	Ultra-smooth Ripping	24	\$60.00	\$51.00
210-240	Thin-kerf Ripping	24	\$69.00	\$58.65
110-500	Maxi-Combo™	50	\$78.40	\$66.60
110-600	General Purpose	60	\$84.40	\$71.70
210-500	Maxi-Combo Lite™	50	\$79.00	\$64.90
210-600	Thin-kerf Fine	60	\$84.40	\$71.70
110-800	Ultra-Cut™	80	\$100.90	\$85.80

Miter Blades with -5° hook!

Item	Blade Diam.	No. of Teeth	Arbor Size	List	Sale
185-048	8-1/2"	48	5/8"	\$59.40	\$50.50
185-600	8-1/2"	60	5/8"	\$74.40	\$63.20
110-801	10"	80	5/8"	\$100.90	\$85.80
112-901	12"	90	1"	\$135.00	\$114.75
114-100	14"	100	1"	\$144.00	\$122.40
115-100	15"	100	1"	\$149.00	\$126.65

Two-blade Packages. SALE!

110-221	List: \$134.00	\$100.50
110-240 Rip & 110-500 Maxi-Combo		
110-223	List: \$201.90	\$151.40
110-800 Ultra-Cut & 110-801 Miter		
110-224	List: \$153.40	\$115.40
210-240 Thin Kerf 24T Rip & 210-600 Thin Kerf 60T Fine		
110-225	List: \$185.40	\$138.90
110-600 60T General Purpose & 110-800 80T Ultra-Cut		
110-228	List: \$178.00	\$128.50
110-800 80T Ultra-Cut & 210-500 50T Maxi-Combo Lite		
110-233	List: \$179.30	\$119.00
110-500 50T Maxi-Combo & 110-800 80T Ultra-Cut		

CMT's Award-Winning Joint-Master 8" Dado



Includes CMT's 3/32" Ply-Groove Chipper plus four 1/8" chippers & one 1/16" chipper. The Joint-Master's 24 teeth and 4-wing chippers deliver incredibly smooth cuts, even in veneer plywood!

108-2405 Dado Set with free Dado Shim Set

List: \$268.40 **Sale: \$179.00**

Rabbit-Master Plus™

One Rabbeting bit makes you the master of seven different cuts at one low price!

800-639
1/4" Shank
Rabbit-Master Plus **\$38.90**

800-640
1/2" Shank
Rabbit-Master Plus **\$39.90**



3D Router Carver™ System

Add a whole new dimension to routing!

Carve doors, drawers, furniture and more with your plunge router and CMT's patented 3D Router Carver!

For more details call for our free catalog, or order the 3D Carver video for a complete, step-by-step demonstration.

3DC-999 3D Carver Video
Sale: \$10.00

NEW!!



Band Saw Blades

CMT carries premium quality blades for most popular band saws. For a complete selection call for our free catalog

93-1/2" Blades fit Delta's 14" saws plus 14" saws by, Enlon, Elephant, Reliant, Grizzly & more!

Item	Width	Pitch	Style	Sale
BSB-931	1/8"	14 TPI	Std.	\$16.10
BSB-932	3/16"	4 TPI	Skip	\$13.00
BSB-933	3/16"	10 TPI	Std.	\$13.00
BSB-934	1/4"	6 TPI	Skip	\$12.50
BSB-935	3/8"	4 TPI	Skip	\$12.50

Heavy-duty resaw blades:

BSB-936	3/4"	3 TPI	Hook	\$15.70
BSB-937	3/4"	3 TPI	Skip	\$15.70
BSB-938	3/4"	6 TPI	Std.	\$15.70
BSB-939	3/4"	10 TPI	Std.	\$15.70
BSB-930	1"	3 TPI	Hook	\$17.50
BSB-193	1"	8 TPI	Std.	\$17.50
BSB-293	1"	14 TPI	Std.	\$17.50

Save on our package of five 93-1/2" blades

Includes one each: 1/8"x14TPI, 3/16"x10TPI Std., 1/4"x6TPI Skip, 3/8"x4TPI Skip, 3/4"x3TPI Hook.

BSS-951 Save over 10%! SALE \$62.00

105" Blades

Fits Inca 710, Delta, Jet & other 14" extended

Item	Width	Pitch	Style	Sale
BSB-101	1/8"	14 TPI	Std.	\$17.30
BSB-102	3/16"	4 TPI	Skip	\$13.90
BSB-103	3/16"	10 TPI	Std.	\$13.90
BSB-104	1/4"	6 TPI	Skip	\$13.00
BSB-105	3/8"	4 TPI	Skip	\$13.00

Heavy-duty resaw blades:

BSB-106	3/4"	3 TPI	Hook	\$17.00
BSB-107	3/4"	3 TPI	Skip	\$17.00
BSB-108	3/4"	6 TPI	Std.	\$17.00
BSB-110	1"	3 TPI	Hook	\$18.80
BSB-111	1"	8 TPI	Std.	\$18.80
BSB-112	1"	14 TPI	Std.	\$18.80

Save on our package of five 105" blades

Includes one each: 1/8"x14TPI, 3/16"x10TPI Std., 1/4"x6TPI Skip, 3/8"x4TPI Skip, 3/4"x3TPI Hook.

BSS-151 Save over 10%! SALE \$66.20

Planer & Jointer Knives

High Speed Steel Specialty Knives
Perfectly match your planer or jointer!

Item	Knives	Fits	Sale (set)
SPK-005	2	Ryobi JP155	\$48.50
SPK-025	2	Ryobi AP10	\$49.40
SPK-030*	2	Makita 2012 planer	\$38.50
SPK-035	2	Ryobi AP12 planer	\$45.80
SPK-040	2	Ryobi AH-115 & AH-125	\$91.30
SPK-045	2	Makita 2030N planer	\$63.40
SPK-055*	2	Delta 22-540	\$45.40
SPK-060	2	Makita 2040	\$77.80

*Double Edged Knife

HSS Knives

A keen edge that's ideal for hard or soft wood
(Number of knives in parenthesis)

Item #	Description	Sale
SJK-005	4" Knives for Delta, Craftsman, other (3)	\$16.30
SJK-010	6" Knives for old Delta, Craftsman (3)	\$24.00
SJK-012	6" Knives for Grizzly (3)	\$24.00
SJK-015	6-1/16" Knives for Delta DJ-15 (3)	\$25.10
SJK-020	8" Knives for old Delta & Rockwell (3)	\$31.80
SJK-025	8-1/16" Knives for Delta DJ-20 (3)	\$32.60
SJK-030	12" Knives for Powermatic (3)	\$46.10
SJK-035	12-1/2" Knives for RBI 612 & 812 (2)	\$44.90
SJK-040	12-1/2" Knives for Grizzly & other (2)	\$45.90
SJK-045	13-1/8" Knives for Delta RC-33 (3)	\$52.10
SJK-055	15" Knives for Grizzly, other imports (3)	\$58.20
SJK-057	16" Knives for SCMI jointer (4)	\$82.60
SJK-065	20" Knives for Parks 20" planer (4)	\$101.60
SJK-070	20" Knives for Delta 20" & others (4)	\$103.30
SJK-075	20-1/2" Knives for RBI 820 (3)	\$78.70

Carbide Tipped Knives

Ideal for abrasive materials like plywood & particleboard.
(Number of knives in parenthesis)

Item #	Description	Sale
SCK-005	4" Knives for Delta, Craftsman, other (3)	\$58.90
SCK-010	6" Knives for old Delta, Craftsman (3)	\$80.10
SCK-012	6" Knives for Grizzly (3)	\$80.10
SCK-015	6-1/16" Knives for Delta DJ-15 (3)	\$89.10
SCK-020	8" Knives for old Delta & Rockwell (3)	\$117.00
SCK-025	8-1/16" Knives for Delta DJ-20 (3)	\$118.30
SCK-030	12" Knives for Powermatic (3)	\$193.60
SCK-035	12-1/2" Knives for RBI 612 & 812 (2)	\$122.10
SCK-040	12-1/2" Knives for Grizzly & other (2)	\$122.10
SCK-042	12-1/2" Knives for Delta 22-540 (2)	\$193.50
SCK-045	13-1/8" Knives for Delta RC-33 (3)	\$193.10
SCK-055	15" Knives for Grizzly, other imports (3)	\$196.90
SCK-057	16" Knives for SCMI jointer (4)	\$279.90
SCK-065	20" Knives for Parks 20" planer (4)	\$392.70
SCK-070	20" Knives for Delta 20" & others (4)	\$416.90
SCK-075	20-1/2" Knives for RBI 820 (3)	\$274.70

* Solid Carbide double-edged knives

CMT TOOLS

Create your next masterpiece with CMT's 3D Router Carver™ System!



Our free catalog is packed with thousands of blades, bits, accessories and more!

Free shipping on orders over \$200.00

\$5.00 shipping & handling for orders under \$200.00

To order, call toll-free 24-hours a day:

1-800-531-5559

Toll Free FAX: 1-800-870-7702

Dealer inquiries welcome!

CMT TOOLS,

310 Mears Boulevard, Oldsmar, FL 34677

(813) 891-6160 FAX: (813) 891-6289

In Canada, call: ToofTrend Ltd. 1-800-387-7005

NET NEWS



WHAT'S UP AT AW ONLINE

New cabinet chat— Whether you're in the throes of a hinge dilemma or you're thinking about remodeling the kitchen, check out the new weekly "Shop Talk" chat on cabinets and built-ins. Vital stats:

Host: Paul Levine (screen name: ElseNew), cabinetmaker & author of *Cabinets and Built-Ins* (1994, Rodale Press)

Time: Mondays, 9:30 pm

Place: the "Shop Talk" chat room

Wood database on the Web—Technophiles: WOODPRO is a lumber database and wood selection system you can download from two World Wide Web sites, accessible through America Online. You can look up 331 types of wood and their properties. Or ask WOODPRO to search for any combination of physical and working properties, color or price. (For example, it can list all the strong black woods that plane well, in order of price.) Download WOODPRO from:

<ftp://ftp.rahul.net/pub/geary/woodpro>

or from:

<http://www.woodworking.com>

AW Online is part of the America Online computer service. Call (800) 764-4400 for free software and 10 free hours of online time.

WORLDWIDE WOODWORKING STAMP-OUT

Ever since England invented stamps in 1840, postmasters worldwide have elevated them to an art form, using them to commemorate every imaginable object of national pride. It's not surprising that woodworking has shown up on many countries' stamps—after all, wood is one of the oldest and most useful building materials in human history. Below are just a handful that illustrate the amazing diversity of woodworking around the world.—*Raymond Schuessler*



Norway, 1986. This jointing portrait commemorates the 100th anniversary of the Norwegian Federation of Craftsmen.



Australia, 1993. A souvenir sheet of "Working Life in the 1890s" bears the banner of a 19th-century carpenters' trade union.



Singapore, 1981. The island republic in Southeast Asia issued this stamp to encourage its cabinetmaking trade.



Wallis and Futuna Islands, 1969. Two groups of South Pacific islands saluted native furniture-making.



Anguilla, 1970. Here, boatbuilders practice their craft on the Caribbean island in the Lesser Antilles.



Hungary, 1955. This Iron Curtain era stamp is part of a set honoring Hungarian workers. Here, a carpenter planes a board.

NEW UNDERGRAD FURNITURE MAJOR AT RISD

The Rhode Island School of Design has launched a new undergraduate major in furniture design. It joins RISD's well-established graduate program to form a new Department of Furniture Design, staffed by four leading furniture makers/scholars.

The new undergraduate major opens this fall. It aims to give aspiring furniture designers the broad range of skills necessary to make a living and advance the craft as

a whole. The curriculum will include design theory, technical classes, studio work and professional practice, as well as research projects examining the social and environmental aspects of furniture design and fabrication. Interdisciplinary work will be encouraged.

Well-known contemporary furniture maker Rosanne Somerson, chair of RISD's graduate furniture program, heads the new department. She is joined by three distin-

guished colleagues: John Dunnigan, from RISD's Dept. of Interior Architecture; Alphonse Mattia, a member of the graduate furniture faculty; and Charles Swanson, a part-time RISD furniture faculty member.

RISD is now accepting applications for the fall of 1997. Contact: Rhode Island School of Design, Admissions Office, Two College St., Providence, RI 02903-2784, (401) 454-6300.

EMPEROR Grandfather Clocks



✓ **DO-IT-YOURSELF KITS** for those who love to work with wood. Precision cut parts. Easy to assemble.

✓ **FINISHED CLOCKS** Handcrafted, superbly finished with solid brass German movements.

✓ **ALL PRICES FACTORY DIRECT**

FREE CATALOG

Model 435 Stratton **1-800-642-0011**

World's Largest Manufacturer of grandfather clock kits
Emperor Clock Company
Department 5700
Fairhope, Alabama 36532



READER SERVICE NO. 104

Lee Valley

Veritas® Plumb Bob & Case

This Veritas plumb bob is not only beautiful but very functional; the bob fits into a case that is a tip protector and a cord spool; the case also holds a special collet so that the bob can readily be used for drill-press alignment work. The bob is 2" long and is held in the 1" diameter case by an integral O-ring. Compact, functional, and well designed. Solid brass. Cord and drawstring bag included. Patented.

05K95.01 Plumb Bob & Case \$24.95

(Shipping and handling extra; N.Y. residents add sales tax.)



To order call:

1-800-871-8158

or fax:

1-800-513-7885

Our 248-page catalog sent free with order.

Lee Valley Tools Ltd. - 12 East River St., Ogdensburg, N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7



FROM LOG TO LUMBER

with the **Alaskan Saw Mill**

(available in 24", 30", 36", 48", 56" sizes)

G 776 MK III 30"



Cut lumber on site with the Alaskan MK III: beams, boards, siding and custom cuts.

G1012C Precision Grinder



CALL OR WRITE TODAY FOR INFORMATION ON OUR MILLS, SAW CHAIN SHARPENERS AND OTHER ACCESSORIES.

GRANBERG INTERNATIONAL

PO Box 425, Richmond, CA 94807-0425
(510) 237-2099 Fax (510) 237-1667

READER SERVICE NO. 68

Wooden Memories Inc.

Rt 1 Box 87A • Bear Lake PA 16402 • 814/489-3002

All Patterns Full Scale

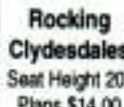
Money Back Guarantee If Not Totally Satisfied



Rocking Burro
Seat Height 14"
Plans \$10.00



Eight Reindeer Herd
Available in two sizes.
Each herd has eight different poses.
Large Herd 18" High...\$15.00
Mini Herd 12" High...\$12.00



Rocking Clydesdales
Seat Height 20"
Plans \$14.00



Our plans lead the beginner and assist the experienced.

Add \$3.50 P/H with your plan order.
Catalog — \$1.00 Free Catalog with every order.

READER SERVICE NO. 164



Entry Table #130



Rolltop Desk #151



All Plans \$19.95 + \$4.50 S&H, Catalog \$3.00
P.O. BOX 300100, ESCONDIDO, CA 92030
Phone 619 743-6923 FAX 619 743-0707

READER SERVICE NO. 302

UPDATE YOUR TABLE SAW with EXCALIBUR



- Units are available individually or as a complete system guaranteed to increase the accuracy and productivity your table saw
- Quick, easy installation. Fits all table saws
- Fence locks on both front and rear guide rail and always stays parallel to the saw blade
- Sliding Table - crosscut stock up to 62" wide
- OverArm Blade Cover comes with Dust Collection
- More features and accessories than other systems
- No risk trial period - Lifetime Guarantee

"...the smoothest to operate..."

— American Woodworker

"...for overall features the Excalibur T-Slot fence comes out first..."

— Fine Woodworking Magazine

EXCALIBUR

MACHINE & TOOL CO.

1-800-387-9789

210 Eighth Street South Lewiston, NY 14092 (416) 291-8190 FAX (416) 293-2076

READER SERVICE NO. 37



Industrial Quality Carbide Router Bits
Full Body Anti-Kick/Anti-Stick Yellow Powder Coated
Made in America! Lifetime Warranty!

Make Raised Panel Cabinet Doors

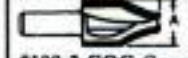
#100-2-NEC Cove



#100-2-CAS Straight



#100-2-AOG Ogee



#100-2-COG Ogee/Bead



"VIPER" VERTICAL SAFETY RAISER'S
The 1" diameter "Safety Raiser" provides the same quality performance as a 3/8" horizontal bit while reducing tip & surface speeds by 3.6 times.

Retail \$74.95 ea.
Your Choice Only!
\$44.95 ea.
Free Shipping! 48 States



#158-2-RSOG

3 pc. Cabinet Door Construction Set
Includes: 2 pc. Matched Stile/Rail bits Plus your choice of Vertical Safety Raiser
Regular \$199.95 Special \$149.95

CHARGE IT! Same Day Shipping!

The Woodworker's Choice
1123 Industrial Drive S.W.
Conover, NC 28613

For A Striking Difference!
Call for FREE 48 Pg. Catalog!

1-800-892-4866

(704) 466-0347 Fax: (704) 466-0417

READER SERVICE NO. 60

CAN YOU PASS THIS WOODWORKING "QUIZ"?

Think you know everything about woodworking? Test your wits with this multiple-choice "quiz." *Caution: Not for the faint of humor.*—Jerry Beall

What is a plane iron?

- A) Just the ordinary garden variety of clothes-pressing implement.
- B) Ballast for large, slow aircraft.
- C) A type of ore found only in Montana and Wyoming.
- D) A part of a hand plane which looks like it might cut but doesn't.

What is a loose tenon?

- A) A tenon proficient in moral turpitude.
- B) A large, heavy tenon which has slipped its moorings and, in high seas, rolls back and forth, wreaking extensive damage and great consternation. Frequently found in ships of state.
- C) An unattached tenon which insists on mating simultaneously with two mortises. (See A, above.)
- D) A condition which exists in many joints during the winter months.

About what famous furniture style can it be said, "it may be ugly, but it certainly is uncomfortable"?

- A) Victorian.
- B) Arts and Crafts.
- C) Contemporary "art furniture."
- D) All of the above.



What is a biscuit joint?

- A) A slightly seedy Southern eating establishment.
- B) A joint secured by a small, oval, unappetizing loose tenon. (See above.)
- C) The last joint finished before tea time. (British)
- D) A woodworking joint of indifferent fit, cosmetically improved with dough.

What is meant by a "distressed finish"?

- A) One in which the

fisheyes are bigger than the knot holes.

- B) One in which the wood's natural oils begin to weep from the pores after the final finish has been applied.
- C) A foot race at the end of which all contestants have shin splints.
- D) An appearance which suggests that the piece may have stood next to the dart board in a particularly rowdy tavern, in a region plagued by earthquakes.

What are

Japanese water stones?

- A) Calcium deposits found in the urinary tracts of Tokyo-based Perrier drinkers.
- B) Large pebbles common to creek beds on the island of Honshū.
- C) Boulders which are artistically located along the coastline of Japan to provide interest for landscape painters and photographers.
- D) Synthetic sharpening stones for use on specially laminated steel blades and pocketknives.

DELTA BUYS BIESEMEYER

Delta International Machinery Corp., maker of the popular Unisaw and other equipment, has acquired Biesemeyer Manufacturing Corp., which manufactures precision T-Square® Saw Fence Systems.

"We believe Biesemeyer will make an excellent addition to our woodworking accessory line," says Delta Machinery President Nevin J. Craig.

Biesemeyer will still operate under its own name, as a subsidiary of Delta. Biesemeyer fences will be sold separately and also as optional accessories on some Delta tablesaws.

Jim's Corner

Offbeat Answers to Common Woodworking Questions



Q: What's the difference between a jig and a fixture?

A: A jig is a small lure used in ice fishing, while a fixture is a heavy ceramic thing found in the bathroom.

Jim Cummins is a contributing editor to AW.

COOL TOOL!



Old-fashioned American ingenuity never ceases to amaze us. AW reader Bob Calhoun and his grandson Vancil, both of Illinois, came up with this combination hammerhead/vise grip themselves. They use it for salvaging lumber.

The tool is especially handy for pulling nails out of old

trim pieces. The locking vise grip helps you get a handle on stubborn finish nails and cement-coated nails, which tend to lose their heads if you try to pry them out with a regular hammer claw.

The elder Calhoun made the tool by cutting a standard hammerhead in two and welding it to the vise grip.

Foolproof Dovetails



Made In U.S.A.!

Introductory \$69.95 Offer

+ \$6.95 shipping

Now you can create flawless dovetail and box joints with ease. Precision 1/2" half blind template and aligning guides position your workpiece exactly for perfect dovetails every time. 1/4" dovetail and 1/2" box templates available separately. OH. res. add 5% tax

Order Toll Free 1-800-345-2396

Call or Write For Your **FREE** Catalog:

Hundreds of unique and hard to find items, that will help you become a better woodworker!

HARTVILLE TOOL

Dept. AW0196A
13163 Market Ave N.
Hartville OH. 44632



READER SERVICE NO. 45

Econ-Abrasives

WE MAKE ABRASIVE BELTS ANY SIZE, ANY GRIT!

ABRASIVE SHEETS:

(9 X 11)

CABINET PAPER

	50/pk	100/pk
40D	\$18.90	\$35.60C
50D	17.80	32.25
60D	16.70	30.00
80D	15.60	27.80
100 thru 150C	13.00	23.00

FINISHING PAPER

80A	\$11.15	\$18.90C
100 thru 280A	10.00	16.70

WET/DRY PAPER

220 thru 600	\$15.56	\$26.67C
--------------	---------	----------

NO LOAD PAPER

180 thru 400A	\$12.25	\$21.25C
---------------	---------	----------

C = 100 SHEETS

JUMBO CLEANING STICK

ONLY \$8.80 2X2X12

ABRASIVE BELTS

PLEASE SPECIFY GRITS

1X30	\$.81 ea.
1X42	.81
1X44	.81
2 1/2X16	.85
3X18	.86
3X21	.90
3X23 3/4	.93
3X24	.93
3X27	.96
4X21 3/4	1.06
4X24	1.10
4X36	1.35
6X48	3.50
2 1/4X80	3.25

Other sizes priced upon request

JUMBO ROUTER PAD (24" x 36")

It will not allow small blocks of wood to slip out under router or sanding applications.

ROUTER PAD ONLY \$8.95ea.

* OTHER PRODUCTS *

*WIDE BELTS*ROLLS*FLAP WHEELS*PUMP SLEEVES
*PSA DISCS*ROUTER BITS*WOOD GLUE*WOOD BITS

*MINIMUM ORDER \$25.00
*MasterCard, VISA, Check or C.O.D.
*SATISFACTION GUARANTEED!!!
*CALL FOR **FREE** CATALOG
- TX & NV Add Sales Tax
- Continental U. S. Shipping
Charges add \$5.50

ORDERING LINE

(800)367-4101

VELCRO® VACUUM DISCS
8 Hole pattern
For Bosch Sanders



Grit	Price	Dia.	Grit	Price
5" 60	\$.48 ea.	6"	60	\$.65 ea.
5" 80	.46	6"	80	.63
5" 100*	.45	6"	100*	.62

Note: * = thru 320 grit * Now in 5 hole pattern *

Nuisance Dust Mask

This double absorbent filter material screens out dust, and lets air pass freely!



ONLY \$10.50/box of 50

STEEL BAR CLAMPS

Size	Price
2-1/2 x 6	\$6.50ea.
2-1/2 x 12	7.00
2-1/2 x 24	7.75
2-1/2 x 36	9.50



SPRING CLAMPS

Clamps come with PVC tips and grips.

Size	Price
4"	\$1.75 ea
6"	2.25
8"	3.50



Lint-Free Wiping Cloths

Handy for all your cleaning or finishing jobs around the shop or home.



3LBS. FOR \$4.50

TACK CLOTHS



1-10 - \$.95 ea.
Box of 10 - \$7.60

Econ-Abrasives

P. O. Box 1628

Frisco, TX 75034

(214)377-9779



PRICE BREAKTHROUGH!

At Last! Now There's An Affordable 14.4v Cordless Drill.

Forget paying \$200 or more for a quality 14.4-volt cordless drill. As part of a nationwide media campaign, the world's largest cordless drill manufacturer has authorized us to introduce this industrial 14.4v powerhouse at an unheard of \$69⁹⁵!

By Ron Bishop

Unleash awesome 14.4v cordless power in your workshop, RV, boat, yard or anywhere. And, do it for an incredibly low price!

But, don't take my word for it. Check the home improvement centers. Check the catalog houses. Check other ads in this magazine!

No. I'm not trying to send you to the

FREE BONUS!

If you're among the first 1000 people who take advantage of this exclusive direct-to-you offer, you'll also receive a 20-Piece Accessory Kit.

It's a \$19⁹⁵ value, yours FREE to keep as our gift—even if you return the drill set. You're guaranteed to come out ahead no matter what!

competition. I want to prove to you that this is easily the cordless drill bargain of a lifetime!

TRY IT YOURSELF RISK-FREE

Go ahead. Feel the balance. Feel the power. And, challenge this drill with your toughest projects. If it doesn't meet or exceed your expectations, I insist that you return it within 30 days for a no-questions-asked refund. Your 100% satisfaction is guaranteed.

To order your 14.4-Volt T-Handle Cordless Drill/Screwdriver Set with handy ABS carry case, battery charger and battery, call toll-free, 1-800-553-1455 or send your check for just \$69⁹⁵ (\$6⁹⁵ S&H). CA res add sales tax.

Extra batteries are just \$34⁹⁵ each. And remember, the first 1000 orders get a free bonus.

Heavy Duty 3/8" Jacobs® Keyless Chuck

6 Precision Clutch Settings

Powerful industrial motor delivers 145 in. lbs. of torque.

Ergonomic pistol grip

UL Listed

0-600 RPM, variable speed, reversible.

Powerful 14.4-volt Battery

Yours For Just \$69⁹⁵

Perfectly balanced T-handle design stands on its own.



Call Toll-FREE 1-800-553-1455

Great Tools Direct!

4872 Topanga Cyn Blvd. - Dept. 165
Woodland Hills, CA 91364



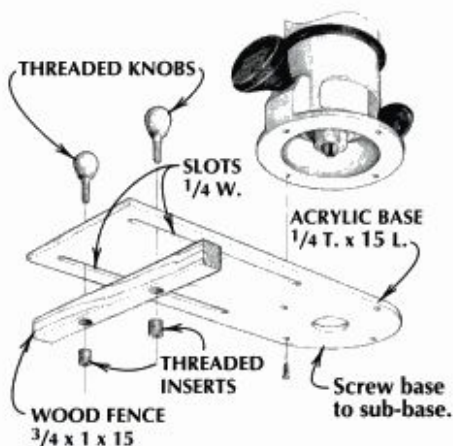
READER SERVICE NO. 107

TECH TIPS

Router Edge Guide

You can adapt this adjustable edge guide design to fit just about any router. To make ours, we first removed the original router base and used it as a template to drill mounting holes in the new acrylic base. Then we drilled a clearance hole for the bit and collet and routed a pair of parallel slots for the fence. Install a couple of threaded inserts in the wooden fence and you're ready to rout.

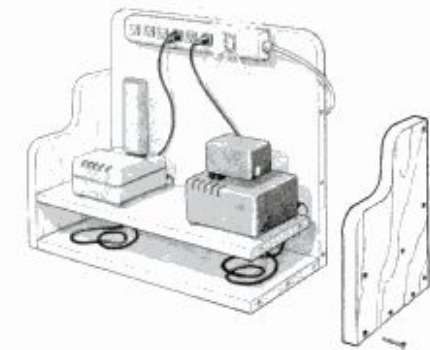
Ray Provost & Herman Picard
South Hadley, MA



Charger Caddy

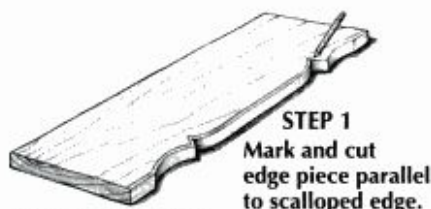
Overheated battery chargers have caused a number of workshop fires. To minimize this risk, I built a caddy for my chargers and equipped it with an outlet strip that has a red warning light. The light glows when the strip is switched on, so it's easy to notice (and then switch off) when I turn the workshop lights off. The charger cords stow in the space underneath the upper shelf.

Carol J. Reed
Ramona, CA



Scalloped Bead

To raise a bead on a scalloped edge, first cut it to shape in the usual way on the bandsaw or scrollsaw. Then pencil a line



SECTION VIEWS

STEP 2

Glue edge piece to stand proud.

STEP 3

Round over to form bead.

parallel to the profile and between 1/8 in. and 1/2 in. from the edge. Cut carefully along this line to free up the narrow scal-

loped strip. Glue the strip to the "parent" piece, but with its top edge proud. (See Step 2.) Since the grain matches, the glue line will be hard to detect. Finally, round over the edges of the proud strip to create the bead detail. When you're done, a few passes on the jointer will eliminate the step on the bottom.

Paul K. Murphy
San Jose, CA

No-Fog Safety Glasses

Wearing safety glasses or goggles and a dust mask at the same time usually results in fogged lenses. My strategy for preventing fogging is to spread some paste wax (not the dark stuff) on the lenses and then buff it off.

Will Foxx
Big Rock, AK

BEST TIP WINS \$200

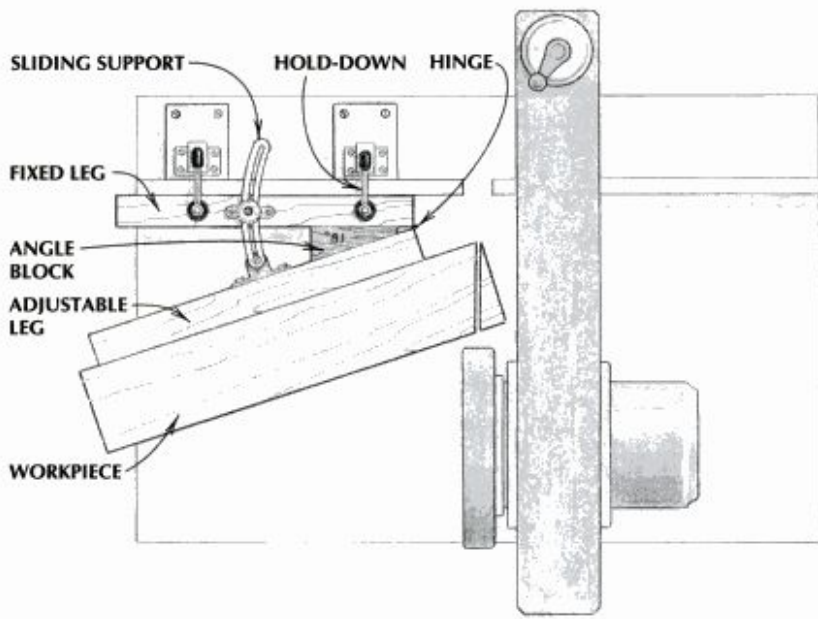
Know a better way of doing something? Designed a clever jig? Send your original woodworking tips, along with a sketch or a snapshot to: "Tech Tips," AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098. We'll pay \$50 for each tip we publish and \$200 for the best tip of the issue.

Angle Guide for Radial-Arm Saw

This jig works great as an angle guide on the radial-arm saw. The fixed leg of the jig is clamped against the fence. The adjustable leg is locked at its angle

setting with a sliding support. I cut a variety of angle blocks to help in setting the jig angle. Hold-down clamps keep the jig in position.

Don Guild
Kentfield, CA



HARDWOODS
EXOTIC & DOMESTIC
OVER 100 SPECIES
LUMBER • VENEERS • TURNING STOCK
WOODWORKERS SAMPLER
Discover the perfect wood for your projects
30 GORGEOUS WOODS
 Standard collectors size 1/2" x 3" x 6", sanded smooth, labeled with the common and botanical name. Ideal for displays, use to test workability or finish, or just experience and feel these beautiful products of nature.
BOOK OF FINE HARDWOODS included
 Provides geographic source, description, uses and availability for over 200 woods. Over 70 woods shown in full color. Charts compare physical properties. 60pgs. **A great reference tool!**

\$59.00
 postage paid in Cont US

WOODWORKERS Source 1-800-423-2450
 5402 S. 40th St. • Phoenix, AZ 85040 • 602-437-4415
SATISFACTION GUARANTEED

READER SERVICE NO. 53

Versatile... New Mini-Ligno DX

Wood Moisture Meters

Only a thorough moisture check assures problem-free woodworking. Lignomat's pin-type moisture testers can accurately measure surface and core moisture. Ideal for veneer, heavy timbers and even curved plywood.

Request our free brochure and the leaflet: "Moisture Problems, Helpful Hints and how to Choose the Right Moisture Meter."

Also ask about pin-less meters.

800/227-2105, 503/257-8957
Lignomat USA Ltd.
 PO 30145, Portland OR 97230

READER SERVICE NO. 57

The Joy of Sanding

Right!? Who would believe a job as tedious and dusty as sanding could be a joy?

Thousands of Performax owners do. With their Performax drum sander... no more sawdust in their faces, no more high and low spots on their finished pieces.

Imagine the satisfaction of sanding a wide surface (up to 44") to within .010" uniform thickness across its full width. Or sanding stock as short as 2 1/4" without a carrier board or scuffed up fingers. Fantasize sanding to as smooth a surface as you wish without any elbow grease.

22-44 PRO



Proudly Made in the USA

PERFORMAX
PRODUCTS, INC.

12257 Nicollet Ave. So. Dept. AW08
 Burnsville, MN 55337

(612) 895-9922 1-800-334-4910

Make your woodworking the pleasure it was meant to be. Call us today for a free brochure and the dealer nearest you.

READER SERVICE NO. 31

The world has been waiting for a less expensive version of the Fein Triangle Sander.

Once again, we've failed.

Let's face it, if you set out to build a cheap Mercedes, you'd end up with something *less* than a Mercedes. Same's true with the Fein Triangle Sander.

Sure we've refined it a bit. But this is *still* the original patented technology. The oscillation the others have *tried* to match. And the one you'll want to get your hands on, before you make a decision. This one won't buzz your hands or numb them. Won't tire your hands or wrists or elbows. Even with heavy-duty continuous use. It's balanced for comfort and absolute precision sanding. No wandering. No banging into corners. No effort.

So what's new? For starters we moved the switch from the side to the top. (Equality for righties and lefties.) Then added variable speed for ultimate control. Boosted the power 20%, just for the heck of it. Shaved the weight by half a pound. Moved the air intake to the rear, so your hands won't block the flow. And resculpted the head for better clearance.

These changes are the result of an extensive customer poll. (A lot of good feedback.) We just wanted to make sure that the most expensive triangle sander on the planet will continue to be worth every nickel.

It's easy to learn more about the Fein Triangle Sander and its many accessories (for sanding or sawing or scraping or polishing). Simply call 1-800-441-9878. Fein Power Tools Inc., 3019 W. Carson St., Pittsburgh, PA 15204.

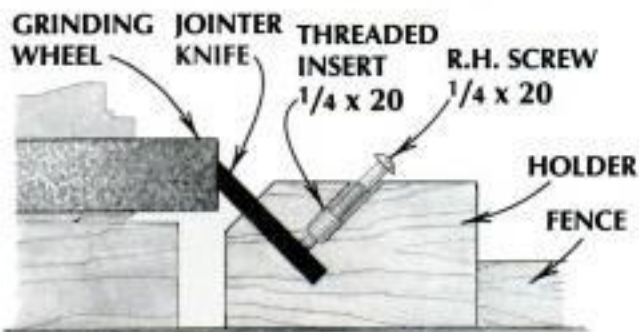


Celebrating a Century
 Since Fein Invented the World's First Power Tool

READER SERVICE NO. 20

Upended Grinding

I've found a way to grind planer and jointer knives quickly and accurately by turning my small 5-in. motorized grinder on end. First I bolt the grinder securely to an L-shaped plywood base



Tighten screws to grip knife.

that I can clamp to my tablesaw table. The wooden holder for the knife has a kerf that's cut at 45°. Round-head screws and threaded inserts are located on the holder every 3 in. to secure the knife during grinding. The holder runs against an adjustable fence that I clamp to the base of the jig. It usually takes just two or three passes to regrind a knife.

John Renneker
Tallahassee, FL

Miter-Gauge Upgrade

If you get as annoyed as I do with the sloppy fit of miter-gauge bars, here's what to do about it. Chuck a #17 twist bit in the drill press and drill a hole near



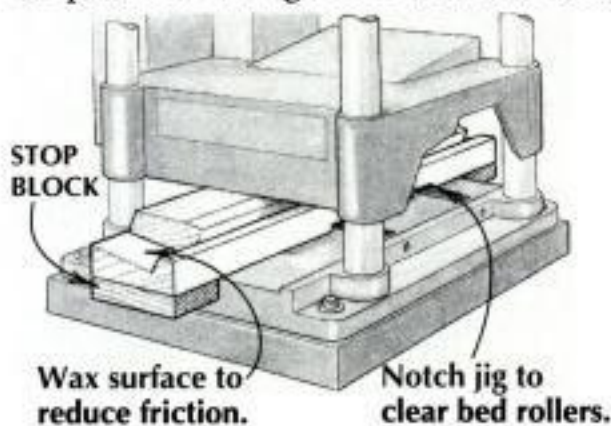
each end of the bar, centering each hole on the bar edge. Then drill out the same holes using a #7 bit—but stop as soon as the bit's point protrudes. Using a 1/4-in.

#20 tap, thread each hole at least halfway down. Drop a 3/16-in.-dia. steel ball bearing into each hole, followed by a small compression spring, as shown in the drawing. A setscrew holds everything in place. With a pair of spring-actuated balls taking up the play between miter bar and slot, you'll never be troubled by sloppy fit again.

Alan de Silva
Houston, TX

Pair O' Planer Jigs

With the aid of a couple of "auxiliary" beds, I've added some versatility to my Delta thickness planer. One jig lets me bevel stock that's rectangular in section to produce things like window sills.



With another jig, I can plane square stock into octagonal stock. This jig is also useful for planing a flat along a length of dowel rod.

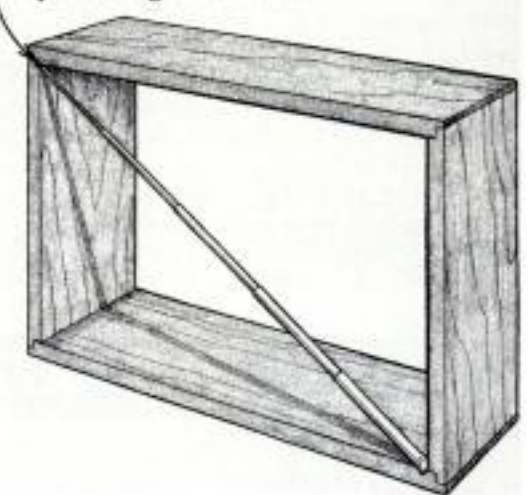
Since each jig covers the bed rollers, you need to thoroughly wax the contact surface to reduce friction. Wooden stop blocks at both ends of the jig keep it from sliding.

Dana Batory
Crestline, OH

Diagonal Measure

Most woodworkers are familiar with the trick of checking for square by comparing diagonal measurements from opposite corners. Sometimes clamps are in the way, which makes it difficult to measure diagonals with a tape measure. My solution is to use a discarded car antenna as a measuring device. Remove the ball at the tip of the antenna, crimp

Remove ball, flatten each end, then file square edges on ends.

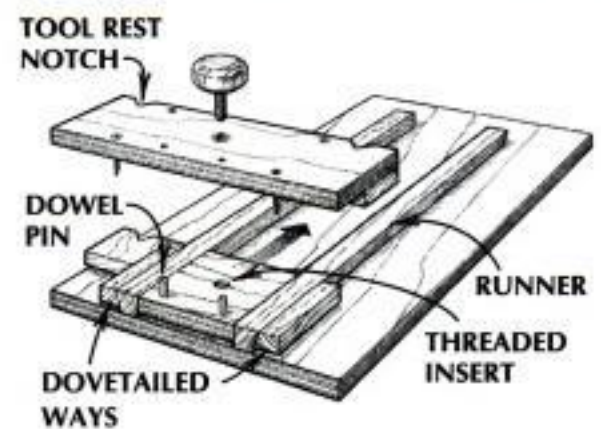


both ends, then file them square as shown in the drawing. You can also crimp the telescoping sections so they hold a measurement securely.

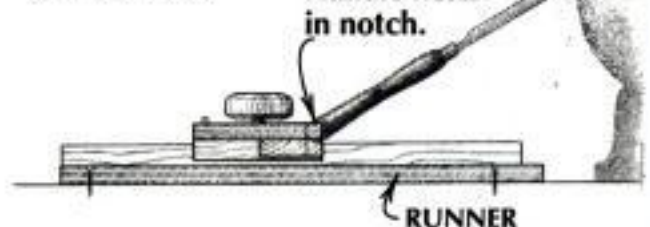
Mark Stryker
Jersey Shore, PA

Gouge-Sharpening Jig

This jig takes the guesswork out of sharpening turning gouges. You simply rest the end of the gouge handle against one of the notches, adjust the sliding carriage until you get the proper grinding angle and lock the carriage with the threaded knob. When you make your version of this jig, match the spacing



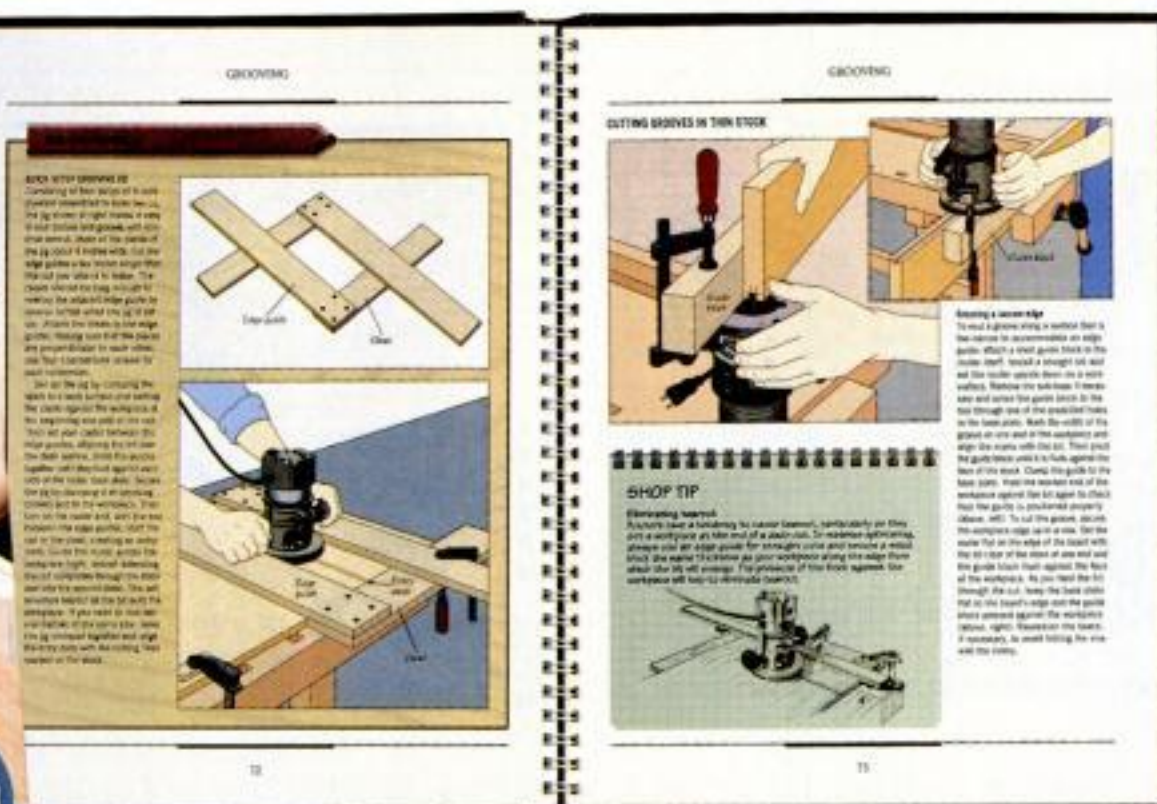
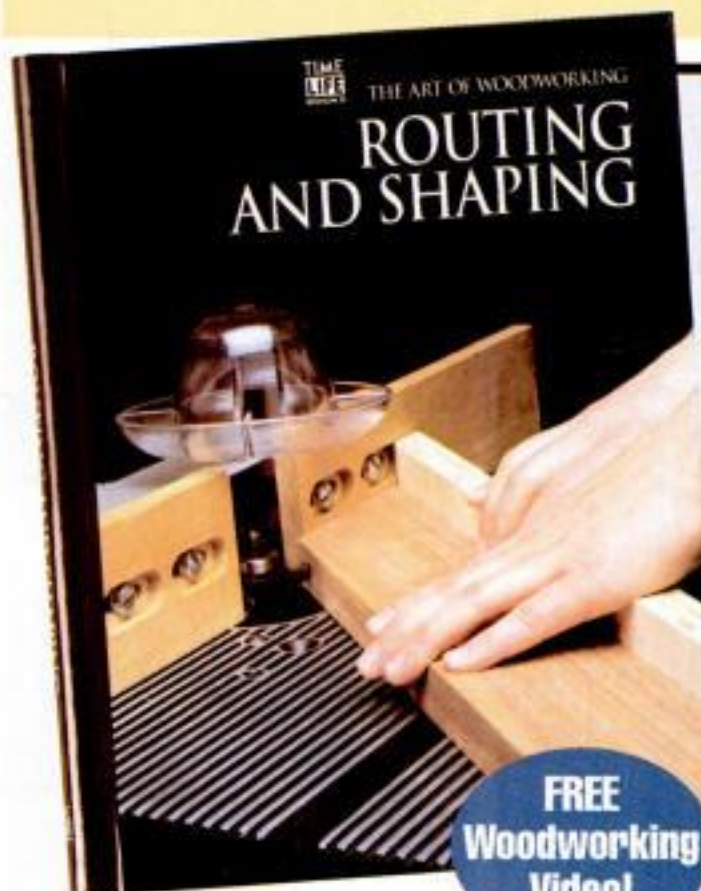
SIDE VIEW



between notches to the spacing between your two grinding wheels. Alternatively, you could adapt this design for a single wheel. Screw or clamp the jig's base to your grinding bench.

William Boyd
Bloomfield, MI

144 tip-packed pages. 200 photographs and illustrations. 19 shop-made router jigs. *Yours to try for 15 days FREE.*



ROUTING AND SHAPING IS YOUR INTRODUCTION TO THE ART OF WOODWORKING, THE MOST COMPLETE GUIDE TO WOODWORKING TOOLS, TECHNIQUES AND MATERIALS.

Now you can learn the practical woodworking skills that'll give you more professional-looking results on every project. And find out how to build and use hundreds of jigs that'll help you work faster and with much greater control. It's all in THE ART OF WOODWORKING, from Time-Life Books.

Here's the perfect workbench companion — with clear, easy-to-follow illustrations and a unique spiral binding that allows the book to lie flat while in use. In your first volume, *Routing and Shaping*, you'll discover the secrets and skills that have taken master woodworkers years to acquire. And you'll learn the techniques, from edge forming to joinery, that make your router the most versatile tool in your shop.

Shop-test *Routing and Shaping* free for 15 days and receive a bonus woodworking video! If you keep the book, pay just \$16.99, plus shipping and handling.

Then every month, you'll have the chance to preview new volumes—without risk or obligation—like *Cabinetmaking*, *Hand Tools* or *Portable Power Tools*, at our regular price of just \$16.99, plus shipping and handling.

FREE BONUS VIDEO!



Shop Secrets from Master Craftsmen

Spend an hour with America's finest woodworkers learning their techniques, shortcuts and tools step-by-step. A \$29.95 value!

FREE PREVIEW CERTIFICATE!

Yes! I would like to examine *Routing and Shaping* free for 15 days as my introduction to THE ART OF WOODWORKING. Please send it to me, along with my free woodworking video and other future volumes, under the terms described in this ad.

SEND NO MONEY NOW!
Orders subject to approval.
©1995 TIME LIFE INC. WDW.OSS.196

KGCQP0

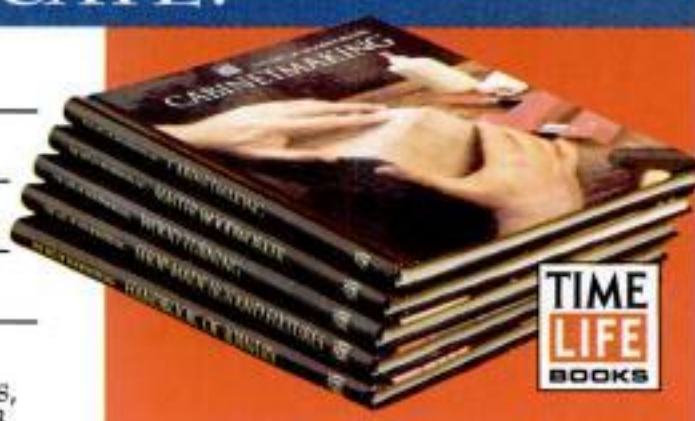
Name _____

Address _____

City _____

State/Zip _____

If card is missing mail to: TIME-LIFE BOOKS,
P.O. Box 85563, Richmond, VA 23285-5563.



Disposable Natural-Bristle Brushes

You don't have to throw these pure Chinese-bristle brushes away after you use them; they can be cleaned and reused. But some people aren't very good about cleaning brushes and these are excellent for such people. At less than 35¢ each, a brush full of hardened paint or lacquer is easier to take. Wooden handles. 7" to 7 1/2" overall lengths. Ten each of 1/2", 1", and 2" widths. Excellent value.

56Z99.30 Pkg. of 30 Brushes

\$9.95

(Shipping and handling extra; N.Y. residents add sales tax.)



To order call:

1-800-871-8158

or fax:

1-800-513-7885

Our 248-page catalog sent free with order.

Lee Valley Tools Ltd. - 12 East River St., Ogdensburg, N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7



THE COMPETITION CALLS US

LIGHTWEIGHTS...

... and they're **RIGHT!**



Model No. 0241NK

Our competitors are learning what our customers have known for years - AIRY's line of professional quality nailers and staplers are lightweight, powerful and reliable. *Wood Magazine* gave our model 0241S 18 ga brad nailer their highest rating "10 Overall Value". And listen to what *Popular Woodworking* said about our 0350 16 ga brad, "This nailer is one of the best."

Innovative design, consistent quality and **LIGHTWEIGHT PRICES** have always been AIRY's trademark - now fine woodworkers everywhere can own these fine tools.

Ask your dealer about our complete line of staplers and nailers.

AIRY®
AIRY SALES CORPORATION

14535 Valley View Ave., #N
Santa Fe Springs, CA 90670
310-926-6192 • (FAX) 310-404-1400

READER SERVICE NO. 16

UNIQUE, NEW TRAIN DESIGN



Build a wooden 4-4-0 Steam Engine and Tender over 48" long. More than 100 pages of drawings for more than 350 pcs and instructions.

Only **\$29.95** US PPD.

(WI residents add 5% sales tax.)



Enterprises

Order Today!

P.O. Box 51429 • New Berlin, WI 53151-0429

Heavy Glass Table Tops

FACTORY DIRECT DISCOUNT PRICING



- Table Tops
- Shelves
- Doors
- Display Cases
- Entertainment Centers
- Tempered Glass

TABLE TOPS BY PHONE SATISFACTION GUARANTEED!

WGB GLASS ■ SHAPES ■ THICKNESSES ■ EDGE DESIGNS

FREE CATALOG - 1-800-288-6854

READER SERVICE NO. 67

Powerful Thinking



Call today for a **FREE video.**

Powerful thoughts bring powerful results. Watch our free demonstration video on the Robland X31 combination machine and you will see the powerful thought process that has gone into the design of this Belgian success story. Every woodworker's dream, combine:

- 12" Jointer/Planer
- 10" table saw
- Cast iron sliding table system
- 3, 3HP motors (German)
- 50" rip capacity
- 20 seconds to change functions
- Mortiser
- Shaper

Put the power in your hands today. Call (800) 234-1976, for your free demonstration video.

