NEW SKILLS

• HOW TO MAKE LEADED-GLASS PANELS
• BARKROSSING
• CLAMPING MITERED CORNERS

SENSATIONAL PROJECTS
Leaded-glass wall clock
Perfume vial
Snail rocker
Picture frame
Keepsake box
Barn play set

FUN-IN-THE-SUN TABLE & CHAIR SET
LET'S CLEAR THE AIR!

Newly aware of the dangers of airborne dust, woodworkers in shops of all sizes are investing in dust collection systems. You should, too. These four popular models from Grizzly are extremely efficient and very quiet. So, why take chances with your health? Take advantage of these unbelievably low prices and enjoy a safer woodworking environment.

**DUST COLLECTION ACCESSORIES**

| PLASTIC BLAST GATES | MODEL G1843  3" $4.95  MODEL G1845  4" $5.95  MODEL G1846  5" $9.95  MODEL G1845  6" $10.95 |
| ALUMINUM BLAST GATES | MODEL G1553  3" $10.95  MODEL G1571  4" $13.95 |
| FLOOR SWEEP SYSTEM | MODEL G1840 $9.95 |
| T | MODEL G1546 3" $4.50  MODEL G1547 4" $5.95 |
| Y | MODEL G1551 3" $4.99  MODEL G1552 4" $6.99 |
| SPLICE | MODEL G2481 3" $3.99  MODEL G2482 4" $4.99 |
| ELBOW — 90° | MODEL G1644 3" $3.99  MODEL G1645 4" $4.99 |
| REDUCER | MODEL G2483  Reducer 3" x 2" $3.99  MODEL G1519  Reducer 4" x 3" $3.99 |
| ADAPTOR (for Shopvac® & Sears®) | MODEL G2551  Reducer 3" x 2-1/2" $4.99 |
| 2-1/2" UNIVERSAL DUST PORT | MODEL G2977 4" x 3-5/8" $5.95 |
| UNIVERSAL DUST HOOD | MODEL G1838 7" x 7" $7.99 |
| JOINTER DUST HOOD | MODEL G1839 6" x 6-1/2" $7.99  MODEL G1841 7" x 6-1/2" $8.99 |
| TABLE SAW DUST HOOD | MODEL G1837 10" x 10" $9.99  MODEL G2480 14" x 14" $11.99 |
| FLEXIBLE HOSE | MODEL G2867 2" x 10' $9.95  MODEL G1674 3" x 10' $11.95  MODEL G1678 3" x 50' $49.95  MODEL G1536 4" x 10' $14.95  MODEL G2868 4" x 20' $29.95 |

**FREE 4" x 10' HOSE WITH PURCHASE OF DUST COLLECTOR!**
HOW WE INVOLVE MANUFACTURERS IN OUR TOOL-TESTING PROCESS

Above, Giorgio Pozzo (right) and Jim Brewer