LAGUNA TOOLS

2265 Laguna Canyon Rd., Laguna Beach, CA 92651 • FAX (714) 497-1346

READER SERVICE NO. 25

For that **"SPECIAL" project**

Made In Tennessee



Table Bases



Table Legs

IN STOCK
NO MINIMUM
VARIOUS WOODS

FREE COLOR CATALOGUE



Kits Ready to Assemble & Finish



Adams Wood Products L.T.D., L.P.

974 Forest Dr., Dept. AW23
Morristown TN 37814 • Phone (423) 587-2942

READER SERVICE NO. 43

The Only Tablesaw Blade You'll Ever Need...Guaranteed!

Tighten on your Forrest blade and enjoy the hands-down BEST cuts you've ever seen—with NO scratches or tearout. Feel the smooth-cutting power when you rip through thick hardwoods. Watch the flawless precision of every miter and crosscut you make. Even splintery oak plywood cuts clean and tearout-free.

Once you put on a Forrest blade, you can LEAVE it on! You could buy an ordinary blade, but quite frankly, all you'd get would be ordinary performance. For extraordinary cuts year after year, trust your work to Forrest. More than 100,000 extraordinarily satisfied woodworkers already do.

Prove it to yourself—completely without risk! **Call today—(800) 733-7111**—for your chance to try a premium Forrest Woodworker II blade in your own shop.



Forrest Woodworker II

Special 10% Discount!

Take 20% off your second blade.

10" x 40 Tooth (1/8" or 3/32" kerf)	Reg. Price \$119	10% Off First blade \$107	20% Off Second Blade \$95
--	-----------------------------------	--	--

Call for prices on other sizes as well as other types of blades!

Blade Stiffener

Make all your blades cut better and quieter with a blade stiffener!

● 4".....\$20 ● 5".....\$24 ● 6".....\$25

Unmatched Precision On Every Dado Cut!

The Forrest Dado-King gives you flat-bottomed grooves and no splintering—even when crosscutting oak plys and melamine. This award-winning set comes with six 4-tooth chippers (incl. 3/32" chipper), two 24-tooth outside blades plus shims. Cuts 1/8" to 29/32" grooves.

Forrest Dado-King

	Reg. Price	Sale Price 10% Off	15% Off (when you buy a Woodworker II)
6" set	\$269	\$242	\$229
8" set	\$289	\$260	\$245

Extra Bonus!

Buy a blade and get \$45 worth of sharpening discount coupons from Forrest, good on any blade or dado set you own.

To Order Call 1-800-733-7111

All Major Credit Cards Accepted

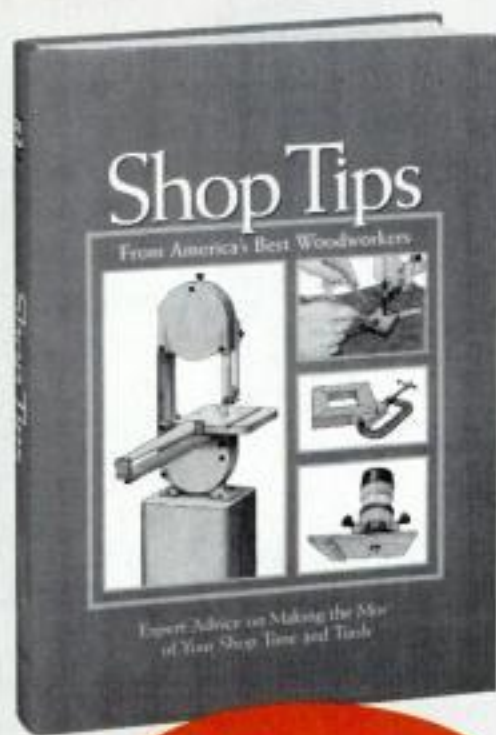
CA, FL, NJ, NY, PA residents please add sales tax.

Shipping charges: saw blades: \$9; dado: \$10; stiffener: \$2

EXCLUSIVE OFFER

Raise your woodworking skills to a whole new level with more than 600 proven woodworking tips from 100 top woodworkers. This best-selling 312-page hardcover book retails for \$27.95 but is yours FREE with any saw blade purchase from this ad.

You must mention you saw this offer in *AMERICAN WOODWORKER* magazine.



YOURS FREE!
\$27.95 value

Hurry!

This limited-time offer expires March 31, 1996.

(One book per order)

FORREST

Forrest Manufacturing Company, Inc.
461 River Road, Clifton, NJ 07014
Phone (800) 733-7111 • In NJ, call (201) 473-5236
Fax (201) 471-3333

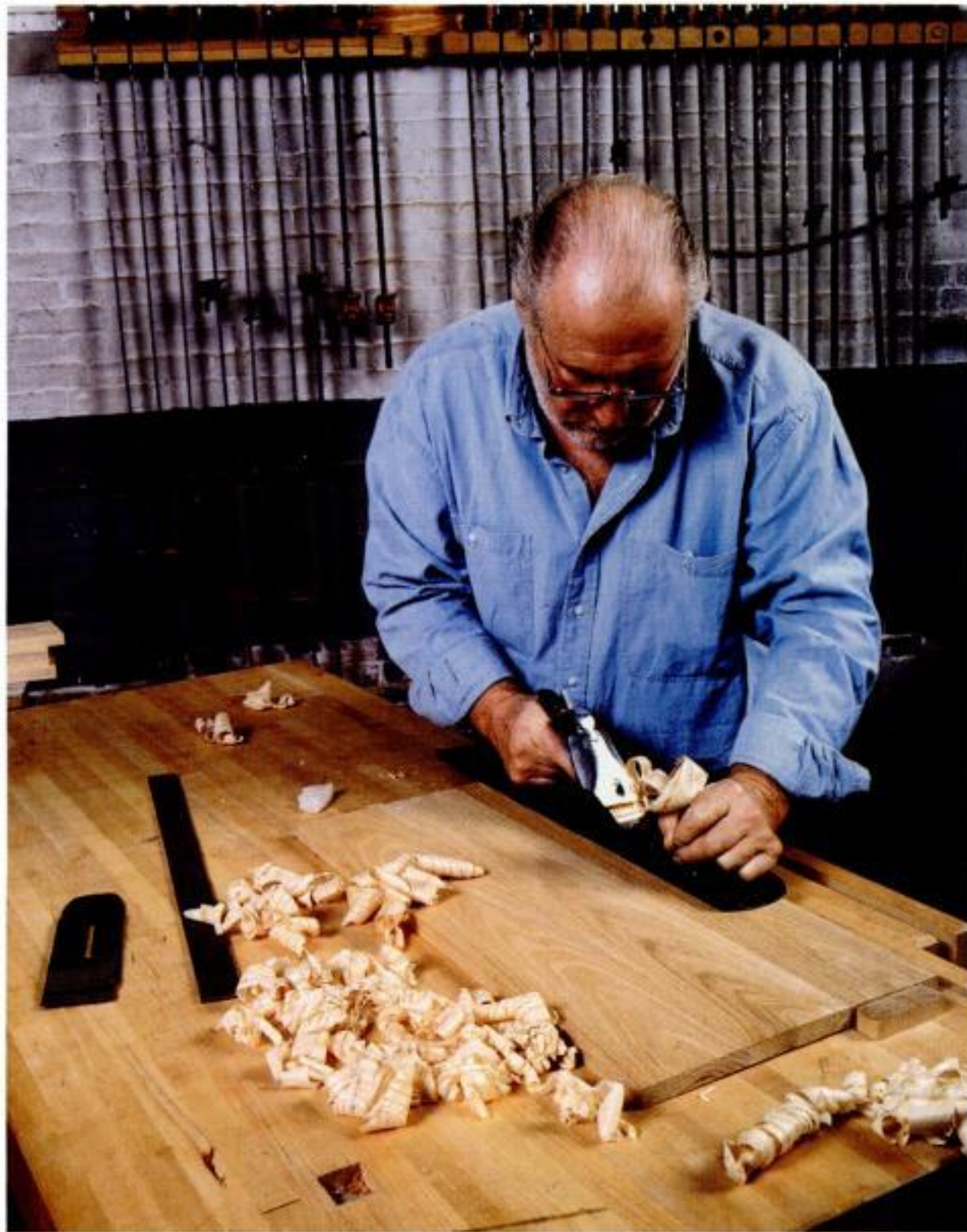
Unconditional Money-Back Guarantee

Use either of these blades for a month. If you are not completely satisfied, return the blade for a complete refund. No other blade company will make that kind of guarantee—because there's no other blade like a Forrest blade!

Designing Edge Joints

Compose with Grain, Figure and Color for Appearance and Workability

by Ian J. Kirby and John Kelsey



EDITOR'S NOTE

This article is the first in a series about the design of joints. Subsequent articles will focus on situations where glue isn't enough and you must make an interlock between the parts: rail joints, which are primarily mortise and tenon; carcase joints, which are primarily dovetail and box; and joints in such man-made sheet materials as plywood, particleboard and medium-density fiberboard.

Planes nicely. The author smooth-planes a beautiful edge-glued panel made by carefully ripping cathedral figure out of red oak short ends. Selecting the wood—which means ripping for the figure you want—is necessary for both technical and aesthetic reasons.

Here's the problem with wood: It's not always big enough. By gluing long grain to long grain, you can make wood wider, or thicker, or both.

Most of the time, the reason for gluing up a wide panel or a thick slab is both structural and visual: an inviting tabletop, a pretty door panel or cabinet side, a curvaceous leg or chair seat. These are the showy parts of furniture projects—the wood you'll look at and touch. If all you wanted was a big piece of plain material, you wouldn't bother to glue up; you'd use poplar or particleboard. But you want something more, and carefully designed edge joints can give you the appearance and the performance you need.

A properly made long-grain glue joint is stronger than the surrounding wood. If you break it, you'll have bits of wood sticking to both sides of the glue, and you won't be able to achieve a clean break along the glue line itself. Since there's no shortage of gluing area, glue alone is enough to hold long-grain joints together. There's no strength reason to add biscuits, tongues, splines or dowels, though these devices will help you align the glue-up. You are free from the necessity to design interlocking parts, which gives you the opportunity to concentrate on appearance. So although there are technical considerations, designing an edge joint is largely a problem in wood selection and composition.

Selection and Composition

You can see thoughtless, even ugly, wood composition in manufactured kitchen cabinets and cheap hardwood floors. Narrow boards are stuck together with no thought for color or figure, let alone for such design elements as pattern, rhythm, repetition, symmetry or proportion. People like the warmth of wood so much that they accept this, and if no one ever shows them anything better, they'll give it high value.

As an individual craftsman you don't have to settle for the hurry-up economics

PHOTO BY TETZ GRIEGER

WOOD SELECTION AND LAYOUT

To compose the most attractive panels, select and harvest the figure you desire from the available boards. There's no reason to preserve wide boards, nor to lay out parts parallel to existing edges. The ordinary long-grain edge joint thus becomes a vehicle for design and imagination. —I.K. and J.K.



Prospecting for gold. Kirby surveys an unpromising stack of short ends that were discarded by a flooring manufacturer.



Rip and sort. After you rip the board on the bandsaw, you can sort the wood into flatsawn cathedrals and the straight figure of quartersawn and rift-sawn wood.



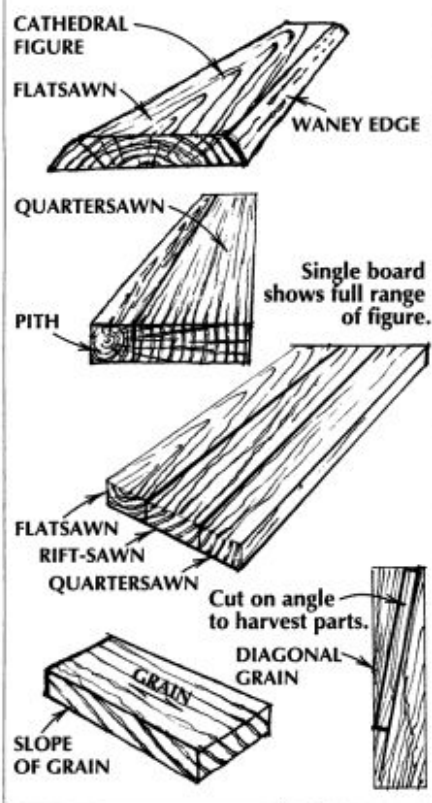
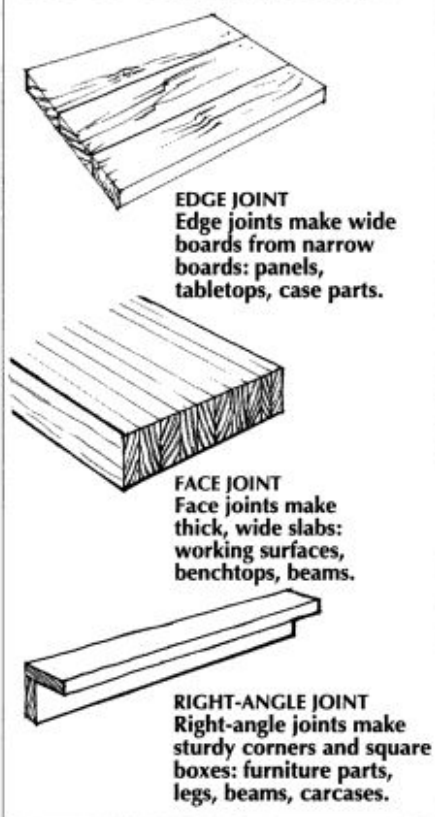
Draw the board. The first chalk line locates the center of the "V"-shaped figures, or "cathedrals." Measuring equal distances to both sides defines the selections.



Solid inserts. Inserts of solid mahogany enhance the proportional pattern created by quartersawn rippings of various widths. Kirby scrapes off the glue squeeze-out before it sets hard.



Fancy panels. At left, a quartersawn panel with solid inserts. At right, a flatsawn panel with cathedrals.

FIG. 1: WOOD FIGURE**FIG. 2: THREE KINDS OF LONG-GRAIN JOINTS**

of the assembly line. You've got the time, the familiarity with your material, and the taste to do a lot better. You can select the faces you want from the available boards. You can saw each board into the precise pieces you want to glue up, and you can arrange the pieces for the best visual effect. This doesn't mean wasting any good material, for once you have extracted the show wood from your boards, the remainder will become rails and stiles, aprons, moldings and structural parts. However, this *does* mean giving up the automatic preference for wide boards.

Not only is wood not always big enough, it's not as big as it used to be, because the big trees are mostly gone. On the other hand, unlike in earlier times, commercial wood is almost always seasoned correctly. Since you don't have to worry about wild instability due to erratic seasoning or extreme moisture exchange, you don't have to make wood movement and distortion your paramount concern. You can concentrate on appearance.

By looking at the end grain, you can correlate the figure in a board with where it was sawn from the tree. The widest board is the center board. In a reasonably straight trunk, this board will

be mostly quartersawn wood, interrupted by the center, or *pith*, of the tree. The pith is juvenile wood, unstable, and difficult to dry without defects. Tempting as it may be to preserve this wide center board, it generally has to be ripped into two narrower boards, cutting out the pith. The two planks that result, each approaching the radius of the tree in width, will show quartered figure on their faces—straight grain, splashed in some species with ray cells. Ray splash is what makes quartersawn oak so valuable. It's not as prominent in cherry and maple but nevertheless it can give these woods a beautiful shimmer.

The next two or three boards, sawn on both sides of the pith, will be mostly quartersawn as well. In an earlier time these would have been called the "crown planks." Since most woods move the least in the radial plane, these boards will be the most stable. And once they are seasoned, they'll stay flat. When you need maximum stability, or when you want the straight figure and restrained, sophisticated appearance of quartersawn wood, these are the boards to look for.

Flatsawn begins to show up in the next run of boards. They'll contain quartersawn and rift-sawn wood at their edges, with flatsawn wood in the cen-

ters. (See Fig. 1.) Flatsawing produces the long "Vs" called cathedral figure, which some people feel is the most beautiful expression of wood. Flatsawn wood is also the most liable to cup during drying, and as the calendar turns it will expand and contract the most in response to changes in humidity. Even if you are lucky enough to find wide flatsawn boards, unless your design can allow for the inevitable movement and distortion, you'll be better off to rip saw for the precise figure elements you want.

The planks from the outside of the log will be all flatsawn, with no quartersawn at all. In many species they'll also contain a lot of sapwood, which may be a different color than the heartwood—walnut and cherry, for example, have creamy white sapwood—and which usually shrinks more. Thus, while the boards nearest the bark may show cathedral figure with elaborate whorls and plumes, they may also show radical changes in color, and they're liable to distort severely. Avoid this material, or, when you are stuck with it, saw it into narrow pieces.

Grain Slope

After appearance and a good fit, the important technical consideration is the slope of the wood grain. (See Fig. 1.) Most of the time, you can not only compose the wood for the look you want, you can also organize the direction of the grain to be the same in adjacent boards. When all the fibers slope the same way, you'll be able to smooth-plane the wood without tearing it up. When the grain direction changes across a glue line, you'll have trouble planing. You'll have to plane up to each glue line and finish by sanding, which not only takes longer but also changes the appearance of the wood. It's subtle, but planed wood looks crisper than sanded wood.

You can spot the grain slope by looking at the edge of the board. When in doubt, you can always plane a shaving off the face. Chalk an arrow on the face to mark the direction you can plane with the least amount of torn grain. Most of the time, you will be able to keep the grain direction aligned by turning some boards over, or end-for-end. In the end, however, the way the panel looks is most important, and if I've got to choose between easy smooth-planing and appearance, I'll go for appearance every time.

GETTING SMOOTH, SQUARE JOINTS

To make a really good long-grain glue joint, the two mating edges must be flat, straight and smooth. You can achieve this result with machine tools or with hand tools—in fact, I usually use both.

Glue works by molecular attraction between itself and the wood cells. Clean, smooth, freshly cut wood that fits together perfectly makes the strongest glue joint. A good glue line is imperceptibly thin. Maneuvers such as roughing up the surface or planing a hollow into it are pointless.

Although you can achieve flat, straight edges with a jointer, it will leave a rippled edge, even if you make slow, even passes. Two passes with a sharp, finely set jointer plane will make the edge smooth. Provided that the edge is truly straight and out of winding, and truly square to the face side, you've now created the fabled face edge. Two of these will mate perfectly every time.

When the wood comes off the jointer, how do you know the edge is square and straight? You can check with measuring tools, but the real test is whether a second piece of wood with a similar square edge will butt perfectly. Stand the first piece of wood on edge in a vise. Plant the second piece on top of it. If they do line up, you can consider the edges square.

To check for straightness, look to see whether there is any visible gap, either at the ends or at the center. If you can rock the top board, there's a hump someplace. Pivot the top board on the bottom one. If it's flat, you'll hear wood scraping on wood and it will want to pivot on two points. If it pivots on one point, one of the edges is not flat.

When you are concentrating on removing an almost invisible hump or valley from the edge of a board, it's not always easy to pay attention to squareness, too. But if you plane both mating edges at the same time, it doesn't matter—any deviation from squareness cancels. Do it by folding the joint as if it were hinged. Then clamp the boards in the vise, with the edges carefully aligned. When you get it right, you'll be able to take a single shaving off both boards at once, end to end. Check for straightness with a straightedge before you unclamp the boards.

When students ask me how many times to go through this drill, I tell them about the old-timer and the apprentice.

The apprentice planes the long edges, sets up the joint and goes through all the checks.

"Well, how is it?" the geezer asks.

"Well, it's close enough," the kid says.

"Well then, you better plane it some more."

After several rounds of this the exasperated apprentice finally can say, "All right, it's spot on, absolutely spot on."

"Ah well," the old-timer sighs, "that's close enough."

—I.K. and J.K.



Is it flat? With the joint set up in the vise, the straightedge reveals deviation from flatness if the edges aren't square.

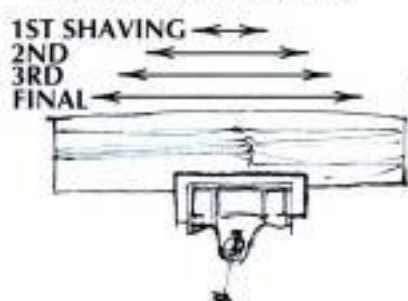
Is it straight? Check the planed edges with a long straightedge.



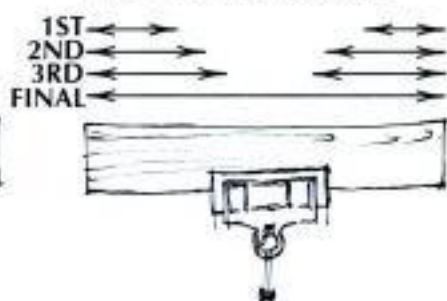
Both at once. After machine jointing, fold the mating edges together and straighten them out with a jointer plane.

STRAIGHTENING AN EDGE

HUMPED BOARD



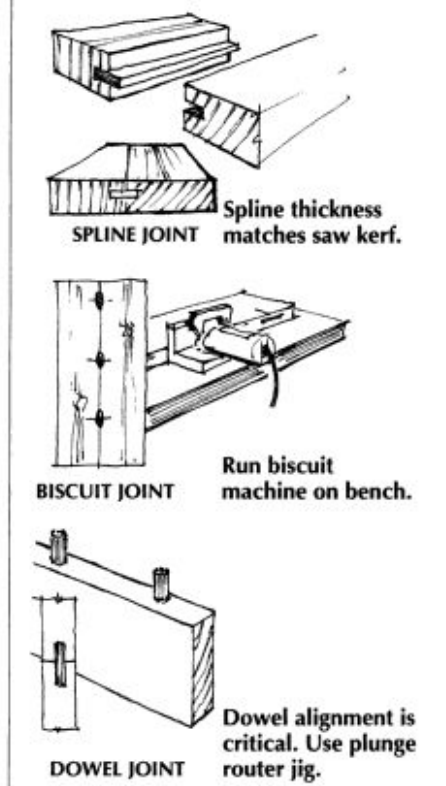
HOLLOW BOARD



See the light. If you put your eye right up to the joint, you'll see light where it doesn't fit. When you can't see any light, that's close enough.



**FIG. 3: ALIGNING
EDGE JOINTS**



Heart Side or Bark Side? Bah.

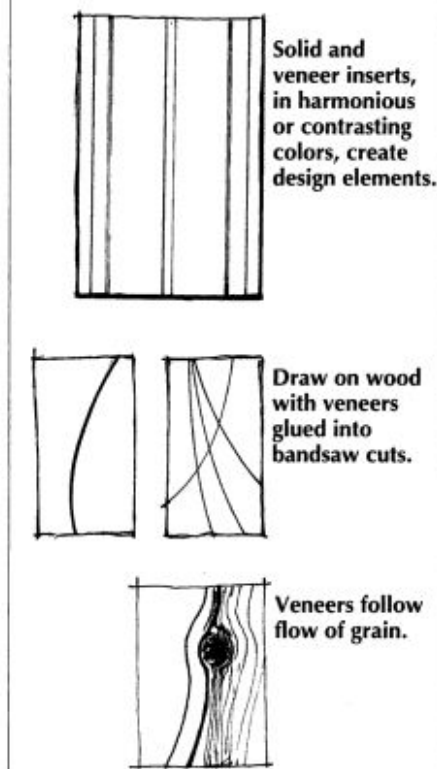
Much ink has been spilled about controlling cupping by which way up the boards go. Do you want them all heart side up, or bark side up, or alternating, or what? Perhaps this was a problem back in the old days, when wood was wide and erratically seasoned. Today you can't get those wide boards, but what you can get is likely to have been seasoned properly. Therefore, in most situations, you can quit worrying and go for what looks best.

In unusual situations, where you really aren't sure about the wood's moisture content or when you anticipate moving from Seattle to Santa Fe, you have only three choices about which way to arrange the wood:

All boards same way up—If the boards cup, they all go the same way and the whole panel takes on a curve. There isn't much force in it, so a couple of screws will pull the panel down flat. You might favor this tactic if you were making a supported structure, like a leg-and-apron table.

Alternate heart side, bark side—If there's any cupping, it'll show up as ripples, but they won't be very big. You might follow this approach when making table leaves, fall-flaps and other unsupported panels.

**FIG. 4: DECORATING
EDGE JOINTS**



Go for good looks—Even in unusual conditions, you can design your way out of distortion by restraining the glued-up panel. This is one of the reasons for making frame-and-panel furniture, and for dovetailing the tops to the sides of cases. You can forget about heart-side bark-side and concentrate on the look you want.

Aligning the Joint

With well-prepared boards and some clamping practice, you can glue up most wide panels without mechanical alignment. When the wood is bowed in length, or the assembly has a lot of parts, you may need splines or biscuits.

From a design point of view, biscuits have the advantage of not showing on the end grain, whereas the spline does show if you run the slot right through. Otherwise, the two processes achieve the same alignment.

Cut the spline slot on the tablesaw. Make it the width of the carbide blade and to a depth of about $\frac{5}{16}$ in. in each board. I usually try to center the spline in the thickness of the edge, but it doesn't matter, provided you can keep the same face of every board to the fence. You can make the splines out of the same wood as the panel, or you can use a different wood; my preference is

hard maple because of its strength and uniformity. Make the splines a snug fit in the grooves, with perhaps $\frac{1}{64}$ in. of depth clearance. Be sure you brush glue down into the slots and roll glue onto the spline itself.

A single row of biscuits is enough. Though they don't permit up-and-down movement, there's a surprising amount of end play. Use #20 biscuits and space them between 8 in. and 12 in. apart. To cut the slots, jig the sole of your biscuit joiner off the benchtop. (See Fig. 3.) As long as the board is flat and you hold it tight on the benchtop, the slots will be the fixed distance from the machine's sole to the cutter from your reference surface. Always spread glue on the biscuits as well as in their slots—it won't transfer from one surface to the other.

Dowels or tongues cause problems. I don't recommend using either of these for aligning edge joints. Milled tongues, like the shaped glue-joint made with a special router cutter, just waste a lot of wood with no advantage. Dowels are almost impossible to keep parallel, so they'll force misalignment into the joint. They also introduce a cross-grain element. Even so, if you get them right, dowels do work. But splines and biscuits work better.

Decorative Enhancements

With well-chosen wood and good edge-joining technique, a long-grain glue joint virtually disappears. You don't see the glue itself; you see only a discontinuity in the wood's figure, and if the color matches, you'll have to look hard to find it. You've created an ideal wide board, one you couldn't have found elsewhere.

But wide and perfect might not be what you want. You might want to introduce such design elements as line, pattern, color, shape, and texture. For example, it's usual to shape the long sides and the ends of tops. You can also choose to emphasize the glue lines, with inserts of veneer or of solid wood, in harmonious or contrasting colors. And you can glue up along curved lines, with or without veneer inserts. (See Fig. 4.)

Veneer inserts offer many design possibilities. Though you should learn the technique with a single thickness of veneer, it's worth experimenting with multiple layers from a palette of colorful and dyed woods. Take a look at cherry with a three-veneer insert, black-color-black. Or maple with a triple thickness of a strong primary-colored veneer.

The way you space the glue lines might result from the way you saw the boards for wood figure. But it can also be a design element you control, in order to create a proportional array of lines, or a pattern. If you use a bland wood, such as maple or Swiss pear, you could glue up, then resaw in order to draw with veneers. Don't be afraid of diagonal lines and curved lines.

When working with veneer inserts, you don't have to glue up a whole panel at once. You can make subassemblies, and you can glue a veneer to one piece of wood, let the glue set, then glue up the adjacent piece. You can run biscuits or splines right through veneers.

Curved edge joints are another design option. The shapes in the figure of the wood, or the clear path around defects, might inspire you to try a curved glue line. But you don't have to derive your shapes from the wood—you can impose patterns and curves on the wood.

The simplest way to make curves is to bandsaw two overlapped pieces of wood. Prepare the wood extra long, so you can screw the lap together and screw it to support battens. If you saw in a single smooth motion, you'll probably be able to fit the saw marks together. In any event, glue up straight from the bandsaw. The curve will have enough visual impact to mask the tiny discontinuities in the bandsawn line. Any additional work you do on the edge will only make the fit worse.

You can even glue up a wide panel, then saw it apart in order to create a new pattern with inserts of veneer—in effect, you can draw in the wood. The humble long-grain glue joint thus becomes a medium in which to develop your design vocabulary—and you can be as sophisticated and elegant as you wish. ▲



IAN KIRBY is a furniture designer, woodworker and teacher with studios in Connecticut.



JOHN KELSEY is a journalist and amateur woodworker. He and Ian Kirby are writing a book on joinery for Rodale Press.

EDGE JOINTS AT RIGHT ANGLES

Edge joints not only make flat panels, they can also make sturdy long-grain right angles. In terms of glue and grain direction, it's all long grain glued to long grain.

The long-grain right angle can be extremely useful in designing and constructing furniture. Used alone, it can make the leg of a table or the corner of a cabinet; used in pairs, it makes a square column. (See drawing, below.)

Glue alone is enough to join the long-grain right angle, provided you square and smooth the parts with the same care you would give to a flat glue-up. Alternatively, you can make a rabbet joint, and you can create a decorative element if you saw the rabbet short, as shown in the drawing. The short rabbet shows as a reversed corner, which you can highlight with paint or fill with a decorative bead.

The rabbet aligns the joint in one direction. When you glue it up, make sure you use glue blocks sized and placed to squeeze the mating parts together.

If you want more certain alignment, you can design a rabbet-and-groove joint. The principle is the same as the tongue-and-groove, but a tongue would be centered, whereas the rabbet creates the tongue on the inside face of the wood. Make the groove the thickness of the carbide saw blade.

All of these long-grain right angles show a joint line somewhere *other* than at the corner. When your design demands a perfectly symmetrical appearance, a long-grain miter is the answer. It can be plain, or augmented by a spline or biscuits.

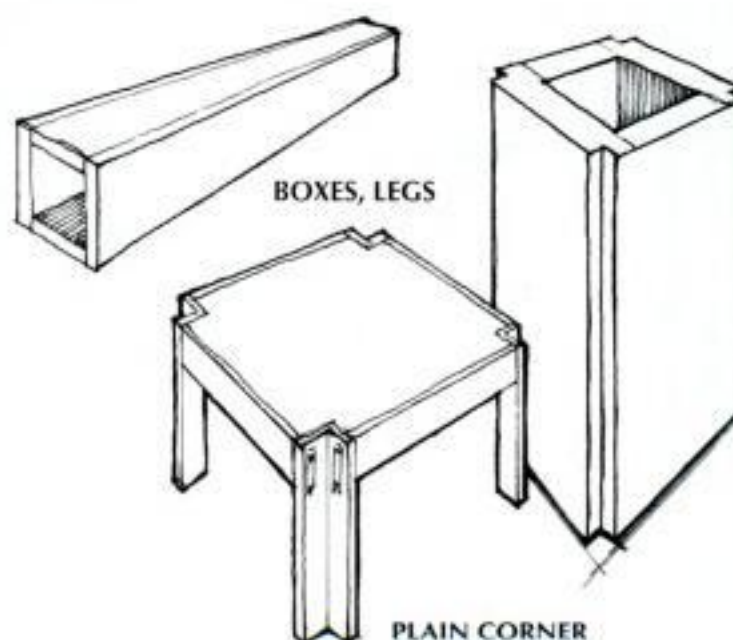
The spline should be set right at the root of the miter and it should not penetrate more than one-third the thickness of the wood. If you shift the spline up the face of the miter, or make it any deeper, you risk seriously weakening the joint. Biscuits will be located by the miter fence that comes with your slot-cutting machine. But because biscuits are intermittent, they're not likely to cause problems, so long as the slots aren't so far up the miter that they break through the show side.

Good clamping is the key to designing and making the long-grain miter and any of its variations. You have to put pressure at right angles to the miter, so rip some long, 45° clamping blocks, glue them onto the face of the wood opposite the miters, and add C-clamps. After the glue sets, you can bandsaw the blocks off the wood and clean up with a smoothing plane.

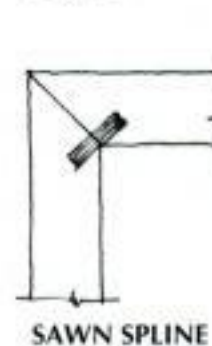
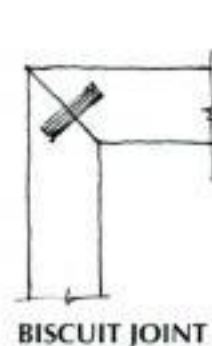
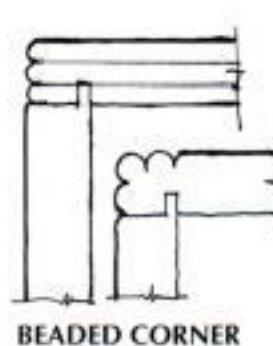
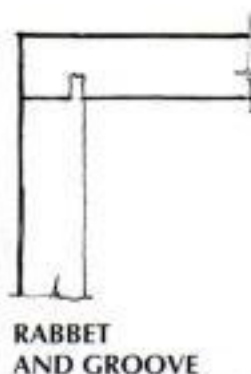
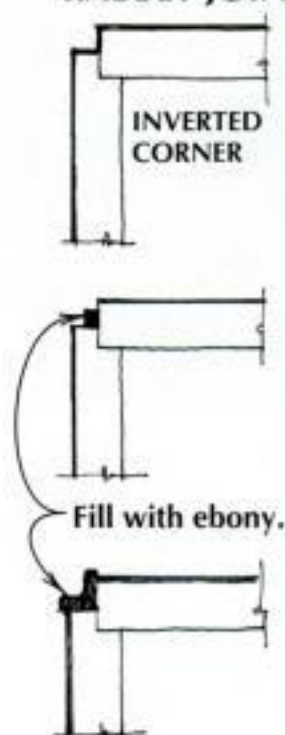
—I.K. and J.K.

LONG-GRAIN RIGHT-ANGLE JOINTS

PLAIN EDGE JOINTS



RABBET JOINTS



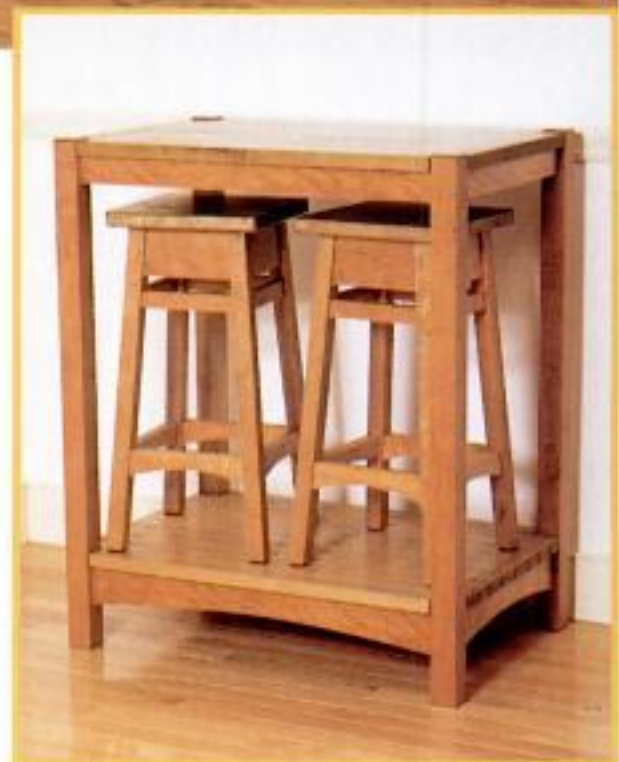


Chop and munch. This easy-to-build table provides a working height that's easy on your back and allows a friend to pull up a stool. When the meal is over, stash your stools below (right).

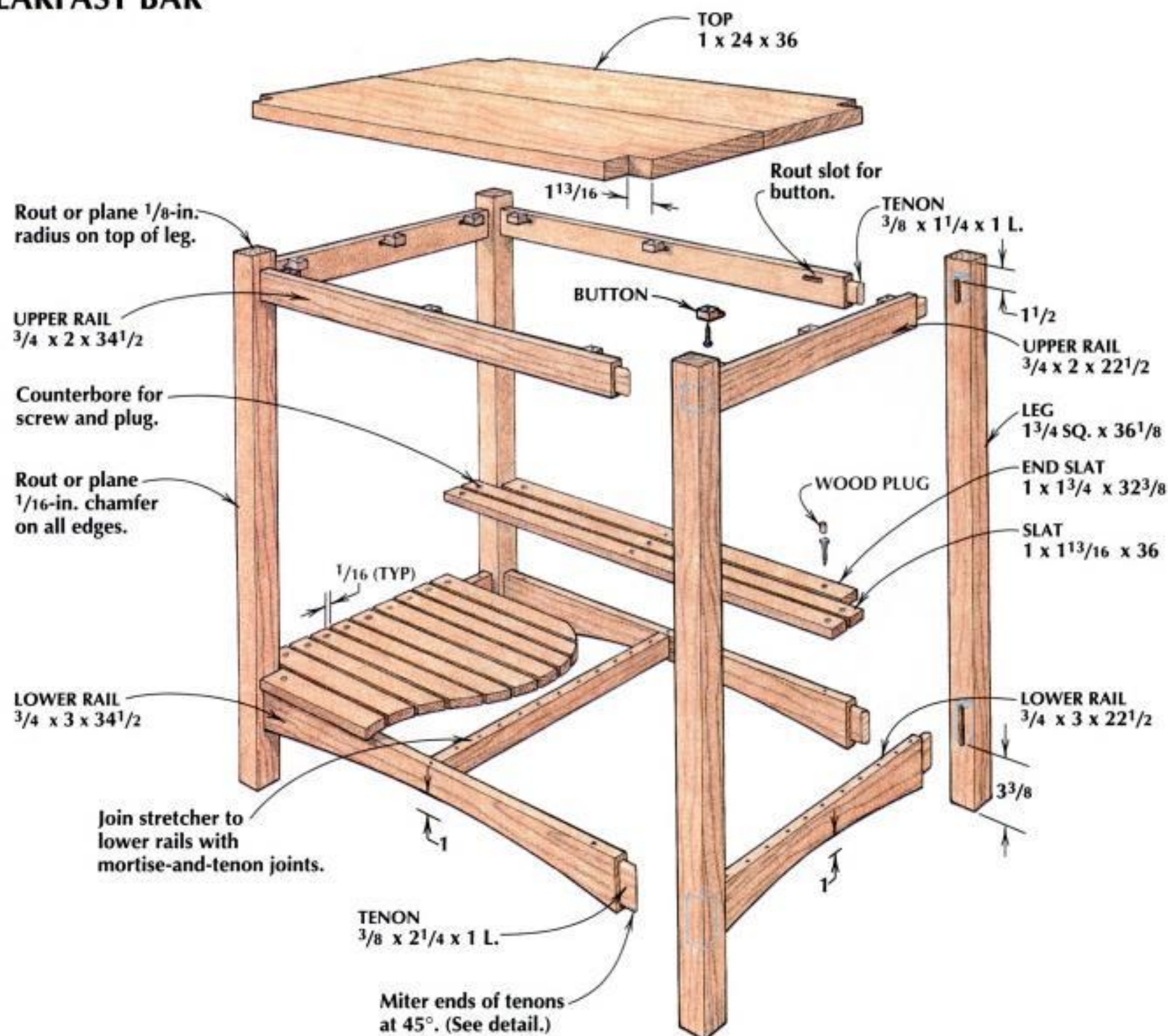
Breakfast Bar

**An All-Purpose Table for Two
You Can Build in a Weekend**

by Andy Rae



BREAKFAST BAR



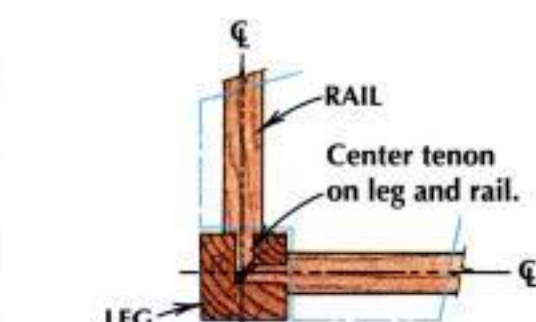
I was surprised when my mother-in-law handed me a popular mail-order catalog. Inside she had circled a "breakfast bar," consisting of two stools and a 36-in.-high breakfast table that could double as a worktable. "Want the job?" she asked.

The bar design was interesting. The height of the table matched that of most kitchen counters, making it perfect for food preparation and other standing chores. And the stools could be used during meals, then stashed away when not in use. The ensemble would sit in a central spot in her kitchen, forming an "island" or focal point for daily activities. I agreed to the job, and built the table shown here. I'll show you how to build the matching stools in the next issue.

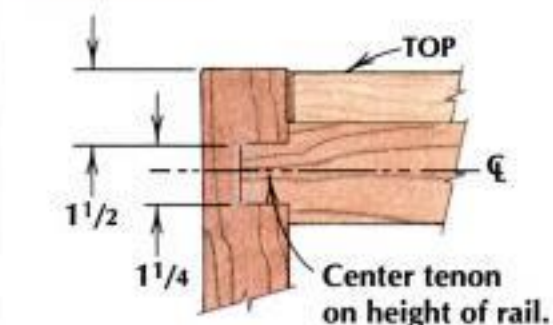
The table I made is similar to the mail-order model, except I reduced its length and width to fit its particular kitchen destination. For more work

MORTISE AND TENON DETAILS

TOP SECTION



SIDE SECTION



Milling mortises. A plunge router equipped with an edge guide makes quick work of cutting the leg mortises. Rae supports the router by ganging two legs together.



Tenon two-step. Form the tenons on the tablesaw with a carbide-tipped dado blade (left). At the bench, Rae rounds the edges of the tenons with a patternmaker's rasp (right).

space and increased seating capacity, I suggest you build the table to the dimensions shown in the drawing on page 35. If you already own a set of bar-height stools, feel free to use them with the table.

This table isn't very difficult to build, especially when you consider that some of the more challenging aspects—the mortise work and the curved rails—can be accomplished quite easily with a router. If you own a stacked dado blade, even the tenon work may surprise you with its simplicity.

When selecting your wood for this project, consider using a moderately hard wood, particularly for the top and the slats. These two areas will be subject to the most wear. Mill all the parts—especially the legs and the rails—with square faces and ends. When laying out the legs, I took the time to orient the end grain in a pleasing pattern since it would be very visible at the corners of the finished top.

Construction Notes

Once you've prepared your stock, here are a few notes that will help make construction go more smoothly:

Plunge-routed mortises—The plunge router is the small-shop answer for making slot mortises. You don't need any fancy jigs to get accurate cuts—just an edge guide for your router and a $\frac{3}{8}$ -in.-dia. up-cutting spiral bit.

Set up for plunge routing the mortises by clamping a pair of legs together, as shown in the photo on page 35. This will provide a broad platform for the router base. Rout each mortise with the edge guide bearing against the right side of the workpiece, and push the router away from you during the cut. Plunge

the bit in successive increments of $\frac{1}{8}$ in. or so to prevent chatter.

Once you've cut the mortises, switch to a $\frac{1}{4}$ -in.-dia. straight bit and rout the slots in the rails for the buttons. (See drawing.) Use the same gang-cutting method to plunge rout the slots.

Tenons on the tablesaw—Many woodworkers rip tenons on the tablesaw by holding the work vertically against a tall fence. I form my tenons with the stock flat on the table. The key is to use a carbide-tipped, stacked dado blade. If your dado head leaves any roughness on the tenon cheeks, you can smooth it with a chisel or rabbet plane.

Set the height of the dado blade to the correct shoulder width of the tenon and adjust the fence for the desired length of

the tenon. (See drawing.) I cut one cheek at a time by pushing the stock over the blade with the miter gauge, removing about $\frac{3}{8}$ in. of stock with each pass, beginning at the end of the rail and working toward the shoulder. Use firm, downward pressure. On the final pass, hold the end of the stock against the fence, to establish the shoulder of the tenon. (See photo, far left.)

Once the tenons are cut, crank the blade to 45° and miter their ends, again pushing the stock with the miter gauge. At the bench, round over the tenons to fit the radiused ends of the mortises. I pare away each tenon near the shoulder with a sharp chisel, then I round the remainder of the tenon with firm, forward strokes from a patternmaker's rasp. (See photo, near left.)

Pattern-routed curves—The shallow curves on the lower rails provide a visual lift to the table, while preserving the rails' relatively wide shoulders to help prevent the table from racking. You can cut these curves on the bandsaw and fair the surfaces with a spokeshave, or template rout the curves on the router table.

To template rout, make a pattern or template that matches the desired curve of the rail. Then use the template to lay out your workpiece and saw the curve on the bandsaw, staying about $\frac{1}{8}$ in. away from the line. Attach the workpiece to the template with double-faced tape, and rout the curve by riding the edge of the template against the bearing



Routing a curve. Rae shapes the lower rail on the router table by guiding a curved template against the bearing of a pattern bit. Double-faced tape holds the workpiece to the jig.



Top-notch work. Use a tall fence attached to the miter gauge to support the work when notching the top. A spacer block clamped to the fence lets the offcuts fall safely away from the blade.

of your pattern or flush-trim bit. (See bottom photo, opposite page.) If tearout is a problem, rout half the curve, then flip the workpiece end-for-end and rout the other half.

Top work—The top is notched to fit around the protruding tops of the legs. (See drawing.) Rather than fitting the top tight to the sides of the legs, I left a gap around the legs to allow room for the top to expand during humid conditions. While the notches in the top can be cut with a handsaw, I decided to cut them by standing the top vertically on

the tablesaw and pushing it over a 40-tooth combination blade. It's a smooth and precise operation.

To make these notch cuts safely, screw a tall fence to your miter gauge to support the top, and clamp a spacer block to the fence well before the blade. This way, nothing can bind the offcut between the blade and fence. Raise the blade to the depth of the notch and push the top over the blade. (See photo, left.)

Making and attaching the slats—You can design the slats to be equal or variable in width. Either way, remember to drill counterbored screw holes in the slats before you attach them to the table. (See drawing.) I used my drill press for this operation.

To install the slats with even gaps between them, I laid them in place on the rails of the table and inserted shims of equal thickness between the slats. (See photo, below.) You may have to joint a couple of slats before all the shims will slip into place. I planed the edges of individual slats with a jack plane, but you can take light passes over the jointer if you wish. Once the slats fit, I prefinished their edges because, once installed, the edges are difficult to reach. I'll discuss the finish in detail below.

With all the wedges in place, tap the slats into final position and place a bar clamp across the center of the slats to hold them in place. Drill pilot holes into the rails and install the slats with screws. Then fill all counterbore holes with wooden plugs. Glue the plugs in place, and when the glue has dried, pare and scrape the plugs flush with the slats.

Parts to the finish—I enjoy finishing furniture most when I can prefinish parts before assembly. With this in mind, I finished the top and the frame as separate pieces.

The finish I used on this table consists of several parts, but the basic ingredient is a wiping varnish. I like this type of finish because it's easy to renew should the furniture require it in the future. I wiped on three to four coats of McCloskey's Tungseal Clear, letting each coat soak into the wood for about 20 minutes. When the finish



Buttons in bulk. Saw notches in a length of stock, then cut individual buttons to length on the chop saw. Black tape on the fence indicates the correct button length.

became tacky, I wiped the surface with a pair of clean, soft cloths to remove any excess. I sanded the surface only after the first coat with 220-grit sandpaper.

Prior to the final coat, I gave the table a light scuffing with a fine, nylon abrasive pad. For the final wipe-on/wipe-off coat, I mixed together equal parts boiled linseed oil, McCloskey's Quick Dry Varnish, and Benjamin Moore Wood Paste Filler in "natural." Don't be alarmed by the wood filler: The varnish acts as a binder, and with so much finish already in the pores of the wood, using filler in the final coat simply helps to smooth the surface. It won't noticeably change the color of the wood. If you want better protection from spills, you can use a polyurethane instead.

Top it off—The last step is to install the top, and here I again used shims to get the spacing right. Place the top onto the upper rails and insert shims of equal thickness between the legs and the notches in the top. Your top is now automatically centered around the legs. Then secure the top to the frame by screwing the wood buttons to the underside of the top. Don't forget to remove the shims before you call your mother-in-law. ▲



Spacing out. Rae uses spacers and a clamp to position the slats before securing them to the rails with screws.



ANDY RAE
is a furniture maker
and an associate
editor of AW.



Testing tails. Side-by-side tests of four high-end router dovetail jigs revealed a broad range of features and capabilities.

Buyer's Guide to Premium Dovetail Jigs

We Test Four Jigs That Take Dovetails Beyond Drawers

The first router-based jigs for cutting dovetails were developed some 50 years ago. They relied on finger-type templates that were positioned against the workpiece to guide a router bushing and a dovetail bit. Today, many versions of these jigs are available. You can buy a basic jig for routing half-blind dovetails for as little as \$60. Shell out five or six times that amount and you're into premium jig territory.

For this buyer's guide, we focused on the high end, testing four premium

jigs—the Craftsman 25450, the Keller 2401, Porter-Cable's Omnijig and the Leigh D4—priced from around \$120 to well over \$300. These high-end jigs offer capabilities that you won't get from lower-priced units. Read on, and find out which one of the premium jigs best meets your need for dovetails.

What's a Premium Jig?

Most basic, lower-priced dovetail jigs are designed for cutting just one kind of dovetail: the half-blind variety.

Compared to the premium jigs, these less expensive units are relatively small—they're best suited to making drawers or small boxes.

The four jigs featured here enable you to rout through dovetails in wider, thicker stock. With these jigs, you can go beyond drawer-sized joinery and into blanket chests and other solid wood carcase construction. And with three of the four jigs, you can rout other types of joints as well, as we'll discuss.

Multi-function router jigs, such as

TYPES OF DOVETAILS



Through dovetails are found on many solid wood cases and drawers. They are a common choice for decorative joints in boxes and chests.



Half-blind dovetails are used to join drawer sides to drawer fronts and backs. Rabbed half-blind dovetails are used in overlay-type drawers.



Sliding dovetails are used to connect shelves to uprights. These are also good joints to use when installing a batten across a wide board.

CMT's WoodRat and the MatchMaker from Woodworker's Supply, weren't included in this test. Even though they can cut through dovetails, these jigs are really wood machining systems, not dedicated dovetail jigs.

Judging the Jigs

What's important in a premium dovetail jig? Our evaluation work began with unpacking and initial assembly and continued through the adjustments and procedures required to cut the different types of dovetails possible with each jig. Here are some important considerations for anyone interested in buying a premium dovetail jig.

Capabilities—All of the jigs shown here will cut through dovetails, but the minimum and maximum stock thicknesses vary. Maximum workpiece width is also different from one jig to the next. And you'll notice that different capacity models of the Leigh and Keller jigs and the Omnijig are available. Check out stock thickness and width capacities in the "Specifications" box for each jig, and match these up with your requirements.

Then there are other types of dovetail joints to consider. The Leigh and Craftsman jigs and the Omnijig will all cut half-blind dovetails and rabbeted half-blind dovetails. With the Leigh jig and the Omnijig, you can also cut variably spaced through dovetails, sliding dovetails and box, or "finger," joints.

Instructions—You don't need a great owner's manual to get the most out of a new electric drill. But well-organized, coherent instructions are crucial with these jigs. This is especially true of the Omnijig and the Leigh jig, which are capable of more functions and have more optional accessories than the Craftsman and Keller jigs.

In evaluating instruction manuals, we looked for user-friendly features: good organization, helpful illustrations and clear, concise text. In the write-up for each jig, you'll find a rating on the instruction manual along with our specific comments.

Ease of use—How long does it take to set up for specific dovetailing operations? How well do the clamps work? What adjustments are necessary to improve joint fit and alignment, and how difficult are these adjustments to make? These are a few of the questions we asked when we evaluated each jig's ease of use.

While putting these jigs through their paces, we found that all were capable of precise joinery, but that adjustments to enhance precision varied from easy to fussy. For example, the Craftsman jig is equipped with a pair of easily accessible adjustment knobs that will quickly move the template forward or backward to adjust joint tightness. On the Omnijig, you need to tuck a wrench into a tight spot and turn a nut to make the same adjustments.

The Jig Is Up

So, if you decide to spring for a premium jig, which one is right for you? Before we venture into the specific pros and cons of each model, here's a brief overview of the significant differences we found among the four jigs we tested.

The Craftsman jig is the best choice for entry-level machine-cut joinery. Although it's not as rugged or versatile as the Omnijig or Leigh jig, it gets you cutting through dovetails for around \$120, and you'll also get the capability of cutting half-blind dovetails.

If you're primarily interested in through dovetails, particularly for carcase joinery, the Keller is worth considering. Although it won't make half-blind dovetails, it will make a wide variety of through dovetails. It's precision-made, durable, and foolproof to use. Just the ticket for anyone with an aversion to studying instruction manuals.

The Omnijig and the Leigh jig both offer extensive dovetailing capability, but it takes some effort (and, in some cases, extra money for additional templates) to draw out their full potential. In fact, it could easily take several hours before you're ready to turn on the router. But patience and practice will really pay off with both of these premium jigs. With them, you'll be able to grace your projects with a variety of dovetails, including variably spaced dovetails, creating that sought-after "handmade" look with machine-made precision. ▶

Craftsman 25450 Deluxe Dovetail Fixture

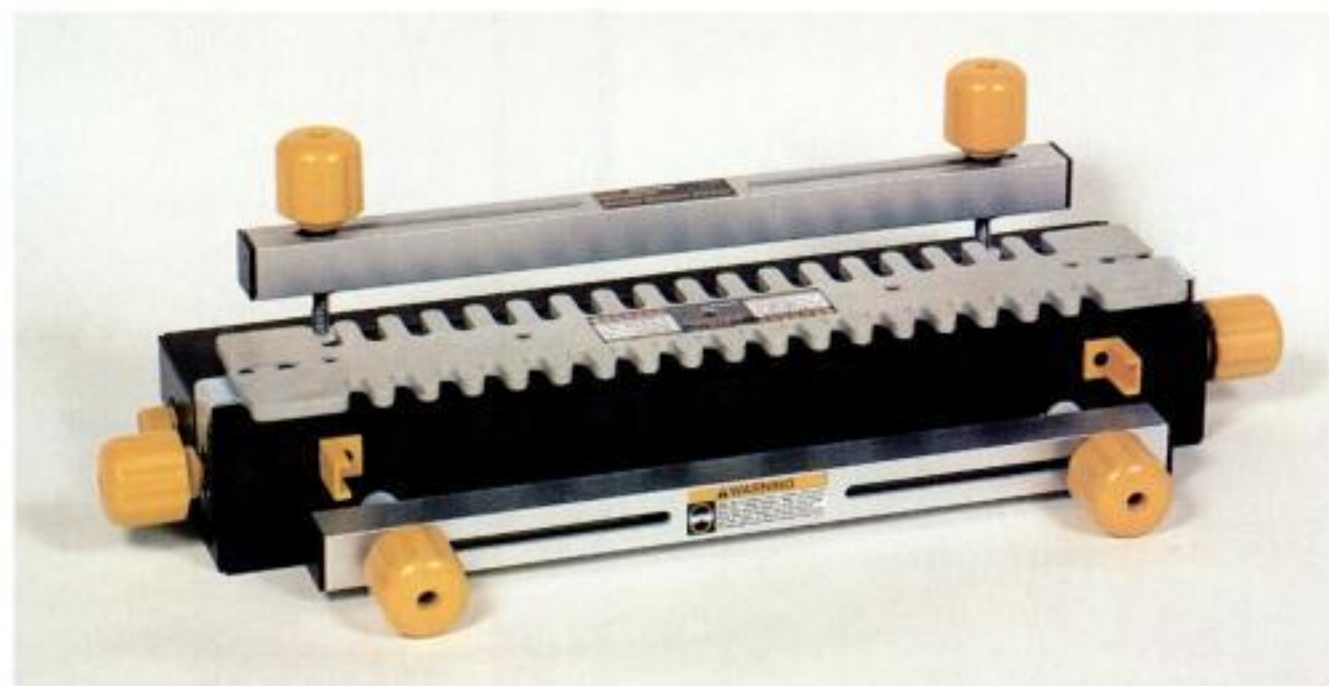
Street price: \$119.99

Phone: See your nearest Sears store.

Ease of use: ●●●●●

Instructions: ●●●●

Versatility: ●●●●●

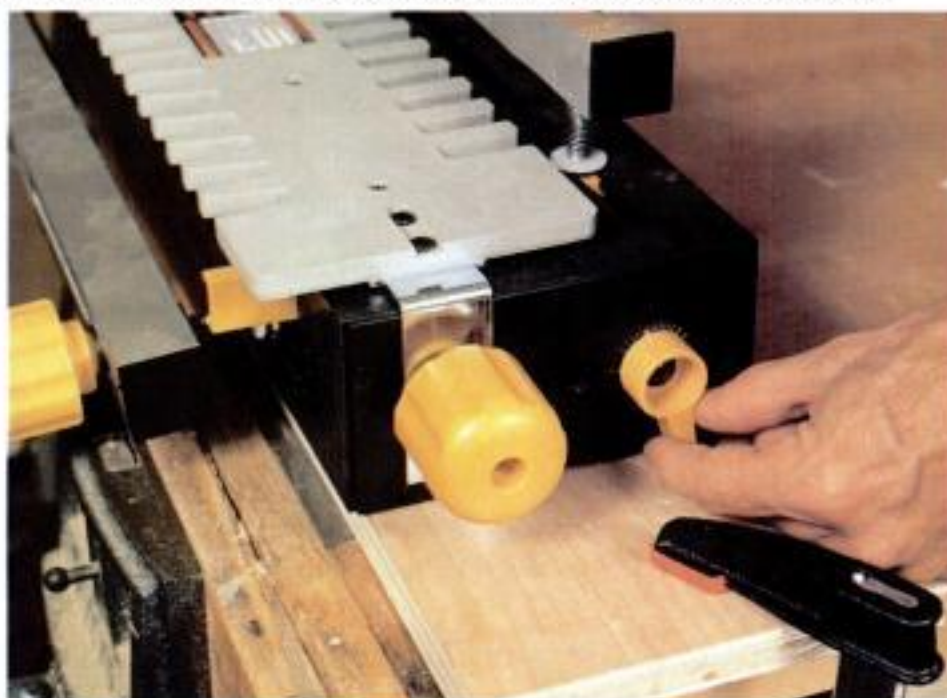


Made primarily of plastic, the Craftsman 25450 is the lightweight in our test group. This jig will cut evenly spaced through dovetails and half-blind dovetails in two sizes. Though its capabilities are limited, this jig is bargain-priced compared to the three other jigs in our test.

To cut through dovetails on the Craftsman, you clamp the work vertically to the front of the machine, with the end of the board under the template. The tails and pins for through dovetails are cut in separate operations.

This jig is easy to use once you learn its basic working procedures. And there are some innovative features that we liked: You can position the clamping knobs along either clamping bar to focus pressure on narrow stock. And the fine-tuning knobs make it easy to adjust the template position for joint fit.

On the downside, the manual is poorly organized and the jig requires an hour or two to assemble. And, if you don't have a Sears router, you'll also need to buy the optional universal adaptor plate. We didn't like the fact that you have to change guide bushings to switch from tail routing to pin routing.



Fine-tune the fit. It's simple to adjust the template position by turning this knob on the Craftsman jig, which changes the tightness of the joint.

Though the Craftsman jig doesn't offer the versatility of the Leigh or Omnijig, it provides an inexpensive way to enter the world of machine-cut through dovetails.

SPECIFICATIONS

Basic jig will make:

- Through dovetails in stock 3/8 in. to 1 in. thick
- Half-blind dovetails (in pin boards 1/2 in. to 1 in. thick; tail boards 3/8 in. to 1 in. thick)

Maximum stock width: 16 in.

Options:

- Universal adaptor plate; adapts most routers to accept Craftsman guide bushings (\$9.99)
- Router bits for through dovetails:
 - 9/16-in.-dia. carbide dovetail bit (\$19.99)
 - 1/4-in.-dia. carbide straight bit (\$17.99)
- Router bits for half-blind dovetails:
 - 1/2-in.-dia. high-speed-steel dovetail bit (\$6.49)
 - 1/2-in.-dia. carbide dovetail bit (\$7.99)

Note: Prices are street prices.

SCORECARD

PROS: Attractive price; easy to use, with nicely designed clamps and fine-adjustment knobs.

CONS: Poor instruction manual; narrowest range of stock thickness and width; adaptor required for non-Craftsman routers.

BOTTOM LINE: A good choice for budget-minded woodworkers.

Key: ●●●●● = Excellent, ●●●● = Good, ●●● = Fair, ●● = Poor, ● = Unacceptable.

Circle #601

Keller 2401

Street price: \$329

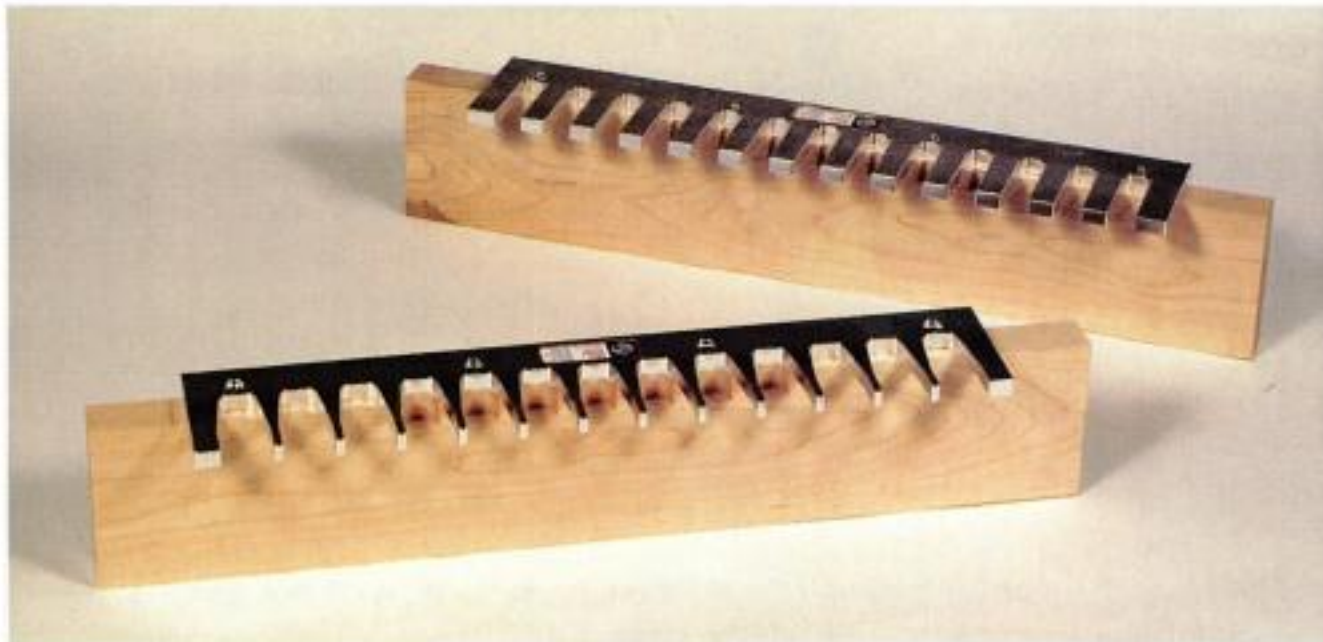
Phone: (800) 995-2456

Keller and Co., 1327 I St., Petaluma, CA 94952

Ease of use: ●●●●●

Instructions: ●●●●●

Versatility: ●●●●●



The Keller jig is designed for making through dovetails only. But it makes them quickly and accurately with a minimal amount of setup. The jig produces comparatively large dovetails, making it a good choice for carcase joinery. (The 2401 makes 5/8-in.-wide pins spaced 1 3/4 in. on center.) And, of the jigs we looked at, it is the only one that will produce dovetails on stock of unlimited width.

The jig is simplicity itself. It consists of two aluminum templates—each mounted on a hardwood backing block that you supply. One template is used for cutting the dovetails and the other for cutting the pins. The two router bits supplied—a dovetail bit and a straight bit—have top-mounted bearings that follow the templates. There's no need for router guide bushings.

To assemble the Keller jig, you make the wooden backing blocks and align and fasten the templates to them. The initial alignment requires some fussing, but you only have to do it once.

To make dovetails, you clamp your tail board vertically in a vise with the tail template positioned over the end of the workpiece. You clamp the template's backing block to the workpiece and rout the tails using the dovetail bit. You use the tails to scribe for the pins on the pin board—just as when



Bearings instead of bushings. The Keller jig comes with bearing-guided bits that eliminate the need for regular router guide bushings.

making hand-cut dovetails. (For evenly spaced dovetails, you need only scribe for one pin; the template will register the rest. For variable spacing, however, you have to scribe for all pins.) To make the pins, you align the pin template to your scribe marks, switch to the straight bit, and rout. You'll need a router with a 1/2-in. collet to accept the router bits supplied.

The Keller jig is a solid, nearly foolproof aid to the cabinetmaker who is primarily interested in dovetails for carcase joinery.

SPECIFICATIONS

Basic jig will make:

- Variably spaced through dovetails in stock 1/4 in. to 1 in. thick
- Angled dovetails
- End-to-end dovetails
- Box joints

Maximum stock width:

Unlimited

Options:

- Standard replacement bits (\$88 for both)
- Carbide bit set for cutting smaller pins and tails in stock up to 3/4 in. thick (\$75)
- Keller jig also available in 16-in. and 36-in. models (\$229, \$429) and in a 15-in. phenolic version (\$139)
- Instructional video (\$8.95)
- Pro Clamp Kit; includes toggle clamps and hardware for fast clamping during production work (\$98)

Note: Prices are street prices.

SCORECARD

PROS: Easiest jig to set up and use; unlimited stock width; bearing-guided bits easier to use than guide bushings.

CONS: Won't make half-blind dovetails; variable spacing possible, but tedious.

BOTTOM LINE: Easy-to-use, precision jig for making a wide variety of through dovetails.

Circle #602

Porter-Cable Omnijig 7116

Street price: \$324

Phone: (901) 668-8600

Porter-Cable Corp., Box 2468, Jackson, TN 38302

Ease of use: ●●●●

Instructions: ●●●●

Versatility: ●●●●●



Weighing in at 60 lbs., the steel and aluminum Porter-Cable Omnijig is the sturdiest jig of the four we tested. And—with its many template options—it rivals the Leigh jig for versatility.

Unfortunately, the basic jig will only make half-blind dovetails: To make through dovetails you'll have to shell out an extra \$160 or so for the optional through dovetail template. This sturdy, well-engineered template has fingers that you can adjust for variable spacing, allowing you to create the look of hand-cut dovetails.

To make through dovetails, you clamp the work vertically to the front of the jig under the template, which guides a router bushing. The tails and pins are cut in separate operations. To be able to use some of the larger dovetail bits, you'll need a router that accepts a 1/2-in. collet.

Once you learn how to set the Omnijig up, dovetailing goes quickly. Adjustments are fairly easy to make, although fine-tuning for a good joint fit requires turning nuts with a wrench to position the template. The workpiece clamps require a little fiddling to adjust, but they're strong

enough to straighten a warped board. All templates are solid aluminum and attach easily to the jig.

This jig came out of the box fully assembled except for a few template brackets. All that's necessary is to bolt the jig to a bench, or to a piece of plywood that you clamp to a bench.

The Omnijig's instruction manual is its Achilles' heel. It inadequately covers jig setup and adjustment, leaving you to discover the fine points of "tweaking" the jig by trial and error.

Fortunately, the video that accompanies the jig clarifies many of these procedures.

In short, we liked the Omnijig's design—but not its price. Its rock-solid construction makes it the jig we'd favor for constant production work.



Strong clamps. *Gripping a workpiece is easy with the Omnijig's cam-action clamps.*

SPECIFICATIONS

Basic jig will make:

- 1/2-in.-wide half-blind dovetails (in pin and tail boards 5/16 in. to 1 in. thick)

Maximum stock width: 24 in.

With optional templates, jig will make:

- Variably spaced through dovetails in stock 5/16 in. to 13/16 in. thick (\$155)
- Evenly spaced 2-in.-wide half-blind dovetails (\$88)
- 1/4-in.-wide half-blind dovetails (\$70)
- 1/2-in.-wide tapered sliding dovetails 1/4 in. to 1 in. thick (\$60)
- 1/2-in.-wide box joints (\$70)

Additional options:

- Carbide bits (\$4.30 to \$28.50) and router guide bushings (\$5.65)
- Omnijig also available in 16-in. model (\$270)

Note: Prices are street prices.

SCORECARD

PROS: Solidly built; comes pre-assembled; video included.

CONS: Expensive; optional template required for through dovetails; poor manual.

BOTTOM LINE: Bulletproof construction makes this jig great for production work.

Circle #603

Leigh D4

Street price: \$359

Phone: (800) 663-8932

Leigh Industries Co., Box 357, Port Coquitlam, BC, Canada V3C 4K6

Ease of use: ●●●●● Instructions: ●●●●● Versatility: ●●●●●



The Leigh jig is the most versatile—and the most complicated—of the jigs we tested. With its single, basic template, you can cut variably spaced through and half-blind dovetails, sliding dovetails, and even box joints. The jig's versatility lies in its template design. The "fingers" on the template—which guide a router bushing—adjust for the dovetail width and spacing of your choice. This allows you to achieve the look of hand-cut dovetails. It also frees you from having to design the width of your workpiece to suit the spacing on a fixed-finger template.

To make through dovetails, you clamp the tail board vertically under the bar at the front of the jig, placing the board's end underneath the template. Tails and pins are routed in two separate operations. A handy scale at the end of the template helps you fine-tune its position for a tight joint.

You'll need a router that accepts both 1/4-in. and 1/2-in. collets. You'll also need to get two guide bushings—one 5/16 in. dia. and one 7/16 in. dia.—to fit your router.

It takes a few hours to set this complex jig up initially and a while to learn to use it. Fortunately, the excellent instruction manual leads you clearly through setup and operation.

It's worth noting that the Leigh is the only jig that will make variably spaced half-blind dovetails—for that handmade look on drawers. But it's also the only jig that requires two setups, instead of one, for half-blind dovetails.

All in all, if you're a cabinetmaker looking for the most versatile dovetail jig on the market, this is it.



Custom template. The Leigh's adjustable fingers let you customize the size and spacing of the pins and tails in your joinery.

SPECIFICATIONS

Basic jig will make:

- Variably spaced through dovetails in stock 3/16 in. to 1 1/4 in. thick
- Variably spaced half-blind dovetails (in pin boards 1/2 in. to 1 1/2 in. thick; tail boards 1/4 in. to 1 1/2 in. thick)
- Sliding dovetails in stock 1/4 in. to 1 1/2 in. thick
- Angled dovetails
- End-to-end dovetails
- Box joints

Maximum stock width: 24 in.

With optional templates, jig will make:

- Multiple mortises and tenons (\$179)
- Variably spaced box joints (\$275)

Additional options:

- 11 carbide bits for making through and half-blind joints in stock of various thickness ranges (\$18 to \$24 per bit)
- Instructional video (\$25)
- Leigh Universal Guide Bushing System; includes precision template bushings (\$11) and adaptors (\$16) to fit most routers

Note: Prices are street prices.

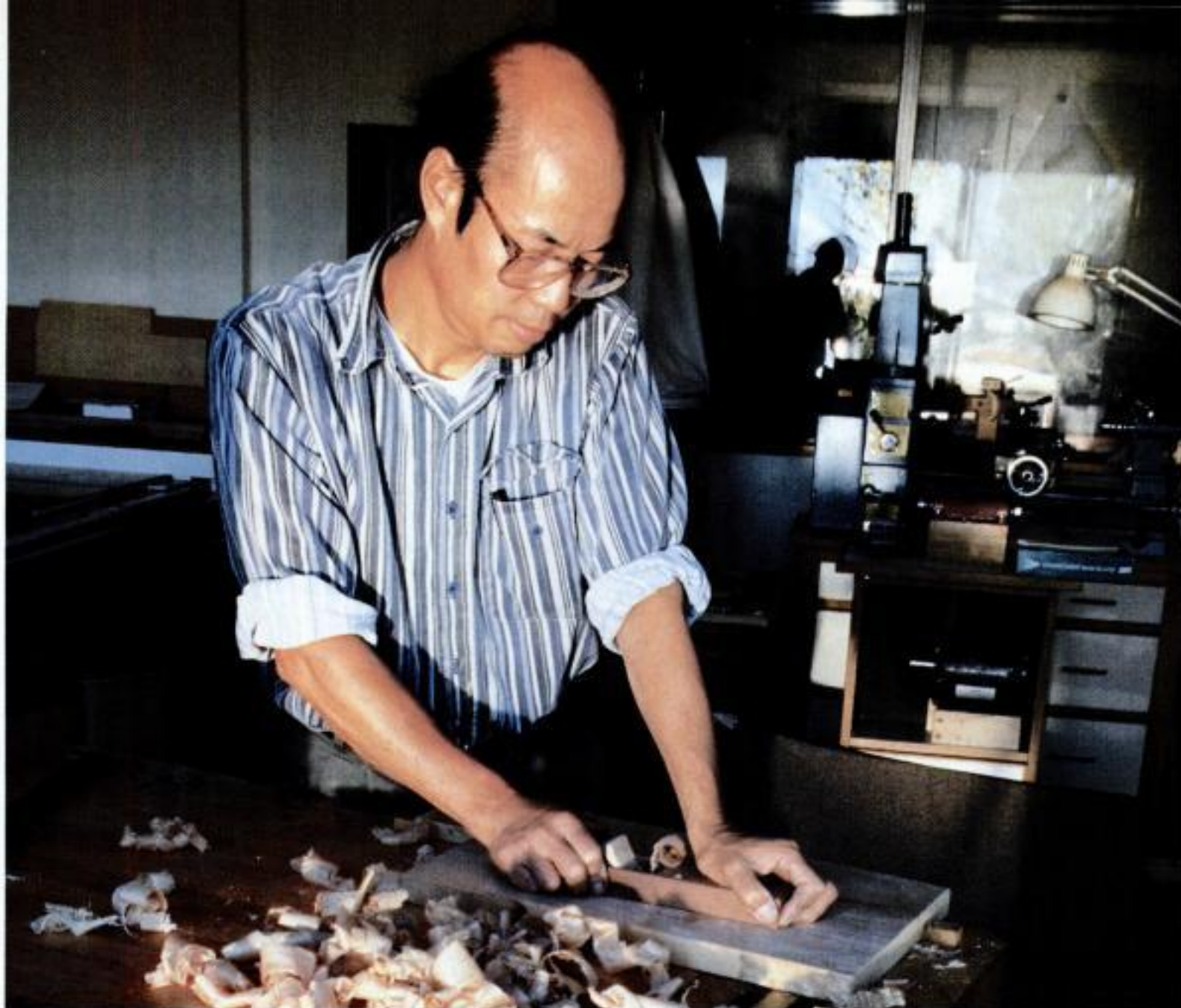
SCORECARD

PROS: Basic jig produces a wide variety of dovetail sizes and spacings; excellent instruction manual.

CONS: Steep learning curve; half-blind dovetailing requires two setups.

BOTTOM LINE: A very versatile (but complicated) jig capable of making most types of dovetails.

Circle #604



Fine shavings from a shop-made plane. The author uses his wooden plane, which consists of only three pieces: the body, the plane iron and a wedge.

PHOTOS BY SIMON WATTS

Wooden Hand Plane

Make a Tool You'll Treasure From a Blade and a Block of Wood

by Yeung Chan

I like to make my own planes. When you make a plane, you can size and shape it to suit your hands and the type of work you do. You can choose the width and style of iron you prefer and set it at whatever cutting angle you like.

Although I also use metal planes, I prefer the feel and simplicity of wooden planes. Metal planes are heavier and have more complicated adjustment mechanisms, while wooden planes are adjusted with a few taps from a small mallet. A wooden plane also won't break if you drop it on concrete. And when the sole eventually wears out, it's a simple matter to laminate another one on.

There are several ways to make a plane from a block of wood. One common

method is to rip the sides off a block, shape the center (throat) section, and then glue the sides back on with a metal pin spanning the throat to hold the wedge and iron in place.

A different approach—which I'll discuss here—involves shaping the throat with a drill, chisels and knives without cutting the block apart. The wedge and iron are held in slots, or *abutments*, in the sides of the throat. (See drawing, opposite page.) I like the simplicity of this design, which has only three parts: the body, the wedge and the iron. And this approach is a great opportunity to sharpen your hand-tool skills.

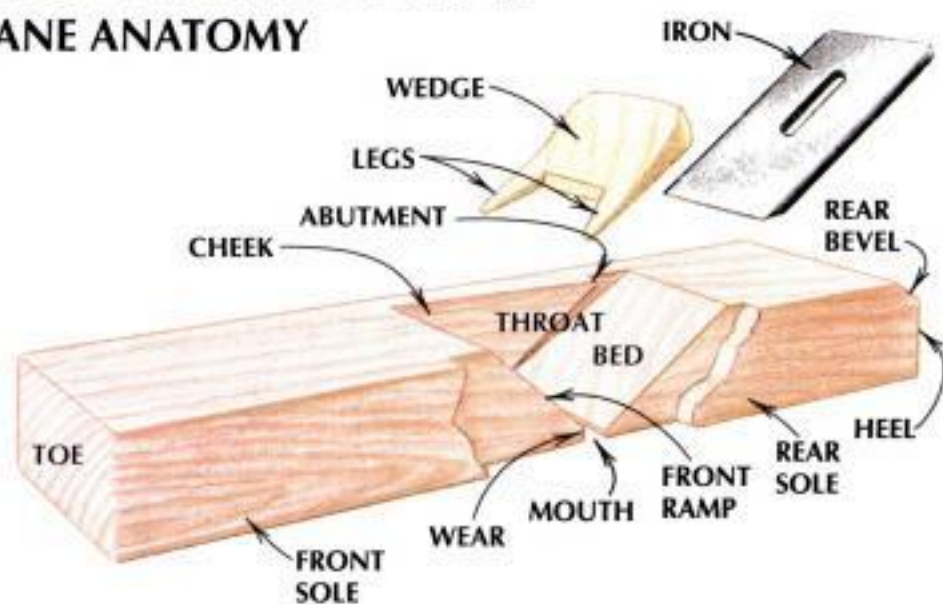
Designing Your Plane

For this article, I made a 10-in.-long, 2-in.-wide, 1 1/8-in.-high smoothing plane, but you can make a plane any size you like. The width of your plane should be 1/2 in. wider than the iron you choose. This allows for 7/32 in. of wood and 1/32 in. of space on each side of the iron.

You will notice that the mouth of the plane shown in the drawing is closer to the heel of the plane than to the toe. This design, typical of oriental planes, puts more than half of the plane's sole in contact with the work before the iron begins cutting. I prefer this to the design of western metal planes, on which the mouth is about one-third of the way back from the toe.

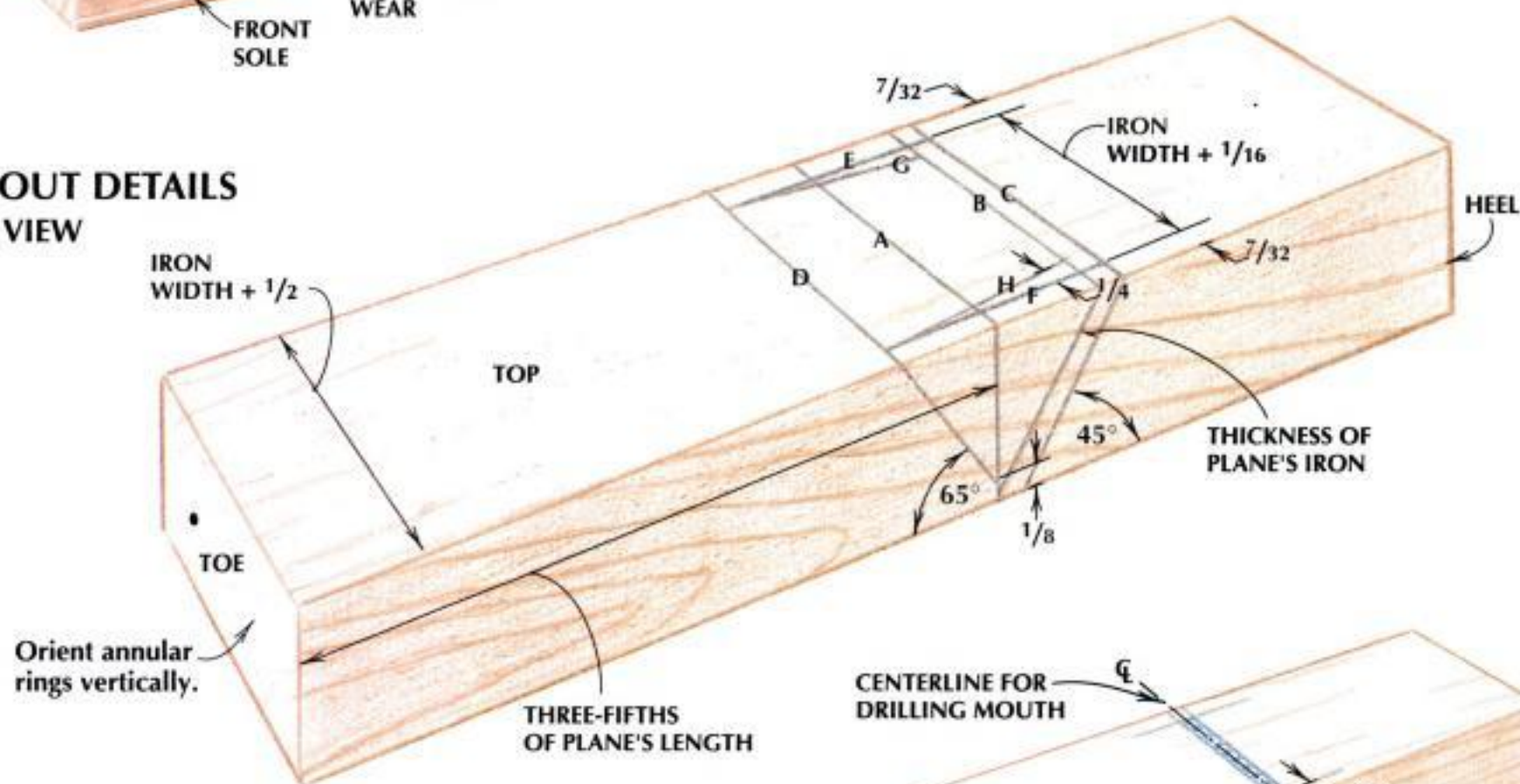
WOODEN HAND PLANE

PLANE ANATOMY



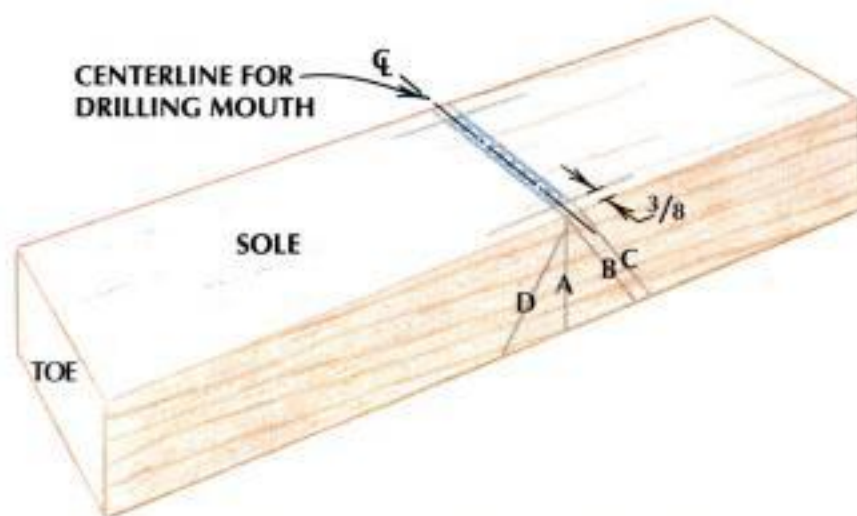
LAYOUT DETAILS

TOP VIEW



MOUTH LAYOUT

BOTTOM VIEW



For the plane body, choose a hardwearing, stable wood with close annular rings. Suitable native species include rock maple, beech, northern white ash and white oak. Good choices for exotic woods are rosewood and padauk. I used Australian jarrah for the plane that you see in the photos.

I often make my own plane irons using the excellent steel in industrial hacksaw blades, but you can also buy thick, quality irons in various sizes from Hock Handmade Knives (16650 Mitchell Creek Dr., Fort Bragg, CA 95437, 707-964-2782). You can order blades with or without cap irons. My experience has been that wooden planes work just as well without cap irons, so I omit them.

Laying Out the Plane

To make the body of your plane, cut a block of wood to the desired finished dimensions of the plane. It's important that the sides, top and bottom of the block are square to each other. The wood's annular rings should be at right angles to the plane's sole to ensure uniform wear.

Use a sharp pencil or pen to lay out the cuts as shown in the drawing. Begin by drawing line A completely around the block about three-fifths of the way back from the toe. Then mark lines B, C and D, continuing line C completely around the block. The distance between lines B and C should equal the thickness of your plane iron.

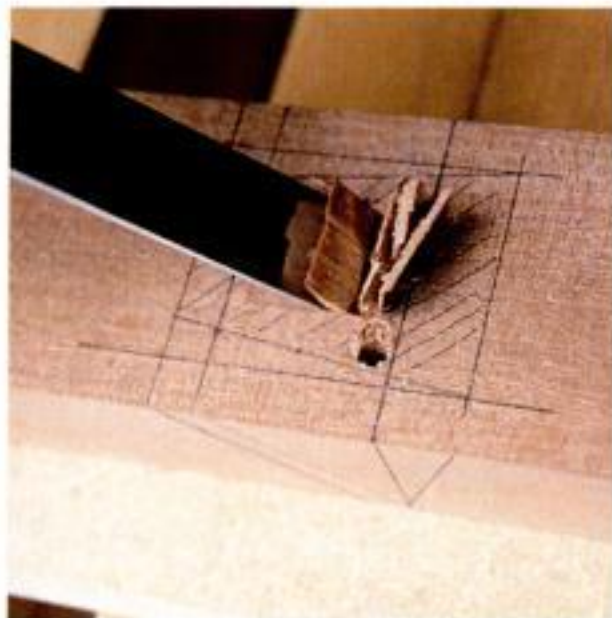
Cutting Out the Throat

The first step in cutting out the plane is to drill for the mouth opening. Draw a centerline on the sole between lines A and C. (See drawing.) Then, measure in $\frac{3}{8}$ in. from the sides of the plane to determine the ends of this opening.

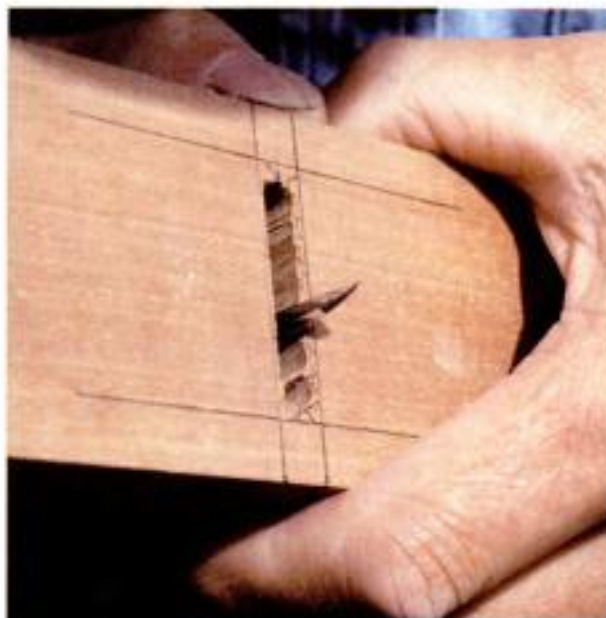
Place the plane upside down on the drill press. Using a bit slightly smaller than the width of the mouth, drill a row of vertical holes through the block on the mouth's centerline. Keep the two outer holes $\frac{1}{8}$ in. in from the marked lines.

Next, clamp the block to your bench, top side up, with a piece of scrap underneath, and chisel out the waste. (See top left photo, page 46.) Leave about $\frac{1}{32}$ in. of stock around the perimeter for final

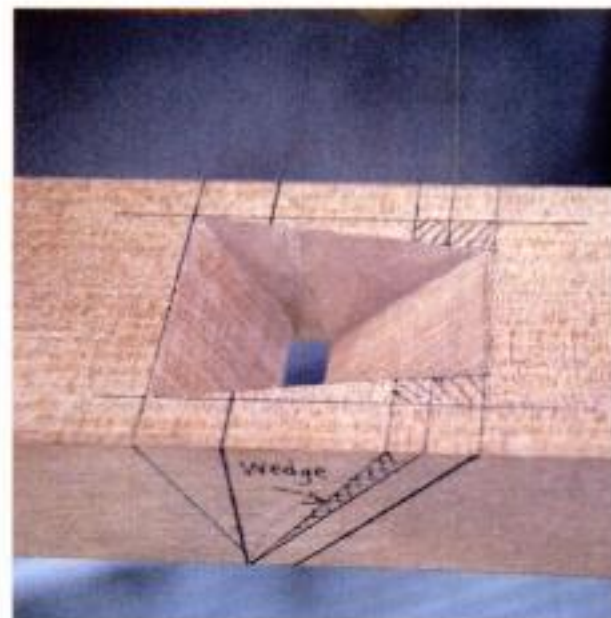
FROM ROUGH-OUT TO FINAL FIT



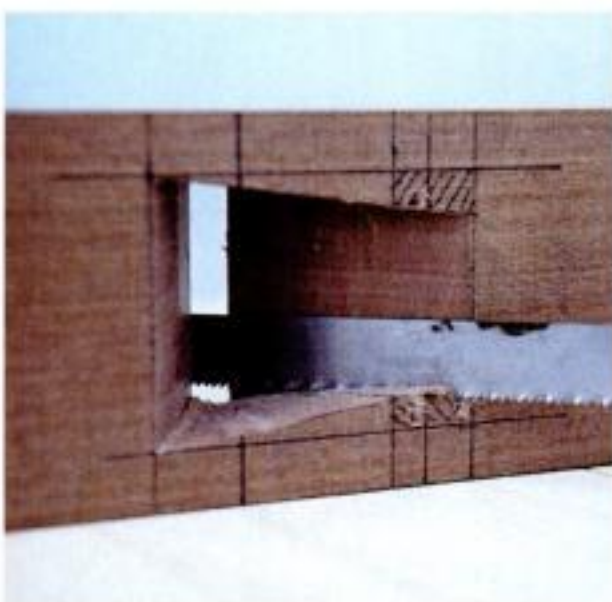
Chop out the throat. After drilling a row of holes through the block, Chan begins to chisel out the waste inside the layout line.



Open the mouth. With a sharp, narrow-bladed knife, the author pares the front of the mouth, or wear, back to a scribed line.



Define the abutments. Chan marks the shape of the wedge in front of the lines that indicate where the plane iron will go.



Saw the abutment shoulders. Using a fine-tooth hacksaw blade, he cuts the shoulders of the abutments, taking care to cut inside the layout lines.



Chisel out the waste. The author uses a 1/8-in.-wide chisel to pare out the waste at the bottom of the abutment slots.



Test for tilt. Holding a T-shaped jig against the plane's bed, Chan sights across the top of the "T" to check for tilt in the bed.



Fine-tune the mouth opening. Chan widens the mouth in increments until there is less than 1/32 in. clearance in front of the cutting edge.



Shape the wedge. With the plane nearly complete, the wedge is shaped until it bears evenly against the iron and the abutment shoulders.



Shave the legs. After shaping the wedge, Chan carves a beveled ramp between the legs to create clearance for wood shavings.

paring later. When chiseling, I judge the angle of the bed and front ramp by eye, using the lines on the side of the block. It's more important to get the bed flat and even (not tipped to either side) than to have it angled at exactly 45°. You'll fine-tune the flatness and tilt later.

Next, you need to widen the mouth. The bed should now meet the rear of the mouth at a straight knife-edge. But the front of the mouth, or *wear* (see drawing), will still have scallops from the drill bit. Scribe a line 1/32 in. shy of line A. Then, using a knife or chisel, pare to the scribed line, as shown in the top center photo on the opposite page.

Mark out each abutment slot to accept the wedge and the plane iron. (See top right photo, opposite page.) The wedge section of the abutment should be 1/8 in. to 3/16 in. wide at the top of the block. Cut the shoulders of the slots with a fine-tooth keyhole saw or a hacksaw blade.

To remove the waste at the bottom of the abutment slot, you'll need a 1/8-in.-wide chisel. You can pare the shoulders of the slots with a wider chisel, but stay a little shy of the final width; you'll do the final paring later with the plane iron.

Fine-Tuning the Bed and Mouth

It's crucial that the bed is flat and not tipped to either side. First, check it with a small straightedge. Then, press the iron down against the bed and hold it up to a light to check for gaps. If the bed is flat but doesn't meet the sole at a uniform knife-edge, it indicates that the bed is tipped and that you need to relieve the high side with a file or chisel.

I use a simple T-shaped jig to check my paring adjustments. Place the jig's blade against the bed, with the plane square to the edge of your bench. Sight across the jig's top bar to the far edge of your bench. Any tip should be obvious.

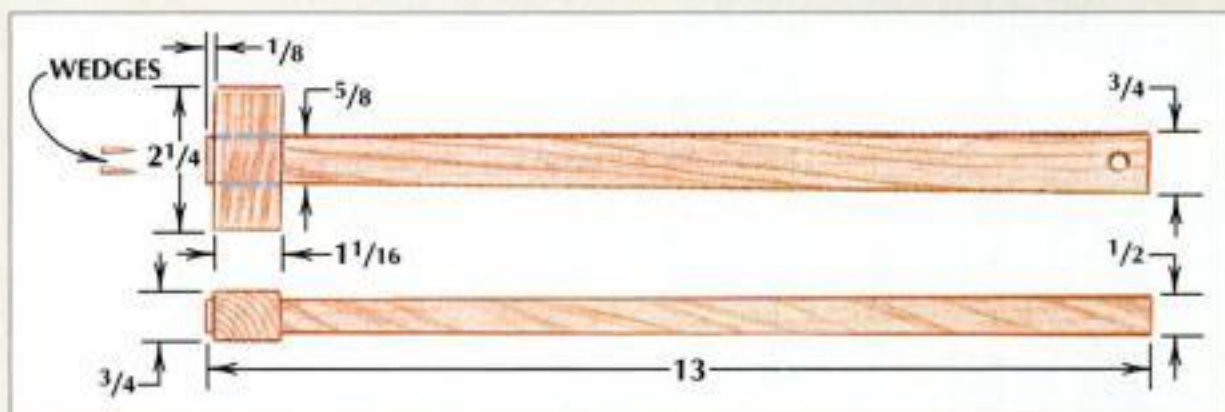
After the bed is adjusted, pare just a bit of material off of the rear of the mouth to relieve the knife-edge where the bed meets the sole.

Next, fine-tune the mouth opening: Insert the iron into the throat until it butts up against the wear. This helps indicate how much wood needs to be removed from the wear. Remove the iron and, with a sharp knife and a square, scribe a line a little bit forward of the existing mouth opening. Pare to the line and recheck the iron fit. Repeat this procedure until only 1/32 in. of space remains in front of the cutting edge.

A WOODEN Mallet for Plane Adjustments

I never use a metal hammer on a wooden plane; I use a small wooden mallet instead. Here's a simple one that you can make from any hardwood. (I used rosewood for this one.) The dimensions aren't critical, but I've found that this size works well for me.

—Y.C.



Now, pare the forward abutment shoulders using the sharpened plane iron. Insert the iron from the bottom of the plane and take a final, thin slice off of the shoulders. This assures that they will be in the same plane, and that they'll bear flat on the wedge.

After this, I do the final trimming of the throat perimeter and bevel the top corner at the heel of the plane. I flatten the sole by rubbing it on a sheet of sandpaper on a flat surface. Flatten the plane with the iron and wedge tapped in place, so that the plane is in its working tension. I don't apply finish to my planes.

Making the Wedge

For the wedge, use a soft wood such as alder or poplar to accommodate any slight unevenness in the fit. Make sure that the grain follows the centerline of the wedge for strength. The back of the wedge—which sits against the plane iron—should be flat. The front section of the wedge that fits in the abutments should have a straight taper. The bevels on the wedge's top corners allow you to tap the iron sideways without hitting the wedge. The opening between the legs allows clearance for wood shavings.

I cut several wedges of slightly different thicknesses on the bandsaw, then pick the one with the best fit. To check

the fit, I rub a soft pencil on the abutment shoulders, and then tap the wedge in place with the iron installed. Traces of graphite will show where wood still needs to be removed from the wedge.

While the wedge is in the plane, mark for its legs using the plane's cheeks as a guide. Then shape the legs and the bevel between them.

Adjusting the Plane

Adjust the plane by tapping it while holding it in your hand. I use a small wooden mallet. (See sidebar, above.)

To retract the blade, tap the plane body on its upper rear bevel. To lower it for a deeper cut, tap directly on the iron's top edge or rap the toe of the plane sharply.

If the plane produces shavings that are thicker on one side, lightly tap the iron toward the opposite side. If tapping the blade is not enough to fix the problem, you'll have to regrind your plane iron's edge to make up the difference. ▲



YEUNG CHAN
designs and makes
furniture in northern
California.

Build a Low-Back Windsor

The Curves in this Classic Chair Are Sawn, Not Steamed

by Robert Treanor



Simple curves. The sawn back rail on this low-back makes it unique among Windsor chairs.

Is it true that the Windsor chair gained its name when King George III ordered some distinctive seating for Windsor Castle? Probably not. But what can't be denied are the English origins of this famous chair. The earliest Windsor chairs date back to England around 1720, and by 1740, the production of American Windsors had begun. In a short time, the Windsor chair became arguably the most democratic form of furniture in the newly formed United States.

Typically, Windsor chairs have steam-bent parts—an aspect of construction that has scared off plenty of potential chairmakers. The low-back Windsor chair shown here is unusual—its curves are sawn, not bent. Originated by Philadelphia furniture makers, this chair is the perfect project for anyone wishing to venture into Windsor territory without getting steamed.

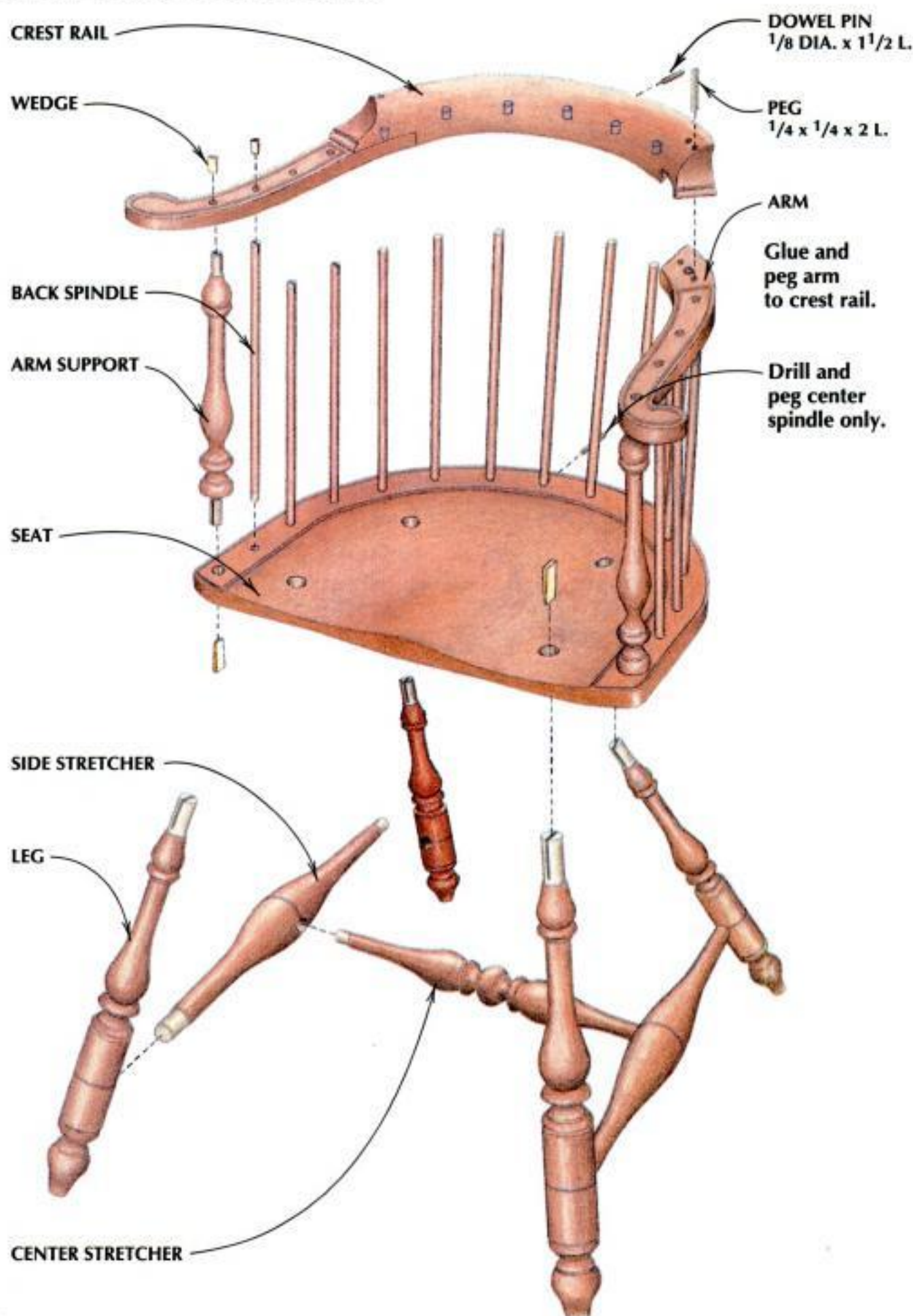
Woods of the Windsors

Windsor chairmakers were particular about their choice of woods. Easy-to-work woods like pine and poplar were commonly used for the heavily shaped seat, which was worked by hand. Maple was popular for the turned elements because of its exceptional turning abilities. Bent parts and back spindles were most often made of oak, ash or hickory—all woods that respond well to steam bending. Sawn parts, such as the three-piece arm in the low-back chair, were typically made from a combination of oak and poplar.

On the low-back Windsor shown here, I struck a balance between tradition and practicality. The seat is made from sugar pine and all the spindles are maple. Ignoring convention, I chose mahogany for both the arms and crest rail. The crest requires extensive shaping by hand, and mahogany works beautifully with hand tools. Also, I simply had some handy. If you're going to paint the chair as I have done, you could use almost any moderately hard wood.

PHOTO BY ROBERT TREANOR

FIG. 1: LOW-BACK WINDSOR CHAIR



Making the Arm Assembly

I like to start with the arm assembly, one of the more difficult sections of the project. The assembly consists of three parts: the crest rail and a pair of arms that join it. (See Fig. 1.)

First, make stiff paper templates of the arm and crest rail. (See Fig. 2.) Mill the stock for the arms and the rail, selecting even, straight-grained material. Then, use the templates to lay out the parts, making sure to maximize the long grain in the two arms. I cut out the arms and the crest rail on the bandsaw.

After sawing the arms and crest rail to shape, I clean up the saw marks and fair the curves using a round-bottomed spokeshave and half-round rasps. The best rasps are #49 and #50 Nicholson patternmakers' rasps. You can work these parts comfortably and with great control if you hold them vertically in a bench vise.

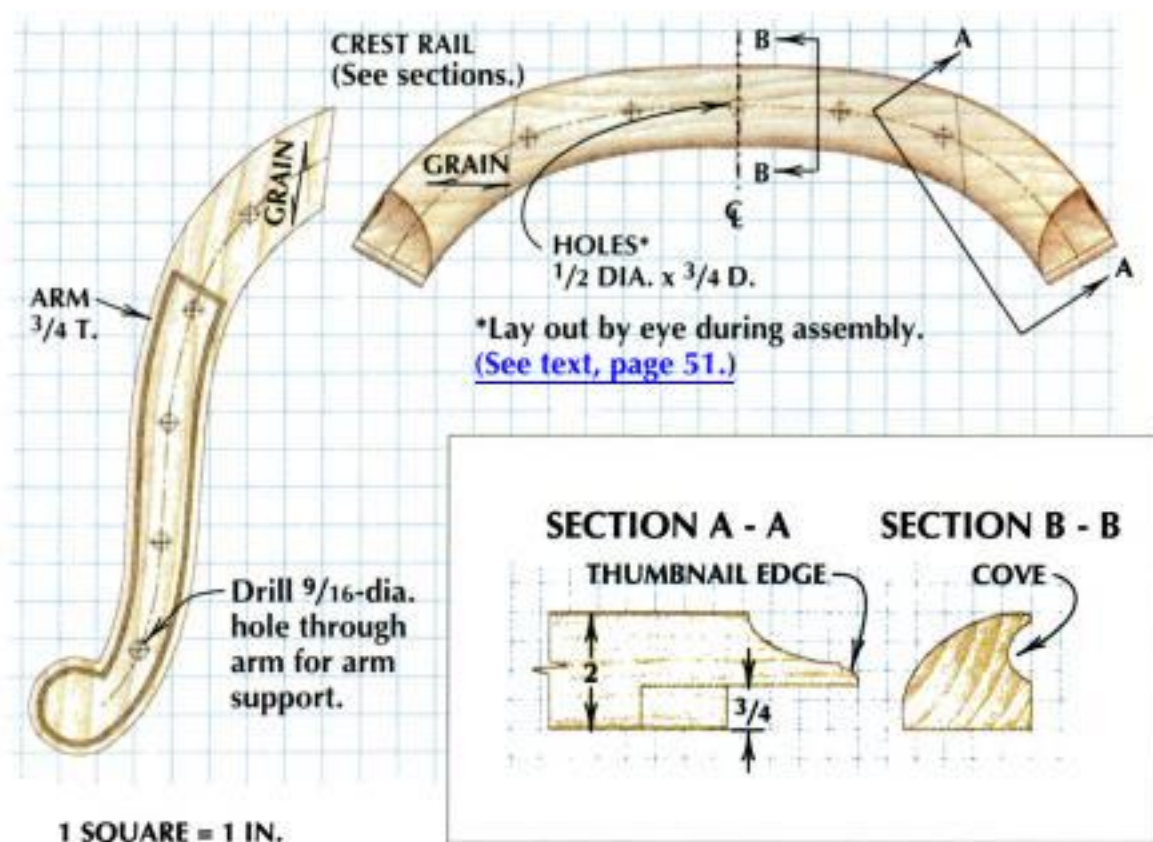
Next, lay out the lap joint and the cove on the crest rail. (See Fig. 2.) I cut the cove by hand with a razor-sharp gouge, using the layout lines as a visual guide. (See photos, page 50.) It takes a

few passes with the gouge to bring the cove down to depth, so take your time.

With the cove complete, I round over the front face of the crest rail. (See Fig. 2.) The tool of choice for preliminary shaping is a drawknife, because it removes large amounts of material quickly. (For more on drawknives, see AW #49.) I find that drawing the shape of the round-over on the end grain of the rail helps me to visualize the end result as I cut. (See top center photo, page 50.)

After removing most of the material with the drawknife, switch to a round-

FIG. 2: ARM AND CREST RAIL



bottom spokeshave and rasps to refine the surface. Complete the shaping with files, curved scrapers and some 120-grit sandpaper. Don't be too critical about the surface at this point. You'll be doing more shaping and blending after the arms have been attached.

Now you're ready to cut the lap joints in the crest rail. I make most of the rip cut on each joint on the bandsaw, using a fence to support the work. (See top right photo, below.) I complete the cut at the bench with a Japanese *kugihiki* handsaw. Then I make the final cut across the shoulder with a backsaw. Remove the saw marks with a sharp, wide bench chisel, paring the joint until the arm fits in the lap without gaps.

Gluing the arms to the crest rail presents a clamping problem because of the curved surfaces of the rail. I solve this by clamping the parts upside down on my bench. (See bottom left photo, below.)

MAKING THE ARM ASSEMBLY



Carving a cove by hand. Clamp the crest rail in a bench vise and carve from the center of the rail toward each end to avoid tearout.



Shaping the round-over. Treanor uses a drawknife to round the edge of the crest rail. A spokeshave and rasps help to refine the curved surface.



Sawing the lap joint. Cut the half-lap in the crest rail on the bandsaw. Guide the workpiece against a fence to keep the cut straight.



Clamping the arm. Treanor glues up the arm assembly with the parts upside down on his bench.



Carving the details. Use a sharp chisel to carve the transitional thumbnail on the end of the crest rail (center). Then, use a narrow gouge to cut the shallow cove on the arm (right).



After the glue has dried, drill and pin the lap joints with square pegs. (See Fig. 1.) Then complete the final shaping around the lap joint with files, scrapers and sandpaper.

Next, shape the curve and the transitional thumbnail in the end of the crest rail as shown in Fig. 2. I make the curved cut with a coping saw and pare the thumbnail to shape with a sharp chisel. (See bottom center photo, opposite page.) Finally, carve the shallow cove into the arms with a small gouge. I use a 3mm veiner with a #11 sweep for this cut. (See bottom right photo, opposite page.)

Seat, Spindles and Legs

Now is a good time to prepare the seat blank. I make the seat from one piece of 16½-in.-wide stock. If you don't have the required width, you can glue up the blank from two boards. I bandsaw the stock to shape (see Fig. 3), then I clamp the seat in my bench vise and cut the heavy chamfer on the underside, as well as smooth and fair the sawn edges. I use a drawknife for most of the heavy stock removal, then I switch to a small smoothing plane, spokeshave and rasps to even out the rough surfaces left by the drawknife. At this point, lay out the cove, or "rain gutter," on the top of the seat. (See Fig. 3.)

Putting aside the completed arm and the seat blank, I work on the turned parts for the chair. I begin by turning the legs, arm supports and back spindles.

(See Fig. 4.) Leave the side and center stretchers for now until you can glean an empirical measurement for these parts from the partially assembled chair.

When turning matched parts such as legs and spindles, I first use a parting tool to establish the critical diameters; then I use a ½-in. or ¾-in. gouge for most of the shaping work. I cut the beads on the legs and arm supports with a narrow skew. When turning the legs and, later, the side stretchers, use the tip of the skew to score centerline marks on these parts. The marks will aid you later when drilling holes. (See Fig. 4.)

I turn a straight tenon at the top of each leg to fit into the hole bored through the seat. (See Figs. 3 and 4.) This runs contrary to the tapered leg joints used by early Windsor chairmakers. Nor do I use green wood for the legs. These departures from tradition haven't caused my chairs to fall apart prematurely, but they do make the construction process go more easily.

Another feature commonly found on Windsor furniture is the whittled back spindle. Spindles were typically shaped with drawknives and spokeshaves, and by scraping the surface with small pieces of glass. On this low-back chair, however, the short spindles can easily be turned on the lathe.

Drilling the Holes

With all the spindles turned, I bore the holes for them in the seat blank and the arm. I use a brace and auger bit for all

the drilling in the chair. An auger bit makes exceptionally clean holes, and the slow cutting action makes it easy to control the cut.

Here are some general guidelines for you to keep in mind when drilling: To prevent tearout when drilling through holes, stop drilling when the bit's lead screw penetrates the stock; then complete the hole from the opposite side. When drilling the angled holes (see Fig. 5), I adjust a bevel gauge to the correct angle and place it adjacent to the hole, [where I can use it as a visual guide.](#) (See [photo, page 52.](#))

I use a drill-and-fit strategy to bore the holes in the seat and arm assembly. With all the spindle holes in the seat laid out (see Fig. 3), I drill the arm-support holes and the angled hole for the center back spindle. (See Fig. 5.) Then I insert the arm supports and center spindle into the seat, set the arm assembly over the spindles, and mark the hole locations on the underside of the arm assembly. Remove the arm assembly and drill these three holes.

Now, drill the holes on both sides of the center back spindle in the seat. Insert the spindles in the seat, set the arm assembly on the arm supports and center back spindle, and lay out the holes in the arm for the remaining spindles. Balance the spacing between these angled spindles by eye.

Once you're satisfied with the hole locations, remove the arm and bore the holes on both sides of the center back

FIG. 3: SEAT DETAILS

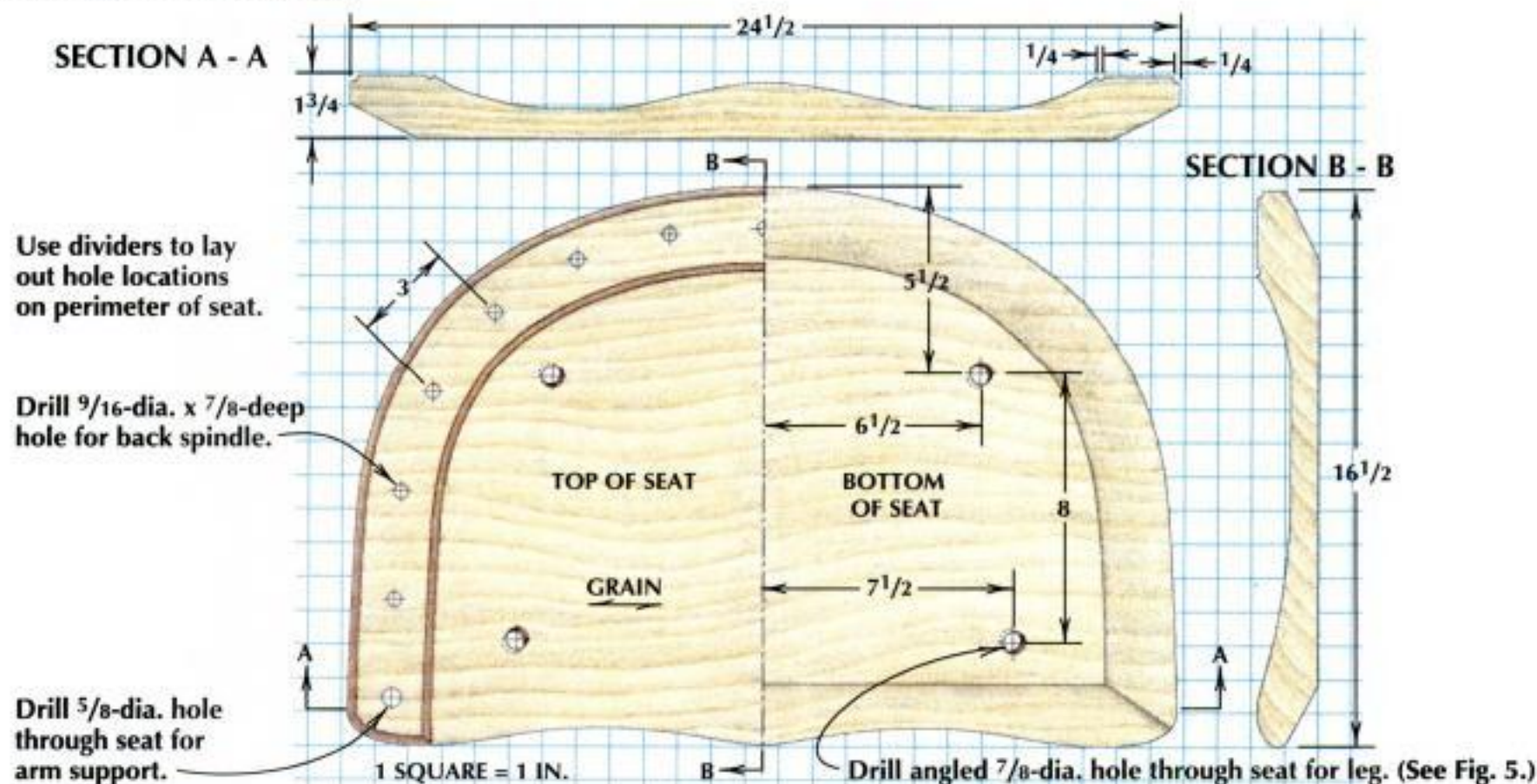
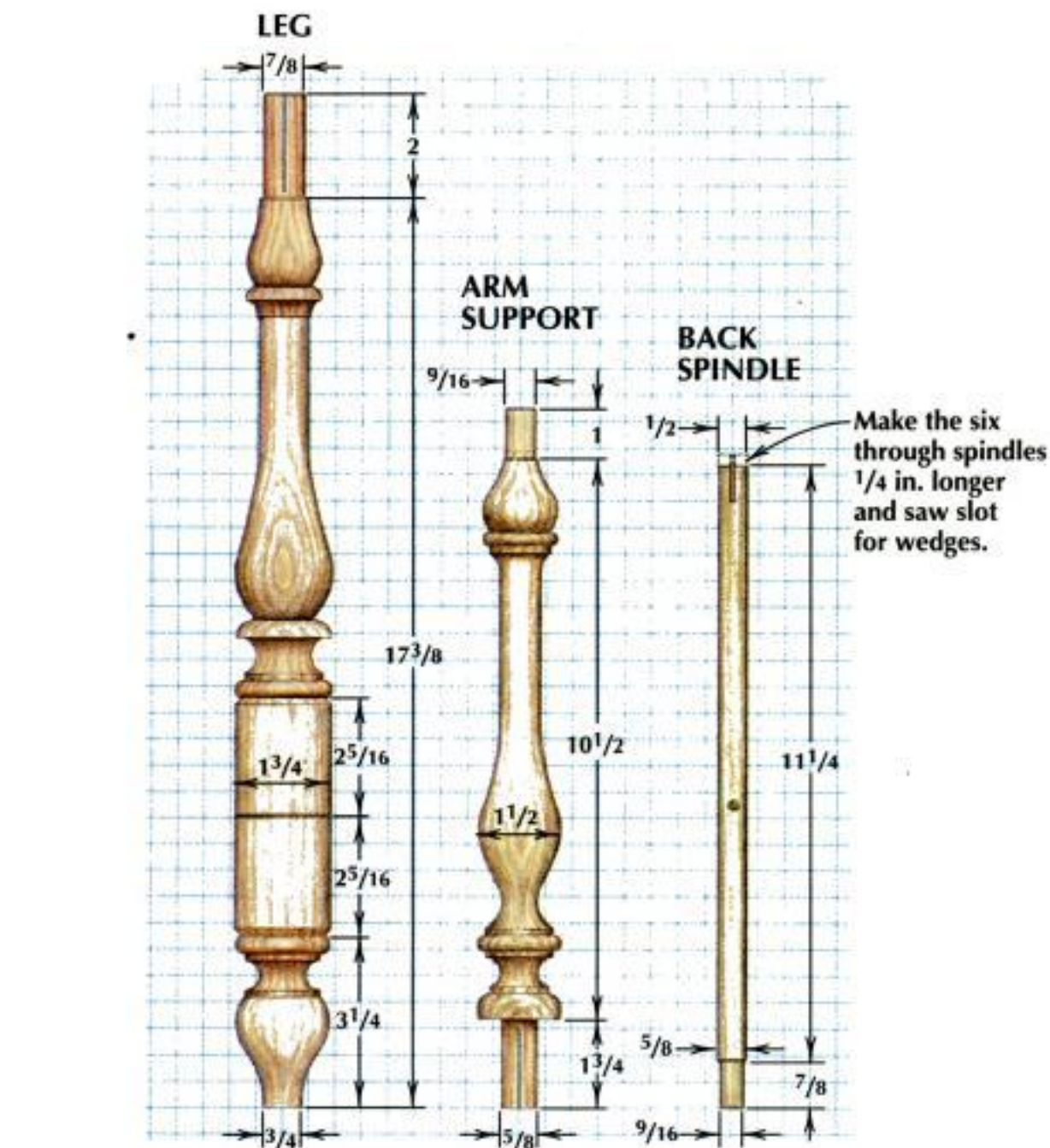
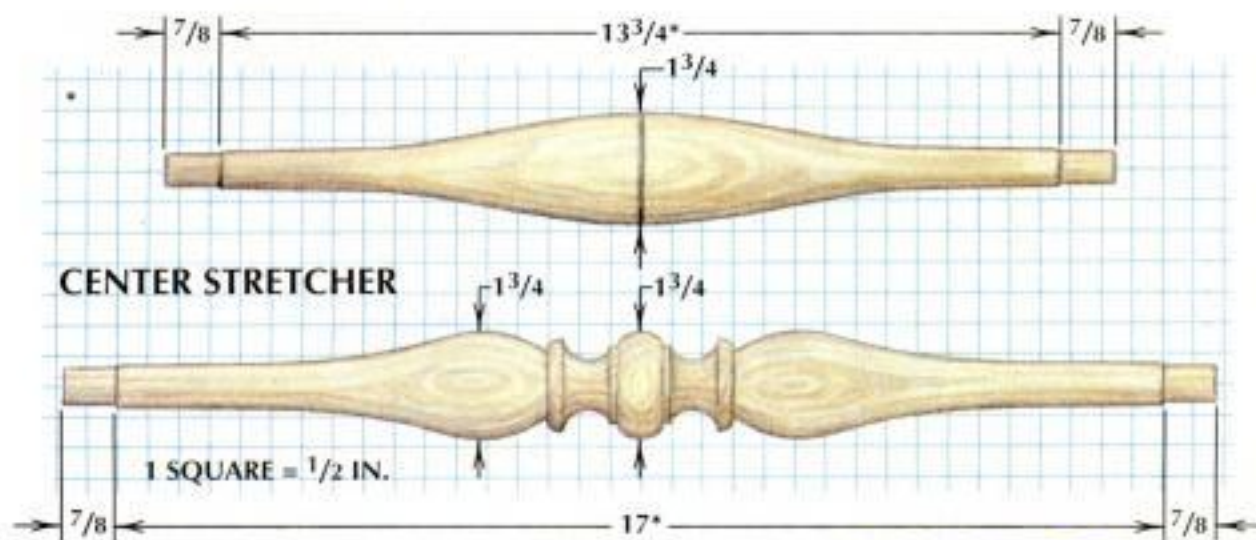


FIG. 4: SPINDLE PATTERNS



1 SQUARE = 1/2 IN.

SIDE STRETCHER



*Determine correct length during chair assembly. (See text, page 53.)

FOR MORE INFORMATION

The following books have more information about Windsor chairs:

Make a Windsor Chair with Michael Dunbar, by AW contributing editor Michael Dunbar (1984, Taunton Press, Newtown, CT 06470).

Windsor Style in America, Vols. I and II, by Charles Santore (1981 and 1987, Running Press, 125 S. 22nd St., Philadelphia, PA 19103).



PHOTOS BY ROBERT TREANOR

Drilling the seat top. Use a bevel gauge set to the correct angle as a guide when drilling the holes for the back spindles.

spindle. Then reassemble the seat and arm assembly and mark the next two holes. Continue the marking and drilling process until all the holes are drilled. This method is slow, but it's a good way to avoid errors.

Shaping the Seat

Deeply saddled seats are yet another typical feature of Windsor furniture. (See Fig. 3.) Traditional chairmakers accomplished this sculptural look with an assortment of specialized chairmaking tools, including adzes, shaves, scorps, travishers and devils. I do most of the shaping with a sharp scorp, sometimes called an *inshave*, and with a wooden travisher. (See Sources.)

The scorp does an excellent job of roughing out the seat contour. With the seat secured to my benchtop, I work inside the rain-gutter lines, pulling the scorp toward me and cutting with the grain where possible. (See left photo, opposite page.)

The travisher takes up where the scorp leaves off. The turned-up handles on this tool are meant to make hollowing work easy. Cut with the travisher on the push stroke, working with the grain as much as possible. Test the fairness of the contours with your hand. Some chairmakers like to leave the facets from this shaving work in the seat surface. Others sand them smooth.



Saddling the seat. A scorp makes quick work of roughing out the contours of the seat (left). Treanor then smooths and refines the surface with a travisher (right).

Installing Legs and Stretchers

For me, attaching the leg and stretcher assembly to the seat is the most intimidating part of building any Windsor chair. Here's where it pays to take your time and work carefully.

Start by laying out the through hole locations for the legs on the underside of the seat. As shown in Fig. 5, the legs enter the seat at compound angles. To guide my bit, I use two bevel gauges that are adjusted to the entry angles and placed on the seat's *x* and *y* axes. (See bottom photo, page 54.) Remember to drill from both sides of the stock.

After boring all four leg holes, insert the legs and turn the chair upright. To

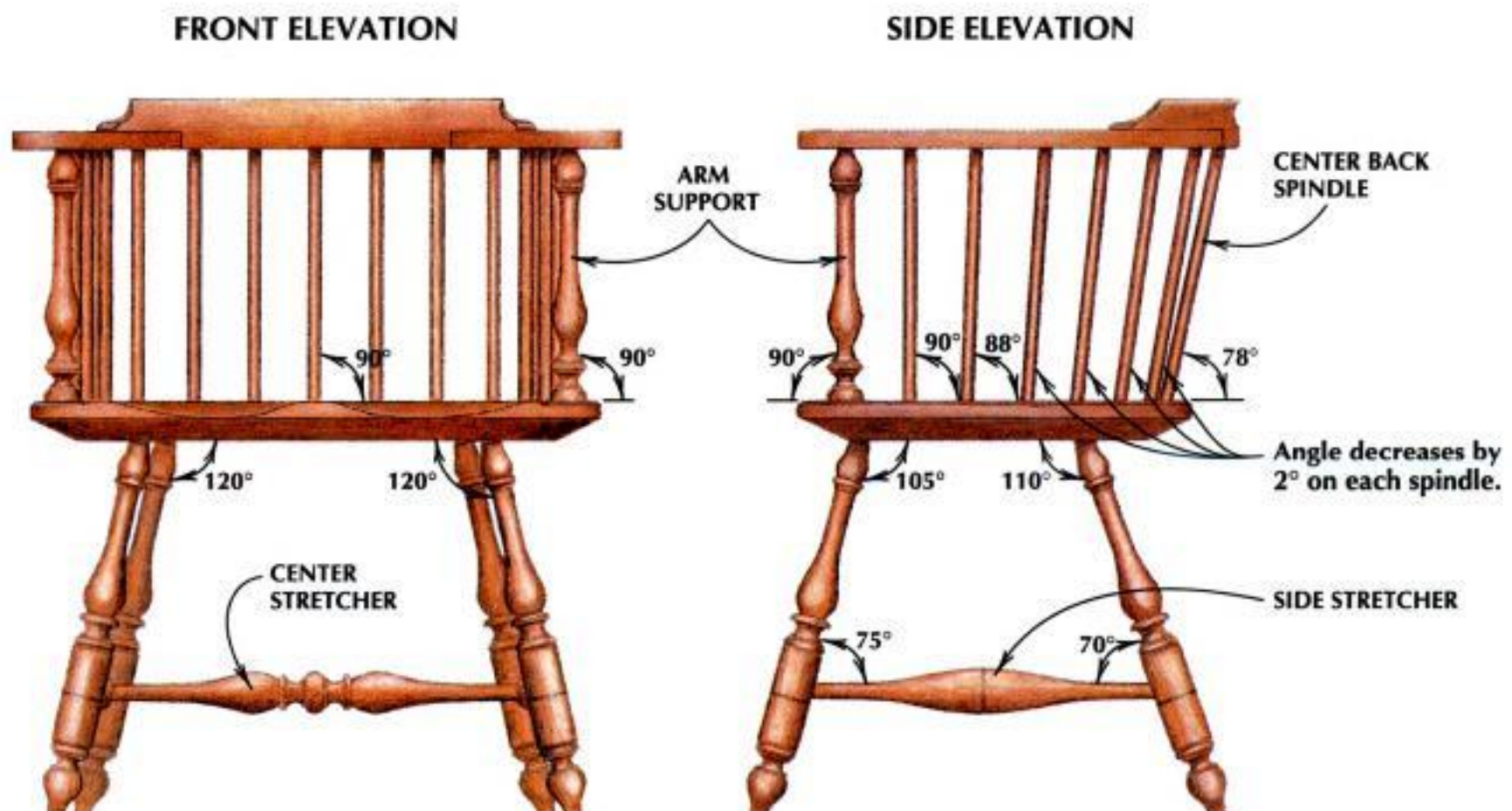
determine the length of each side stretcher, clamp a straightedge between two of the side legs, lining up the straightedge with the centerlines for the holes turned on the legs. Make sure to spread the legs slightly; this will compress the stretchers when they are installed, keeping the joints tight. Now, measure the shoulder-to-shoulder distance for a side stretcher.

With the straightedge still in place, transfer the boring angle for each stretcher to your bevel gauge, as shown in the top left photo on page 54. Then repeat the process for the opposite side stretcher. If the two side stretcher measurements differ, don't worry. This is

due to slight differences in the angle of each leg and is part of the nature of a handmade Windsor. At this point you can turn the side stretchers.

Now remove the legs from the seat. Drill the stretcher hole in each leg with the leg clamped in your bench vise and your bevel gauge set on the benchtop as an angle guide. (See top right photo, page 54.) When all four legs are drilled, install the two leg and stretcher assemblies in the seat. Then determine the length of the center stretcher and its corresponding hole angles in the side stretchers, using a straightedge and bevel gauge as before. Turn the center stretcher, disassemble the chair and bore

FIG. 5: HOLE-DRILLING ANGLES



the holes in the side stretchers as you did in the legs. Then reassemble the undercarriage once again to check that everything fits.

There's some final carving to do before assembling the chair for good. I carve the coved rain gutter into the surface of the seat, using a deep gouge sized to the width of the cove for the interior cuts, and a slightly wider gouge for the cut on the edge of the seat. (See Fig. 3.)

Assembling the Chair

The toughest work is done; now it's time to put everything together. I assemble the chair in two sessions: First I glue the undercarriage into the seat; then I glue the arm, back spindles and arm supports in place.

Saw slots into the ends of the legs, the arm supports and the six back spindles to accept the wedges for these parts (see Figs. 1 and 4.), keeping the kerfs perpendicular to the grain in the seat and arm for strength and to reduce the chance of splitting. I make the wedges from maple. I also carve a shallow "V" groove into the tenons on the side and center stretchers. The groove provides an escape route for excess glue in these blind joints.

Now clamp the seat upside down on your bench. Brush glue into all the sockets in the stretchers, legs and seat. I use a urea-formaldehyde glue to assemble the chair because of its slow setting time. White or yellow PVA glues set up too



Boring the leg holes. Treanor drills the angled hole for the front leg by eyeballing two bevel gauges set to the correct splay of the leg.



fast for this involved assembly process.

Next, insert the center stretcher into the side stretchers by hand and install this assembly into the legs. With a little coaxing, ease the leg assembly into the inverted seat. Alternately tap the bottom of each leg using a waste block and a hammer until you drive the legs fully home. Then right the chair, spread glue on the wedges and drive the wedges into the saw kerfs in the legs. Before setting the assembly aside to dry, completely remove any glue squeeze-out with a damp rag. Once the glue has dried, trim the protruding wedges with a handsaw and use shallow, wide gouges to bring the ends of the legs flush with the seat.

The last step in the assembly process is attaching the arm and its accompanying spindles to the seat. I first glue the arm supports and spindles to the seat, wedging the tenons on the bottoms of the arm supports. Then I work the arm down onto the spindles. An extra pair of hands are welcome at this point. When the arm is in place, drive the wedges into the tops of the arm supports and six back spindles at the sides of the chair. Carefully check that the height of the arm is consistent above the seat before leaving the chair to dry. Then clean up the protruding wedges and tenons as before, and pin the center back spindle to the arm and seat with 1/8-in.-dia. dowels. (See Fig. 1.)

Finally, level the chair by sawing off the ends of the legs so the chair sits level. Use a flat surface like the top of a tablesaw or your bench to position the seat level, then scribe around the ends of the legs and cut to your lines with a handsaw.



Stretcher work. Find the correct angle of the stretcher holes in the legs with a bevel gauge (left). Then use the gauge as a guide when boring the stretcher holes (above).

Finishing Up

The traditional finish for a Windsor chair is paint. The opacity of paint serves two purposes: it disguises the fact that a variety of dissimilar woods are used, and the single color unifies the design and permits the eye to flow over the contours of the entire chair. I painted my chair with "Covered Bridge Red" made by The Gryphon Co. (available from Primrose Distributing, 54445 Rose Rd., South Bend, IN 46628, 800-222-3092). Two coats of this high-quality paint—no primer—allows you to discern the different textures of the various woods used in the chair. ▲



ROBERT TREANOR writes and works wood in northern California. He maintains a special interest in early American and Shaker furniture.

SOURCES

Scorps, travishers and other chair-making tools are available from local antique tool dealers and flea markets, or by mail from the following:

Country Workshops
(704) 656-2280
Circle #612

Olde Mill Cabinet Shoppe
(717) 755-8884
Circle #613



Sliding secret. The lid of this box slides through a hidden notch in the bottom key. Push the key in to lock the box.



PHOTOS BY JOHN HAWELL

Dovetail Puzzle Box

There Are No Locks to this Three-Key'd Box

by Mason Rapaport

This box started as a mental woodworking project on a flight from New York to San Francisco. The puzzle (for me) was to come up with a design that wouldn't need a lot of measuring or fancy hardware, or require a lengthy glue-up. By the time my plane landed, I was ready to try my idea on some real wood.

Though I didn't make this puzzle box with the intent of selling it, it has become a furniture show favorite. It's amusing to watch people try to figure it out. Most people try to yank off the lid...just how hard they pull determines how soon I reveal the secret: a series of three engaging dovetail keys. You push the sliding bottom key to release the end keys and open the lid.

I made my box from straight-grained 8/4 walnut, gluing two pieces face-to-face to create the box blank. It can just as easily be made from a single piece of wood; or you can glue up contrasting woods for an entirely different look. Overall dimensions aren't critical for this project, as long as your blank is thick enough to accommodate the bottom key and still have room for an inner compartment.

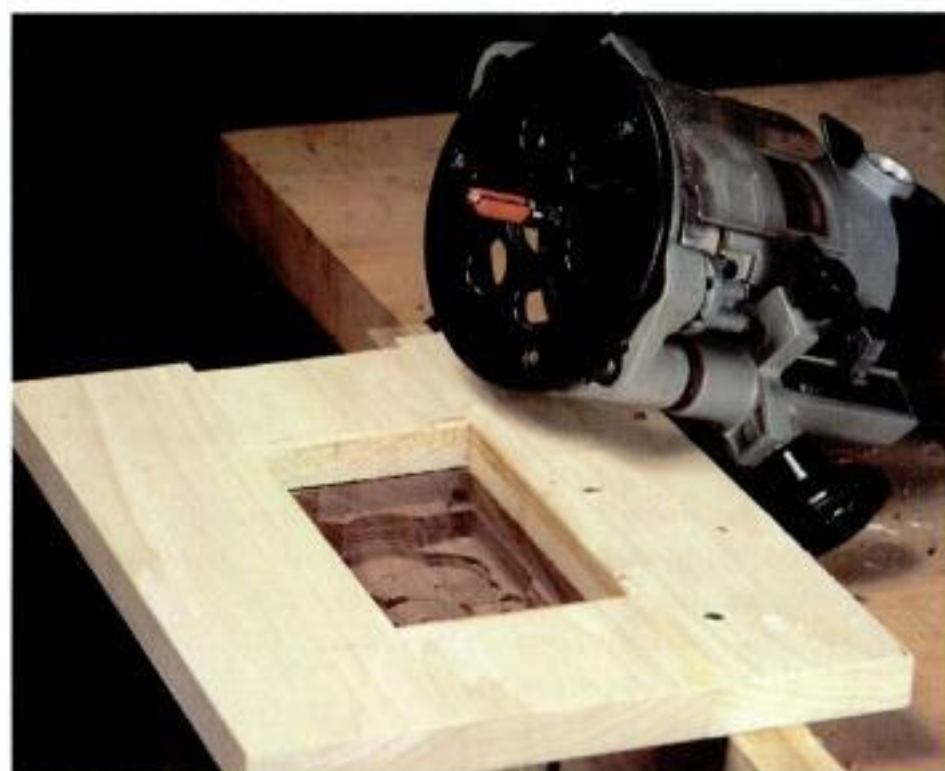
Dovetail Work

After squaring up the box blank and cutting it to length, I set up the router table to cut some dovetails. All of the dovetail work can be done with a dovetail bit set to a height of $\frac{7}{16}$ in.

Routing the end keyways. Guide the box blank against the fence and make a series of overlapping passes through the dovetail bit to complete each end keyway.



Making the end keys. A plywood guide strip, attached to the workpiece with double-faced tape, runs against the fence to guide the cut. Adjust the fence position to creep up on the finished width of the dovetailed part.



Routing the hollow. The bearing rides against the edge of the template to clean up the inside edges and bottom of the box.

I used a $\frac{3}{4}$ -in., 14° bit, but you could use any dovetail bit on hand for this project.

Start by routing the two wide keyways on the ends of the box. I deliberately positioned these keyways slightly off center so that the lid would only match up if assembled the right way. Rout each end keyway about 2 in. wide, guiding the blank against the router table fence to make a series of overlapping cuts. (See top left photo.) If you're making a different size box, make sure that your end keyways will be wide enough for the bottom key to slide through with plenty of "meat" (at least $\frac{3}{8}$ in.) left on the end keys.

The next step is to make the end keys—the pieces that fit in the keyways you just routed. I made both end keys (as well as the bottom key) from a length of walnut that I had planed to a thickness of $\frac{7}{16}$ in.

Attach a length of $\frac{1}{4}$ -in. plywood to one face of the walnut with double-faced tape so that both pieces are flush along one long edge. Rip both plywood and workpiece about $\frac{1}{4}$ in. wider than the widest part of your end keyways.

The objective is to shape each end key so it fits snugly in its keyway, yet is loose enough to slide in and out without binding. Without changing the height of the dovetail bit, I "nibbled" the workpiece to the correct fit by running the plywood against the fence and resetting the fence as necessary. (See center left photo.)

When you've got the right fit, cut the dovetail strip in two, making a pair of end keys at least $\frac{1}{4}$ in. longer than the thickness of your box. Slide both end keys into their ways so that they're flush with the bottom of the box, and clamp them in place. Now adjust your router table fence to cut the keyway along the bottom of the box and through the center of both end keys. Keep the bit at its $\frac{7}{16}$ -in. height. I made several overlapping passes with different fence settings to complete this bottom keyway.

To make the bottom key, use the $\frac{7}{16}$ -in.-thick stock left over from making the two end keys. Cut the blank a couple of inches longer than needed. Make the bottom key with the same technique you used to make the end keys.

Lid and Lock

To make the lid, remove the end keys and bandsaw $\frac{1}{2}$ in. off the top of the box blank. To smooth the rough-cut surfaces, I simply taped a sheet of 120-grit sandpaper to the tablesaw top and sanded both surfaces until they were seated smoothly against each other.

Now it's time to fasten the end keys to the lid. So that you don't smear glue into the end keyways and wind up welding the lid to the box, apply glue to the lid and insert the end keys from the bottom up. Insert the bottom key to ensure that everything lines up, then screw the end keys to the lid. Fill the counterbored holes with matching wood plugs. Now, remove the lid assembly and clean up any excess glue.

To make the slot for the dowel pin (see drawing), use a $\frac{3}{16}$ -in.-dia. straight bit in the router, adjusted to about $1\frac{1}{16}$ in. deep. Rout a $\frac{3}{4}$ -in.-long slot along the center of the bottom keyway. Next, install the pin in the bottom key. Drill a $\frac{1}{8}$ -in.-dia. by $\frac{1}{4}$ -in.-deep hole in the top of the key, $\frac{3}{4}$ in. from one end, and glue in the $\frac{1}{8}$ -in.-dia. dowel pin. Trim the pin so that it stands about $\frac{3}{16}$ in. proud of the key.

Now, notch the bottom key and complete the lock. To locate the position of the notch on the bottom key, fit the key into the bottom keyway and slide it in as far as it will go—

DOVETAIL BOX

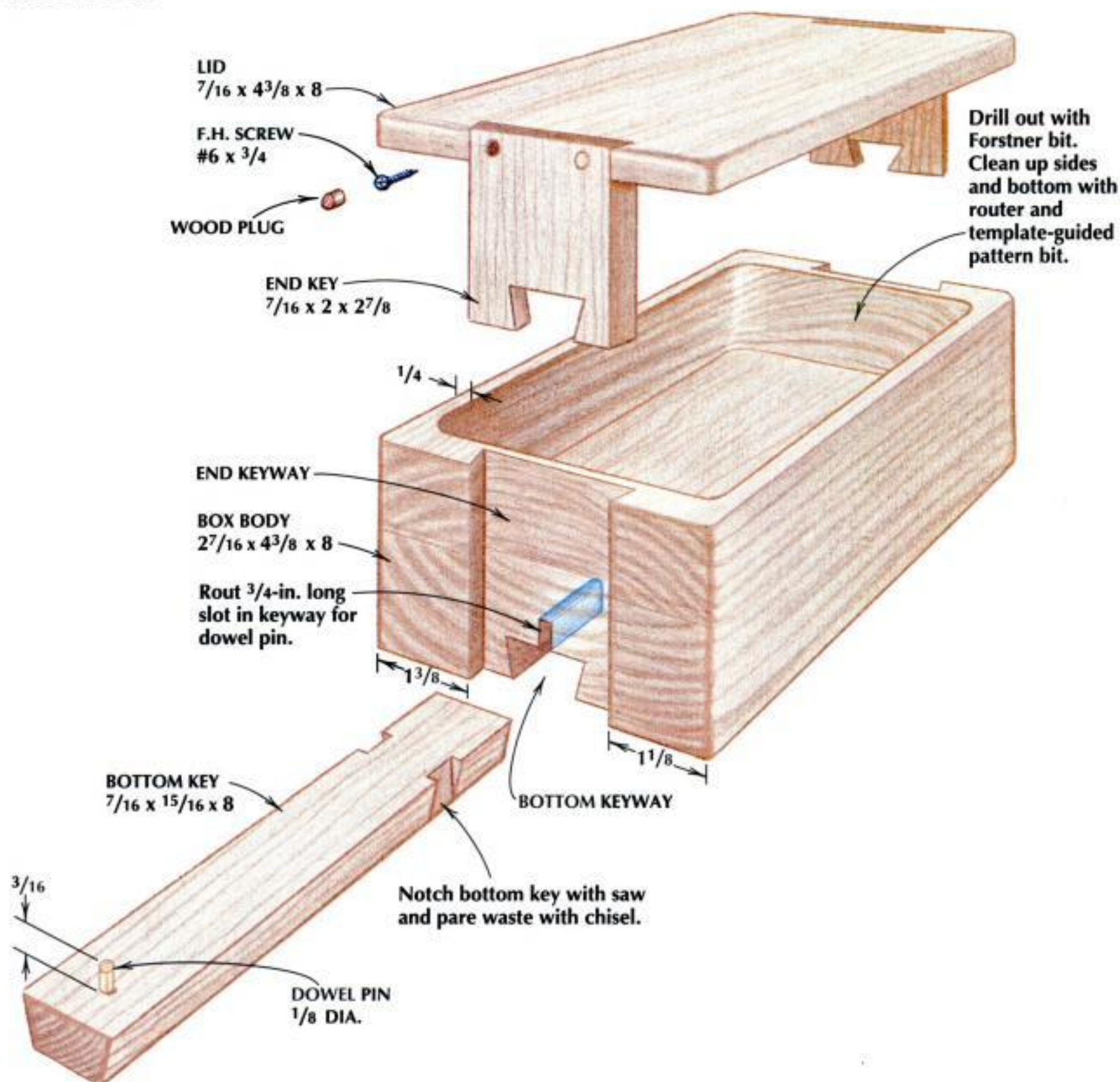


ILLUSTRATION BY MELANIE POWELL

until the dowel pin stops against the end of the slot. Now slide the lid down and use a knife to mark where the outside face and inside edge of the end key touch the bottom key. Notch the bottom key with a dovetail saw and use a chisel to pare away the waste. (See drawing, above.)

Check the locking action. If the mechanism works smoothly, lock the box and trim the end keys and bottom key flush. Soften all the edges of the box with a router and a 1/4-in. round-over bit.

Hollowing and Finishing

I used my drill press and a 1-in. Forstner bit to hog out most of the waste inside the box. Since the finished depth of my box is 1 3/8 in., I drilled to a depth of 1 1/4 in., then cleaned up the bottom and

sides of the opening with a router and a pattern-cutting bit.

The easiest way to do this is to make a template guide for your pattern bit. I glued up my template from four pieces of scrap to form a rectangular opening the exact size of the box opening. Don't worry about square corners in your template; the pattern bit will automatically create radiused corners. I aligned the template's inner edges with those of the drilled opening and rode the top bearing of the bit against the template while the bit cut the identical pattern in the box. (See bottom photo, opposite page.) You can scrape or sand any remaining router marks from the bottom of the box.

Next, I sanded all the parts of my puzzle box with 400-grit steatrated sandpaper, and then I switched to 0000 steel

wool to bring up the luster of the wood.

To preserve the natural appearance of the walnut, I decided not to stain the box. I applied two coats of penetrating oil finish with a rag, and left the box to dry for two days. For added protection and a more uniform appearance, I followed the oil with three wiped-on coats of polyurethane thinned 50/50 with mineral spirits, allowing a full day for each coat to dry. ▲



MASON RAPAPORT
designs and builds furniture in Massachusetts. He build boxes mostly for the fun of it.



Mitered Sticking

*A Time-Honored
Frame Construction Technique
You Can Do On Your Tablesaw*

by Lonnie Bird

These days, the frames of most frame-and-panel doors are made with precisely matched shaper cutters or router bits that cut mating profiles on the stiles ("sticking") and rails ("coping"). But this approach has a few drawbacks. The cutters are expensive and can only cut a single profile. And a typical "cope-and-stick" joint relies on the limited glue surface of a short "stub tenon" for its strength. This type of joint is not nearly as strong as a conventional mortise-and-tenon joint.

Although I make some types of doors with coped sticking, I prefer a much older, more traditional technique that I call "mitered sticking." (See Fig. 1.) With this method, I can join all sorts of stiles and rails, from those found on cabinet doors and face frames to those used on massive entry doors. Mitered sticking allows me to use mortise-and-tenon joints where stiles join rails. And I can use sticking profiles that can't be matched with coping cutters, such as the quirk-and-bead profile.

Economy and simplicity are other important advantages with this technique. To construct doors or frames with mitered sticking, all I need is an edging bit to produce the sticking profile and a tablesaw to miter it.

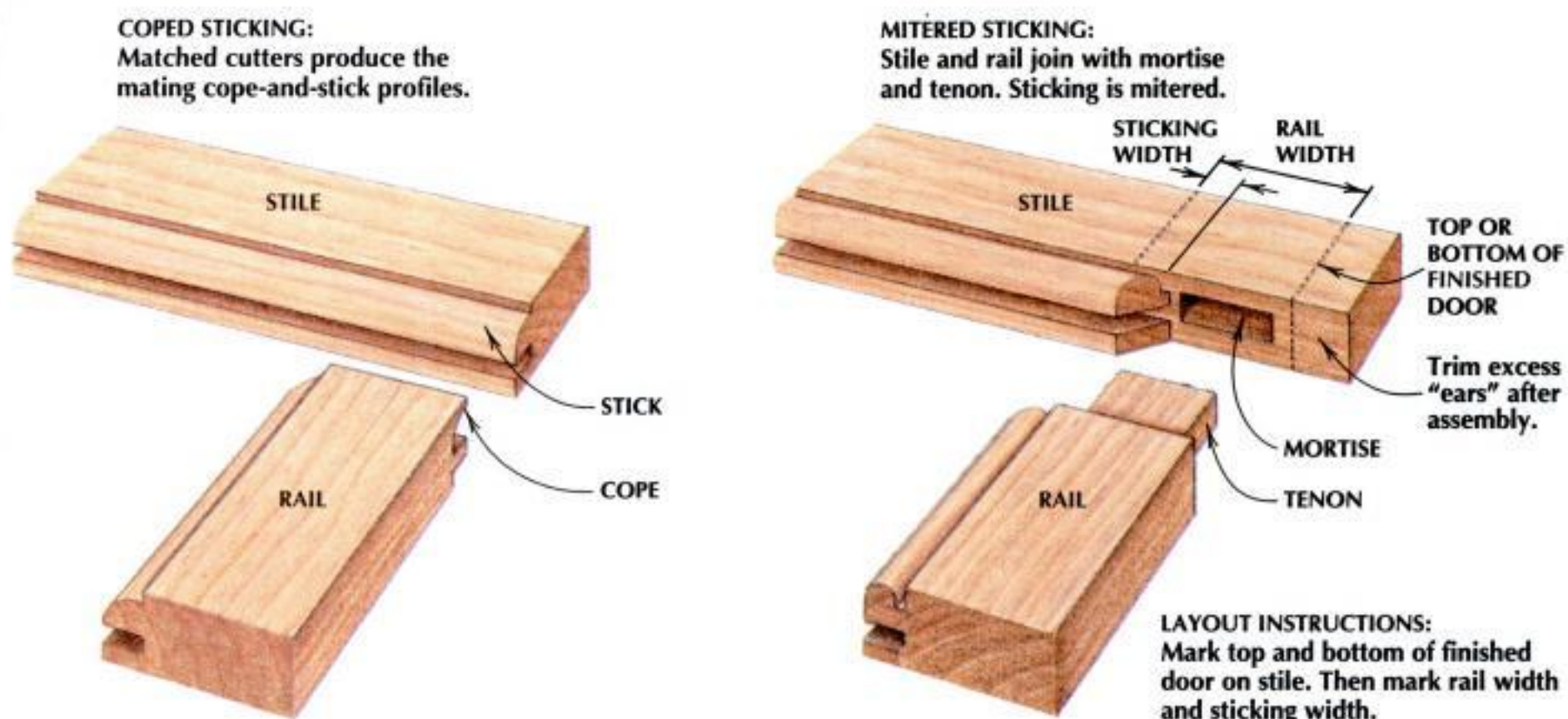
Preparing Stiles and Rails

Once I've determined the sticking profile, it's time to dimension the stiles and rails. I cut the stiles about 2 in. longer than their finished length. This extra length offers insurance against splitting when I cut the mortise near each stile end. It also makes it easier to clamp the stile in my hollow-chisel mortiser. I'll trim off the excess "ears" after the door is glued up.

Each stile needs to be marked up with crisp, precise layout lines that extend across a face and edge of each member.

Miters, mortises and tenons. A traditional alternative to coped frame joinery, mitered sticking allows frame members to have the strength of mortise-and-tenon joints. The door shown here has a quirk-and-bead sticking profile, one of many possible when using this technique.

FIG. 1: COPED VS. MITERED STICKING



(See Fig. 1.) I use a hard (No. 4), sharp pencil for this layout work. On one of the stiles, I lay out the finished height of the door, allowing for about an inch of waste at each stile end. Then I mark the overall width (including the sticking) of each rail where it will join the stile. I also mark the width of the rail sticking itself.

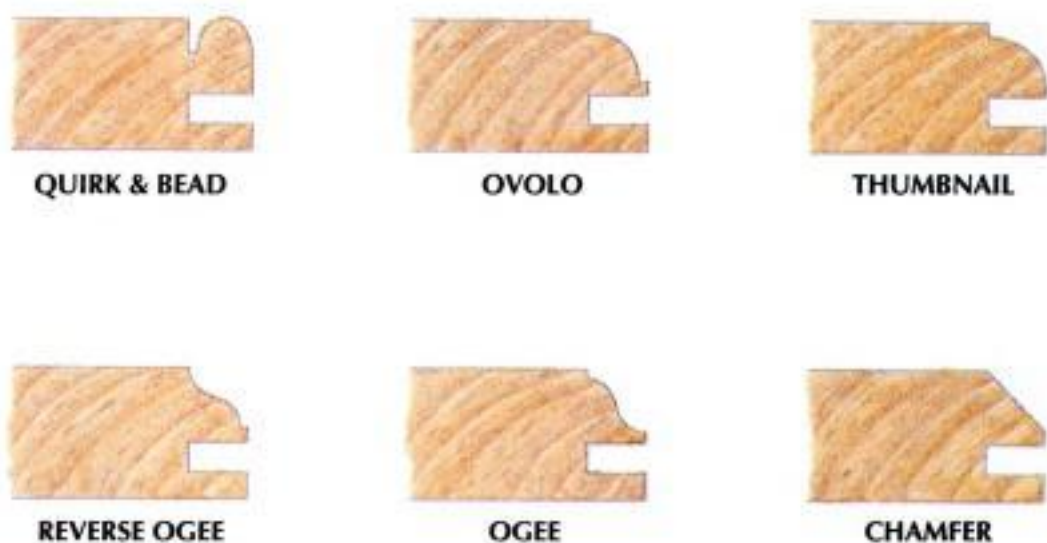
As shown in Fig. 1, the mortises in each stile will fall between the sticking miter cut and the finished end of the stile. The sticking width lines are used to align the miter cuts. After double-checking the layout, I transfer my lines to the remaining stile.

Rails need to be cut to their finished length at this stage. The formula for calculating this length is simple. Start with the finished width of the door. Subtract the width of both stiles, then add back the width of the sticking on each stile. Finally, add the length of both tenons.

At this point, I cut the stile mortises using the hollow-chisel mortising attachment on my drill press. I cut the tenons on the rails using my tablesaw and a dado cutter.

Now, mill the sticking profile along each frame member. (See photo, right.) I do this on the shaper, but with the proper bit, you could just as easily do this work with a router and edging bit. It's even possible to create your sticking profile by hand, if you want to plane a chamfer or scrape using a scratch stock. Important: Remember to profile a sam-

FIG. 2: COMMON STICKING PROFILES



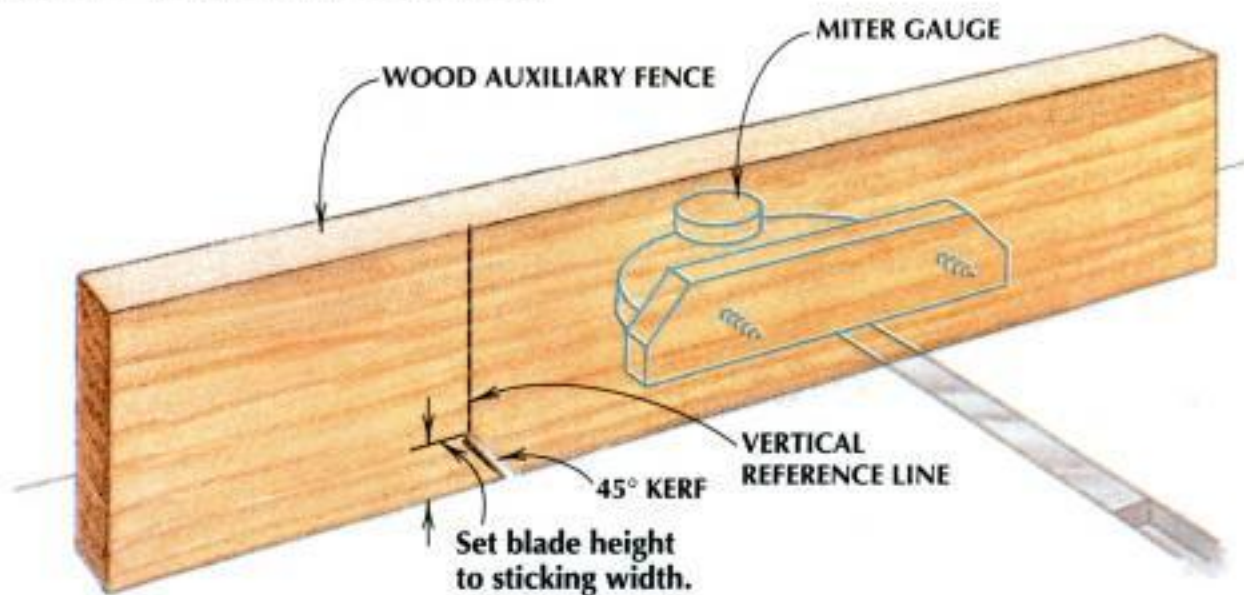
ple edge (or several edges) in a length of scrap. You'll need to use these extra profiles to set up the tablesaw for mitering the sticking.

Next, I cut the panel grooves in the frame members. Groove depth is usually equal to sticking width, except when the sticking is very narrow and more depth is needed to hold the panel securely. When the groove depth exceeds the sticking width, you'll need to stop the stile grooves at the mortises. Otherwise, the grooves will show at the ends of the stiles. You can cut the grooves on the shaper or router table with a slotting cutter. On the rails, since the ends will not show, you can mill the grooves along the entire length.



Profile work. Bird runs a stile through the shaper to mill the quirk-and-bead sticking profile.

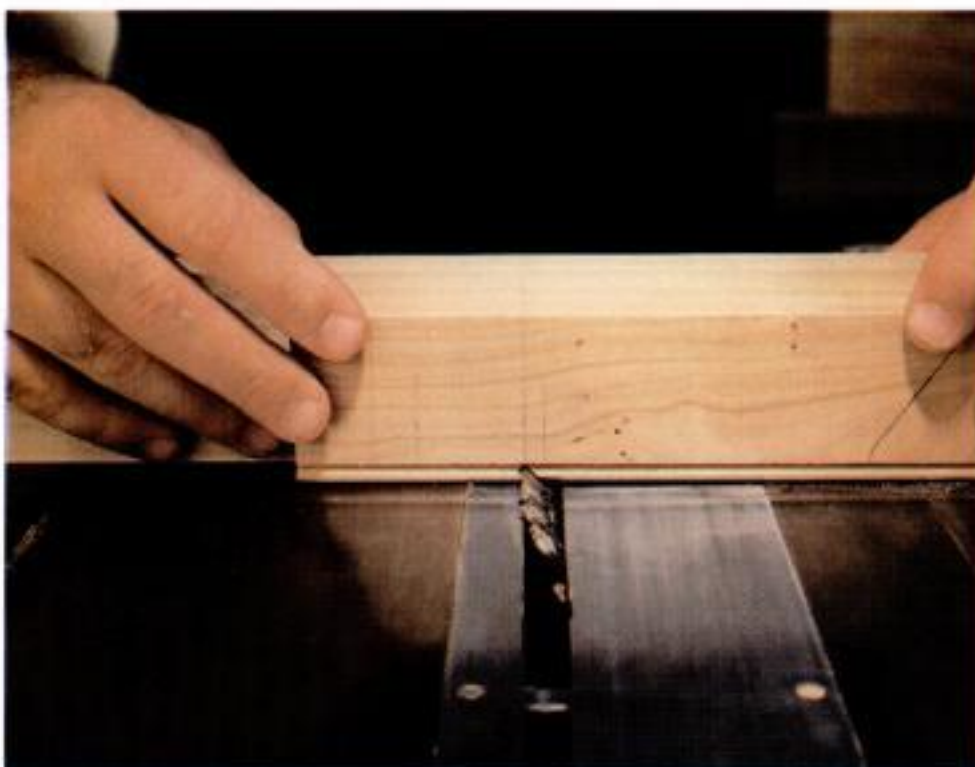
FIG. 3: TABLESAW MITERING SETUP



MITERING THE STICKING



Mitering the rail sticking. To set up for this cut, Bird aligns the shoulder of the rail tenon against the reference line on the miter-gauge auxiliary fence.



Mitering the stile. Align the sticking width line on the stile with the fence reference line to set up each stile miter cut.



Removing the waste. With the rip fence adjusted to the width of the sticking, Bird makes a stop cut on the table-saw, cutting to within about 1/4 in. of the miter. The waste strip can then be broken free.

Making the Miters

Now you're ready to miter the sticking with your tablesaw. This is an easy step, but it calls for precise setup and a sharp blade. To ensure mirror-smooth miters, I use a 60-tooth carbide-tipped ATB blade.

First, set your saw's miter gauge for a right-angle cut. Then tilt the tablesaw blade to 45°. To insure accuracy, I make test cuts in two pieces and hold them together to see if they form a 90° joint. When the angle is correct, I lock the angle and adjust the height of the blade to equal the width of the sticking. Test blade height by cutting a miter in the test piece that you milled earlier, and fine-tune it as necessary. You need to cut through the sticking, but not beyond it.

Next, attach a wood auxiliary fence to the miter gauge. Make sure it's straight, slightly wider than the frame members, and installed so that part of it is in the path of the blade. Turn on the saw and cut a kerf in this fence. Then use a square and a sharp pencil to mark a vertical line from the highest point of the kerf. Extend this reference line to the top of the wood fence, as shown in Fig. 3.

To miter the sticking on the rails, align the shoulder of the tenon with the reference line on the wood fence. (See top left photo, opposite page.) To miter the stile sticking, align the sticking width layout line on the stile (see Fig. 1) with the fence reference line. (See bottom left photo, opposite page.) Half of your cuts will be made from the front side of the workpiece and half will be made from the back.

Now you have to rip off a short length of sticking from each stile end—up to the miter cut. I make these cuts on the tablesaw, with the blade set back to 90° and raised to maximum height. Set the rip fence for the width of the sticking. This measurement must be made from the fence to the *outside* of the blade.

Run the inside edge of the stile against the rip fence to make each cut, stopping before the blade cuts into the mitered end of the sticking. (See right photo, opposite page.) You can make a mark on your rip fence to indicate where the blade meets the table insert. Or you can clamp a stop block on the outfeed side of the rip fence to stop the cut just short of the miter. For half of your cuts, the sticking will be facing up; it will face down for the other half. When you're done at the tablesaw, snap off the remainder of the waste sticking and clean up the joint with a chisel.



Clamping up. A pair of pipe clamps pulls stiles and rails together around a raised panel. Excess "ears" on stile ends will be trimmed after the glue dries.

Assembling the Door

At this point, your joinery work is done; now it's time to make the panel and assemble your door. First, dry assemble the frame to test the fit and measure for the panel. Pare your mortise-and-tenon joints as necessary so that the fit is snug, but not forced.

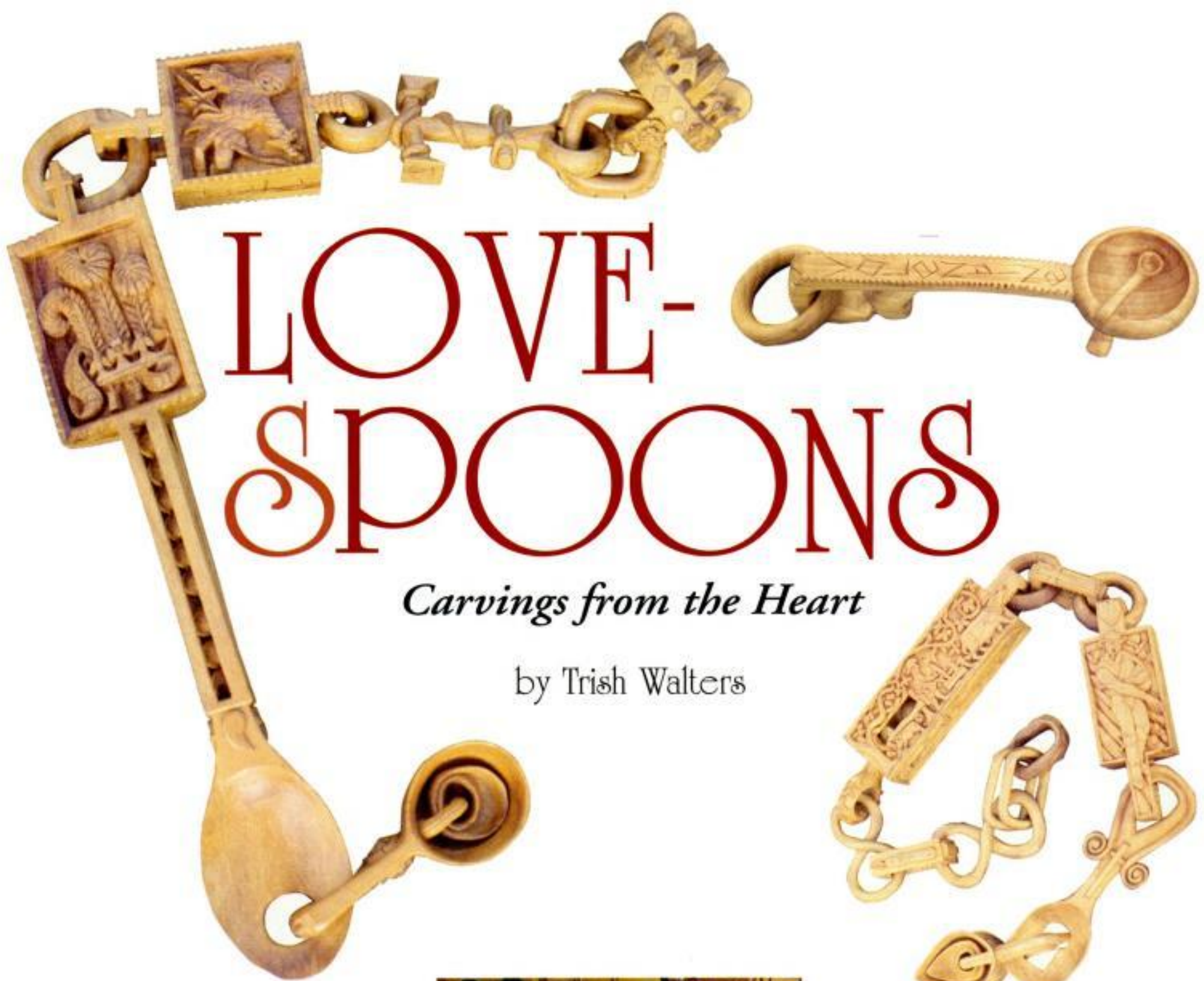
When the frame is together, you can measure the height and width of the interior opening, figure in the depth of the panel groove, and determine the width and length of your panel. Make the panel, and then dry assemble the door one final time with the panel in place. If everything fits together, you're ready for glue-up.

As with any frame-and-panel construction, keep glue out of the panel grooves. I use only two pipe clamps on a door such as this one, centering each clamp on a rail. (See photo, above.) After the glue dries, trim the excess "ears" off your stile ends, and your new door is ready to sand and finish. ▲



LONNIE BIRD

is a contributing editor to *AW*. He teaches woodworking at the University of Rio Grande, in Ohio.



LOVE- SPOONS

Carvings from the Heart

by Trish Walters



To call Englishman Ralph Hentall a spoon carver is to call Buckingham Palace a nice house. Hentall, one of Great Britain's premier carvers, makes lovespoons. These symbol-laden ornaments of affection are carved to commemorate important events, from 50th anniversaries to royal weddings. Usually carved from a single piece of wood, each Hentall creation carries on a centuries-old tradition that most likely originated with the Celts or Vikings.

Simple Beginnings

The intricate patterns and complex carved forms of Hentall's work belie much simpler origins. The first lovespoons were just spoons. Their deep bowls signified the act of providing, promising "I'll take care of you." Early lovespoon makers whittled their



A labor of love. Surrounded by a varied selection of chisels, gouges, files and knives, Ralph Hentall carves spoons that tell a story.

creations with crude knives, perhaps adding embellishments such as initials and hearts before presenting the spoon to a sweetheart.

Over the years, the art of lovespoon carving developed its own symbolism, drawing upon both Christian and

pagan influences. A chain was added to the spoon, and represented being "fettered in love." The key says "My house is your house," and the spade assures "I will work for you." A loose ball in a cage, representing the seed in the womb, symbolizes fertility, as do the tiny "sponlets" which signify children.

Researching the history of lovespoons, Hentall began visiting museums throughout Great Britain, persuading curators to bring lovespoons out of their vaults. "Since there were hardly any books on the subject," Hentall recalls, "I had to look into the wood and reason out how to do the carving by studying the different facets and angles of the chainwork." His investigation also delved into the significance of the many symbols and motifs that have characterized lovespoons through the ages.

These days, Hentall designs and makes heirloom-quality spoons unique to the people who commission them. When a client requests a spoon—usually to commemorate an anniversary—Hentall gathers together as many personal details as possible. He then develops a design that is both symbolically apt and aesthetically pleasing.

Wood Selection and Layout

Since his delicate and complex spoons involve a good deal of chainwork, the wood for a lovespoon must be strong in cross-grain section. Traditionally, sycamore has been regarded as the ideal wood for lovespoon carving since it's strong and odorless. Hentall also uses maple, walnut, holly and fruitwoods such as cherry, plum and apple.

Careful layout is important, especially for the chainwork, much of which is extremely complex. The figure-of-eight twists, for instance, involve nine different steps from layout to completion. (See photo, below.) "If you connect that figure-of-eight to an ordinary chain link by adding a flat twist," he explains, "you have three differently shaped chain links and it becomes very complicated. You've got to know just where to cut the wood or you'll end up with three unconnected pieces."

Tools and Techniques

To shape his designs, Hentall uses an impressive array of tools that includes a fretsaw, firmer chisels, V-chisels, gouges, files and Swiss knives. For probing tools, he improvises with dental instruments and rug needles.

The traditional tool that is crucial for many aspects of lovespoon carving is the *twca cam* (pronounced took'-ur-cam). The name is Welsh and means "bent knife." The *twca cam* has a curved blade that excels at scooping out the



Getting the scoop. Hentall uses a specially made bent knife, called a *twca cam* (pronounced took'-ur-cam), to hollow out the spoon bowl.

hollow in a spoon. (See photo, above.) Most serious spoon carvers make their own *twca cams*. Hentall has a selection of different shapes and sizes that he has made from old files.

Despite his collection of tools, Hentall says that the beginning lovespoon carver can do well with a basic selection: "Don't spend a fortune on tools. Buy the best, but just buy what you need. Start with a 1/2-in. firmer chisel, a good selection of craft knives and one or two probing tools. The only tool you need to make is a *twca cam*. If you can't make one, find someone who can."

After marking out the design onto the wood, Hentall sets to work carefully shaping the chain using the fretsaw,

chisels, gouges and knives. That done, he roughs out the panels, the spoon-work and the other ornamentation.

He uses chisels and gouges for the relief work on the panels and Swiss knives for the chip carving. The spoons are sawn out and shaped with knives and chisels, and their bowls are hollowed out with *twca cams*.

It isn't until after every part has its basic shape that Hentall approaches the fine detail. "That's when it becomes exciting," he says. "When I've got everything that the customer wants on the lovespoon, I can start working on my own embellishments." The minutiae to be found on his work are fascinating: A lovespoon made for a royal wedding features surfaces that are textured with minuscule patterns, tiny tendrils clinging to crosses and wee beads dancing around panel frames. A diminutive, elaborately carved crown tops off the piece. (See lead photo, opposite page.)

Finishing Up

When he's satisfied with the carving, Hentall coats porous woods with a sanding sealer or wood filler. Then he smooths the piece again before applying either boiled linseed oil or a button polish. Last, he applies a coat of beeswax to bring up the highlights.

Although the spoons (and their promises) are not carved in stone, they are likely to last a long time. Hentall once carved a lovespoon out of a spoke from the original bell wheel that had been installed in the Whipsnade Church belfry around 1593. "If you allow for the tree's growth time—about 200 years—you're talking about a piece of timber that's more than 600 years old," Hentall marvels.

He has nearly completed writing a book about lovespoons around the world and continues to create his own legacy of work in wood. "I've been carving seriously for 25 years," he says with a smile, "and every day is a joy."

Ralph Hentall loves spoons—and Buckingham Palace is indeed a very nice house. ▲



Pieces of eight. The figure-of-eight links shown here feature links that have a 90° twist. Careful carving frees them from the blank.



Spoon with a twist. With its figure-of-eight handle, this spoon is first cut with a fretsaw and then shaped with carving tools.



TRISH WALTERS

is a freelance writer living in England. She writes extensively on the subject of traditional rural crafts.

Easy Entry Door

*Build the Frame
With Biscuits;
Add Panels to Taste*

by Sven Hanson
and Chuck Ring



Southwestern flavor. Tongue-and-groove boards, installed diagonally, form the panels on the exterior side of this easy-to-make door. Inset: Door frame joints get their strength from oversize "S-6" biscuits, used three across.

We build doors professionally but instead of relying on an industrial shaper and an array of expensive cutters, we use a tablesaw, chop saw and biscuit joiner. There are no mortise-and-tenon joints in our doors. To connect frame members, we use Lamello "S-6" biscuits—oversize, football-shaped wafers of compressed beech. Joints made with the S-6 biscuits are remarkably strong. In tests done here in Albuquerque (at the Sandia Laboratory), more than 800 lbs. of force were required to break a biscuit-joined stile-to-rail connection. And the joint didn't fail; the wood around it did.

Biscuit joinery isn't the only thing that makes this door easy to build. Applied moldings also simplify the construction process. By keeping the construction simple, we make a door that lets simple geometry and native materials speak for themselves. The pine frame and the diagonally installed paneling and twigs fit perfectly in the Southwestern-style homes in our area. But

with different wood, panel material and hardware you could easily make a door more indigenous to your home ground, using the techniques shown here.

Start with the Frame

Most of the entry doors we build are 36 in. wide, 80 in. high and 1 $\frac{3}{4}$ in. thick. We like to use a 5-in. width for the two stiles, or vertical frame members. This width gives a standard-size door good proportions and strength, while allowing ample room for lockset hardware. (See Fig. 1.)

To keep things simple and get the most out of our wood, we also use a 5-in. width for the top rail, the middle rail and the two vertical dividers. The bottom rail of the door is 8 in. wide. This extra width at the base of the door adds strength, helps the proportions and also protects the bottom panels from errant feet.

Frame Joinery

You don't have to get far into the construction process to appreciate the simplicity of making a biscuit-joined door. We rip the frame members to width, chop-saw them to length, then proceed to lay out the joinery. There are no mortises or tenons to cut; nor is there any work to be done on the shaper. A single layout line across each joint is all you need to align the biscuit joiner. We like to arrange the entire frame assembly on the workbench, and mark all the joints at once.

As shown in the inset photo on the opposite page, the thickness of the door allows for a "stack" of three biscuits to be used, each one spaced $\frac{1}{2}$ in. from its neighbor. S-6 biscuits require deeper, longer slots than standard biscuits. If your joiner has an "M" setting, this will give you the proper cut. Otherwise, adjust your machine to make a $\frac{5}{8}$ -in.-deep slot. To elongate the slot, we cut $\frac{1}{8}$ in. to the right and left of the layout line.

We cut the bottom slot first, with the biscuit joiner and the frame members flat on the benchtop. Then we add a $\frac{1}{2}$ -in.-thick spacer to make the middle cut, and another $\frac{1}{2}$ -in. spacer to cut the top slot. With this technique, you get three accurate slots from one layout line. (See top photo, page 66.)

Assembling the Door Frame

We prefer to use urethane glue (either Gorilla Glue or Excel) for assembling the door frame. This type of glue is strong and completely waterproof. Also, the adhesive expands slightly as it cures, taking up any play between the biscuits and their slots.

Polyurethane glue relies on moisture to cure. We've found that by moistening joints just before applying glue, we can improve joint strength by up to 30 percent. A couple of "spritzes" with a plant mister is all you need—just enough moisture to darken the wood slightly.

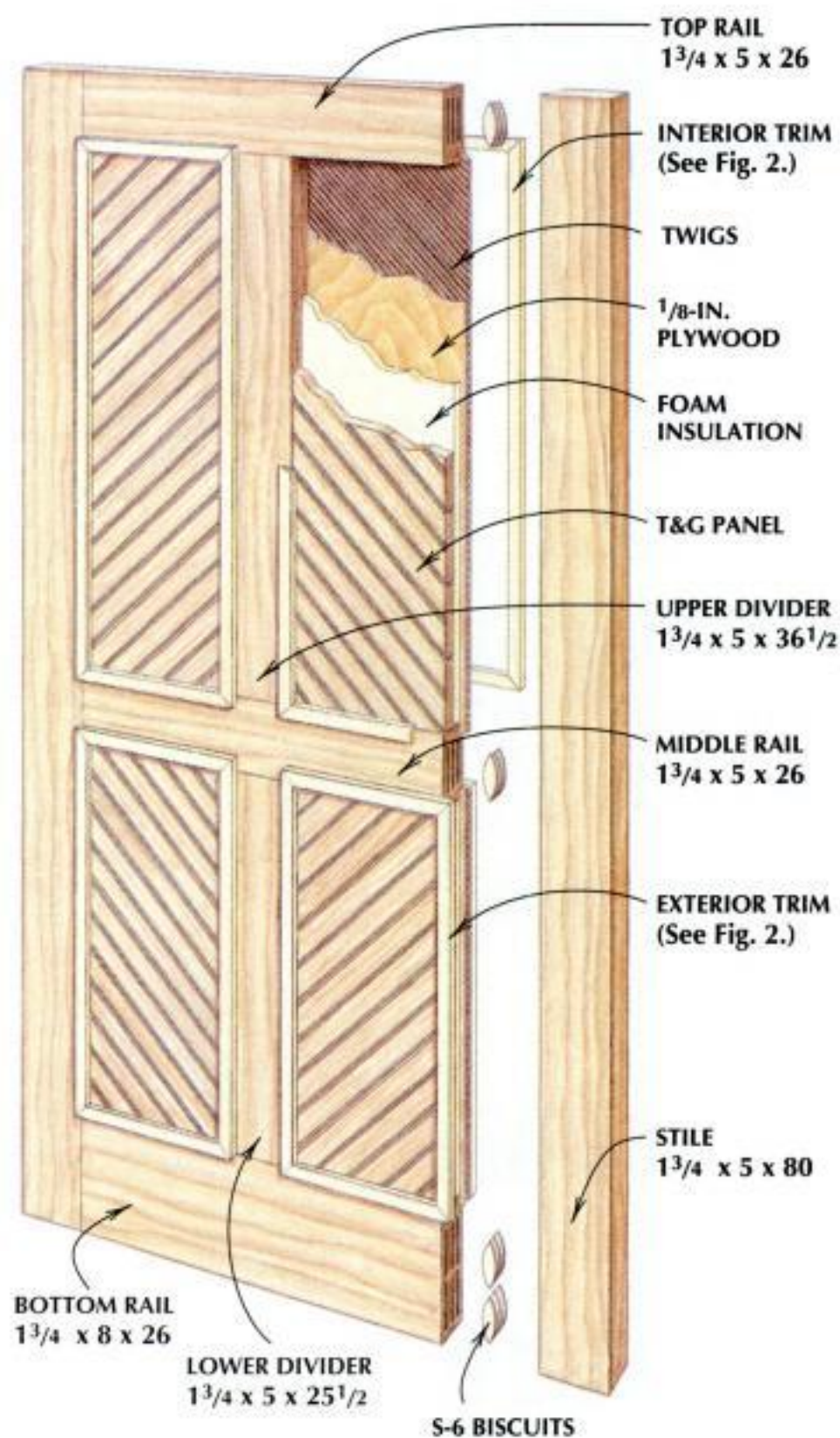
After moistening the joint, we brush glue thoroughly into each slot, also taking care to lightly coat mating sections of edge grain and end grain. Even though end-grain adhesion won't contribute much to the strength of the joint, the glue effectively seals the porous ends of the rails and dividers.

We start the frame assembly by gluing the upper and lower dividers to the middle rail. The same cross-joint marks used to align the biscuit joiner can now be used to align these joints. The top and bottom rails go on next; the stiles are glued on last. Moderate clamp pressure pulls it all together. (See center photo, page 66.)

Applied Moldings

In this door design, the panels aren't held by grooves in the frame members. Instead, several layers of panel material are sandwiched between moldings that we apply from the interior and exterior sides of the door. With this technique, the only machining on the frame members is the small rabbets that we

FIG. 1: BISCUIT-JOINED DOOR
(36-in. x 80-in. size shown.)



route around the inside of each panel opening to receive the interior panel material. (See Fig. 2.)

We mill the rabbets with a standard rabbeting bit and square up the corners with a bench chisel. (See bottom photo, page 66.) Then we cut the $\frac{1}{8}$ -in.-thick plywood panels to fit in the rabbeted openings. These panels will cover the foam insulation and act as backer boards for the twigs. Don't install the panels yet; you'll need them to lay out the exterior panels, as we'll explain below.

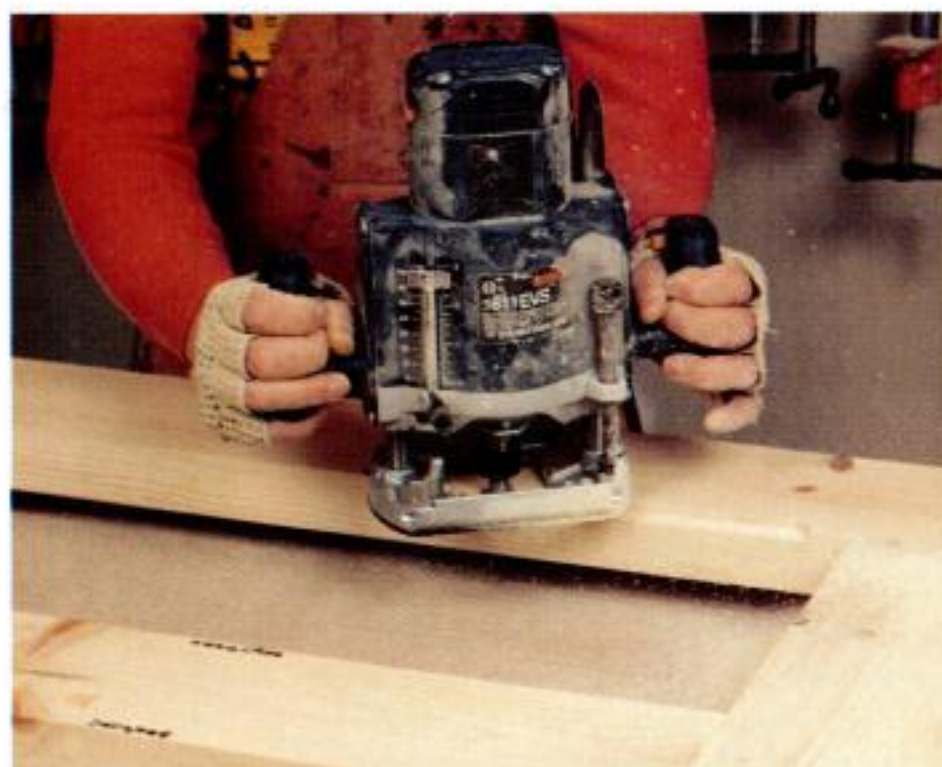
Now for the trim. The exterior trim is a simple molding made from $\frac{5}{8}$ -in.-thick pine. It has an "L" profile, with hand-planed chamfers on the two outside edges. (See Fig. 2.) The interior molding is also pine, and measures $\frac{1}{2}$ in. by $1\frac{1}{4}$ in. in section. Both of these profiles are easy to make and inexpensive; they're also consistent with the Spanish Colonial style of the finished door. For a different style door, you might opt for trim with a more elaborate shape. It's easy to make your own on the router table, or to modify a standard lumberyard molding.



Slot machine. Hanson mills the topmost biscuit slot in a door stile, using two 1/2-in.-thick spacers beneath the joiner to keep the slots parallel and evenly spaced.



Framed up. The authors clamp up the door, using a pair of tape measures to check for square by comparing diagonal measurements.



Quick rabbet. Chuck Ring rabbets the frame on the interior side of the door. The rabbet will hold a thin plywood panel and the twigs that show on the interior of the finished door.

We install the exterior trim first, mitering the four pieces that fit around each frame opening. (See top photo, opposite page.) We use urethane glue and 1 1/4-in. brads to secure the trim to the frame. When all the exterior trim is on, place the door on the workbench with the interior side facing up.

Panel Possibilities

For the exterior panels, we've used quite a few different materials to suit a client's tastes or to fit a particular decor. It's possible to have a flat panel or raised panel made from solid wood. Or you can use tongue-and-groove (T&G) boards as we do on this door. By choosing a thinner exterior panel—3/8-in.-thick T&G boards, for example—you make room for more insulation or a thicker interior panel. Since the panels are installed after the door frame is together, your options are numerous—another reason why we like this type of door.

The nominal 1x4 (3/4 x 3 1/2) T&G board we use to panel this door is known at many lumber yards as "beadboard," or beaded ceiling paneling. We call it "car siding" after the historic style used on wooden railroad cars. We install the boards on a 45° angle, creating diagonal joint lines that break up the horizontal and vertical lines of the frame while also enhancing its symmetry. We like the visual interest this creates, but here again, you can install your panels to suit your own taste.

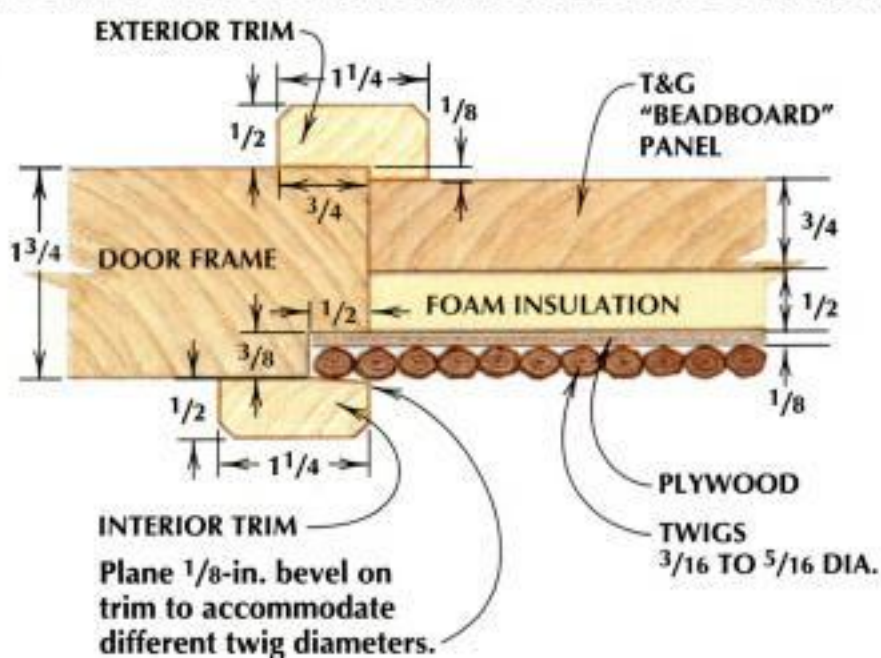
With diagonal paneling, note that the panels on both sides of the dividers need to have their joints running in opposite directions. Also, you'll want to lay out your T&G boards so you don't end up with a tiny corner piece that doesn't look good or fit well. To solve this problem, we work out the layout of the boards on the 1/8-in.-thick plywood panels cut earlier. Measure 1/2 in. in from the edge of an upper or lower plywood panel, and you'll get the actual dimensions of the panel opening.

Mark up the plywood with 45° diagonal lines, spaced 3 1/4 in. apart (the width of our boards minus the 1/4-in. width of the tongue). This will give you a good idea of how to place the boards. We mark the boards using the perimeter line on the plywood panel, make the 45° end cuts on the chop saw, and then simply dry fit the T&G panel into the opening.

Foam, Plywood and Twigs

Next, we lay a bead of panel adhesive down the middle of each board and press in a 1/2-in.-thick sheet of foil-faced foam insulation, cutting each piece for a tight fit in its opening.

FIG. 2: PANEL INSTALLATION DETAILS



We lay a bead of panel adhesive down the middle of each insulation panel, then cap the foam with the 1/8-in.-thick plywood panels cut earlier. Before installing the plywood, you may want to paint or stain it to match the color of your twigs. But make sure that each piece of plywood has 45° diagonal lines marked on it, in the orientation that you want your twigs to run. You'll use these guidelines when installing the twigs.

We paneled this door with salt cedar (tamarisk) twigs cut from bushy trees which grow wild along the banks of the Rio Grande. Salt cedar is a vigorous, non-native weed tree; its bark is naturally shiny and varies in color from yellow to burgundy. We mix and match the colors; sometimes we even paint the twigs before installing them. Depending on what's available in your area, you could substitute willow, dogwood, salt grass, bamboo or a lot of other natural materials. Harvest about three times more than you think you'll need, and aim for a twig diameter between 3/16 in. and 5/16 in.

We found that it works best to install the interior trim before installing the twigs. This way, you can press the twig ends into the channel between the plywood panel and the trim. Plane a 1/8-in. bevel along the inside face of the trim, as shown in Fig. 2. The bevel will accommodate slight variations in twig diameters. To accommodate larger-diameter twigs or other interior panel material, you can increase the bevel, or even rabbet the trim pieces. Miter the trim to overlap each rabbeted opening by 1/2 in. We install the trim with glue and 1 1/4-in. brads.

When installing the twigs to fill a panel, we work from the corners toward the center. (See bottom photo.) It's easier to squeeze in the last few twigs near the center than in a tight corner. To better maintain the 45° pattern, we alternate thin and thick stick ends. Keep a sharp utility knife handy, since you may need to trim some ends to fit between the trim and the plywood. We glue every third or fourth twig in place with a quick dab of urethane adhesive on the twig ends. Install the last few twigs by inserting one end into the stop, flexing the middle up and squeezing the other end into place.

A Quick Hanging

The door isn't really done until it's finished and hung. For a Southwestern-style door, we sometimes wipe on and wipe off thinned coats of paint—dark green, rust red or dark gray-blue. The little bit of color remaining lends an air of instant history. For real authenticity, you could top this off with a coat of paste wax, renewed every six months or so.

When a door is slated for exterior use, we usually go with a more durable finish. First we fit it to the opening, install the hardware and hang it. Then we take it down, remove the hardware and use HVLP spray equipment to apply three coats of semigloss, water-based exterior varnish. Equal coating on both sides of the door will maximize stability. When the finish is thoroughly cured we put the hardware back on and re-hang the door. ▲



SVEN HANSON AND CHUCK RING
are professional woodworkers who occasionally collaborate on projects in central New Mexico.



Trimmed out. Ring uses a block plane to touch up a chamfer on the exterior trim.



Diagonal paneling. With their ends cut at 45°, T&G boards are fit together to fill the frame opening. Diagonal guide-lines on the plywood panel in the foreground make it easy to lay out the boards.



Twig infill. Working toward the center from opposite corners, Hanson and Ring cover a plywood panel with tamarisk twigs. After being snipped to length, twig ends are wedged between the panel and the interior molding.

CHOICE OF PROS

NOW AVAILABLE
AT **40% LESS!**

INTRODUCING THE **NEW**
WAGNER L609
MOISTURE METER...



L 4.5" x
W 2.75" x H 1.0"

WAGNER
ELECTRONICS

"The Choice of the Pros"

1-800-944-7078

326 Pine Grove Road
Rogue River, OR 97537
(503) 582-0541 Fax (503) 582-4138

- Pin-Free
Narrow Sensor
Deep Penetrating
- Features Wagner's
Proven EMF
Technology
- Accuracy Verified
by Independent
Studies

Our Lowest Price
Was: \$225

Now: **\$129**

© 1995 WEPI

READER SERVICE NO. 42

MAKE IT MOBILE

WITH HTC MOBILE MACHINE BASES

For a FREE
Full-Color Catalog
of HTC's Complete
Product Line Call:
1-800-624-2027



READER SERVICE NO. 70

"1995 CLEARANCE"

- Financing
Available!
- Low
Monthly
Payments!

Save on
Select Models
25x36 • 30x48
40x62 • 50x120



**STEEL
BLDGs**

SAVE UP TO 50%

Buy factory direct! • Build it yourself!

American Owned • American Operated
CALL TODAY!!

1-800-888-4606

READER SERVICE NO. 163

FREE TOOL CATALOG!



Your Best Work Starts With Us...

With over 4,000 of the finest
woodworking tools
in the world,
Woodcraft can help you
work more efficiently
and skillfully than ever.
Call for your Free copy today.

1-800-542-9115

WOODCRAFT®

210 Wood County Ind. Park, Dept. 98W201S
PO Box 1686, Parkersburg, WV 26102-1686

READER SERVICE NO. 49

"Jorgensen" **E-Z HOLD™ II**

THERE ARE ~~NO~~ TWO WAYS ABOUT IT!

Imagine the ease and convenience of a clamp that provides both
bar and spreader applications in one tool! The revolutionary
"Jorgensen" E-Z HOLD™ II is performance engineered with a
double sliding-head design and in-line advancing handle...
maintains greater applied force than other one-handed
clamps. It's the most versatile, affordable,
high quality clamp you can buy...
no two ways about it!



MADE IN THE U.S.A.

For our catalog
send \$1.00 to:
Adjustable Clamp Co.,
443 N. Ashland Ave., Chicago, IL 60622

READER SERVICE NO. 10

BOSCH HOLIDAY BLOWOUT!

BOSCH SUPER SPECIAL HOLIDAY OFFER
PURCHASE ANY COMBINATION OF SKIL OR BOSCH POWER TOOLS & ACCESSORIES AT ONE TIME TOTALING \$500 OR MORE & RECEIVE A SKIL CORNER DETAIL SANDER ABSOLUTELY FREE - LIMIT ONE PER ADDRESS. QUANTITIES ARE VERY LIMITED!

1003VSR	3/8" VSR DRILL, W/KEYLESS CHUCK	85
1194VSR	1/2" VSR, 2 STAGE HAMMER DRILL	145
1272D	3" X 24" DUSTLESS BELT SANDER	208
1273D	4" X 24" DUSTLESS BELT SANDER	214
1273DVS	4" X 24" VS DUSTLESS BELT SANDER	229
1371DVS	6" VS DUSTLESS RNDM ORB SDR	234
1584VS	CLIC BARREL HANDLE JIG SAW, VS	148
1584VSW	1584VS JIG SAW W/CASE & 10 BLADES	189
1584DVS	BARREL HANDLE JIG SAW, DUSTLESS	189
1584DVSW	1584DVS JIG SAW W/CASE & 10 BLADES	209
1587VS	TOP HANDLE JIG SAW, VARS	148
1587VSW	1587VS JIG SAW W/CASE & 10 BLADES	189
1587DVS	TOP HANDLE JIG SAW, DUSTLESS	189
1587DVSW	1587DVS JIG SAW W/CASE & 10 BLADES	209
1604A	ROUTER	142
1604AW	1604A ROUTER WITH CASE	156
1608	LAMINATE TRIMMER	339
1608K	DELUXE INSTALLERS KIT W/4 BASES	229
1613EVS	2 HP VAR SP PLUNGE ROUTER	196
1613EVSX	1613EVS 2HPVAR1051 DELUXE EDGE GUIDE	209
1614EVS	1 1/4 HP VAR SP PLUNGE ROUTER	158
1615EVS	3 1/4 HP VAR SP PLUNGE ROUTER	289
1615EVSX	1615EVS W/1051 DELUXE EDGE GUIDE	304
3051VSRK	9.6V CORDS KIT W/2 BATT KEYLESS	139
3083DVS	9" VS DUSTLESS RANDOM ORBIT	95
3083DVSX	INCLUDES CASE, SANDER & ACCESS	119
3725DVS	5" DUSTLESS VS RANDOM ORBIT SANDER	149
3725DVSX	5" DUSTLESS VS RANDOM ORBIT SANDER W/CS	159
3727DVS	6" DUSTLESS VS RANDOM ORBIT SANDER	154
3727DVSX	6" DUSTLESS VS RANDOM ORBIT SANDER W/CS	164
B165K	BISCUIT JOINER KIT	154
B165KX	BISC JOINER KIT W/250 BISC & GLUE BOTTLE	163
B405K	NEW IN LINE GRP JIGSAW	113
B405KX	B405K W/4 EXTRA LONG BLADES	119
B7000	TRIANGULAR CORNER SANDER	68
B7000A	B7000 W/EXTENDER PAD & 12 SHTS PAPER	79
B7001	VAR SP CORNER SANDER	91
B7001A	B7001 W/EXTENDER PAD & 12 SHTS PAPER	102

BOSCH CORDLESS DRILL SUPER SPECIAL
PURCHASE ANY BOSCH CORDLESS KIT LISTED BELOW & RECEIVE A SKIL SHOP CLOCK ABSOLUTELY FREE - LIMIT ONE PER ADDRESS & QUANTITIES ARE VERY LIMITED!

3300K	12V CORDS VSR DRILL W/2 BATT, CS & CHR	193
3310K	12V CORDS W/ HANDLE W/2 BATT, CS & CHR	197
3329	9.6V CORDLESS IMPACT DRIVER KIT	194
3500	12V CORDLESS HAMMER DRILL KIT	197
3545VSRK	12V CORDLESS KIT W/2 BATT, CASE	185
3545VSRK	12V CORDS DRILL KIT W/2 BATT & LIGHT	174

OUTRAGEOUS HOLIDAY OFFER
PURCHASE ANY SKIL OR BOSCH TOOL BETWEEN 10:30 & 12:31 PM AND TAKE \$20.00 OFF OF ANY SKIL OR BOSCH PURCHASE OF \$100.00 OR MORE BETWEEN 11:36 AND 3:31 PM. CALL FOR COMPLETE DETAILS!

SKIL

77	7 1/4" WORM DRIVE CIRCULAR SAW	145
77K	77 WORM DRIVE SAW WITH CASE	150
77M	7 1/4" MAGNESIUM WORM DRIVE SAW	164
77MK	77M WORM DRIVE SAW WITH CASE	175
1605-02	BISCUIT JOINER	134
1605-02K	1605-02 W/250 BISCUITS & GLUE BOTTLE	143
2736-04	12V VSR CORDLESS DRILL KIT	147
2736-04K	2736-04 W/12 VOLT LANTERN	157
3409	10" TABLE SAW W/CARBIDE BLADE	186
3409K	3409 TABLE SAW W/CARBIDE BLADE & STAND	209

ITEM	LENGTH	OPEN CAP	OUR PRICE EACH	BOX OF 6
ADJUSTABLE HANDSCREWS				
#0	6"	4 1/2"	11.79	\$7.95
#1	12"	6"	12.50	\$7.95
#2	10"	8 1/2"	14.50	77.85
STYLE 37 2 1/2" THROAT 1/4" X 3/4"				
3705	6"	6.50	32.50	
3712	12"	6.50	35.00	
3718	18"	6.50	37.75	
3724	24"	7.99	42.50	
3730	30"	8.99	47.75	
3736	36"	9.95	53.95	

POW CLAMP FIXTURES				
#50	3/4" BLACK PIPE CLAMPS	7.90		
#52	1/2" BLACK PIPE CLAMPS	6.75		
BOX OF 12 \$72.95				
PONY SPRING CLAMPS - 3201HT 1" - 1.25				
3202HT 2"	1.79	3203HT 3"	3.90	

HITACHI

CRF82	8 1/2" SLIDE COMPOUND MITER	548
C10FC	10" COMPOUND MITER SAW	255
C10FS	NEW 10" SLIDE COMPOUND MITER SAW	745
M12V	3 HP VAR SPEED PLUNGE ROUTER	215
TR45A	18 GA. FINISH NAILER W/CASE	289
NV83A	FULL HEAD CONSTRUCTION COIL NAILER	429
PC05B	3 1/4" PLANNER, 3.4 AMP	92
TR12	3 HP PLUNGE ROUTER	192

INTERNATIONAL TOOL CORPORATION

ALL CHECKS WILL BE HELD 10 BUSINESS DAYS
WE ACCEPT VISA, MASTERCARD, DISCOVER, & AMERICAN EXPRESS
BUSINESS HOURS: MON-FRI 8-5 PM EST, SATURDAY 8-12 EST
2590 DAVIE RD., DAVIE, FLORIDA 33317
FREE FREIGHT & SAME DAY SHIPPING
ON MOST UPS ORDERS OVER \$50 MINIMUM PURCHASE WITHIN THE CONTIGUOUS U.S.A.
FAX US YOUR ORDER AT 1-305-792-3560

1-800-338-3384

GIFT CERTIFICATES AVAILABLE. QUANTITIES LIMITED. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS. PRICES SUBJECT TO CHANGE WITHOUT NOTICE

PORTER-CABLE

Model 9444 - Profile Sander Kit		OUR PRICE \$113.00
109	7/8 HP ROUTER	\$104
310	PRODUCTION LAMINATE TRIMMER	144
314	4 1/2" TRIM SAW	141
339	SPEED BLOCK FINISHING SANDER	59
332	QUICKSAND 5" RNDM ORB W/STKIT PAD	65
332K	332 W/CASE & 100 SHEETS PAPER	94
333	QUICKSAND W/HOOK & LOOP, DUSTLS	74
333K	333 W/CASE & 50 SHEETS PAPER	102
334	QUICKSAND W/STKIT, DUSTLESS	74
334K	334 W/CASE & 100 SHEETS PAPER	102
340	1/4 SHT FIN SANDER W/OUT PU	49
345	SAW BOSS 6" CIRCULAR SAW	104
347K	7 1/4" FRAMERS SAW, 15 AMP WITH CASE	127
351	3" X 21" BELT SANDER	156
352	3" X 21" BELT SANDER W/OUT BAG	162
352VS	3" X 21" BELT SANDER DUSTLESS W/VAR SP	165
361	3" X 24" BELT SANDER W/OUT BAG	157
362	3" X 24" BELT SANDER	189
363	4" X 24" BELT SANDER W/OUT BAG	206
363K	4" X 24" BELT SANDER	199
440	BETTERLEY UNDERSCRIBE TRIMMER	148
444	PROFILE SANDER	85
447	7 1/4" FRAMERS SAW W/BRAKE 15 AMP	137
505	12 SHT FIN SANDER	123
510	CYLINDRICAL LOCK INSTALLATION KIT	138
511	NEW POCKET CUTTER	178
552	PRODUCTION POCKET CUTTER	508
556	BISC JOINER W/CASE & TLT FENCE	137
556K	SAME AS ABOVE W/1000 BISCUITS	157
600K	1 1/2 HP ROUTER W/1/4" & 1/2" COLLETS	194
601K	600 W/CS, EDGE GUIDE, & TEMP GO KIT	189
601	1 1/2 HP 10" HANDLE ROUTER	152
601K	601 W/CASE, EDGE GO & TEMP GO KIT	209
603	PLUNGE BASE ROUTER, 1 1/2 HP	168
603K	SHAPER TABLE W/ 1 1/2 HP ROUTER	222
606	SHAPER TABLE	127
734K	7 1/4" FRAMERS SAW, LEFT SIDED WITH CASE	128

INTERNATIONAL TOOL EXCLUSIVE OFFER

Purchase any Porter Cable power tool and receive either "THE WORLD OF PORTER CABLE ROUTERS" or "THE WORLD OF PORTER CABLE SANDERS" video tape for only \$2.95 (regular price \$5.95)! Each video covers subjects from adjustments & set up, to techniques & accessories to make your tool more versatile & enjoyable to use! Included in each video is a COUPON GOOD FOR \$5.00 OFF of a future Porter Cable accessory purchase from INTERNATIONAL TOOL. Call for complete details!

Panasonic

EY6100EQW	NEW PREDATOR CORDLESS KIT	
	W/KEYLESS CHUCK, 2 IRONMAN BATTERIES, CHARGER & CASE, VSR	209
EY6181CQW	NEW PREDATOR 9.6V CORDLESS KIT VSR W/KEYLESS CHUCK, 22 STAGE CLUTCH W/2 BATT, CASE & 15 MIN CHGR	189
EY6780CQK	9.6V CORNER MASTER W/15 MIN CHARGER, CASE	199

SUPER HOLIDAY SPECIAL
PURCHASE THE EY6100EQW & RECEIVE AN EY5790B 12V CORDLESS LANTERN W/ADJ HEAD & HANDLE ABSOLUTELY FREE!

POWERMATIC

13	6" X 8" EDGE SANDER	644
14	OSCILLATING SPINDLE SANDER	298
15	15" PLANNER	1295
54	6" JOINTER WITH ENCLOSED STAND	574
60	8" LONG BED JOINTER	1685

ALUZ

0241NK	18 GAUGE BRAD NAILER 3/8"-1 9/16" WITH CASE & 5000 NAILS	97
0250NK	18 GAUGE BRAD NAILER 3/4"-2" W/CASE & 5000 NAILS	163
0350NK	15 & 16 GA. FINISH NAILER 3/4"-2" W/CASE & 5000 ASSORTED BRADS	190
0565T	ANGLE FINISH NAILER 1"-2 1/2" WITH CASE & 5000 STAPLES	104
0638P	3/4"-1 1/2" NARROW CROWN STPLR W/CS	179
EZ-1	SHOOTS 1/4", 3/8", 1/2" CRN STAPLES & BRADS, 5/8" CAP, W/CASE & 5000 ASSORTED FASTENERS	97

Makita

6172DWE	7.2V CDS DRILL KIT W/2 BATT	99
6095DWE	9.6V CDS DRILL KIT W/2 BATT	139
DA391DW	9.6V ANGLE DRILL KIT	175
6211DWE	12V KIT W/2 BATTERIES	169
5007NBK	7 1/4" CIRC SAW W/CASE & BLADE	129
LS1011	10" COMPOUND MITER	509
LS1211	12" COMPOUND MITER	839
N1500B	3 1/4" PLANNER	129
BO5001	5" RANDOM ORBIT SANDER	67
DA3000R	3/8" ANGLE DRILL	187

Engle

AM78HC4V	1 1/2 HP COMPRESSOR	\$308.00
----------	---------------------	----------

DELTA

14-650	HOLLOW CHISEL MORTISER	289
17-960	OSCILLATING SPINDLE SANDR ATTCHMT	84
22-540	12" BENCH TOP PLANNER	385
25-710	NEW SHARPENING CENTER	174
28-180	BENCH TOP BAND SAW	157
31-460	4" BELT/1/2" DISC SANDER	127
34-182	TENONING JIG	84
36-250	10" SLIDE COMPOUND MITER SAW	489
37-070	NEW 6" VS BENCH JOINTER	258
40-560	16" SCROLL SAW, 2 SPEED	177
40-640	20" VAR SP SCROLL SAW	295

DEWALT

DW4201	5" RANDOM ORBIT SANDER, PSA	68
DW4210	5" DUSTLS RNDM ORB SANDER, VELCRO	77
DW4301	3" X 21" DUSTLESS BELT SANDER	167
DW4310	3" X 21" DUSTLS BELT SANDER VAR SP	183
DW443	6" BOS SANDER VAR SP, VELCRO	139
DW444	SAME AS ABOVE WITH PSA PAD	139
DW4510	1 1/2 HP ROUTER, 9 AMP	148
DW4615	1 1/4 HP PLUNGE ROUTER, VAR SP	164
DW4625	3 HP HYV DTY PLUNGE RTR, VAR SP	275
DW470	NEW LAMINATE TRIMMER WITH GUIDE	97
DW4820K	BISCUIT JOINER KIT	219
DW4935	14.4V TRIM SAW	146
DW4935K	14.4V TRIM SW KIT W/BAT, CHGR, CS	239
DW4935K2	DW4935K WITH 2 BATTERIES	259
DW4972K2	NEW 12V CORDS KIT W/BATTERY & CASE	188
DW4991K	14.4V CORDS KIT W/BATTERY & CASE	199
DW4991K2	DW4991K WITH 2 BATTERIES	218

DEWALT HOLIDAY BONUS SPECIAL

DW472K5-2	INCLUDES DW472 12V CDS DRILL, DW4930 CORDLESS SAW, 2-1/2 VOLT BATTERIES, CHARGER & CASE	274
DW491K5-3	INCLUDES DW491 14V CDS DRILL, DW4933 CORDLESS SAW, 2-1/4 VOLT BATTERIES, CHARGER & CASE	349

WEN

SUPER SPECIAL! \$188
OSCILLATING TRIANGULAR SANDER INCLUDES CASE & PAPER ASSORTMENT

SENCO

SLP20	BRAD NAILER W/CASE 5/8"-1 5/8" CAP	278
SPN40	FINISH NAILER 1 1/4"-2 1/2" CAP	396
SL520	1/4" CRWN STAPLER, 3/8"-1 1/2" OLESS W/CS	258

RYOBI

AP12	12" PORTABLE PLANNER	388
DT9300SX	10" TABLE SAW W/FREE STAND	529
DC500K	DC500 KIT W/CASE & 5 PC CHISEL SET	65
DS2000K	2 SP DETAIL SANDR W/CS & 12 PC AST	65
HT20VSK	MULTI ROTARY TOOL W/CS & 101 PC AST	57
ML618	18" WOOD MINI LATHE	200
CS8450	OSCILLATING SPINDLE SANDER	156
SC162VS	16" VS SCROLL SAW	164

Milwaukee

0407-1	12V KYLS CDS DRILL KIT W/2 BATT, CS	174
6480	10" MITER SAW	264
6484	10" CMPND MITER SAW W/CARB BLADE	322
6507	VAR SPD SAWZALL W/BLADES & CS	144

freud

TR215	8 1/2" SLIDE COMPOUND MITER SAW	369
JS100	BISCUIT JOINER #164 (AFTER REBATE)	134
TR2000E	3 hp ROUTR WEDGE GUIDE (AFTER REBATE)	185
EB100	EDGE GUIDING SYSTEM	208
EDS132B	13.2V CDRS DRILL KIT W/2 BATT	209
F410	10" X 40T QUIET BLADE	49
F810	10" X 80T QUIET BLADE	74
LM72M010	10" X 24T FPL TOP RIP BLADE	36
LM2M010	10" X 60T CROSSCUT RIP BLADE	45
LM4M010	10" X 50T ATB COMBO BLADE	40
LM5M010	10" X 80T ATB FOR MIRROR FINISH	56
LM7M010	10" X 24T RIP BLADE THIN KERF	39
LM8M010	10" X 60T CROSSCUT THIN KERF	45
LM9M010	10" X 72T TCH NON FERROUS METAL	57
LM2M010	10" X 80T TCH - BEST FOR LAMINATES	50
LM9M010	10" X 80T TCH LAMINATES OR WOOD	67
SD098	8" SAFETY DADO WITH CASE	116
SD058	NEW 8" SUPER DADO SET	168
94-100	CABINET DOOR SET	159

OUR PRICES WILL NOT BE BEAT!

WOOD FACTS

Purpleheart

by Paul McClure



As a young lad interested in cabinetmaking, I used to visit Old Tony's cabinet shop just to watch the gruff, cigar-smoking old craftsman work. One day, while sweeping the floor, I came across a most remarkable piece of wood. Its undulating fiddleback figure was a gorgeous violet hue, tinged with shades of blue. "It's amaranth," Old Tony said, looking up from his work, "you can have it." Later, I learned the wood's common name: purpleheart.

I've treasured that piece of wood for more than 30 years. It was the crown jewel in what was to become my collection of hundreds of unusual woods.

Purpleheart grows in Mexico, Central America and in the northern countries of South America. The tree commonly reaches heights of 100 to 125 ft., with

diameters up to 4 ft. The trunk is often clear of branches up to 50 ft., providing long lengths of knot-free lumber.

Appearance

The heartwood of purpleheart is a rich violet which turns, over time, to a brownish purple. When exposed to weather, the wood turns gray and even black. The sharply demarcated sapwood ranges in color from white to pink with tan streaks and is almost always removed in the country of origin before shipping. The grain, which can be either straight or wavy, is often interlocked, making planing difficult. The wood has a fine, even texture with very small pores.

Workability

Purpleheart is heavy and dense and requires sharp cutters and knives. The wood blunts cutting edges quickly, so using carbide tools is highly recommended. It's best to feed the lumber

slowly through your jointer and planer and to take light passes.

Purpleheart turns cleanly and easily with sharp tools, but it leaves a sticky resin on them, which must be cleaned off with alcohol occasionally. The wood glues well with aliphatic, polyurethane and cyanoacrylate adhesives, and it sands easily. It can be polished to a high luster. The use of screws or other fasteners requires preboring. Purpleheart steam bends moderately well.

Uses

Purpleheart lumber is often used as a furniture accent wood or for boxes, jewelry, and novelties. It's also preferred for billiard cue butts. Architectural applications include flooring and paneling. The heartwood, which is very durable and resistant to chemicals and acids, is even used to make chemical vats. Veneers are used for inlay, marquetry and overlay of furniture and cabinet surfaces. ▲

PURPLEHEART

SPECIES AND COMMON NAMES	<i>Peltogyne pubescens</i> and others—purpleheart, amaranth, violetwood
GROWING REGION	Mexico south to Brazil
SPECIFIC GRAVITY	0.86 to 1.26
DENSITY	52 to 60 lbs. per cubic ft.
WOOD MOVEMENT ¹	Tangential (flatsawn): small ($\frac{7}{32}$ in. per ft.) Radial (quartersawn): very small ($\frac{3}{32}$ in. per ft.)
DURABILITY	Heartwood highly resistant to fungal attack and moderately resistant to insect attack
SUSTAINABILITY	Sustainable at current harvest levels
AVAILABILITY	Hardwood lumber dealers
SIZE: THICKNESSES	4/4 through 12/4
WIDTHS	6 to 12 in.
LENGTHS	8 to 16 ft.
COST: LUMBER	\$4 to \$6 per bd. ft., depending on thickness
VENEER	95 cents per sq. ft.

¹ Indicates wood movement across the grain from 6 to 12 percent moisture content.



PURPLEHEART

VEGA SAW FENCES

ARE SUPERIOR!

LET US SHOW* YOU THE REASONS WHY!

Vega Fences will add unequalled accuracy, productivity, and convenience to your Table Saw ... Professional and Utility models are ideal for Cabinet to Contractors Saws. Accessories are available for greater convenience and productivity. Vega uses only the finest materials and processes combined with thoughtful design.



THE RESULT IS THE FINEST FENCE SYSTEM YOU CAN BUY

Models from \$198. *Call or write for free literature

Vega Enterprises RR3 Box 193 Decatur IL 62526 800-222-VEGA (8342)

READER SERVICE NO. 59

GREG HARKINS

... says **THANKS,**

AW readers. I did not anticipate the national interest in my chairmaking and way of life.

It would be a privilege to share my skills with you.

Classes in building plantation rockers and primitive Mississippi chairs.



GREG HARKINS CHAIRS
(601) 362-4233

Possum Bend Road
P.O. Box 16165
Jackson, MS 39236

READER SERVICE NO. 54

NO GIMMICKS, NO HYPE
Just a Better Product
At a Better Price



- No mixing
- Waterproof
- Extraordinary strength
- Sands & scrapes easily
- Expands as it dries
- 30 Minute open time
- Exterior/Interior use
- Fully guaranteed

Distributor/Dealer inquiries welcome

Tel: (318) 876-2495

Fax: (318) 876-2213

EXCEL

The First Polyurethane Wood Glue in America

The AmBel Corporation, P.O. Box 819,
Cottonport, LA 71327

READER SERVICE NO. 28

Unlimited
Range And
Versatility

The World's Most Perfect Router Joints
Start With Good Phone Skills.

When you phone our toll-free number and order your detail-rich, complimentary 32-page Leigh catalog you're well on your way to a new level of woodworking craftsmanship. The Leigh Dovetail Jigs and growing array of accessories remain the universal benchmark for precision, easy-to-use router joinery tools. And with the addition of the Multiple Mortise and Tenon Attachment and now the NEW F1 Finger Joint Attachment, the ingenious, patented Leigh Jig System sets new standards for quality, versatility and convenience. Do what thousands of serious woodworkers worldwide have done already; call us today.



Call For Your Free 32-Page Catalog Now!

1-800-663-8932

LEIGH

Joining Tradition With Today

Leigh Industries Ltd., PO Box 357, Port Coquitlam, BC, Canada V3C 4K6
Tel. 604 464-2700 Fax 604 464-7404

"Certainly no production workshop should be without one of these, and the serious home craftsman will certainly find great joy in using it."

JOHN SAINSBURY'S ROUTER WORKSHOP

"The Leigh Jig cut through dovetails that looked identical to those cut by hand and fit as if they had been cut by a master."

WOODSMITH MAGAZINE

READER SERVICE NO. 15

AMERICAN WOODWORKER FEBRUARY 1996 71

JUST FINISHING

Strippers

More Than One Way To Take It Off

by Michael Dresdner



Stripper. The very word evokes exotic images of Fifi LaRue and her infamous fan dance, but in reality, stripping a finish is a messy—and potentially hazardous—job.

I can't change that, but I can tell you what to expect from the four main types of strippers and how to use them safely.

Choosing Right

Commercial strippers fall into four main categories based on their primary active chemicals. A look at the label should tell you which category a stripper belongs in. Many companies mix two or more of these basic types to combine their advantages.

1 Methylene chloride (also called dichloromethane or DCM) based strippers are the quickest and most effective of the strippers. DCM is often added to other stripper mixtures to increase their effectiveness. DCM strippers will remove almost any finish, so they're a good choice if you don't know what is on the wood. To make these removers even more effective on tough paints, some manufacturers add an alkali and call the resulting product a "marine" stripper.



Under the sheets. A DCM-based stripper (left) lifts the finish in sheets, while other strippers dissolve the finish from the top down (right).



Brush it on, scrape it off. Stripping a finish is easy, but it can be harmful to your health without good ventilation and protective equipment.

DCM is the only "bottom up" type of stripper—it falls through the finish and dissolves it first at the wood line, causing the film to wrinkle up and come off in large sheets. The other strippers are all "top down"—they turn the entire coating into a gooey mess, layer by layer, starting from the top.

Hazards: DCM is non-flammable, but it is harmful to breathe and harmful to your skin. Wear goggles and neoprene gloves, and work in excellent ventilation. Avoid using it if you have a heart condition. It is highly corrosive to metals—and especially to aluminum—so never put it in an aluminum container. In addition, DCM fumes are heavier than air and can collect on the floor of a poorly ventilated basement, corroding parts of your heating system.

2 MAT (methanol, acetone and toluene) strippers are often called "refinishers." While MATs do not work

well on all paints and varnishes, they will dissolve shellac and lacquer finishes fairly quickly.

Hazards: MATs are very flammable. Be sure to keep away from sparks and flames. They are also harmful to breathe and will dry out your skin. Wear goggles and gloves, and work with good ventilation.

3 Strippers containing NMP (n-methyl pyrrolidone) or BLO (gamma butyrolactone) act more slowly than the first two types, but they'll eventually dissolve shellac, lacquer, varnish, and most paints.

Hazards: NMP formulations are usually non-flammable and are generally less harmful than DCMs. Their fumes are harmful; however, their slower evaporation rate means it takes longer for a dangerous level to build up. Still, you should use goggles and gloves and keep your work area well ventilated.

WHITECHAPEL LTD

FOUR CENTURIES
OF BEAUTIFUL REPRODUCTION
HARDWARE FOR FURNITURE
CABINET AND HOME



BOX 136, 3650 W. HWY 22, WILSON, WY 83014. TEL 307 739 9478
CALL OR WRITE FOR OUR 112 PAGE CAT \$3.00.

READER SERVICE NO. 306

NEW
VIDEO TAPE

AMERICAN MADE, HEAVY DUTY!

DRUM SANDER

THE BEST DRUM SANDER IN THE WORLD!

MODELS FROM 12 TO
37 INCH CAPACITY



It has quality features not
found on other brands. Sand
boards, frames, doors,
veneer, knots, wild grain
perfectly flat and smooth
every time!

Reduce sanding time from
hours to minutes!

Delivers sanding precision
equal to large wide belt
sanders at an affordable
price!

EXCALIBUR MACHINE CORP.
P.O. Box 82
Anderson, MO 64831

ROSS

PLEASE SEND ME A FREE BROCHURE 1-417-223-4031

READER SERVICE NO. 66

JoinTECH

ULTRA PRECISION
WOODWORKING SYSTEMS

IPM™ JOINERY SYSTEMS

This multi-patented system has been recognized by the experts as the *best* and the *easiest* to use to make dovetails and box joints plus, the best, all around patented dovetail incremental fence system you will ever own. Because IPM's accuracy is based upon a fine-threaded chrome lead screw, fine joinery is made easy and accurate cuts assured every time. Micro-adjustability even allows you to move the fence in thousandths of an inch increments.



CABINET MAKER'S SYSTEM™

This one can do it all. All cabinet making operations can be accomplished with this ONE System. JOINTECH'S CabinetMaker's Systems include all the Joinery System components plus our award-winning SmartFence. You don't have to be a master craftsman to build beautiful cabinetry, furniture or even jewelry boxes. Our 48 templates enable you to easily make every type of dovetail and box joint. SmartFence accommodates any cutter in your shop allowing you to make raised panels, rails & stiles, tongue & groove, face frame construction, drawer design, edgework and more. JOINTECH'S CabinetMaker's System is simply the best investment in quality and at a very affordable price.



CALL, WRITE OR FAX FOR A FREE BROCHURE
& SPECIAL INTRODUCTORY OFFER DETAILS!

P.O. Box 790727 • San Antonio, Texas 78279

Toll Free: (800) 619-1288 • Tel: (210) 377-1288 • Fax: (210) 377-1282

SEND, OR CHARGE BY PHONE, \$5.00 FOR A COMPLETE
DEMONSTRATION 35 MINUTE VHS VIDEO BROCHURE

READER SERVICE NO. 23

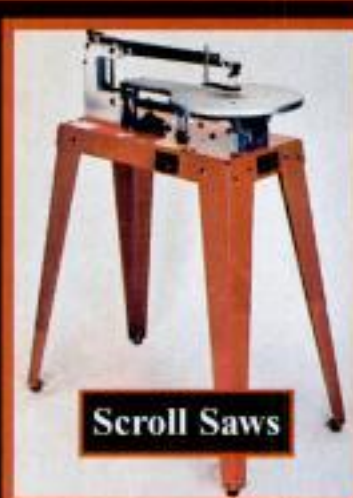
Convert Your Workshop Into A Money Making Machine!

Have you ever dreamed of converting your workshop into a money making machine? With RBI tools, your dream can become reality! Using your RBI Hawk Ultra Precision Scroll Saw, you can turn scrap pieces of wood into profitable craft items. Another possibility is to use your new Universal Woodplaner to take saw-mill cut lumber and turn it into valuable finished stock or expensive hardwood moldings.



Dust
Collectors

Universal Planers



Scroll Saws

Our Hawk 220VS Scroll Saw was picked for **WOOD** magazines - *New, Improved Workshop*
WOOD® Magazine Aug, 1995

Our RBI 812 Planer was rated ★★★★★ for overall performance!
WOOD® Magazine Sept, 1995

r b i industries
The American Tool Manufacturer

Call 1-800-487-2623 for FREE Catalog Today!

5 - Year Warranty
30 Day Money Back
Guarantee

READER SERVICE NO. 19

AMERICAN WOODWORKER FEBRUARY 1996

F126 Copyright, 1995 rbindustries

JUST FINISHING

4 DBE (dibasic ester) strippers are the safest and slowest of the batch. They work best on oil-based paint and varnish but they're not as effective on lacquers. DBEs often contain water, so they may loosen veneers held with hide glue if they're left on for too long.

Hazards: DBE/water strippers are non-flammable and won't generally harm skin. Their ultra-slow evaporation rate allows for less aggressive ventilation. However, some DBEs contain other chemicals, so it's wise to use gloves and to keep your work area ventilated.

There's one finish that seems to defy all of the strippers mentioned here: milk paint. To remove this stubborn coating, mix about a cup of lye into a gallon of water (not the other way around), brush it on and let it go to work. Don't leave it on any longer than necessary; it turns wood into pulp. When the lye solution has eaten off the milk paint, neutralize the wood by washing it thoroughly with a mixture of vinegar and water.

Hazards: Lye is very caustic, so use neoprene gloves, goggles and strong ventilation.

Using the Stuff

Stripper only works while it is still wet with active solvents and in contact with the finish. Some manufacturers thicken stripper so that it doesn't run. They may also add wax, which forms a "crust" to slow the solvent's evaporation. Here's another good way to keep the stuff wet and working:

Brush on about a 1/8-in. layer of stripper with a natural-bristle brush. On large tabletops, I pour some on and spread it with a notched trowel. Then cover the entire piece with polyethylene film, or seal it in a polyethylene bag. This keeps the fumes inside and working. Check it

periodically until the finish is completely dissolved, then squeegee it off with a putty knife with rounded corners. While the surface is still wet, scrub it with some planer shavings to remove residue in the pores, carvings and turnings.

Several visitors to my online chats on Sunday evenings have asked me about my method for washing down a surface after stripping it, so here it is. As soon as the surface is clean (but not yet dry) I use Scotch-Brite™ or a stiff, natural-bristle scrub brush to scrub the wood with lacquer thinner. Then I wipe it down with a dry rag and repeat the procedure with alcohol. The third "wash" is with a half-cup of ammonia in a gallon of warm water. Wipe off the excess and let the wood dry thoroughly. ▲



Join Michael Dresdner live on America Online Sunday nights from 9:30 pm to 10:30 pm eastern time for answers to your finishing questions. From AMERICAN WOODWORKER Magazine Online, click the "Shop Talk" icon to enter the finishing chat room.

BUILD YOUR OWN POWER TOOLS & SAVE!

Gil-Bilt kits include step-by-step plans, full scale patterns, and all the necessary metal parts and components (except wood parts and the motor). Made in America with pride by Gilliom Manufacturing, Inc. since 1946.

For **QUALITY CRAFTSMANSHIP** choose **GIL-BILT** and construct your own:

- ▼ 12-inch Band Saw
- ▼ 18-inch Band Saw
- ▼ 10-inch Tilt/Arbor Saw
- ▼ Lathe/Drill Press Comb
- ▼ 9-inch Tilt Table Saw
- ▼ 6-inch Belt Sander
- ▼ Spindle Shaper
- ▼ Circular Saw Table

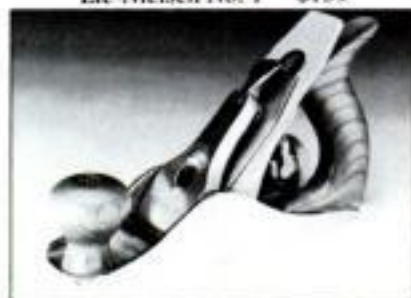
Send \$9 per plan, \$25 for any 4 tool plans, or \$2 for brochure. Satisfaction Guaranteed!

GILLIOM MANUFACTURING, INC.
Dept. AW61, P.O. Box 1018
St. Charles, MO 63302
PHONE (314) 724-1812

READER SERVICE NO. 201

Lie-Nielsen TOOLWORKS INC.

Makers of Heirloom Quality Tools
Route 1, Warren, ME 04864
1-800-327-2520
Lie-Nielsen No. 1 \$159



Free Brochure of Heirloom Quality Tools
READER SERVICE NO. 71

KID'S SIZE FURNITURE PLANS



Our Kid's Computer Desk is just one example of our creative line. This desk grows with your child with just a simple adjustment. As the child gets taller, the desk gets taller. With the desk plan we include a shelf unit and a roll-out printer stand plan.

Order our KID'S COMPUTER DESK today
#250...\$18.00

Send for "KID'S SIZE" Catalog...\$2.00 or
"HOME FURNISHINGS" Catalog, featuring
55 best selling accents...\$3.00

SAVE...ORDER BOTH...\$4.50...Check or M.O. (US Funds Only)

DESIGNER FURNITURE PLANS

179 Davidson Ave. Dept. 47, Somerset, NJ 08873

READER SERVICE NO. 206

Lee Valley

Veritas® Bar Gauge Heads

Simple bar gauges are among the most useful tools in a shop for comparing or transferring measurements. Measuring equal diagonals in a drawer ensures it is square. Transferring a dimension directly, without converting it into numbers, avoids errors. Bar gauges are unequalled for inside measurements such as sizing shelves or interior trim in windows, or can be used as "story sticks" for complex built-ins where nothing is square. Gauge head openings are 1/2" x 3/4". You just rip 1/4" slices off standard lumber to make bars of the length you want. Made of brass and ABS plastic. (Wood is not included.)

05N31.01 Bar Gauge Heads, pr.

To order call:

1-800-871-8158



Lee Valley Tools Ltd. - 12 East River St., Ogdensburg, N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7

\$9.95

or fax:

1-800-513-7885

(Shipping and handling extra;
N.Y. residents add sales tax.)

Our 248-page catalog sent free with order.





**"CALLING ALL
WOODWORKERS!"**

**JET rebates
up to \$100**

when you buy our most popular woodworking tools,
backed by JET's impressive 2-year warranty.

See your local JET dealer today!

*Offer effective Oct. 1, 1995
through Feb. 28, 1996.*

JET
EQUIPMENT & TOOLS

For the name of your local JET dealer, call 1-800-274-6848.



JWB 14CS
Closed Stand
Bandsaw

JWB 14OS
Open Stand
Bandsaw

\$25
Rebate



JWS 18HD
Shaper

\$25
Rebate

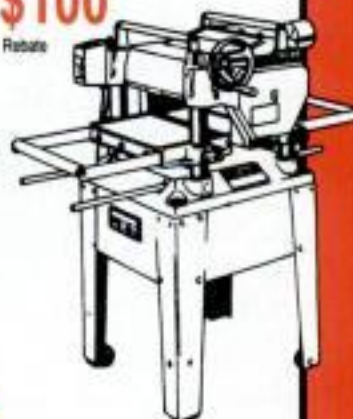
JWP 15HD
Planer

\$100
Rebate



JWP 12
Planer

\$30
Rebate



JPM 13
Planer/Molder

\$50
Rebate

NEW!

DC 1200
Dust Collector

\$25
Rebate

DC 600
Dust Collector

\$20
Rebate



JWL 1200
Woodworking Lathe

\$30
Rebate



JJ 6CS
Joiner

\$30
Rebate



JCS 10/JMCS 10JF
Tablesaw

\$75
Rebate

NEW!



JTS 10/JWTS 10JF
Tablesaw

\$35
Rebate



JDP 17MF
Drill Press

\$30
Rebate

Auburn, WA

TOOLBOX

New Finishes for an Old Look

At a time when many waterborne finishes are touted for their clarity, three new Tried & True Finishes are formulated to recapture the warm amber tones of old-fashioned linseed-oil-based finishes without the petroleum thinners or toxic "driers" found in most modern finishes. Original Wood Finish is a mix of linseed oil and pure beeswax that you can apply as a top coat or to restore old finishes to an antique luster. Varnish Oil is recommended for tabletops or other surfaces that require protection. A penetrating Danish Oil finish is also available. (Price: Original Wood Finish and Varnish Oil, \$19.95 per qt.; Danish Oil Finish, \$9.75 per qt.) *Tried & True Wood Finishes, 14 Prospect St., Trumansburg, NY 14886, (607) 387-9280. Circle #605*



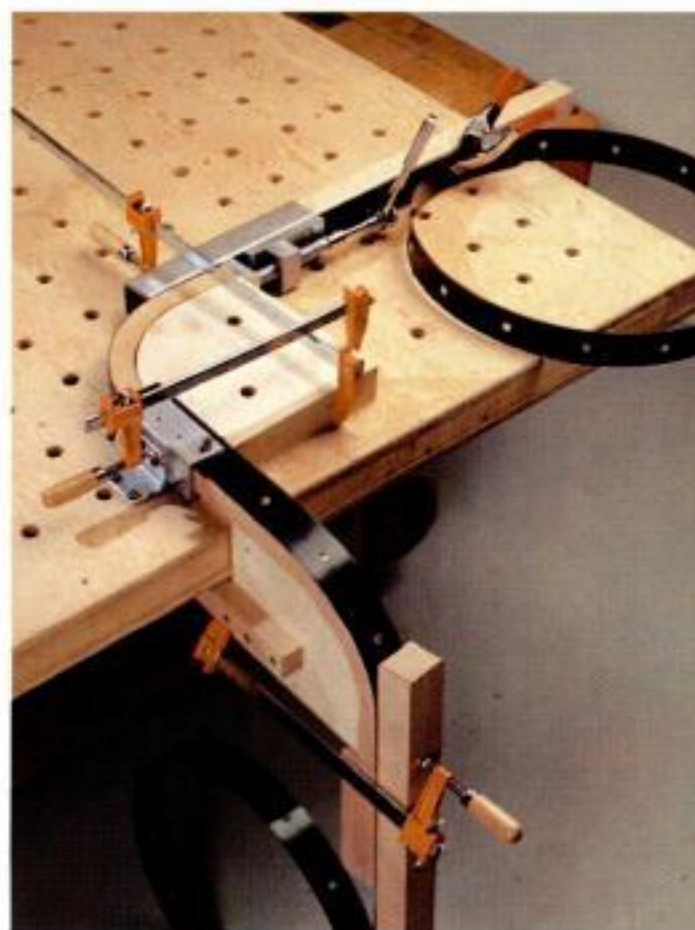
Combo Bandsaw and Sander

Tradesman's unique new 8130 bench-top three-wheel bandsaw doubles as a 77/8-in.-dia. disc sander, complete with a dedicated tilting work table. The sander spins at 1,750 rpm and takes hook-and-loop-type sanding discs. To ensure safe operation, a crescent-shaped guard covers the disc while you're using the bandsaw. The saw has a 15-in. throat capacity; resaw capacity is just over 6 9/32 in. The 8130 is powered by a 3/4-HP direct-drive motor. Standard equipment includes a dust collection port, miter gauge and rip fence. Ball-bearing blade guides and a circle cutting jig are optional. (Price: \$499.95) *Power Tool Specialists, Dept. AWT, 3 Craftsman Rd., East Windsor, CT 06088, (203) 654-1761. Circle #606*



Steam-Bending Kit

Veritas has developed a set of components for steam bending. The basic kit consists of a 10-ft.-long strap clamp (sold in two widths), an adjustable end stop, and bolts to use when making your own fixed end stop. The strap and stops help to keep wood fibers on the outside of a bend from failing. Optional specialty items for steam bending are also available: clamps to hold the wood where it makes a transition for compound bends, a special electric kettle for generating steam, and a block and tackle with special fittings to help bend wood pieces. Contact Veritas for a free brochure describing the kit. (Price: basic kit, \$54) *Veritas Tools Inc., Dept. AWT, 12 East River St., Ogdensburg, NY 13669, (800) 667-2986. Circle #607*



Micro Fence Gets Circle Jig

Micro Fence has introduced a Circle Jig Attachment for its micro-adjusting aftermarket router fence. The new attachment lets you cut circles and curves (6 in. to 48 in. dia.), with the same precision and repeatability as the original Micro Fence. (See "Toolbox," AW #44.) (Price: as Micro Fence accessory, \$79; as independent tool, \$98; Micro Fence and Circle Jig together, \$198) *Micro Fence, Dept. AWT, 11100 Cumpston St., #35, North Hollywood, CA 91601, (800) 480-MICRO. Circle #608*

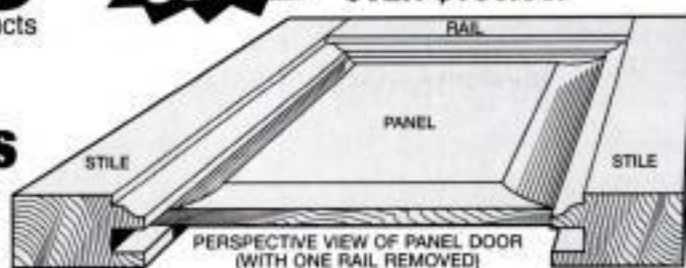


SAVE 55% REGULAR VALUE OVER \$150.00!

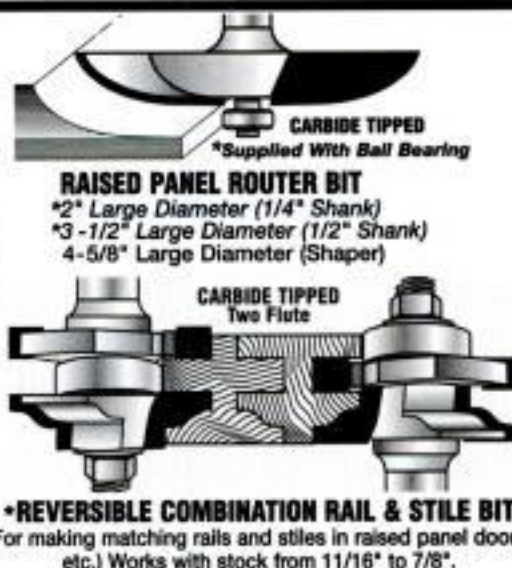
Make Beautiful Raised Panel Doors

with your 1/4" or 1/2" Router, or with your 1/2" or 3/4" Shaper.

Professional production quality router bits and make it quick and easy to produce matching rails and stiles. The panel raising bit with ball bearing guide makes the raised panel perfect every time!



SIZE & FORM	ITEM #	PRICE/SET
1/4" Shank Router	#1301	\$69.95
1/2" Shank Router	#1302	\$79.95
1/2" Shaper	#1303	\$99.95



• PROFESSIONAL PRODUCTION QUALITY GUARANTEED

1/4" SHANK CARBIDE TIPPED ROUTER BITS

FREE SHIPPING IN CONTIGUOUS USA

ROUND OVER BITS

- #1314.....\$11.00
(1/8" Radius)
- #1315.....\$11.00
(3/16" Radius)
- #1394.....\$13.00
(1/4" Radius)
- #1316.....\$14.00
(5/16" Radius)
- #1369.....\$15.00
(3/8" Radius)
- #1370.....\$17.00
(1/2" Radius)

TONGUE & GROOVE BITS

- #1333.....\$29.00
Straight
- #1335.....\$29.00
Wedge

FLUSH TRIM BITS

- #1337.....\$8.50
3/8" Diameter, 1" Cutting Length
- #1338.....\$9.50
1/2" Diameter, 1" Cutting Length

PATTERN/FLUSH TRIM

- #1340.....\$15.00
1/2" Diameter, 1" Cutting Length
- #1341.....\$17.00
3/4" Diameter, 1" Cutting Length

Ogee Raised Panel Bit

- #1353.....\$29.95
2" Large Diameter

BULL NOSE BITS

- #1330.....\$16.00
1/2" Dia. of Circle
- #1331.....\$21.00
3/4" Dia. of Circle

QUANTITY DISCOUNT!

When ordering three or more bits deduct \$1.00 each!

45° CHAMFER BITS

- #1404.....\$14.00
1" Lrg Diameter, 3/8" Cutting Lngth
- #1405.....\$16.00
1 1/2" Lrg Diameter, 5/8" Cutting Lngth
- #1406.....\$22.00
1 3/4" Lrg Diameter, 1" Cutting Lngth

ROMAN OGEE BITS

- #1415.....\$18.00
5/32" Radius
- #1416.....\$20.00
1/4" Radius

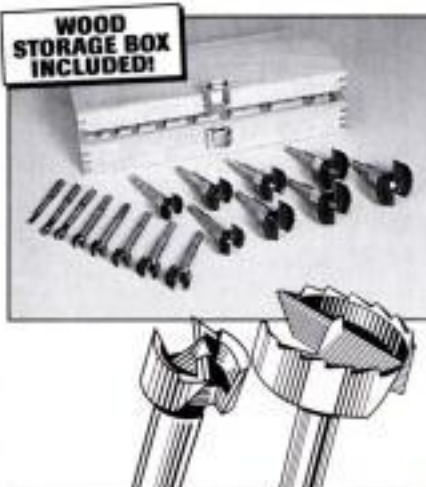
14° DOVETAIL BITS

- #1409.....\$7.00
1/2" Large Diameter
- #1410.....\$9.50
3/4" Large Diameter

RABBETING BITS

- #1411.....\$15.00
3/8" Depth, 1/2" Height, 1 1/4" Lrg. Diameter
- #1412.....\$17.00
1/2" Depth, 1/2" Height, 1 1/2" Lrg. Diameter

TECHNICAL HELP & EXPERT ADVICE • CUSTOMER SERVICE BEFORE & AFTER SALE • FREE 40 PAGE CATALOG



FORSTNER BIT SETS FOR PERFECT HOLES

Forstner bits are designed to drill flat bottom or through holes cleanly in end grain, thin stock, veneers & regular stock. Comes with it's own attractive wooden box.

- 7 PIECE SET**
Reg. \$40.65 Sale \$22⁹⁵
Item #1417, 1/4" TO 1", in 1/8" increments
- 16 PIECE SET**
Reg. \$141.20 Sale \$59⁹⁵
Item #1418, 1/4" TO 2-1/8", in 1/8" increments
- 24 PIECE SET**
Reg. \$298.80 Sale \$169⁹⁵
Item #1419, 1/4" TO 3-1/8", in 1/8" increments



ROUTER SPEED CONTROL

CONTROLS THE SPEED OF YOUR ROUTER! Gets the best results with the wood and bit you are using!

- Works with all routers 3-1/4" HP or LESS - 120V 15 Amp
- Full horsepower and torque at all speeds
- Gives your router a feature only available on routers costing hundreds of dollars!

Reg. \$49.95 SALE \$34⁹⁵
Order Item #1304



25 PIECE BRAD POINT DRILL BIT SET

Drill accurate holes in wood, plastics & composites.

Bit sizes from 1/8" to 1/2" by 1/64" increments. Bits are deep fluted to clear chips quickly.
Reg. \$34.95 ... SALE \$18⁹⁵
Item #1413



22 pc TAPERED DRILL BIT SET

For exceptional thread "bite". Includes sizes 5, 6, 7, 8, 9, 10, 12, seven matching countersink heads with adjustable stop collars, & Allen key.

Item #1414 Reg. \$34.95 SALE \$22⁹⁵



BISCUIT JOINING SET

5/32" Slot Cutter- 1/4" Shank & 250 #20 Biscuits
"Biscuit Joining with your Router", Instructional sheet included.

Reg. \$35.00 ... SALE \$29⁹⁵
Order Item #1385

To Order By MasterCard, VISA, Discover, or American Express
CALL TOLL-FREE, 7 DAY - 24 HOUR ORDER SERVICE
Or Send Check To: MLCS, Ltd., P.O. Box 4053 AZ, Rydal, PA 19046

1-800-533-9298

Double-Drum Sander

With Enlon's new EN-3409 Dual Drum Sander, you can make a single pass through the machine and surface with two abrasive grits. In another mode, you can put the same grit on each drum, and use a reversing switch to run work through the sander first in one direction, then the other, saving stock-handling time.

There are two feed rates: 11 ft. and 17 ft. per minute. The new sander's rubber rollers will handle stock up to 24 in. wide and accept standard 4-in.-wide, spiral-wrapped abrasive paper. (Price: \$950) Enlon Import Corp., Dept. AWT, 17709 East Valley Blvd., City of Industry, CA 91744, (800) 888-9697. **Circle #609**



Stitching Veneer Joints

Tired of fussing with veneer pins and tape to edge-join veneer? Try the Kuper Veneer Stitcher. To use the tool, align two joining pieces of veneer with their glue sides facing up. Roll the stitcher along the seam. Two angled rollers pull the joint tight while gluing a zig-zag pattern of fine fiberglass thread across the seam. Then glue the sheet to your substrate. The thread is too fine to telegraph through the veneer. (Price: \$605) Vacuum Pressing Systems, 553 River Rd., Brunswick, ME 04011, (207) 725-0935. **Circle #610**



DELTA TOP-TURN 46-860 LATHE by Stephen H. Blenk

If you've outgrown your lathe and are aiming to move up to a larger, heavy-duty model, I'd suggest taking a look at Delta's new Top-Turn 16-in. lathe.

The Top-Turn's list of standard features and equipment will impress any experienced turner. The modular cast-iron bed is one of my favorites. With its two standard interlocking bed sections, the lathe holds 38 in. between centers. But it's easy to add more interlocking modules. It took me just 30 minutes to expand bed length to nearly 5 ft., and the lineup was flat and accurate. Factor in the optional outboard turning setup that's made to handle work up to 31 in. dia., and you have a machine with impressive capacity.

Six-inch and 12-in. tool rests are standard, and the rest holder is long enough to make use of the lathe's full 16-in. swing. Posts are long enough to let you work high above center when necessary.

The 24-point shaft indexing feature is to be expected, but Delta added an automatic release on the indexing pin. Close the headstock cover and the pin disengages automatically.

The standard 3-in. and 6-in. faceplates are left- and right-hand tapped for use on inboard or outboard sides, and the accessory outboard table can do double duty as an 8-in. bed extension. Other standard features include a high-quality live center, two heavy-duty arbor wrenches, a knockout bar and a good



Turning heads. Delta's Top-Turn lathe lives up to its name: It's a high-end machine designed for the serious turner.

spur center. And the machining on this lathe is excellent.

The Top-Turn is powered by a 1½-HP, 220-volt motor, and has a five-speed step-pulley drive (350 to 3,000 rpm). Speed changes are all made from the top of the headstock. I appreciated not having to bend down to the motor cabinet to change speeds. According to Delta, a Top-Turn with DC variable speed will be available soon.

As you might expect, the Top-Turn isn't cheap, with a street price around \$3,200. The bed module extensions, which come with stand and shelf parts, will run you over \$600 each. Despite the cost, this new lathe is bound to be popular with experienced turners who can appreciate its thoughtful design and quality components. If you want a more capable lathe, you'll have to build it yourself. (List price: \$3,687) Delta International Machinery Corp., Dept. AWT, 246 Alpha Dr., Pittsburgh, PA 15238, (800) 438-2486. **Circle #611**

**SHOP
TESTED**



Restorer's Cat's Paw

This Japanese tool is ideal for easing apart cabinets in repair work without marring the wood. Until you have used this tool, it is difficult to appreciate its versatility. Removing molding, separating miter joints in frames, and easing off paint-seized hardware are just a few examples. At 8" long, it is easy to carry or store. Excellent tool value.

60K21.06 Restorer's Cat's Paw \$12.95

To order call: **1-800-871-8158**

(Shipping and handling extra; N.Y. residents add sales tax.)

or fax: **1-800-513-7885** Our 248-page catalog sent free with order.

Lee Valley Tools Ltd. - 12 East River St., Ogdensburg, N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7



SHAKER-INSPIRED FURNITURE WORKSHOPS

A Woodworker's Dream

Experience a one-week workshop where you learn to build Shaker-inspired furniture with one of our finest craftsmen. One-on-one instruction in a superb shop located in a restored Shaker village. See FW, May, '93 for profile. Call for details.

DANA ROBES WOOD CRAFTSMEN

Lower Shaker Village, PO Box 707-AWW
Enfield, NH 03748 800-722-5036

READER SERVICE NO. 65

CONVERSION KITS CUT COST!



Band Saw Guide Conversion Kits for Delta 14" and 20", Mini-Max 18", Grizzly 16" & 18" and other saws 14"

Carter

and larger start at \$129.00!
Send \$1.00 for Brochures.

PRODUCTS COMPANY, INC.
437 Spring St., NE, Grand Rapids, MI 49503
(616) 451-2928 / FAX: (616) 451-4330

READER SERVICE NO. 162

FREE BROCHURE

Cut costs, boost production: Ready-to-finish furniture legs.



SAVE TIME

In stock for fast delivery.

SAVE MONEY

Fully mortised and sanded.

18 CLASSIC STYLES AND SIZES.

Aprons & Stretchers
Expert Advice

To order call
802 748-9378

Money-back guarantee

Box 279-B1, Danville, VT 05828

Classic Designs by MATTHEW BURAK

As seen in American Woodworker #45

READER SERVICE NO. 40

PORTER-CABLE PROFESSIONAL POWER TOOLS



ITEM#	DESCRIPTION	PRICE
330	Speed block 1/4 sht. Finish Sander	\$ 60
9052VS	3 x 21 Belt Sander, w/dust bag & steel case	\$169
362	4 x 24 Belt Sander, w/dust bag	\$205
410	Bettermix™ Underscribe Trimmer	\$149
444	"New" Profile Sander-tool only	\$ 88
9444	Same as above but with case & access.	\$114
447	7 1/4" Saw - 15 amp w/electric brake	\$138
843	"New" #447 Saw w/blade on left side	\$138
505	1/2 Sheet Sander	\$120
550	Pocket Cutter Kit w/steel case	\$179
556	Plate Joiner Kit, 8ft fence, case	\$138
690	1 1/2 hp Router-10 amp	\$138
691	1 1/2 hp D-handle Router - 10 amp	\$150
5116	18" OMNIJIG® Dovetail Machine	\$258
7116	24" OMNIJIG® Dovetail Machine	\$294
7310	Laminate Trimmer 5.6 amp	\$ 95
97355	5" HD Ran. Or. Sander-case, dust kit	\$152
97366	6" HD Ran. Or. Sander-case, dust kit	\$158
7499	"New" Cutout Tool-3.4 amp	\$ 69
7536	2 1/2 hp Router - production base	\$203
7539	3 1/4 hp Plunge Router, V/S, 15 amp	\$269
7549	Top Handle Bayonet Saw, 4.8 amp	\$134
7700	10" Miter Saw w/ LASERLOC®	\$339
7800	"New" Drywall Sanding Unit	\$327
7810	"New" Professional Vacuum System	\$248
9840	Cordless Drill Kit, 9.6 V, 2 Batteries	\$160
98535	Cordless Drill Kit, 12V, 2 batt.	\$167
97310	Trim Kit, case and 4 bases	\$197



ITEM#	MODEL	DESCRIPTION	PRICE
1660	DW421	5" Palm R.O. Sander w/dust	\$ 79
1610	DW431	3" x 21" V/S Belt Sander	\$184
1625	DW318K	Top Handle Jigsaw w/case	\$151
1628	DW306K	Recip. Saw V/S w/case	\$159
1650	DW610	1 1/2 HP Router	\$149
1652	DW615	1 1/4 HP V/S Plunge Router	\$159
1655	DW625	3 HP V/S Plunge Router	\$274
1425	DW675K	3 1/8" Planer w/case	\$159
1264	DW682K	Biscuit Joiner Kit	\$219
1085	DW962K-2	9.6V Cordless V/S Kit, 2-batt.	\$179
1088	DW972K-2	12V Cordless V/S Kit, 2-batt.	\$189
1091	DW991K	14.4V Cordless, 1-batt.	\$199

OTHER TOOLS AVAILABLE FROM STOCK.

BUY RIGHT THE FIRST TIME, BUY... BRIDGEWOOD®

WILKE MACHINERY COMPANY MACHINERY POWER TOOLS

TROUBLE FREE, WIDE BELT SANDERS



Compare These Direct-To-You Prices!

Model	Feed Rate	Size	Your Special Price!
BWS-15	1-speed, 15.4 fpm	15"	\$4,295 - \$3,595.
BWS-25	2-speed, 15 & 30 fpm	25"	\$7,195 - \$6,695.
BWS-37	2-speed, 15 & 30 fpm	37"	\$10,395 - \$9,995.
BWS-37-2*	Variable, 9 to 49 fpm	37"	\$20,195 - \$15,995.

*COULBE HEAD
Shipped FOB, York, PA. Prices subject to change without notice.

TO ORDER, PHONE TOLL FREE:
1-800-235-2100

A Great Companion
for Your Wide Belt Sander!

BRIDGEWOOD® DUST COLLECTOR

4-bag unit • 1836 CFM 50.3 gal./bag capacity
3 hp 1 ph or 3 ph 220V Motor • Dolly Cart Base
One 8" or four 4" dust collection hose inlets.

BW-003A Only \$479 additional!

VISIT OUR SHOWROOM:

One block west of I-83 exit 11.

Hours:

Monday through Thursday 8 am - 5 pm,
Friday 8 am - 7 pm,
Saturday 9 am - noon.

COMPARE THESE FEATURES:

Superior automatic air tracking and unique oscillating belt motion. Operating controls up front easily reached.



MODEL BWS-25
ILLUSTRATED

WB25-10/95

TO RECEIVE A CATALOG FAST, SEND \$2.00 TO:

WILKE MACHINERY COMPANY

3230 Susquehanna Trail, York, PA 17402

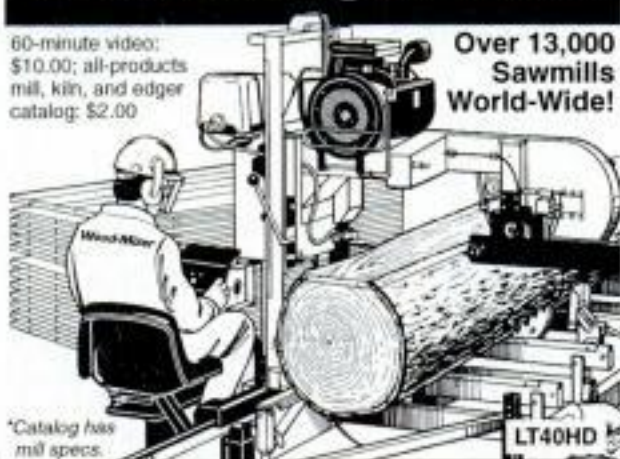
FOR TECHNICAL SERVICE CALL: 1-717-764-5000

READER SERVICE NO. 301

AMERICAN WOODWORKER ■ FEBRUARY 1996 79

MAKE YOUR OWN beams, 2-sided logs, and framing lumber!

60-minute video:
\$10.00; all-products
mill, kiln, and edger
catalog: \$2.00



Over 13,000
Sawmills
World-Wide!

*Catalog has
mill specs.

LT40HD

Wood-Mizer® PORTABLE SAWMILLS

- Saw trees up to
36" dia. x 21 ft. long* on site.
- Optional hydraulic log handling
(LT40 and LT30 models).
- LT25 mills w/o trailer from:

\$6995!
1-800-553-0219

Wood-Mizer Products, Inc.
8180 West 10th Street Dept. AW26
Indianapolis, IN 46214-2400

READER SERVICE NO. 202

STEVE WALL LUMBER CO.

LUMBER	SIZE	GRADE	BOARD FOOT*	UPS SPECIALS**
Ash	4/4	Select	\$2.15	\$69.00
Basswood	4/4	Select	\$1.70	\$55.00
Birch	4/4	Select	\$2.25	\$71.00
Butternut	4/4	1C	\$1.85	\$61.00
Cedar (Aromatic Red)	4/4	1C+Btr.	\$1.55	\$58.00
Cherry	4/4	Select	\$3.15	\$85.00
Cypress	4/4	Select	\$2.10	\$66.00
Hickory-Pecan	4/4	Select	\$1.80	\$63.00
Mahogany(Genuine)	4/4	Select	\$3.15	\$88.00
Maple (Hard)	4/4	Select	\$2.35	\$73.00
Maple (Soft)	4/4	Select	\$1.80	\$61.00
Poplar	4/4	Select	\$1.55	\$56.00
Red Oak	4/4	Select	\$2.35	\$72.00
Walnut	4/4	Select	\$3.00	\$87.00
White Oak	4/4	Select	\$2.30	\$71.00
White Pine	4/4	F.G.	\$1.10	\$47.00
Yellow Pine	4/4	Clear	\$1.55	\$57.00

*100' quantities of kiln-dried rough lumber sold by the board foot. FOB Mayodan, NC. Call for quantity discounts. Other sizes & grades available. **20 board feet bundles of clear kiln-dried lumber 3'-10" wide, 3'-7" long (random widths & lengths). Surfaced 2 sides or rough. Delivered UPS prepaid in continental U.S. SEND \$1.00 FOR LUMBER CATALOG.

Box 287, Mayodan, NC 27027 • (910) 427-0637 • (800) 633-4062 • FAX (910) 427-7588

READER SERVICE NO. 161

Custom Raised
Panel Doors.
Call for quotes.

Quality Hardwoods
& Woodworking
Machinery for
the Craftsman &
Educational
Institutions

Free Workshops • Prizes • Hundreds of Products • Seminars by Mastercraftsmen

See the Widest
Variety of
Woodworking
Products All
Under One Roof!!



★THE
WOODWORKING
SHOWS★
tools • supplies • education

FREE
BROCHURE!

VISIT THE SHOW NEAR YOU!

- | | | | | |
|---------------|-------------------|------------------|------------------|--------------------|
| • Albuquerque | • Delaware Valley | • Las Vegas | • Omaha | • Seattle |
| • Atlanta | • Denver | • Massachusetts | • Phoenix | • So. California |
| • Baltimore | • Detroit | • Memphis | • Pittsburgh | • St. Louis |
| • Buffalo | • Harrisburg | • Milwaukee | • Portland | • Tampa |
| • Charlotte | • Houston | • No. California | • Quad Cities | • Twin Cities |
| • Chicago | • Indianapolis | • North Jersey | • Salt Lake City | • Washington, D.C. |
| • Columbus | • Kansas City | • Oklahoma City | • San Diego | • plus others! |

Call for free brochure Monday - Friday 8:30 am - 5 pm Pacific Time
1-800-826-8257 or 310-477-8521

READER SERVICE NO. 51

Powerful Thinking



Call today
for a
FREE video.

Powerful thoughts bring powerful results. Watch our free demonstration video on the Robland X31 combination machine and you will see the powerful thought process that has gone into the design of this Belgian success story. Every woodworker's dream, combine:

- 12" Jointer/Planer
- 10" table saw
- Cast iron sliding table system
- 3, 3HP motors (German)
- 50" rip capacity
- 20 seconds to change functions
- Mortiser
- Shaper

Put the power in your hands today. Call (800) 234-1976, for your free demonstration video.

LAGUNA TOOLS

2265 Laguna Canyon Rd., Laguna Beach, CA 92651 • FAX (714) 497-1346

READER SERVICE NO. 24

SHAKER CHAIR KITS

An exciting collection of Shaker chairs, tables, clocks and other furniture available in kits or completely finished. All exemplify the simplicity and versatile beauty of Shaker design. Pegs, pegboard, Shaker baskets and oval boxes. Large selection of replacement chair tapes.



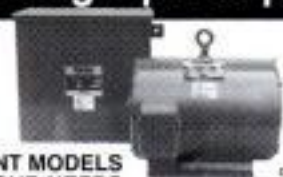
New color Catalog \$1.00

SHAKER WORKSHOPS

Box 8001-AW16, Ashburnham, MA 01430
1-800-840-9121

READER SERVICE NO. 171

Operate 3-phase shop motors from single-phase power



DIFFERENT MODELS
TO FIT YOUR NEEDS

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

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

Ph. 1-800-221-RONK, Ext. 207

RONK
ELECTRICAL INDUSTRIES, INC.

P.O. Box 160, Dept. 207 • Niles, IL 62075 • Ph. 217/563-8333, Ext. 207 • Fax 217/563-8336

READER SERVICE NO. 77

ROUTING SECRETS

They Never Tell You in Your Router's Instructions!

The simple truth is that most woodworkers use only a fraction of their routers' capabilities. ROUTING AND SHAPING shows you how to:

TRIPLE THE VERSATILITY OF YOUR ROUTER!

Once you discover these professional secrets, you'll have the power to cut perfect dados, grooves and rabbets with your router! Making ornamental legs will be a cinch! You'll be routing perfect circles... making flawless mortise-and-tenon joints... routing boxes from solid wood... and more!

PLUS PLANS FOR 21 TIME- AND WORK-SAVING JIGS

You'll also get step-by-step instructions, detailed plans and up-close photos for building 21 jigs including an overhead routing jig... a dove-tail spline jig... a router jointing jig... a router mortising jig... and many others!

PLUS 5 COMPLETE PROJECTS TO TEST YOUR NEW SKILLS!

You'll find plans for a colonial keeping box... a full-featured router table... an elegant routed box... a decorative candlestand... and a versatile jointmaking jig.

Introducing THE WORKSHOP COMPANION™ Series

ROUTING AND SHAPING is your first volume in the most complete and most comprehensive series of woodworking books Rodale Press has ever published: THE WORKSHOP COMPANION: Techniques for Better Woodworking.

Every Volume Is Like Having A Master Craftsman At Your Side!

Each volume in THE WORKSHOP COMPANION focuses on a different skill, technique or tool. Whenever you have a

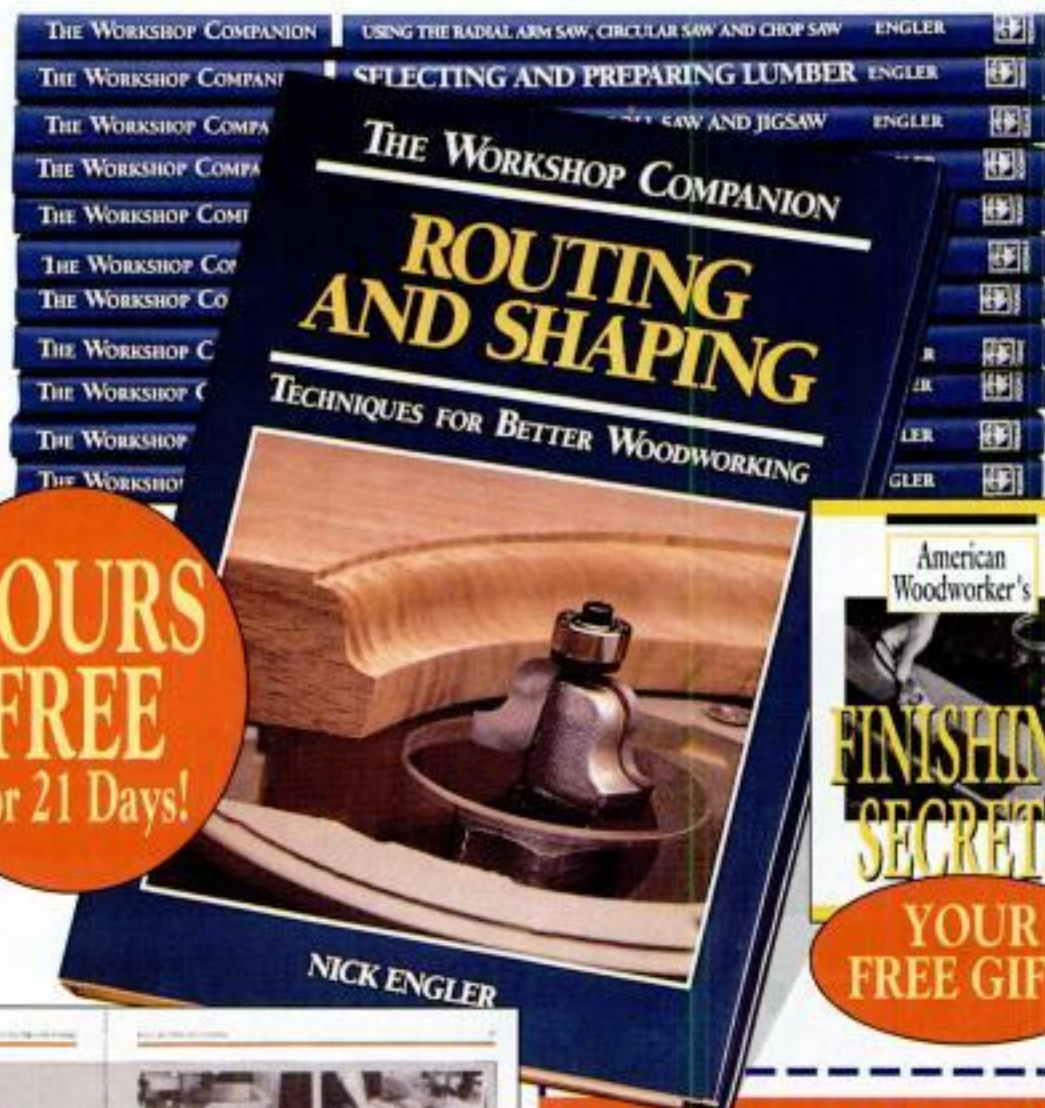
YOURS FREE
For 21 Days!

- Step-by-step instructions
- Easy-to-follow diagrams
- Clear, detailed photographs
- Hundreds of hints and tips

question, simply turn to the appropriate volume, and the answer you need is there, complete with easy-to-understand step-by-step diagrams, photos and instructions!

FREE GIFT: American Woodworker's Finishing Secrets

Finally—everything you wanted to know about achieving a perfect finish every time! Jam-packed with the latest information and the best techniques from finishing experts.



TRY IT FREE FOR 21 DAYS!

YES! Send me a FREE finishing guide. Also send me ROUTING AND SHAPING to shop-test free for 21 days. If I choose to keep the book, I'll pay \$16.95 (\$19.95 CDN funds plus GST), plus postage and handling. Then, every other month, I'll be entitled to preview a new volume in THE WORKSHOP COMPANION series, also for 21 days FREE. I'm never obligated to buy any book, and I may cancel at any time. If I decide not to keep ROUTING AND SHAPING, I'll return it within 21 days and no other books in the series will be sent. The finishing guide is mine to keep no matter what.

C402220

NAME (First) (Last)

ADDRESS APT. #

CITY

STATE ZIP

SEND NO MONEY NOW. THIS IS A FREE-TRIAL OFFER!

Clip and mail this coupon to:
THE WORKSHOP COMPANION,
c/o Rodale Libraries, P.O. Box 10848,
Des Moines, IA 50336-0848

CN10105

SAND CONTOURS!

Pneumatic Drum/Brush Head Sander



Model DB-612
Made In U.S.A.

FREE INFORMATION!

Sand-Rite Manufacturing Co. **800-521-2318**

An Industry Leader Since 1942

VISA MASTERCARD FAX: (312) 997-2407

READER SERVICE #47

RIP AW

The Portable Sawmill.

The "affordable portable" one man band sawmill. Weighs only 45 lbs. Cuts 20" diameter logs into lumber. Minimum 1/8" to maximum 9" thickness. Write or call for free brochure. Video also available.



Better Built CORPORATION
(508) 657-5636
845 Woburn Street, Suite 3, Dept. AW02, Wilmington, MA 01887

MC / VISA / DISCOVER

READER SERVICE NO. 63

FREE! OUR NEW 1995-96 WOODWORKER'S CATALOG

Over 6000 products to **BUILD, REPAIR, RESTORE, REFINISH** anything made of wood!

It's the catalog woodworkers rely on—120 pages jam-packed with fine woods, veneers, tools, finishing supplies, and much more—all top quality, all reasonably priced, all with our 60-day no-questions-asked guarantee.



CONSTANTINE
Serving Woodworkers Since 1812
2050 Eastchester Rd., Dpt. 40601, Bronx NY 10461

Call TOLL FREE 1-800-223-8087

READER SERVICE NO. 62

Like Having A Lumberyard Right in Your Shop!



NOW! Plane, Mold, Sand & Saw ... with Infinitely Variable Power-Feed!

Put this versatile power-feed tool to work in your own shop. See how fast it pays for itself! Quickly converts low-cost rough lumber into valuable finished stock, quarter-round, casing, base mold, tongue & groove... all popular patterns... even custom designs!

NEW! Variable Feed Rate

Now, just a twist of the dial adjusts your planer from 70 to over 1000 cuts-per-inch! Produces a glass-smooth finish on tricky grain patterns no other planer can handle. Converts to Drum Sander or Gang Rip Saw in under five minutes.

FREE FACTS! **1-800-821-6651, ext. PY29**
Woodmaster Tools, Inc., Dept. PY29
1431 N. Topping Ave., Kansas City, MO 64120

Some dovetail jigs promise you everything...

The Keller Dovetail System only promises what it can deliver.

Fast setup. No test cuts. Precision joinery. Unlimited widths. Classic and variable spacing. Compound, acute and obtuse angles. Curved dovetails. Box joints. Made in USA since 1976. 20-yr. warranty. 30-day money-back guarantee.

"Your best choice. It's the easiest of all the jigs to use and great for production use."
— *Woodworker's Journal*

VIDEO: \$8.95 + \$2 P/H

To find out more, contact your Dealer or



KELLER & CO.
1327 T Street, Dept. R16
Petaluma, CA 94952
1-800-995-2456
707-763-9336

Keller Dovetail System
Simple. Fast. Accurate. Enjoyable!

READER SERVICE NO. 41

41 Years of Service

The Woodworkers' Store

Hardware, Wood, Tools & Know How

Q: Where can I find a rust resistant **Heavy Duty Glider Hinge**?



A: Try page 78 of our new full color catalog featuring over 4000 hard to find products for woodworkers... and it's **FREE!**



Call 1-800-403-9736 Today!

FREE! CATALOG



Dept. 53016

READER SERVICE NO. 50

THE AMERICAN WOODWORKER AD GUARANTEE

We guarantee
your satisfaction with
AMERICAN WOODWORKER
advertisers.

If you have a problem with a
product or company advertised in
AMERICAN WOODWORKER, and
you can't settle it satisfactorily
with the advertiser, write to us
and we'll help you resolve it.

Write to:

AMERICAN WOODWORKER

Ad Action Line

33 E. Minor St.

Emmaus, PA 18098

or FAX us a letter at:

(610) 967-7692

Lee Valley

Watchmaker's Cases

Originally made to store gems, watch movements and jeweler's findings, these glass-topped aluminum containers are ideal for organizing any small parts in a shop. Also handy for beads, bugs, buttons, or anything else small. Everybody in the family could use them. Set of 44 includes twenty 1 1/4" dia. containers in an aluminum case, twelve 1 5/8" and twelve 2 1/8" in pasteboard boxes. Excellent containers at superb prices.

27K21.01 Set of 44 Containers \$9.95



To order
call:

1-800-871-8158



Lee Valley Tools Ltd. - 12 East River St., Ogdensburg N.Y. 13669 - 1080 Morrison Dr., Ottawa, Canada K2H 8K7



(Shipping and handling extra; N.Y. residents add sales tax.)

or fax:

1-800-513-7885

Our 248-page catalog
sent free with order.

Quality Kiln Drying

It's Easy and Affordable
with a Nyle DH Kiln!

Call today for
FREE FACTS on
our L-Series
dehumidification
kilns.



800-777-NYLE U.S.A. MADE

- ◆ Made for small operations
- ◆ Compact and easy to operate
- ◆ Unbeatable power and quality

FINANCING AVAILABLE



FREE BOOKLET
Call Today!

P.O. Box 1107 Bangor, ME 04402-1107 USA

READER SERVICE NO. 73

Lion Miter
Trimmer

A good miter
is hard to find...

now you
know where
to look!



Made in New England

POOTATUCK CORPORATION

P.O. Box 24 • Dept. AW196
Windsor, VT 05089 • 802/674-5984

Name _____

Address _____

Zip _____

READER SERVICE NO. 74

WOOD PARTS FROM MIDWEST DOWEL WORKS

Compare Our Low Prices!

	Qty.	Cost
3-1/2" Poplar Shaker Peg	\$18/100	—
1-3/4" Mini Shaker Peg	\$7/100	—
3-1/2" Country Wall / Mug Peg	\$18/100	—
2-1/2" Country Shanty Peg	\$14/100	—
Large Bean Pot Candle Cup	\$17/100	—
Brass Inserts	\$11/100	—
1/2" Mini Candle Cup	\$10/100	—
1-1/2" Toy Wheel	\$11/100	—
2" Toy Wheel	\$19/100	—
Axel Pegs	\$5/100	—

SMOOTH SANDED HEARTS

3/4" x 1/8" Hearts	\$3/100	—
3/4" x 1/2" Hearts	\$5/100	—
1" x 3/16" Hearts	\$5/100	—
1" x 3/8" Hearts	\$7/100	—
1-3/8" x 1/8" Hearts	\$6/100	—
1-3/8" x 1/4" Hearts	\$8/100	—
1-3/8" x 1/2" Hearts	\$11/100	—
2" x 1/2" Hearts	\$19/100	—

Great Buys!

	Qty.	Cost
3/8" x 36" Standard Dowels	\$34/100	—
3/4" x 36" Oak Dowels	\$19.80/10	—
3/8" Maple Buttons	\$2.25/100	—
1/2" Maple Buttons	\$2.35/100	—
1-1/2" Maple Spindles	\$10/100	—
2-1/8" Maple Spindles	\$20/100	—

ORDER NOW

☐ MC/Visa ☐ Check Enclosed

Total Cost _____

Handling \$3.00

Ohio residents
add 5% sales tax

Final Cost _____

MC/Visa Number _____

Expires _____ Phone _____

Name _____

Address _____

City/State/Zip _____

FREE! 16-PAGE CATALOGUE

MIDWEST DOWEL WORKS

4631 Hutchinson Rd., Cincinnati, OH 45248

513-574-8488

Same Day Service/
Order Before Noon

Factory Direct/
Satisfaction Guaranteed

READER SERVICE NO. 39

TABLE SAW



NEW!

MODEL
64

Powermatic's Model 64-10" Table Saw is a new addition to the Artisan line. The Biesemeyer T-Square fence system provides unmatched accuracy and repeatability. A 10" blade is belt driven and powered by a 1-1/2HP motor with a removable safety switch. To insure the rugged construction and industrial quality of this saw, its precision ground cast iron table and grate extensions provide an excellent surface for accurate cutting. An added feature is the beveled front edge of the table to prevent material scarring or damage.

POWERMATIC®

McMINNVILLE, TN 1-800-248-0144

READER SERVICE #32

FREE
FREIGHT!

BIESEMEYER

50L12
50" Commercial
w/12" Left
\$299

26L12 26" commercial fnc 269
52L12 52" homeshop fnc 239
40L12 40" homeshop fnc 209
28L12 28" homeshop fnc 199

POWERMATIC

1660760
66 Saw 3 HP
w/50" Biesemeyer
\$1949

1270100 #27shpr 3hp 1ph 2049
1800205 5hp18" pl w/kn gr 5499
1500040 6"jnt 3/4hp 1ph 1299
1610050 8"jnt 1.5 hp 1ph 1599

1791210 NEW
64 Artisan Saw
w/Bies. Fence
\$729

179121164 Artisanw/50"Bies 829
1791208 osc. spindle sdr 299
1791209 New 15" planer 1299
1791051 New 6"jnt w/stand 599
1791070 1-1/2 hp dust col 369
1791200 6x48 blt/10"dc sdr 449

JET

JTAS-10B
10" Jet Saw
3 HP w/50"
Biesmeyer &
Motor Cover
\$1399

JWCS-10JF 2hp s w/Jet fc 924*
JPM-13 13" plnr/moulder 749*
JWP-12 12" port. planer 349*
JWS-18HO 1hp wd shaper 474*
JWS-14CS 14"thp w bsw 544*
JDP-17MF 17"th 16sp dr pr 399*
JW-6CS long bed jointer 469*

JWTS-10JF
10" Saw
w/Jet Fence
\$534*

JJ-8CS 8" long bed jointer 1149
JWL-1236 12" vs wd lathe 539*
JWP-15HO 15"3hp w plnr149*
JWP-20H-1 20"3hp w plnr 1999
JWP-20H-11 20"hd w plnr 3199
DC-650 1 HP 650 cfm d col 209*
DC-1200 2hp, 1200cfm col 424*
DC-19003hp, 1900 cfm col 619
EHVS-80 6x89 edge sander 689
JSG-66"belt/12"disc sander 599

*Price Includes Rebate

Emqlo

AM78-HC4V
1-1/2 HP Vertical
Twin Tank
\$309

AMDOL78-HC4V1-1/2hp oilss 279
AM99-HC4V 2 hp v tw trk 399
K15A8P 1.5hp wheelbarrow 619
K2A8P 2hp wheelbarrow 689
K5HG4-8P 5hp Honda wheel 769
045 3/8"x50"Goodyear hose 20

freud

FT-2000E
3.25 HP
VS Router
\$179*

JS102 joining sys cs & fc 149*
JS100 plate jnr. cs & d bag 139*
*Price Includes Rebate

MK

MK 660
3/4 HP
Tile Saw
\$599 Complete Line In Stock

DELTA

36-820
3 HP Unisaw
w/52" Unifence
& Motor Cover
\$1599

36-830 3hpuni w/30" unit 1499
34-777 5hpJet-Lock unisaw 1799
34-778 5hp uni w/52" unit 1899

TORMEK

2004-T
Wet Grinding
Machine
\$389

Panasonic

EY6100EQKW
12 V, 3/8, 21
Position Clutch Kit w/2
Ironman Batteries
& Lantern
\$199

Plus 2
Ironman Batteries

DEWALT

DW935K
14.4 Volt Cds
Saw Kit
w/2 Batteries
\$239

DW625 3hp vs pl router 279
DW610 1-1/2hp 1/2" router 154
DW705 12" comp miter saw 359
DW364 7-1/4" saw w/b &cs 159
DW361 7-1/4" saw & case 149
DW318K top hdl vs jig s 159
DW675K 3-1/8" planer w/cs 164
DW402 4-1/2" angle grinder 89

DW682K
Plate Jointer
Kit
\$219

DW106 3/8" 4amp kylls dr 74
DW160 3/8" RA shorty drill 139
DW250 0-4000 drywall drv 89
DW254 0-2500 deck driver 89
DW280K all pump screwdr kit 119
DW421 5"H&L Rndm Sndr 74

DW991K
14.4 Volt,
3/8" Drill
Driver Kit
\$199

DW994KQ 14.4v 1/2" dr kt 239
DW972K-2 12v 3/8"dr kt/2b 189
DW952K-2 9.6v 3/8"dr kt/2b 129
DW930K 12v cds saw kit 199
DW673K laminate trmr kit 209

HITACHI

C8FB2
8-1/2" Compound
Mitre Saw
\$489

C10FS New10" slide cpnd 739
DN100YK vs 9.6v R.A. drill 189
M12V 3-1/4 hp vs pl router 239

JDS COMPANY

AT2000
Air Filtration
System
\$259

8-12 air filtration system 489
10-16 air filtration system 689
18-34 accu miter ga. w/bar 149
24-46 accu miter ga. w/bar 164

FUJI

Three Stage Turbine
High Volume
Low Pressure
Sprayer
\$629

Panasonic

EY6100EQKW
12 V, 3/8, 21
Position Clutch Kit w/2
Ironman Batteries
& Lantern
\$199

Plus 2
Ironman Batteries

DEWALT

DW935K
14.4 Volt Cds
Saw Kit
w/2 Batteries
\$239

DW625 3hp vs pl router 279
DW610 1-1/2hp 1/2" router 154
DW705 12" comp miter saw 359
DW364 7-1/4" saw w/b &cs 159
DW361 7-1/4" saw & case 149
DW318K top hdl vs jig s 159
DW675K 3-1/8" planer w/cs 164
DW402 4-1/2" angle grinder 89

DW682K
Plate Jointer
Kit
\$219

DW106 3/8" 4amp kylls dr 74
DW160 3/8" RA shorty drill 139
DW250 0-4000 drywall drv 89
DW254 0-2500 deck driver 89
DW280K all pump screwdr kit 119
DW421 5"H&L Rndm Sndr 74

DW991K
14.4 Volt,
3/8" Drill
Driver Kit
\$199

DW994KQ 14.4v 1/2" dr kt 239
DW972K-2 12v 3/8"dr kt/2b 189
DW952K-2 9.6v 3/8"dr kt/2b 129
DW930K 12v cds saw kit 199
DW673K laminate trmr kit 209

Milwaukee

6527
Variable Speed
Super Sawzall
\$179

6491 10"miter s w/ct bl&bag 329
6494 New 10" comp. saw 324
6507 VS sawzall w/case 154
6517 New VS sawzall plus 164

0408-6 NEW!
12 Volt VSR
Cordless Kit
w/Keyless Chuck
& Extra Battery
\$174

0234-1 1/2"vdr 0-850 mgm 144
0236-1 1/2" drill w/case 164
6368 7-1/4" saw w/cs & fc 144
5682 2hp rtr26,000rpm &col 169

FUJI

Three Stage Turbine
High Volume
Low Pressure
Sprayer
\$629

MSXE-636-2
VS Triangular Oscillating
Sander w/Case
& Paper
\$199

OCCIDENTAL LEATHER

5080
Pro Framer
Tool Belt
\$134

8080 oxy light pro framer 124

SENCO

SFN40
1-1/2 to 2-1/2"
Finish Nailer
\$389

SN325+ 60-12D nailer 419
SFN-1Plus 1"-2" finish nlr 349
SN60 New full hd stick nlr 449
SLP-20 5/8"-1-5/8" br nil kt 279
SLS20 New finish stplr w/cs 279
SKS 1/4" crown finish stplr 279

Makita

6095DWE
9.6 V 3/8" VRS
Keyless Drill
w/2 Batteries
\$134

5007NBK 7-1/4" saw w/cs 124
2708W 8-1/4" tbi saw w/b 309
2012 12" prt plnr w/d. cht 489
3612C New 3hp pl router 269
LS101110" comp miter saw 479
LS121112" comp miter saw 789
6211DWHE 12vhipac kt 2bl 184
9820-2 blade sharpener 214
N1900B 3-1/4" planer w/cs 134
3901 New plate jointer 209

Back To Shop Sale!

Hours: M - F 7:00 - 7:00
Saturday 8:00 - 4:00

Serving You For 48 Years!

DELTA

22-540
12" Portable
Planer w/Dust
Collector Chute
& Extra Knives
\$389

Includes Host
& Knives

37-070
6" VS Bench
Jointer
\$259

40-560 16" 2 sp scroll saw 174
33-060 sidekick trim saw 379
40-640 20" vs scroll saw 299
31-460 4x36 belt/disc sdr 129
28-180 bench bdsaw w/cs 159
23-700 wet/dry grinder 154
11-950 8" bench drill press 129
36-540 10" bench saw 169
36-090 10" Sidekick miter s 219

PERFORMAX

16-32
16" - 32" Bench
Drum Sander
\$899

ProMax III stationary sdr 1799
SuperMax-25 25"dr sdr 3199
SuperMax37x2 37"dr sdr 3899

BOSCH

1587VSK
Top Handle
Jig Saw w/Case
\$169

1584VKS barrel jigsaw w/cs 169
1587VS New top hdl jigsaw 149
1584VS barrel grip Clic jigsaw 149
1632VSK vs recip saw kit 159

3283DVS
Dustless Random
Orbital Sander
\$95

3283DVS 5" rdm sdr kt 119
3310K 122v T hndl w/2 bat 199
1273DVS 4x24 vs belt sdr 229
3270DVS 3x21vs sdr w/bag 169
1615EVS 3-1/4HP pl router 299
11224VSR 7/8" Bulldog hmr 219

1613EVS
2 HP, VS,
Microfine
Plunge
Router
\$209

B4050 New in-line jigsaw 129
3296K New 3-1/4" planer kit 169
87000 center detail sander 69
87001 vs corner detail sdr 94

7937 NEW!
VS Tiger
Saw Kit
\$164

7800 New drywall sander 339
7499 New drywall cutout 69
7549 top handle vs jigsaw 134
6931 1-1/2 hp plunge router 179
6931 plunge router base 79

RYOBI

BT3000
10" Sliding Table
Saw w/Stand
\$529

RE-600 3 hp vs pl router 229
AP12 12" portable planer 389
OSS450 osc. spindle sander 159

PORTER-CABLE

9444 NEW!
Profile Sander
Kit
\$119

333 5"Quicksand dstls sdr 79
334 5"dustless PSA sander 79
352VS 3x21 vs sander 164
7116 New 24" Omni jig w/vld 299

97355
5" VS Sander
w/Case & Dust Kit
\$154

97366 6"vs sander kit w/cs 159
330 speed bloc fin. sander 54
340 1/4 sheet sander w/bag 64
97310 laminate trimmer kit 199

556
Plate Jointer
w/Case &
Tilt Fence
\$139

7810 tool triggered vacuum 269
550 New pocket cutter 189
360 3x24 sander with bag 199
362 4x24 sander with bag 204
9853 12vdr kt w/cls ch 2/bat 164
6611 3/8" vsr 5.5 amp drill 109
6614 1/2" vsr 5.5 amp drill 119
6615 1/2" vsr 5.5a kylls 124
6645 0-2500 vsr 5.5a drv 99
2640 vsr 4.5A drywall driver 79

743K NEW
Left Hand 7-1/4"
15 Amp Saw
w/Case
\$129

9743 L hd 7-1/4" saw w/cs 139
843 L hd 7-1/4" saw w/bkr 134
9347 7-1/4" 15a saw w/cs 139
447 7-1/4" 15a saw w/bkr 134

9690
1-1/2 HP
Router w/Case
\$144

9345 6" Saw Boss Kit 129
5116 16" Omni jig 259
9314 4-1/2" trim saw kit 159
7700 LaserLoc 10"mitre sw 349

7539
3-1/4 HP
5 Speed
Plunge Router
\$264

691 1-1/2 hp D hdl router 159
696 router-shaper table 139
695 router table w/router 229
7518 3-1/4 hp 5 sp router 269
7403 paint remover 179

7937 NEW!
VS Tiger
Saw Kit
\$164

7800 New drywall sander 339
7499 New drywall cutout 69
7549 top handle vs jigsaw 134
6931 1-1/2 hp plunge router 179
6931 plunge router base 79

To Order or for Technical Support Call TOLL-FREE
1-800-358-3096
Catalog Requests **1-800-582-6704**

MOST PORTABLE TOOLS
SHIPPED FED-EX \$10.00 MORE
FAX US YOUR ORDER! 1-800-343-4205

FedEx
TOOL CRIB
OF THE NORTH

Box 14040 • Grand Forks, ND • 58208-4040

*Any comparable National ad in this issue.
We reserve the right to verify competitors
price and stock. Limited to stock on hand.

AWW Jan./Feb. Box 14040 • Grand Forks, ND • 58208-4040

•• FULL LINE DISTRIBUTOR •• FREE FREIGHT IN 48 CONTIGUOUS USA •• FACTORY AUTHORIZED SERVICE •• ERRORS AND PRICES SUBJECT TO CHANGE ••

READER SERVICE NO. 9

Materiale protetto da copyright

WOODWORKERS! ENTER THE

AMERICAN WOODWORKER 1996

Excellence in Craftsmanship Awards Competition

AMATEUR CATEGORY

1ST PRIZE

\$1,000 cash • Commemorative award
Featured in AMERICAN WOODWORKER

2ND PRIZE

\$300 cash • Award certificate
Featured in AMERICAN WOODWORKER

3RD PRIZE

\$200 cash • Award certificate
Featured in AMERICAN WOODWORKER

PROFESSIONAL CATEGORY

1ST PRIZE

\$1,000 cash • Commemorative award
Featured in AMERICAN WOODWORKER

2ND PRIZE

\$300 cash • Award certificate
Featured in AMERICAN WOODWORKER



PROFESSIONAL CATEGORY (cont.)

3RD PRIZE

\$200 cash • Award certificate
Featured in AMERICAN WOODWORKER

STUDENT CATEGORY

1ST PRIZE

\$1,000 cash • Commemorative award
Featured in AMERICAN WOODWORKER

2ND PRIZE

\$300 cash • Award certificate
Featured in AMERICAN WOODWORKER

3RD PRIZE

\$200 cash • Award certificate
Featured in AMERICAN WOODWORKER

It's time to enter your best work in the AMERICAN WOODWORKER 1996 Excellence in Craftsmanship Awards Competition.

Send us photos of a project you've built, and you could win one of nine awards - including a cash prize of up to \$1,000.

All types of woodworking projects are eligible: furniture, turnings, carving, sculpture, musical instruments, toys, etc.

You may enter up to three pieces. Entries will be judged for craftsmanship and design, but designs need not be original to win.

Amateurs, professionals, and students* will be judged separately.

**To qualify as a student you must be enrolled in a woodworking school or furniture design school in 1995.*

ENTER ENTER ENTER ENTER ENTER

To Enter the Competition

Fill out the form on this page (or a photocopy) and mail it with:

Photographs

- 1) Color slide transparencies or photographs of the piece(s) you want to enter (up to three pieces).
- 2) Label slides and photos with your name and address and the photographer's name.
- 3) Include a self-addressed, stamped envelope for return of slides. (Sorry, prints cannot be returned.)

Description

- 1) A description of each piece including dimensions and materials (100 words or less).

Deadline for Entries

June 7, 1996.

Finalists will be contacted for further information and winners will be announced in the December 1996 issue of AMERICAN WOODWORKER.

Conditions

The deadline for entries is **June 7, 1996**. AMERICAN WOODWORKER is not responsible for entries lost, delayed or damaged in the mail or elsewhere. Incomplete entries will be disqualified. Decision of the judges shall be final.

Award Category (check one only) ☐ Professional ☐ Amateur ☐ Student

Number of pieces being entered _____ (up to three)

Name _____ **Phone** _____

Address _____

City _____ **State** _____ **Zip** _____

Photograph Info

 (check one)

☐ I own all rights to these slide transparencies and/or photographic prints

☐ Rights are owned by _____

Photographer's Name _____

Phone _____

On a separate sheet of paper, describe each piece in 100 words or less.

Mail entry to: Excellence in Craftsmanship Awards

AMERICAN WOODWORKER, 33 E. Minor Street, Emmaus, PA 18098.

I agree with the terms of the competition and accept the judges' decision as final.

Signature _____

**DEADLINE FOR ENTRIES IS
JUNE 7, 1996**

**AMERICAN
WOODWORKER**

CALENDAR

CALIFORNIA

CLASSES/WORKSHOPS

Sausalito: January 29-February 2, and February 5-9. One- and two-week courses in classical woodcarving. **February 5-April 26.** Twelve-week course in classical woodcarving. All taught by master carvers. The School of Classical Woodcarving. (415) 332-7563.

EXHIBITS/SHOWS/EVENTS

Del Mar: February 9-11. The San Diego Woodworking Show. (310) 477-8521.

San Diego: February 17-18. 1996 California Open Wildlife Art Show and Carvers' Competition. Sponsored by Pacific Wildfowl Arts. (805) 772-5811.

San Francisco: January 6-March 17. Exhibition—Craft at Gumps: The Helen Heninger Years. Includes work of Bob Stockdale, Ed and Phillip Moulthrop, Mike Shuler. Also: Exhibition of sculptures by Vitalijaus Cepkauskas. San Francisco Craft and Folk Art Museum. (415) 775-0990.

COLORADO

CLASSES/WORKSHOPS

Denver: January 20. Wood joinery: Tony Brazzale. **January 21.** Tablesaw techniques: Tom Pierce. **January 27.** Beginning lathe: Dennis Korth. **February 3.** Scrollsaws: Harold Foos. **February 10.** Wood technology: Paul McClure. **February 11.** Using jigs: Tom Pearce. **February 17.** Furniture design: Wayne Hoffman. **February 24.** Intermediate lathe: Dennis Korth. **February 25.** Routers: Paul McClure. The Woodworkers' Store. (303) 782-0588.

CONNECTICUT

CLASSES/WORKSHOPS

Manchester: Year-round. Woodworking, finishing and lathe classes. Harris Enterprise Corp. (203) 649-4663.

FLORIDA

EXHIBITS/SHOWS/EVENTS

St. Petersburg: January 5-February 17, 1996. Exhibition of furniture installations by Katherine Siegel. Florida Craftsmen Gallery. (813) 821-7391. **Tampa:** February 2-18. 11th Annual Fine Furniture Show. Sponsored by the Woodcrafters Club of Tampa. (813) 645-8933.

GEORGIA

EXHIBITS/SHOWS/EVENTS

Atlanta: February 29-March 3. Grand National Wild Turkey Carving and Sculpture Championship, and Decorative Turkey Call Competition. National Wild Turkey Federation. (803) 637-3106.

Duluth: February 23-25. The Atlanta Woodworking Show. (800) 826-8257.

ILLINOIS

CLASSES/WORKSHOPS

Arlington Heights: January 27. Intro to routers; advanced router. All taught by Dave Hinske. **January 28.** Veneering. **February 3.** Intro to caning; advanced caning. All taught by Hank Metz. **February 4.** Furniture touch-up: Steve Lorne. **February 10.** Biscuit joinery: Hank Metz. Hands-on sharpening: George Foras. **February 11.** Woodturning: Steve Lorne. **February 18.** Woodcarving: Mike Bock. **February 24.** Tablesaw I and II. **February 25.** Tablesaw III. All taught by Pete Petran. The Woodworkers' Store. (708) 253-8875.

EXHIBITS/SHOWS/EVENTS

Collinsville: February 9-11. The St. Louis Woodworking Show. (800) 826-8257.

INDIANA

EXHIBITS/SHOWS/EVENTS

Indianapolis: January 26-28. The Indianapolis Woodworking Show. (800) 826-8257.

KANSAS

EXHIBITS/SHOWS/EVENTS

Overland Park: February 16-18. The Kansas City Woodworking Show. (800) 826-8257.

MAINE

CLASSES/WORKSHOPS

West Rockport: Year-round. One-, two- and 12-week courses in furniture making and design. Taught by Peter Korn, John McAlevey and others. Center for Furniture Craftsmanship. (207) 594-5611.

MARYLAND

CALL FOR ENTRIES

Gaithersburg: Entries due February 1. 21st Annual National Craft Fair. Takes place October 18-20. National Crafts Ltd. (717) 369-4810.

EXHIBITS/SHOWS/EVENTS

Upper Marlboro: February 2-4. The Washington DC Woodworking Show. (800) 826-8257.

MASSACHUSETTS

CLASSES/WORKSHOPS

Easthampton: January-March. Weekly classes in beginning, intermediate and advanced woodworking; woodworking for women. One Cottage Street School of Fine Woodworking. (413) 527-8480.

STAFF OPENINGS

Williamsburg: Resumes due February 29. Teachers sought for intensive summer craft courses with high school students from around the U.S., from June 21 to August 6. Send resume and slides, or contact: Horizons: The New England Craft Program, 108 N. Main St. - P, Sunderland, MA 01375. (413) 665-0300.

MICHIGAN

CLASSES/WORKSHOPS

Marshall: January 19-20. Shaker oval boxes: John Wilson. (616) 781-1264.

MINNESOTA

EXHIBITS/SHOWS/EVENTS

Duluth: February 12-March 31. Minnesota Woodturners Association show. Duluth Art Institute. (218) 727-8013.

NEW HAMPSHIRE

CLASSES/WORKSHOPS

Portsmouth: January 27-31, February 10-14 and February 24-28. Make a Windsor chair: Michael Dunbar. (603) 431-4676.

NEW MEXICO

EXHIBITS/SHOWS/EVENTS

Albuquerque: January 12-14. The New Mexico Woodworking Show. (800) 826-8257.

NEW YORK

CLASSES/WORKSHOPS

Bronx: January 20. Tablesaw techniques. **January 27.** Spindle turning. **February 3.** Bowl turning. **February 10.** Router basics. **February 17.** Tool sharpening. **February 24.** Wood inlay techniques. All taught by Sal Marino. Constantine's. (718) 792-1600.

EXHIBITS/SHOWS/EVENTS

New York: Through January 13. Exhibition of new art furniture by Edward Zucca. Peter Joseph Gallery. (212) 751-5500.

NORTH CAROLINA

CLASSES/WORKSHOPS

Marshall: January 22-26. Windsor chairmaking. **February 5-9.** Welsh stick chairs. **February 19-23.** Advanced Windsor chairmaking. All taught by Drew Langsner. Country Workshops. (704) 656-2280.

OHIO

CLASSES/WORKSHOPS

New Carlisle: January 13. Router techniques: Nick Engler. **February 3 and March 2.** Bowl turning: Jim Burrows. The Hardwood Store. (513) 849-9174.

EXHIBITS/SHOWS/EVENTS

Columbus: January 19-21. The Greater Columbus Woodworking Show. (800) 826-8257.

OKLAHOMA

EXHIBITS/SHOWS/EVENTS

Oklahoma City: January 19-21. The Oklahoma City Woodworking Show. (800) 826-8257.

PENNSYLVANIA

CLASSES/WORKSHOPS

Quakertown: January 19-21, February 2-4 and 16-18. Three-day bowl-turning workshops in private studio. Beginner to intermediate. Taught by David Ellsworth. (215) 536-5298.

EXHIBITS/SHOWS/EVENTS

Monroeville: January 26-28. The Pittsburgh Tri-State Woodworking Show. (800) 826-8257.

TENNESSEE

EXHIBITS/SHOWS/EVENTS

Memphis: February 23-25. The Memphis Woodworking Show. (800) 826-8257.

TEXAS

EXHIBITS/SHOWS/EVENTS

McAllen: January 19-20. 10th annual Rio Grande Valley Woodcarvers show and sale. (210) 581-2448.

UTAH

EXHIBITS/SHOWS/EVENTS

Salt Lake City: February 16-18. The Utah Woodworking Show. (800) 826-8257.

WISCONSIN

EXHIBITS/SHOWS/EVENTS

Milwaukee: January 12-14. The Greater Milwaukee Woodworking Show. (800) 826-8257.

NATIONAL

CALL FOR ENTRIES

Entries due January 25. Furniture of the '90s—1996. Juried exhibition open to U.S. artists making handcrafted furniture. \$3,000+ in cash awards. SASE to: ASCOA, Furniture of the '90s, Box 7491, Houston, TX 77248.

"Calendar" listings are free and restricted to woodworking classes, workshops, trade shows etc. Include event date and address and a contact phone number. Send listings at least four months prior to date of event to: "Calendar," AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098. Or e-mail to: AWCcalendar@aol.com

Free Catalog

With 176 pages of full-color, our Free Catalog is the biggest in the business. We also think it's the best.

We have the high quality woodworking supplies and tools that are nearly impossible to find anymore. Everything from traditional old-style hand planes and saws to the very latest in modern power tools.

For a Free Catalog send us a post card or letter with your name and address to the address below or call:

Garrett Wade Co.
161 6th. Avenue
Dept. 1060
NY, NY 10013

800-221-2942
800-566-9525 -fax



From Garrett Wade

READER SERVICE NO. 30

BESSEY ... BECAUSE ONLY THE BEST WILL DO!

Bessey has been building quality products for over 100 years. They are the choice of Craftsmen who have learned through use in their own workshop ... **you simply can't buy a better clamp than Bessey.**

If you're serious about woodworking, you owe it to yourself to use a serious clamp ... **Bessey!**

A full range of Bessey clamps are available at better retailers throughout North America.



BESSEY
ISO 9001
CERTIFIED

For the name of your nearest Bessey distributor call toll-free ...
in the United States
1-800-828-1004
... in Canada
1-800-265-8612.

ACC AMERICAN CLAMPING

BATAVIA, NEW YORK • CAMBRIDGE, ONTARIO
FAX (716) 344-0025 FAX (519) 621-3442

READER SERVICE NO. 29

EXCLUSIVE

The Ultimate Router Jig Video

With just a router and your tablesaw you can cut:

**Mortises, Tenons,
Sliding Dovetails,
Raised Panels and More!**

This half-hour tape, complete with detailed drawings, shows you how to build and use this incredibly versatile jig. Order your video today and see why this is the Ultimate Router Jig!



As seen in the April '94 Issue

ONLY \$10.00

ORDER FORM

Mail this form with a check or money order.
For Visa or MasterCard orders call: 610-967-8315.
Please send me _____ video(s) at \$10.00 each.

Name _____

Address _____

City _____ State _____ Zip _____

Mail To: AMERICAN WOODWORKER, P.O. Box 747, Emmaus, PA 18049

Quantities limited - order your copy today!

Grizzly
IMPORTS, INC.

Forstner Bit Blowout!
#70095658

While Supplies Last!

THE MOST ACCURATE AND VERSATILE OF ALL WOOD BITS!

Comes complete inside a protective wood box!

TOP QUALITY!

16pc set **MODEL G1673** Reg. \$59⁹⁵ **SALE \$39⁹⁵**
PLUS SHIPPING

7pc set **MODEL G1752** Reg. \$27⁵⁰ **SALE \$19⁹⁵**
PLUS SHIPPING

WEST of Mississippi | **EAST of Mississippi**
1-800-541-5537 | **1-800-523-4777**

Call now for a **free** tool catalog!

READER SERVICE NO. 12

PRODUCT INDEX

	Page #	Reader Service #		Page #	Reader Service #		Page #	Reader Service #
ABRASIVES			HARDWARE			SCHOOLS & ASSOCIATIONS		
Econ-Abrasives	21	21	Ball & Ball	9	—	Arrowmont School of		
Red Hill Corp.	4	75	Crown City Hardware	94	—	Arts/Crafts	14	14
ADHESIVES			Horton Brasses	14	401	Dana Robes Wood		
AmBel Corp.	71	28	Whitechapel Brasses	73	306	Craftsmen	79	65
Gorilla Group	9	38	JIGS & FIXTURES			Greg Harkins Chairs	71	54
Gougeon Brothers Inc.	93	79	Centerline Tool	16	44	SHOP ACCESSORIES		
AIR TOOLS			Kreg Tool	15	61	Airstream Dust Helmets	93	94
Airy Sales Corp.	26	16	KITS & PLANS			Beall Tool Co.	94	78
Senco	11	33	Accents Plans & Patterns	94	204	JDS Company	4	13
BITS, BLADES & CUTTERS			American Coaster	93	165	TOOL ACCESSORIES		
Amana Tool	9	11	American Furniture Designs	19	302	Carter Products Company	79	162
CMT Tools	14,17	35,101	Better Built & Affordable			Dynamic Engineering	93	86
Forrest Mfg.	27	1	Deck	13	203	Excalibur Machine & Tool	19	37
MLCS Ltd.	77	8	Breckenridge Reproductions	94	167	HTC Products	68	70
Walnut Creek Woodworking			Designer Furniture Plans	74	206	Mesa Vista Design	4	72
Supply Co.	93	82	Emperor Clock	19	104	Ronk Electrical Co.	80	77
Woodworkers Choice	19	60	Furniture Designs, Inc.	15	304	Vega Enterprises	71	59
BOOKS & VIDEOS			Gilliom Manufacturing, Inc.	74	201	TURNING SUPPLIES		
Time Life Books	25	—	GPH Enterprises	26	—	Craft Supplies USA	11	36
CARVING SUPPLIES			Jennings Decoy Co.	94	166	Cutting Edge, Inc.	94	97
Cutting Edge, Inc.	94	97	Shaker Workshops	80	171	Kelton Industries	13	56
CLAMPS			Southern Living Magazine	15	48	Packard Woodworks	94	169
Adjustable Clamp Co.	68	10	Specialty Furniture Designs			WOOD & VENEERS		
American Clamping	87	29	of Michigan	89	305	Blue Ox Brand	93	83
J.L.T. Manufacturing	15	105	Wildwood Designs	94	93	Bristol Valley Hardwoods	94	168
Wetzler Clamp Co.	93	100	Wooden Memories	19	164	C.A.V.E.S.	93	84
CLOCK PARTS			MISCELLANEOUS			Cirtain Plywood	94	96
Klockit	89	46	Steelmaster Buildings	68	163	Colonial Hardwoods	92	—
S. La Rose, Inc.	93	81	MOISTURE METERS			Groff & Hearne		
DOVETAIL/POSITIONING JIGS			Lignomat USA Ltd.	23	57	Lumber Inc.	93	87
Jointech Corp.	73	23	Wagner Electronic Products	68	42	Niagara Lumber	94	88
Keller Dovetails	82	41	POWER TOOLS			Nyle Corporation	83	73
Leigh Industries	71	15	Ashman Technical Ltd.	94	95	Peter Lang Co.	93	80
Taylor Design Group, Inc.	4	17	Better Built Corp.	82	63	Sandy Pond Hardwoods	93	99
FASTENERS			Caribou Tool Co.	95	—	Specialty Lumber	94	90
Jamestown Distributors	15	55	Clayton Machine Corp.	13	64	Steve Wall Lumber	80	161
McFeely's	9	52	Delta International	7	3	Tuckaway Timber	94	91
FINISHING SUPPLIES/EQUIPMENT			Enlon Import Corp.	Cover 4	4	U.S. Mahogany Corp.	94	92
Liberon/Star Supplies	95	—	Excalibur Machine Corp.	73	66	Wood-Ply Lumber Corp.	94	170
FURNITURE & WOOD PARTS			Fein Power Tools	23	20	Woodworkers Source	23	53
Adams Wood Products	26	43	Freud	5	5	WOODWORKING CATALOGS		
Classic Designs			Garrett Wade/Inca	16	22	Constantine's	82	62
by Matthew Burak	79	40	Granberg International	19	68	Garrett Wade	87	30
Excel Dowel &			Great Tools Direct	21	107	Grizzly Imports, Inc.	87, Cover 2	12,102
Woodcrafts, Inc.	95	98	Grizzly Imports, Inc.	87, Cover 2	12,102	Hartville Tools	21	45
Midwest Dowel Works	83	39	International Tool Corp.	69	7	Highland Hardware	89	69
GLASS & MIRRORS			Jet Equipment & Tools	75, Cover 3	2,6	Lee Valley Tools	3,15,19,26,74,79,83	—
Glass & Mirror Craft			Laguna Tools	8,26,80	26,25,24	MacBeath Hardwood Co.	94	205
Industries	26	67	MLCS Ltd.	77	8	Van Dyke's Graphics	13	77
Shapes & Surfaces	15	58	Performax Products	23	31	Woodcraft Supply Corp.	68	49
HAND TOOLS			Powermatic	83	32	Woodworkers' Store	82	50
Antique & Used Tools	93	—	RB Industries	73	19	WOODWORKING SHOWS		
Lie-Nielson Toolworks	74	71	Ryobi	10,11	18	Canadian Workshop Show	93	106
Pootatuck Corp.	83	74	Sand-Rite Manufacturing	82	47	DJC Enterprises	94	85
Robert Sorby, Ltd.	8	103	Silvacraft	93	89	Woodworking Shows	80	51
			Sunhill Machinery	13	34			
			Tool Crib of the North	84	9			
			Tooland	13	27			
			Wilke Machinery	79	301			
			Wood-Mizer Products	80	202			
			Woodmaster Tools	82	—			

FREE Clockmaking Catalog

**25th
Anniversary**

**We Make
Clock-
making
Easy as
1-2-3.**



We're your complete source of clock-making supplies. Our classic wall, mantel, and grandfather designs are available in kits or easy-to-follow plans. We have clock movements, dials, pendulums, fit-ups and more...all backed by our 100% guarantee.

**Send for your FREE catalog today.
Or call 1-800-556-2548.**

Name _____
Address _____
City _____
State _____ Zip _____

KLOCKIT® Dept.
AW16
P.O. Box 636, Lake Geneva, WI 53147

READER SERVICE NO. 46

ADVERTISER INDEX

	Page #	Reader Service #		Page #	Reader Service #
Accents Plans & Patterns	94	204	Jet Equipment & Tools	75, Cover 3	2,6
Adams Wood Products	26	43	J.L.T. Manufacturing	15	105
Adjustable Clamp Co.	68	10	Jointech Corp.	73	23
Airstream Dust Helmets	93	94	Keller Dovetails	82	41
Airy Sales Corp.	26	16	Kelton Industries	13	56
Amana Tool	9	11	Klockit	89	46
AmBel Corp.	71	28	Kreg Tool	15	61
American Clamping	87	29	Laguna Tools	8,26,80	26,25,24
American Coaster	93	165	Lee Valley Tools	3,15,19,26, 74,79,83	—
American Furniture Designs	19	302	Leigh Industries	71	15
Antique & Used Tools	93	—	Liberon/Star Supplies	95	—
Arrowmont School of Arts/Crafts	14	14	Lie-Nielson Toolworks	74	71
Ashman Technical Ltd.	94	95	Lignomat USA Ltd.	23	57
Ball & Ball	9	—	MacBeath Hardwood Co.	94	205
Beall Tool Co.	94	78	McFeely's	9	52
Better Built & Affordable Deck	13	203	Mesa Vista Design	4	72
Better Built Corp.	82	63	Midwest Dowel Works	83	39
Blue Ox Brand	93	83	MLCS Ltd.	77	8
Breckenridge Reproductions	94	167	Niagara Lumber	94	88
Bristol Valley Hardwoods	94	168	Nyle Corporation	83	73
C.A.V.E.S.	93	84	Packard Woodworks	94	169
Canadian Workshop Show	93	106	Performax Products	23	31
Caribou Tool Co.	95	—	Peter Lang Co.	93	80
Carter Products Company	79	162	Pootatuck Corp.	83	74
Centerline Tool	16	44	Powermatic	83	32
Certain Plywood, Inc.	94	96	RB Industries	73	19
Classic Designs by Matthew Burak	79	40	Red Hill Corp.	4	75
Clayton Machine Corp.	13	64	Robert Sorby, Ltd.	8	103
CMT Tools	14,17	35,101	Ronk Electrical Co.	80	77
Colonial Hardwoods	92	—	Ryobi	10,11	18
Constantine's	82	62	S. La Rose, Inc.	93	81
Craft Supplies USA	11	36	Sand-Rite Manufacturing	82	47
Crown City Hardware	94	—	Sandy Pond Hardwoods	93	99
Cutting Edge, Inc.	94	97	Senco	11	33
Dana Robes Wood Craftsmen	79	65	Shaker Workshops	80	171
Delta International	7	3	Shapes & Surfaces	15	58
Designer Furniture Plans	74	206	Silvacraft	93	89
DJC Enterprises	94	85	Southern Living Magazine	15	48
Dynamic Engineering	93	86	Specialty Furniture Designs of Michigan	89	305
Econ-Abrasives	21	21	Specialty Lumber	94	90
Emperor Clock	19	104	Steelmaster Buildings	68	163
Enlon Import Corp.	Cover 4	4	Steve Wall Lumber	80	161
Excalibur Machine & Tool	19	37	Sunhill Machinery	13	34
Excalibur Machine Corp.	73	66	Taylor Design Group, Inc.	4	17
Excel Dowel & Woodcrafts, Inc.	95	98	Time Life Books	25	—
Fein Power Tools	23	20	Tool Crib of the North	84	9
Forrest Mfg.	27	1	Tooland	13	27
Freud	5	5	Tuckaway Timber	94	91
Furniture Designs, Inc.	15	304	U.S. Mahogany Corp.	94	92
Garrett Wade	16,87	22,30	Van Dyke's Graphics	13	77
Gilliom Manufacturing, Inc.	74	201	Vega Enterprises	71	59
Glass & Mirror Craft Industries	26	67	Wagner Electronic Products	68	42
Gorilla Group	9	38	Walnut Creek Woodworking Supply Co.	93	82
Gougeon Brothers Inc.	93	79	Wetzler Clamp Co.	93	100
GPH Enterprises	26	—	Whitechapel Brasses	73	306
Granberg International	19	68	Wildwood Designs	94	93
Great Tools Direct	21	107	Wilke Machinery	79	301
Greg Harkins Chairs	71	54	Wood-Mizer Products	80	202
Gritz Imports, Inc.	87, Cover 2	12,102	Wood-Ply Lumber Corp.	94	170
Groff & Hearne Lumber Inc.	93	87	Woodcraft Supply Corp.	68	49
Hartville Tools	21	45	Wooden Memories	19	164
Highland Hardware	89	69	Woodmaster Tools	82	—
Horton Brasses	14	401	Woodworkers Choice	19	60
HTC Products	68	70	Woodworkers Source	23	53
International Tool Corp.	69	7	Woodworkers' Store	82	50
Jamestown Distributors	15	55	Woodworking Shows	80	51
JDS Company	4	13			
Jennings Decoy Co.	94	166			

**Bow Back
Bench &
Chair Plans
\$15.95**

**Octagon
Picnic
Table Plans
\$16.75**
29" h x 77" w x 85" l



Specialty Furniture Designs

797 W. Remus Road, Dept. AW20
Mt. Pleasant, MI 48858

1-800-892-4026

Visa/MC/Discover • Prices above include S&H.
Color Catalog \$3.00 FREE with order. MI add 6%

READER SERVICE NO. 305

The Wood Slicer™

**Extra-Durable, Precision Resawing Blades for
Delta, Sears, Shopsmith, Inca & other Bandsaws**

Slice through hardwoods up to 12" thick with the cleanest, easiest cuts your bandsaw has ever delivered. Wood Slicer™ blades feature individually filed, precision set teeth which are hardened with titanium carbide and impregnated with diamond. Carbon-manganese spring steel blade stock is thinner and stronger, allowing high tension while wasting less wood and requiring less power from your saw.

State-of-the-art welds are unconditionally guaranteed against breakage. Half-inch 3-tooth design is ideal for resawing and ripping any wood up to your saw's maximum capacity.

Specify standard length: 72" (Shopsmith), 73" (Inca), 80" (Sears), 93-1/2" (Delta 14"), or 104-3/4" (Delta 14" with riser block). Custom lengths available with 4-6 weeks delivery for \$34.95 each.



\$29.95*
(standard lengths)

MC/Visa/Discover users
ORDER TOLL FREE
(800) 241-6748

highland hardware
1045 N. Highland Ave., Dept. A50
Atlanta, GA 30306 (404) 872-4466

*Add \$3.95 per order shipping
charge within 50 states.

READER SERVICE NO. 69

Distinctive Discs

▼ **"Winged Dreams,"** by Susan Ellison, Bantry, MD. Padauk. Turned on a single axis from a square block. L: 9 in. W: 9 in. H: 2 1/4 in.

PHOTO BY RICHARD DORBIN



No, they're not UFOs, but the lathe-turned objects shown here definitely push the outer limits of the craft. These unusual faceplate turnings owe their otherworldly appearances to a host of specialized tricks and techniques—both on and off the lathe.

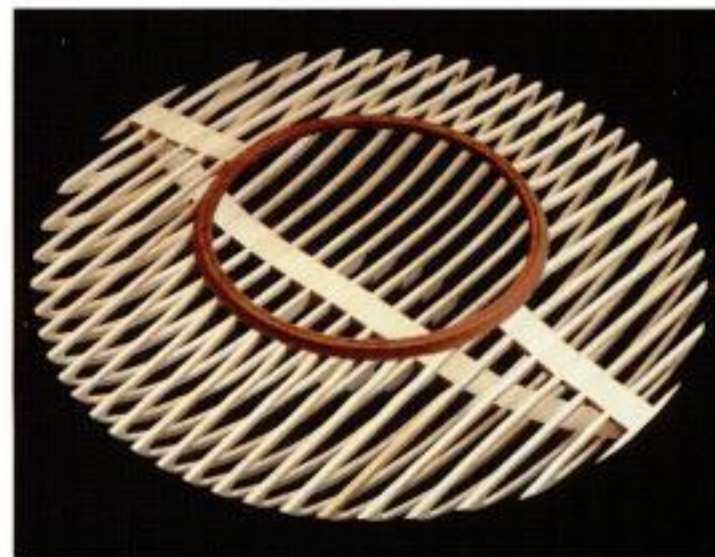


▲ **"Turtle Island,"** by Michael Kresky, Santa Barbara, CA. Walnut, acrylic paint. Dia: 14 in. H: 6 in.

PHOTO BY TOM LOUNSBURY

► **"Exploration,"** by Dewey Garrett, Livermore, CA. Maple and padauk. Block was filled with waste for turning. Dia: 14 in. H: 4 in.

PHOTO BY DEWEY GARRETT



► **"Supported Bowl,"** by Michael Hosaluk, Saskatchewan, Canada. Elm, copper leaf and paint. Turned and carved. L: 10 in. W: 5 in. H: 5 in.

PHOTO BY MARK SFIRRI



Want to see your work in "Gallery"? Send color slides or color transparencies to: "Gallery," AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098. Please include a title, a brief description of techniques used, materials, dimensions, name of photographer, your name, address, and phone number. We'll pay you \$35 per entry published. If you want your photos returned, enclose a self-addressed stamped envelope.



▲ **"Analysis,"** by Dewey Garrett, Livermore, CA. Alder and padauk. Block was filled with waste for turning. Dia: 12 in. H: 4 in.

PHOTO BY DEWEY GARRETT



▲ **Bowls** by Robert Lufrano, Staten Island, NY. Turned from decaying maple. Dimensions clockwise from top left. Dia: 11 in. H: 2½ in.; Dia: 9 in. H: 2½ in.; Dia: 6 in. H: 3 in.; Dia: 9 in. H: 4 in.

PHOTO BY JOSEPH SACHS



▲ **Bowl** by Richard Raffan, New South Wales, Australia; Mark Sfirri, New Hope, PA; and Michael Hosaluk, Saskatchewan, Canada. Tasmanian myrtle and paint. Turned, sawn, burned and painted. Dia: 8 in. H: 1½ in.

PHOTO BY MARK SFIRRI

▶ **"Rings of Saturn—Series I,"**

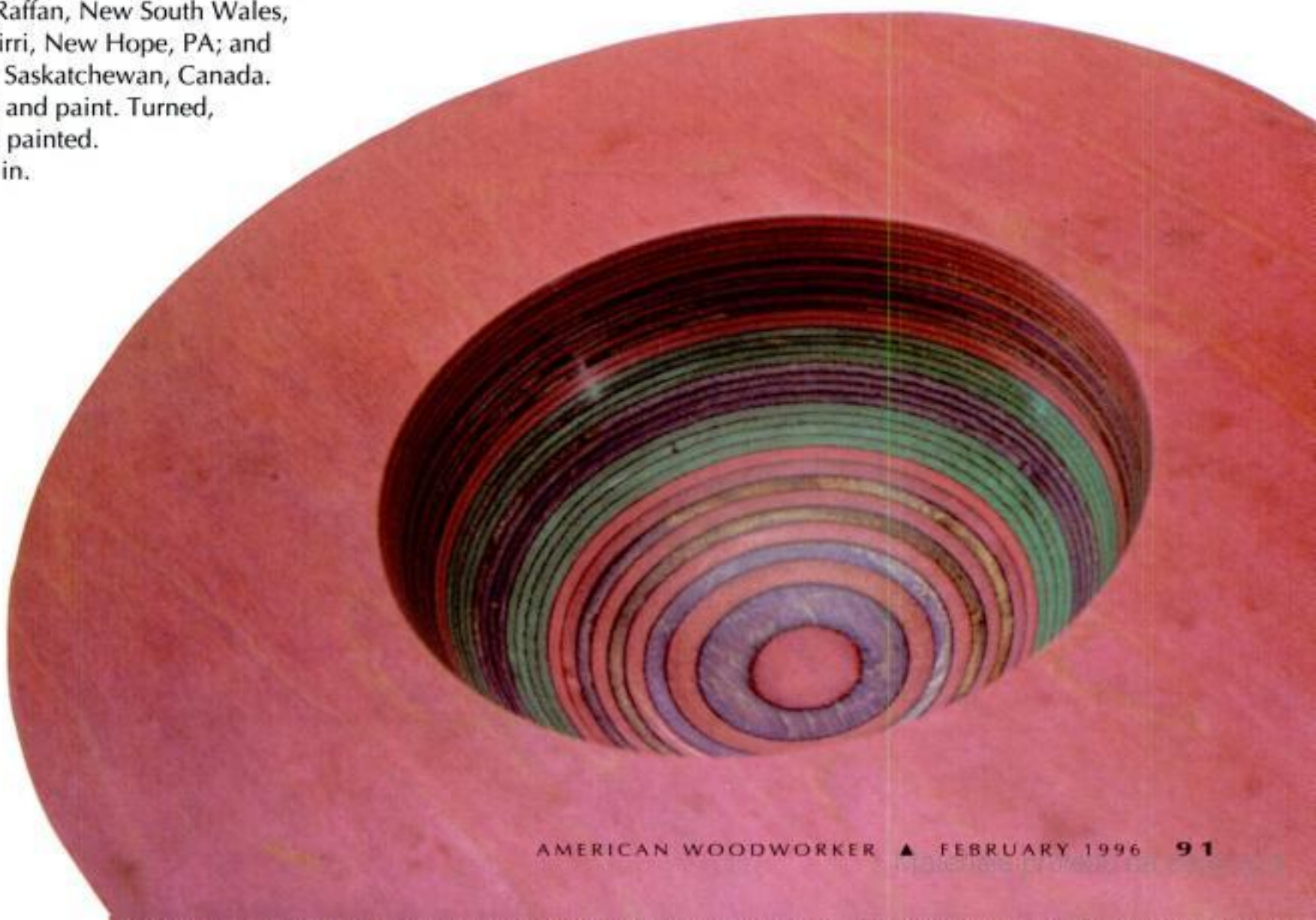
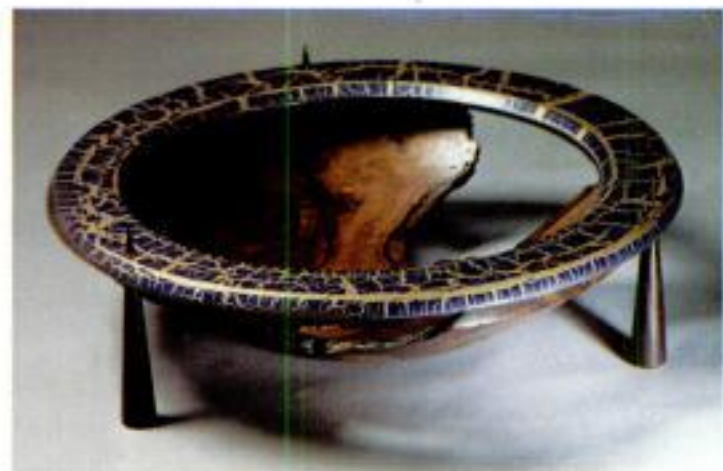
by Susan Ellison, Bantry, MD. Marine-grade birch plywood, aniline dye stains.

Dia: 11 in. H: 2¼ in.

PHOTO BY RICHARD DORSIN

▶ **Bowl** by Tim Zikratch, Pocatello, ID. Walnut, ebony, crackle paint finish. Dia: 16 in. H: 5 in.

PHOTO BY TIM ZIKRATCH



CLASSIFIEDS

Classified rates — \$6.00 per word, 15 word minimum. For more information write, call or fax: AMERICAN WOODWORKER, Diane Wallbillich, 33 East Minor Street, Emmaus, PA 18098, (610) 967-8123. Fax: (610) 967-7692.

Wood

COCOBOLO—1x2x12, 100 PIECES, excellent quality, \$125 delivered (Continental U.S.) 40,000bf of assorted sizes available. Visa/MC. (619) 434-3030.

FANTASTIC INVENTORY—Logs, lumber, turning blanks, instrument woods. Catalog \$2. Gilmer Wood Co., 2211 NW St. Helens Rd., Portland, OR 97210. (503) 274-1271.

BUY TWO BOWL BLANKS—GET ONE FREE! Now's your chance to experience the rewards of turning Mesquite, Red Heart Pecan, Burr Oak and more at LOW sawmill to you prices. Texas Native Wood Products, Inc., Possum Kingdom, Texas. VISA/MC Accepted—Call (800) 229-7994.

GOOD HOPE HARDWOODS—Curly cherry, walnut, figured mahogany and tiger maple. Highly figured Claro walnut in matched sets for fine furniture and in flitches up to 54 in. wide by 13 ft. long. Norman Hughes, 1627 New London Rd., Landenberg, PA 19350. (610) 274-8842.

WHITE CEDAR, CHERRY, Bird's-eye & curly maple; plus burls for turners. 1/8 in.—2 in. thick; planed 2 sides; ripped 2 edges. 100% guaranteed. Send for FREE catalog. Hartford Woodworks, Box 41B, Blaine, ME 04734. (207) 425-2911.

CALIFORNIA'S FINEST QUALITY BURLS: Redwood lace, maples, buckeye, walnut, yew, oak, madrone, manzanita, myrtlewood, rhododendron, etc. Direct. All uses. Call Burl Tree: (800) 785-BURL (2875).

LOOKING FOR TOP QUALITY PA hardwoods? Then we're looking for you at Croffwood Mills! "GOOD WOOD" Reddi-Cut surfaced from 1/8" to 3" thick. "Satisfaction Guaranteed!" Free Catalog: (814) 546-2507.

PREMIUM QUALITY QUARTER-SAWN White oak. Plane sawn red & white oak, walnut, cherry, & ash. ALSO—Red aromatic cedar for crafting. Plus 1/4-in. cedar—Great for closet lining. Gillihan Wood Products, #3 Windstone, N. Little Rock, AR 72120.

HARDWOODS CUT TO ORDER
120 species in stock • From 1/4" to 4" thick
Burls & blocks for turners • Veneers • Custom
mouldings • Other woodworking supplies
Wood I.D. Kits — \$59.95
COLONIAL HARDWOODS INC.
7953 Cameron Brown Ct.
Springfield, VA 22153
(800) 466-5451 • 703-451-9217

WCW MESQUITE—Your #1 source for Texas mesquite lumber. P.O. Box 636, Hondo, TX 78861. (210) 426-3000.

FIGURED MAPLE IS OUR FOCUS. Curly, quilted, burl & spalted maple. Boards, blocks & instrument. Randle Woods, P.O. Box 96, Randle, WA 98377. (360) 497-2071.

SAWMILL DIRECT. Over 70 exotic species. Ebony, cocobolo, bocote, chac tekoke, satinwood, rosewoods, cuban mahogany & more in lumber, squares, bowl stock, slabs. Quality at the right price. S.A.S.E. Tropical Exotic Hardwoods, Box 1806, Carlsbad, CA 92018. Visa/MC. UPS daily. Mitch Talcove (619) 434-3030.

20BF BULK PACKS of selected lumber: Hickory \$1.75/bf; Red Oak \$2.20/bf; Hard Maple \$2.00/bf. Additional Species. FREE Catalog. Visa/MasterCard. Badger Hardwoods of Wisconsin Ltd., N1517 Hwy 14, Suite AW612, Walworth, WI 53184. (800) 252-2373. Email: Badgerwood@aol.com

Wood Parts/Craft Supplies

CHAIR SEATING & BASKET-WEAVING supplies. Large variety, including Shaker tape, cane, books, tools, more. Retail. Wholesale. Catalog \$2. Royalwood Ltd., 517-AW, Woodville Rd., Mansfield, OH 44907. Phone: (800) 526-1630. Fax: (419) 526-1618.

LEATHERCRAFT FOR FUN and profit!!!! Big 80 page wholesale catalog. \$2. (refundable!) Leather Unlimited, AW1095, Belgium, WI 53004-9990.

Plans/Kits

FURNITURE PLANS CATALOG. Over 200 furniture plans and wood-working projects—illustrated. Send \$3.00: Vines, Dept. F, Box 8268, Naples, FL 33941.

MUZZLELOADING RIFLE KITS: Assemble your own Pennsylvania or Kentucky rifle, 1861, 1863 Springfield, Brown Bess, Charleville, or other muzzleloading rifles with one of our kits. Order the GIANT 600-pg. Dixie Gun Works catalog today! Send \$5 or \$8.50 COD to: Dixie Gun Works, Dept. AW, P.O. Box 130, Union City, TN 38261. Or call: (901) 885-0700.

SCROLL SAW PATTERNS & BOOKS by John Nelson. Send \$1.00. Nelson Designs, Box 422-C, Dublin, NH 03444-0422.

WOODEN GEARED CLOCK PLANS. Easy, unique! Free information. Riggs Publications, Box 2983, Gardnerville, NV 89410.

THE CLOCKMAKERS SOURCE! Over 2500 items wholesale! (example: 3/4" clockmakers forstner bit only \$19.50!) Color 64 page catalog and two clock plans \$3.00 deposit (credited). Steebar, P.O. Box 980-AW, Andover, NJ 07821-0980.

FULL-SIZE PROFESSIONAL PLANS, catalog \$3. Over 200 professionally designed plans for building fine furniture. Furniture Designs Inc., CN-16, 1827 Elmdale Ave., Glenview, IL 60025.

Tools/Equipment

HAND-FORGED CHISELS, knives and custom work. Catalog \$1. Cape Forge, Box 987, Burlington, VT 05402-0987.

TASHIRO'S SHARP JAPANESE TOOLS since 1888. Free ZETA™ saw system catalog. 2939 4th Avenue South, Seattle WA 98134. (206) 621-0199. FAX (206) 621-0157.

QUALITY GERMAN WORK-BENCHES at reasonable prices. Diefenbach Benches, Box 370043, Denver, CO 80237. (800) 32-BENCH. (800-322-3624).

REDI CLAMP—Show Demo—features 3 gluing levels, 6 heavy duty, 32" Taylor clamps. \$595.00 plus freight. Call JLT Clamps at (914) 452-3854.

I NEEDED TWO 6" BAR CLAMPS (frame & panel). Sleepless night created \$7.00 substitute. Design works great! Plans—\$10.00, ck/m.o. Send S.A.S.E. to: Myron Bowlby, 1072 South S.R. 213, Tipton, IN 46072.

SCANDINAVIAN CARVING AXES, bowl adzes, drawknives, slicks, broadaxes, crooked knives and custom work. Send \$2.00 for catalog to: Bear Creek Tool, 201 N. Bear Creek Road, Marshall, NC 28753.

Accessories

DUST COLLECTION FOR SMALL SHOPS. Send S.A.S. envelope for description and catalog. F. Weiss, Box 3195, Ashland OR 97520.

ATTENTION WOODTURNERS: Steel faceplates, zinc oxide (rust resistant). Turners' smocks with drawstring neck. Faceplates, P.O. Box 2043, Kings Mtn., NC 28086 or (704) 629-3205.

SPECIALTY LATHE TURNING live tail center cup. Send S.A.S. envelope for description. F. Weiss, Box 3195, Ashland, OR 97520.

NON-SLIP PAD Holds wood in place. Send \$1.00 for sample, PAD, P.O. Box 314, Hornell, NY 14843-0314.

Musical Instruments

GUITAR, BANJO, MANDOLIN—and violin building materials. Repair tools, replacement parts, tone woods and finishing supplies. FREE 104-page catalog. Stewart MacDonald's Guitar Shop Supply, Box 900WV, Athens, OH 45701. (800) 848-2273.

Books/Videos/Software

COMPUTERIZED SEARCHING: woodworking master index, 17 magazines, 716 issues, 17600 articles. Updated regularly. DOS, Windows. Satisfaction guaranteed! \$61.95 Free information. Dept. 11401, Infodex Services, 10609 King Arthurs Ct, Richmond, VA 23235-3840.

WOODWORKING INDEXES, software/printed. Locate information for better use of woodworking magazines. Yearly updates. DOS, Windows, Windows95, 54.45. Printed version, \$24.95. FREE brochure. WOODFIND, Box 2703L, Lynnwood, WA 98036.

Hardware

ATTENTION WOODWORKERS: PROFESSIONAL & HOBBYIST. Save on screws, hinges, glue, wooden parts & more! Professional Discount Hardware: (800) 248-1919.

Finishing Supplies

SPRAY-ON SUEDE. FREE brochure and sample. New Mini-Flocker. Donjer Products, Ilene Ct., Building 8A, Bellemead, NJ 08502. (800) 336-6537.

Business Opportunities

MAKE MONEY IN MAIL-ORDER. Proven success. Information: Send \$1.00 to: A.I.R., 3934 S.E. 27th, Dept. AW01, Del City, OK 73115.

OUR COWBOY HAS GONE WILD!! For free information about our gun slinger whirley gig contact Spicewood Books, P.O. Box 136, Spicewood, TX 78669.

MARKETPLACE

For more information write, call or fax: American Woodworker, Diane Wallbillich, 33 East Minor Street, Emmaus, PA 18098, (610) 967-8123. Fax: (610) 967-7692.

AIRSTREAM AH5 \$342.00

Racal Respirators for all types of woodworking dusts.

Call for FREE info

1-800-328-1792.

Credit cards accepted.

FREE SHIPPING



AIRWARE AMERICA (formerly Airstream)
Box 975, Elbow Lake, MN 56531

READER SERVICE NO. 94

WEST SYSTEM

BOATBUILDERS SWEAR BY IT,
and so will you.

Strong, waterproof WEST SYSTEM® Brand epoxy is more than a 2-part adhesive. It's a complete system of resin, hardeners, fillers and additives from which you can easily create the perfect bonding, coating and sealing agents for your wood or composite project.

For a free copy of the 33-page WEST SYSTEM® Technical Manual & Product Guide, write:

Gougeon Brothers, Inc.

Dept. 42, P.O. Box 908

Bay City, MI 48707

READER SERVICE NO. 79

WIDE SELECTION OF HARDWOODS



Mahogany, Quartersawn White Oak, Curly Maple, Cherry, Walnut, Red Elm, Sassafras, Basswood
Wide & Thick Stock Available

800-758-0950

2050 Elmwood Ave., Buffalo, NY 14207

READER SERVICE NO. 83

POWER PRECISION PERFORMANCE

Get the POWER of PRECISION angle cutting with an innovative new design in miter gage technology that provides accurate, repeatable PERFORMANCE. Eliminates trial-and-error, accurate to within minutes of a degree, quick and easy-to-use.

SEND FOR FREE BROCHURE.

DYNAMIC ENGINEERING • P.O. Box 14772 • Tucson, AZ 85732

READER SERVICE NO. 86

BOB KAUNE

specializing in



buy and sell

ANTIQUE & USED TOOLS for
COLLECTORS & WOODWORKERS®

Quality selection of scarce, older and complete, working handtools for collectors and woodworkers—planes, scrapers, spokeshaves, chisels, saws, levels, rules, unusual items, etc. Hundreds of ready to use pre-1960 tools. Illustrated lists published 5 times a year.

SUBSCRIPTION > \$12.00 for 5 LISTS

CURRENT LIST > \$3.50

SATISFACTION GUARANTEED

511 W. 11th • Dept. AW96 • Pt. Angeles, WA 98362
(360) 452-2292

12th ANNUAL Workshop SHOW

FEB. 23, 24, 25 1996
TORONTO, CANADA

NORTH AMERICA'S PREMIER WORKSHOP & DO-IT-YOURSELF EVENT

Three exciting days of seminars, and live demonstrations. Shop the latest in tools and take advantage of the Canadian dollar!

FOR FURTHER INFORMATION CALL
(905) 475-6440 Ext #161
Exhibitors Welcome

READER SERVICE NO. 106



GROFF & HEARNE LUMBER, INC.

Curly Cherry 4/4 to 16/4 • Birdseye & Tiger Maple
Premium Walnut & Cherry, etc. and Many Unusual Species!
Matching Ritches, slabs to 40" wide
K.D. Nationwide & International Shipping
No Order Too Large or Too Small
(717) 284-0001 800-342-0001 FAX (717) 284-2400
858 Scofield Road, Quarryville, PA 17566

READER SERVICE NO. 87

We have it all!

Battery and
mechanical
movements,
fit-ups, and dials.
Write or call for
our FREE
Catalog #WW.



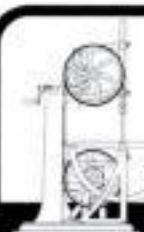
S. LaRose, Inc.

P.O. Box 21208, 3223 Yanceyville St.

Greensboro, NC 27420

(910) 621-1936

READER SERVICE NO. 81



FREE Woodworking Catalog

BIG savings on wide selection of:

- Band Saw Blades - hard edge, bi-metal and wood band
- Fret/Scroll Saw Blades - 5" plain and pin end
- Sanding Belts and Discs
- Books, Lettering Guides, etc.

Walnut Creek
Woodworking Supply Co.
3601 W. Harry, Dept. AW, Wichita, KS 67213
800-942-0553

READER SERVICE NO. 82

Sandy Pond Hardwoods, Inc.

AMERICAN EXOTICS
Birdseye & Tiger Maple
Curly Cherry, Flame Birch
Lumber & Flooring

800-546-9663

717-284-5030



READER SERVICE NO. 99

COMPUTER ASSISTED VENEER SELECTION

Windows® program describing in detail architectural veneers and matching, slicing, colors, figure, specifying, etc.

\$24.95 & \$2 S/H — Check or Money Order to:

CAVES • P.O. Box 536, Freehold, NJ 07728
or for CC call: (908) 294-1897

READER SERVICE NO. 84

Pre-Cut Bowl Blank Specials!

Claro & English Walnut; Bay Laurel:

3" thick: 6" - \$4; 8" - \$7; 10" - \$10.

Tremendous selection of Burl in Redwood,

Madrone, Maple, & Lombardi Poplar

Thicker sizes up to 36" Dia. in stock or cut to order.

Large Slabs up to 46" wide x 20' long x 12/4



check us out

PETER LANG COMPANY

707-579-1341; 1-800-616-BOWL (2695)

FAX # 707-579-8777

READER SERVICE NO. 80

THE AMERICAN COASTER

7106 Lake Road, Dept. AW9, Montrose, MI 48457

- Plan #1: 5 sheets each set (18" x 24")
- Money back guarantee
- \$12.95—1 plan
- \$21.95—2 plans (includes S&H)
- Plan #3: 14" x 15" x 42" L

- 16" x 14" x 34" L
- Easy-to-read full-scale blueprints
- 1890 to 1930
- Miniature Farm Wagon
- 28" x 18" x 40" L
- 6 sheets each set (30 x 36)
- \$29.95
- Removable sides
- Plan #8

- ALSO AVAILABLE:
- Wooden Wheel Kit • Rubber Tire • Metal Parts Kit •
- (810) 639-7004
- 9:00 am—11:00 pm, E.S.T.
- BROCHURE \$1.00 (Free with order)

READER SERVICE NO. 165



WETZLER CLAMP

Route 611, P.O. Box 175
Mt. Bethel, PA 18343

FAX: 717-897-5891 800-451-1852

MADE IN U.S.A.

READER SERVICE NO. 100

SAWMILL \$3795.

FREE INFORMATION

Silvacraft Sawmills

90 Curtwright Dr.

Unit 3

Amherst N.Y. 14221

1-800-661-7746



READER SERVICE NO. 89



SCROLLSAW FRETWORK

PATTERNS & SUPPLIES

Intricate clocks • jewelry boxes • silhouettes
Clock mvmnts • books • blades—\$21.95/gross
FREE CATALOG call 1-800-470-9090
or write **WILWOOD DESIGNS**
Box 661-AW, Richland Center, WI 53581

READER SERVICE NO. 93

"NEW" WOODWORKING HAND TOOL CATALOG

Send \$2, Refundable on Your
First Order. Min. Order \$10.



930 Ashby Ave.
Berkeley, CA 94710
(510) 843-4390

READER SERVICE NO. 205

GENERAL WOODWORKING EQUIPMENT

QUALITY AND PERFORMANCE FEATURES REQUIRED FOR
SERIOUS WOODWORKING MADE IN CANADA,
WITH WORKMANSHIP AND PERFORMANCE GUARANTEED.

special pricing

To order your own copy of the
**GENERAL WOODWORKING
EQUIPMENT CATALOGUE**

50 pages of illustrated equipment detailed, write to:

ASHMAN TECHNICAL LTD.

351 Nash Rd., N. Hamilton, Ontario, CANADA L8H 7P4
Phone 905-560-2400 • FAX: 905-560-2404 • 1-800-668-5721

READER SERVICE NO. 95



Carve Buddy the Cowboy with
this complete kit. Kit includes
2 color photos, carving &
painting instructions & bass-
wood cutout to match. Only
\$6.95 plus \$2.90 shipping.

Send \$1.00 for our new 1996
Carvers Catalog with over 1500
decoy & figurine carving supplies,
finished decoys & figurines.
Catalog is free w/order.
MN Res. add 6.5% sales tax.

Send to

JENNINGS DECOY COMPANY

601 Franklin Ave. NE Dept. A1 • St. Cloud, MN 56304
or call 1-800-331-5613 • MC/V/D • Order yours today!

READER SERVICE NO. 166

GIANT HARDWOOD SELECTION

The finest selection of hardwoods, veneers, turning
squares and hard to find exotics. All in stock and
ready for prompt shipping. **FREE CATALOG**

U.S. MAHOGANY CORP.
746 Lloyd Road • Aberdeen, NJ 07747
(908) 583-6300 • Fax (908) 583-6303

Serving the
woodworking
industry
since 1954.

Mention this ad and receive 10% off first order.
(\$50.00 minimum, excludes S&H)

READER SERVICE NO. 92



JAN. 12-14, 1996

Stampede Park
Roundup Centre
Calgary, Alberta
**FREE Seminars—Tool Draws
Demonstrations**

INFO: DJC Enterprises • Ph/Fax (403) 236-5834

READER SERVICE NO. 85

QUALITY NORTHERN APPALACHIAN HARDWOOD

FREE delivery. Bundled, surfaced shrink-wrapped.
Satisfaction Guaranteed.

NIAGARA LUMBER & WOOD PRODUCTS, INC.
47 Elm Street, East Aurora, NY 14052
(800) 274-0397

READER SERVICE NO. 88

Big Threads FOR BIG PROJECTS



Router attachment comes with especially
designed taps and complete instructions
for making both internal and external threads

For information call or write: Dept. AW
THE BEALL TOOL CO.
541 Swan's Road., N.E. Newark Ohio 43055
Toll Free 1-800-331-4718

READER SERVICE NO. 78

EXOTIC & DOMESTIC HARDWOODS

LUMBER • PLYWOOD • VENEERS • TURNING BLOCKS • BURLS



We specialize in small
to medium size orders!
Over 70 species of
hardwood in stock.

CALL FOR PRICE LIST:
516-378-2612
FAX 516-378-0345

READER SERVICE NO. 170

Child's Folding Rocker



• Complete Plans \$7.95
• Approximate Size: 10.5" x 17"
Matching Loveseat pattern FREE
with each order

Send To: Breckenridge Reproductions
12055 E. Mt. Morris Road • Dept. 7001
Davison, MI 48423

READER SERVICE NO. 167

PREMIUM HARDWOODS Exotic & Domestic

Plywood • Abrasives
Glues • Veneer

CIRTAIR PLYWOOD, INC.

677 Galloway Avenue, Memphis, TN 38105

800-593-3304

READER SERVICE NO. 96

TUCKAWAY

SERVICE QUALITY

Clear White Pine up to 24"
Northern Hardwood, matched sets
Figured, Curving & Turning Wood
Free Price List

603-795-4534 • Rt. 10, Lyme, N.H. 03768

TIMBER CO.

READER SERVICE NO. 91

A Complete Turner's & Carver's Supply

- Henry Taylor Turning and Carving Tools •
- Hi-Tec Turning Tools By Jerry Glaser •
- Tools For Hollow Turning By D. Stewart •
- OneWay Bowl Chucks and Ring Tools •
- Harnen • Ken Helvie • Foredom • Automach



Write or Call For Free Catalog
7123 SouthWest Fwy
Houston, TX 77074
Phone: 713/981-9228
Fax: 713/981-6104

READER SERVICE NO. 97

OVER 1500 PATTERNS

Huge variety of quality blueprint plans & full size patterns!
ACCENTS Dept. BG16 • Box 7387, Gonic, NH 03839
ILLUSTRATED CATALOG plus SAMPLE PATTERN only \$2.00

READER SERVICE NO. 204

NEW! CARLTON CHUCK FROM AXMINSTER

PACKARD WOODWORKS

Woodturning Tools and Supplies

Dept. AW1, PO Box 718
Tryon, NC 28782
(704) 859-6762

Complete Catalog for Woodturners

READER SERVICE NO. 169

HARDWOOD ADVANTAGE PACKS!

25 bf, 30"-60"L, 4"-10"W, S2S to 13/16", clear one face.
Cherry \$79, Poplar \$56, Red Oak \$78, Hard Maple \$76

CALL 800-724-0132

We Pay most UPS shipping. Catalog \$1.00; free with order.

SHORT PACKS ALSO AVAILABLE

BRISTOL VALLEY HARDWOODS

4054 Rt. 64 at Rt. 20A, Canandaigua, NY 14424

READER SERVICE NO. 168

The AUTHENTIC REPRODUCTIONS! Classical Collection



Quality handcrafted European
hardware. Perfect for resto-
ration or recreation of fine
cabinetry, furniture, doors, and
windows. Many hard to
find iron, brass, wood, and
porcelain olde worlde
pieces. Beautiful catalog,
nothing else like it! Over
1000 items pictured at
actual size. 200 pages
with brief history of
European Styles.

Since 1916

Send \$25.00 to:
Croesus City HARDWARE CO.
1047 N. Allen Ave. Dept. A92
Pasadena, CA 91104

ANTIQUE HEART PINE LUMBER

Resawn from pre-1900's salvaged timbers—widths
4"-16"; any thickness. Other woods available.

SPECIALTY LUMBER, INC.

6412 Yelton Road, Appling, Georgia 30802
(706) 541-9231 or (706) 541-1039 FAX.

READER SERVICE NO. 90

MARKETPLACE

Now! Your Router Becomes a Molder, Jointer, Shaper, Joint Maker, Door Maker, Slot Mortiser...all with the

ROUTERSHOP™

New! The RouterShop™ gives you 0° to 90° adjustment of the router bit. It's patented two-piece tilting, aluminium top lets you quickly turn it into one of six stationary routing tools!

FREE FACTS
Caribou Tool Co.

1-800-800-3832
1043 S. Main • Dayton, OH 45458

Dept. AW-1

DOWEL PINS

Dowel Rods Spindles Buttons
Knobs Plugs Balls

Free Brochure
Birch, Oak, Ash, Ramin, & More

EXCEL DOWEL & WOODCRAFTS, INC.
2211 N. Elston, Chicago, IL 60614
Phone (312) 384-3544
Fax (312) 384-4250

READER SERVICE NO. 98

LIBERON™/Star™ Supplies
P.O. Box 86, Mendocino, CA 95460
Order Desk Only: 800-245-5611
For Information: 707-937-0375

Carnauba & Beeswaxes
BLACK BISON Cabinet Makers Wax
Aniline Dyes, LIBERON Steel Wool
Stains, HOT STUFF Instant Glues
Star™ Touch-Up & Repair Supplies

MARKETPLACE ADS

Your Tool To Increased Sales!

AMERICAN WOODWORKER
Advertising Department
610-967-8123

STATEMENT OF THE OWNERSHIP, MANAGEMENT AND CIRCULATION OF AMERICAN WOODWORKER REQUIRED BY ACT OF OCTOBER 23, 1962: SECTION 4369, TITLE 39, UNITED STATES CODE, FILED OCTOBER 10, 1995.

AMERICAN WOODWORKER is published seven (7) times a year at 33 East Minor Street, Emmaus, PA 18098, publication and general business offices.

1. The names and addresses of the publisher, editor and managing editor are: Publisher—David Sloan, 33 East Minor Street, Emmaus, PA 18098. Editor—Ellis Walentine, 33 East Minor Street, Emmaus, PA 18098. Managing Editor—Tim Snyder, 33 East Minor Street, Emmaus, PA 18098.

2. The owner is: Rodale Press, Inc., 33 East Minor Street, Emmaus, PA 18098. The stockholders thereof being Anna Rodale and Ardath Rodale.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of the total amount of bonds, mortgages, and other securities are: None.

	Average no. of copies each issue during preceding 12 mos.	Single issue nearest to filing date
A. TOTAL NO. COPIES (Net Press Run)	425,676	424,000
B. PAID CIRCULATION		
1. Sales through dealers and carriers, street vendors and counter sales	44,334	44,374
2. Mail subscriptions	269,221	260,251
C. TOTAL PAID CIRCULATION (Sum of B1 and B2)	313,555	304,625
D. FREE DISTRIBUTION BY MAIL, CARRIER OR OTHER MEANS SAMPLES, COMPLIMENTARY, AND OTHER FREE COPIES	32,153	31,224
E. TOTAL DISTRIBUTION (Sum of C and D)	345,708	335,849
F. COPIES NOT DISTRIBUTED		
1. Office use, leftover, unaccounted, spoiled after printing	2,252	5,900
2. Returns from news agents	77,716	82,251
G. TOTAL (Sum of E, F1 and F2)	425,676	424,000

AMERICAN WOODWORKER™ BACK ISSUES

COMPLETE YOUR COLLECTION

- #10 October 1989: Tool Cabinet, Glues
- #11 December 1989: Shaker Boxes, 2-Sided Easel
- #12 February 1990: Router Basics, Parson's Table
- #13 April 1990: Turned Birdhouses, Slot Mortiser
- #15 August 1990: Carving Letters, Quilt Rack
- #16 October 1990: Veneer Press, Sharpening
- #22 October 1991: Drawer Making, Hanging Corner Cupboard
- #23 December 1991: Riding Locomotive, Slat-Top Desk
- #24 February 1992: Windsor Chair, Router Table
- #26 June 1992: Tall Clock Part 2, Angled Dovetails
- #27 August 1992: Shaker Sewing Stand, Tiny Turnings
- #29 December 1992: Tilt-Top Table, Combo Machines
- #30 February 1993: Shop Lighting, Harvest Table
- #33 August 1993: Buyer's Guide to Plunge Routers and Router Bits, Making a Bedroom Suite
- #34 October 1993: Guide to Glues, Colonial Bench, Buyer's Guide to Biscuit Joiners
- #35 December 1993: Christmas Tree Ornaments, Breakfast Tray, Buyer's Guide to Cordless Drills
- #38 June 1994: Buyer's Guide to Bandsaws, Queen Anne Lowboy
- #43 February 1995: Perfect Planes, Ultimate Steam Box, Tablesaw Outfeed Cart
- #44 April 1995: Revolutionary Router Table, Buyer's Guide to Vacuum Veneering
- #45 June 1995: Colonial Tavern Table, Buyer's Guide to Shop Vacs, Breadboard Ends
- #46 August 1995: Buyer's Guide to Router Table Fences, Arts & Crafts Armoire, Vacuum Clamping
- #47 October 1995: Rustic Rocker, Japanese Toolbox, Period Pulls
- #48 1996 Tool Buyer's Guide

PRE RODALE-PRESS ISSUES

- Spring 1986: Penna. German Cupboard, Eli Terry Clock
- Winter 1987: Wall-Mounted Tool Cabinet, Toy Locomotive

\$4.50 PER ISSUE

(Includes Shipping)

**SUPPLY LIMITED
ORDER TODAY!**

We have a limited supply of **AMERICAN WOODWORKER** back issues for sale. When these are gone, there'll be no more. Each issue features great articles, projects and woodworking tips. Don't miss out. Order today!

Check off issues you want. Order by phone, or mail ad with check/money order to:

AMERICAN WOODWORKER
PO Box 7591
Red Oak, IA 51591-0591

**ORDER
TOLL FREE:
800-666-3111**

Visa or Mastercard only



\$4.95 NEW INDEX!
The Complete American Woodworker Index Includes: Issues #1-42; 1988-1994
The **AMERICAN WOODWORKER** Index zeros in fast on the information you need. Includes every article, project, Tech Tip and more from 1988 through 1994—all listed by subject and cross-referenced for easy use.

☐ **AMERICAN WOODWORKER BACK ISSUES \$4.50 Each**

(Please check off the issues you want)

☐ **INDEX \$4.95**

Total Amount Enclosed _____

Name _____

Address _____

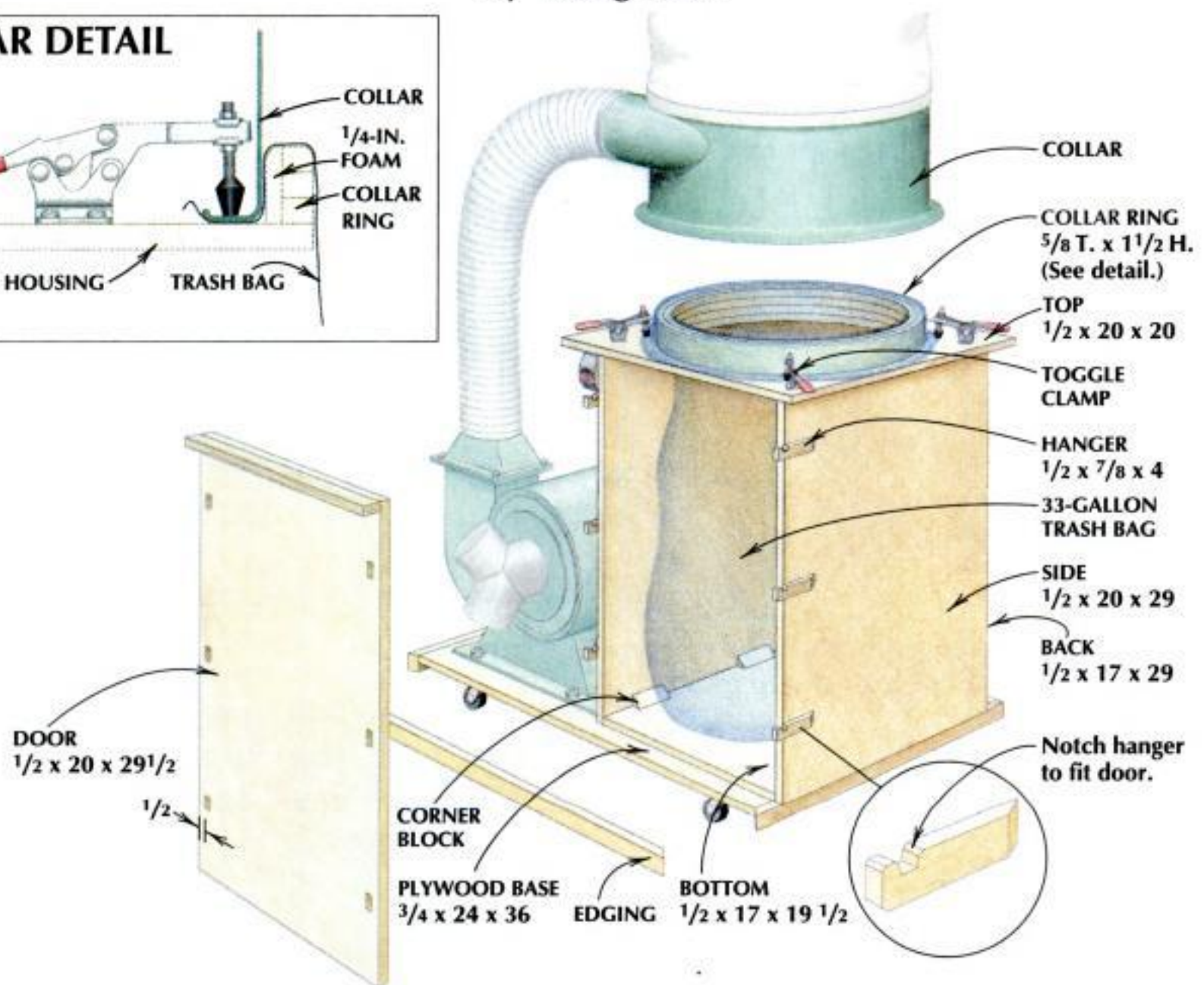
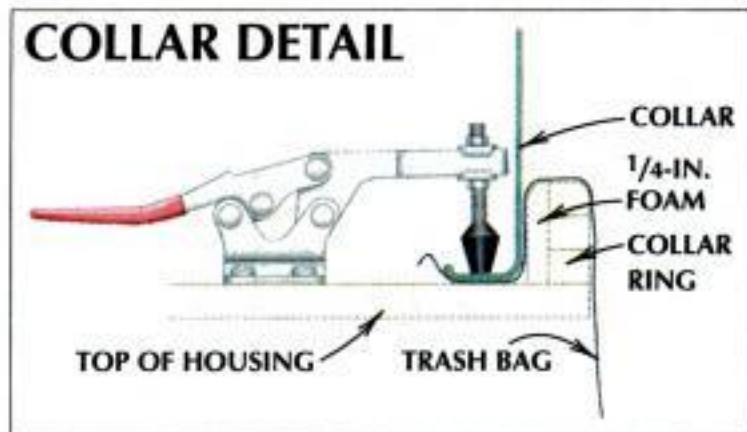
City _____ State _____ Zip _____

SHOP SOLUTIONS

Dust Collector Upgrade

Twist, Tie and Toss Your Chips and Sawdust

by Yeung Chan



I've worked in many woodworking shops, and emptying the the dust collector was always a mess. Upending the bag resulted in an annoying spill of dust and chips. My retrofit, which can be adapted to fit most dust collectors, makes this common chore easier and cleaner.

I designed the 1/2-in. MDF housing around a 33-gallon trash bag. When the bag's full, just lift off the door, unclamp the bag, twist, tie and toss. I also repositioned the machine's on-off switch to a more convenient location on the housing.

BEST SOLUTION WINS!

Send photos, sketches and an explanation of your fixture to: AMERICAN WOODWORKER, 33 E. Minor St., Emmaus, PA 18098. Next

issue's contributor will receive this Dremel two-speed scrollsaw with quick-change blade adaptor, list price \$301.



The collar ring holds the steel collar and the top edge of the trash bag. Make the ring 1/2 in. smaller than the inside diameter of the collar. A layer of foam (available at your local fabric store), glued to the outside edge of the collar ring, creates an airtight seal. Four toggle clamps secure the collar and bag to the lid. The door prevents the bag from blowing out when you turn on the collector. *Toggle clamps are available from Woodworker's Supply, (800) 645-9292. ▲*



Quick and clean. Lift off the door, loosen the toggle clamps, and you can easily dispose of the trash bag held inside this box. Both the collector and the box are mounted on a mobile base.



Plane and simple.

It looks like a planer, but that's just half the story. JET's new combination tool

both planes and molds—with a

simple change of cutters. Offering a 13" planing capacity and more than 40 molding cutter sets, the JET planer/molder is two tools for the price of one: about \$799. Plus, JET will send you a \$50 rebate when you buy before 2/28/96.



Call
1-800-274-6848
to receive a free
demonstration video showing
planing and molding, or for the
name of your local JET distributor.

J E T
EQUIPMENT & TOOLS

Material Auburn, WA da copyright
READER SERVICE NO. 6

ENLON®

IMPORT CORPORATION

The Power You Can Trust

ORDERS

1-800-888-9697

Mon.-Fri. 7:00am-5:00pm (Pacific Time)
Sat. 9:00am-1:00pm (Pacific Time)

Prices & Specifications are subject to change without notice.
*F.O.B. City of Industry, CA or Clarksburg, WV

New Year Sale

ENLON is now in its 4th year of serving you with innovative new products and improvements. ENLON's quality far surpasses the other brand names that look like ENLON's, such as the ENLON 10" H.D. Table Saw #EN3202, Oscillating Spindle Sander #EN3407 and much more. Don't be fooled by look-alike low quality products from other companies.

10" TILTING ARBOR SUPER HEAVY-DUTY TABLE SAW MODEL#EN3202

This industrial quality Table Saw features a heavy-duty cast-iron table top, 3H.P., 220V, 15 AMPS, three belt drive to transmit maximum power to the blade, Enlon's exclusive self-aligning 36" rip fence system, heavy-duty steel stand with dust collector port, magnetic safety switch and much much more.

***EN3202**
REG.: \$795.00 **SALE: \$735.00**

6 EN3202R 56" RIP CAPACITY EXTENSION RAILS \$185.00
Table top not included

5 OUTFEED ROLLER ATTACHMENT
EN3227(w/18") \$160.00
EN3228 (w/37") \$220.00

1 ***EN3225**
HEAVY-DUTY
SLIDING TABLE \$550.00

2 EN3229
SWITCH SWING
MOUNTING BRACKET
\$16.00

3 EN3221
MOTOR COVER
\$50.00

4 EN3226
MICRO-ADJUSTMENT KIT
\$20.00



(OPTIONAL HAND CRANK
ADJUSTMENT KIT ON OUTFEED
AND INFEEED TABLE
ALSO AVAILABLE)

6"X47" HEAVY-DUTY JOINTER
•1 H.P., 110/220V
***EN3101**
REG.: \$365.00
SALE: \$335.00
(4" JOINTER ALSO AVAILABLE)



6" X30" FLOOR STAND EDGE SANDER
•1 1/2 H.P., 110/220V
***EN3406**
REG.: \$495.00
SALE: \$480.00
(BENCH TOP MODEL ALSO AVAILABLE)
Magnetic Safety Switch is Optional



1 1/2 H.P. SHAPER
•110/220V, REVERSING SWITCH
***EN3302**
REG.: \$395.00
SALE: \$375.00
(GREAT OPTIONAL EQUIPMENT ALSO AVAILABLE)



2 H.P. DUST COLLECTOR
•220V, 2 INTAKES @ 4"
***EN-DC20**
REG.: \$289.00
SALE: \$255.00
(1 OR 3 H.P. ALSO AVAILABLE)



FREE
4" X 10'
HOSE!
A \$12.95
VALUE

8"X65" SUPER HEAVY DUTY JOINTER



***EN3102**
•1 1/2 H.P., 220V
REG.: \$640.00
SALE: \$595.00
***EN3106 (2 H.P.)**
REG.: \$675.00
SALE: \$650.00
(OPTIONAL HAND CRANK
ADJUSTMENT KIT ON OUTFEED
AND INFEEED TABLE
ALSO AVAILABLE)



OSCILLATING VERTICAL SPINDLE SANDER
•1 H.P., 110/220V
***EN3407**
REG.: \$565.00
SALE: \$500.00



3 H.P. HEAVY DUTY SHAPER
•220V, MAGNETIC SAFETY SWITCH
***EN3303**
REG.: \$745.00
SALE: \$695.00
(GREAT OPTIONAL EQUIPMENT ALSO AVAILABLE)



(EN3201 SHOWN) **10" H.D. TABLE SAW**
•1 1/2 H.P., 110/220V
***EN3201**
REG.: \$370.00
SALE: \$315.00
***EN3205 (2 H.P.)**
COMES W/EN3202'S FENCE SYSTEM
REG.: \$525.00
SALE: \$495.00

12"X 72" INDUSTRIAL JOINTER
•3 H.P., 220V
***EN3103**
REG.: \$1,795.00
SALE: \$1,750.00
(OPTIONAL HEAVY-DUTY MOBILE BASE AVAILABLE)



24" DUAL DRUM SANDER
•5 H.P., 220V
***EN3409**
REG.: \$1,200.00
INTRODUCTORY PRICE: \$950.00 (GREAT VALUE)



3 H.P. SLIDING TABLE SHAPER
•220V, MAGNETIC SAFETY SWITCH
***EN3304**
REG.: \$950.00
SALE: \$940.00
(GREAT OPTIONAL EQUIPMENT ALSO AVAILABLE)



20" INDUSTRIAL BAND SAW
•3 H.P., 220V
***EN3506**
REG.: \$1,195.00
SALE: \$1,095.00
(MANY GREAT FEATURES)



SHOWROOM/MAIN OFFICE: 17709 E. VALLEY BLVD., CITY OF INDUSTRY, CA 91744
CUSTOMER SERVICE: TEL: (818)935-8888 FAX: (818)935-8889
HOURS: MON-FRI 8:00AM-5:00PM, SAT 9:00AM-1:00PM P.T.



READER SERVICE NO. 4

CALL TODAY FOR YOUR FREE CATALOG
SHOWROOM/DISTRIBUTION CENTER: 12 ARMORY RD., CLARKSBURG, WV 26301
HOURS: MON-FRI 8:00AM-5:00PM, SAT 9:00AM-1:00PM E.S.T.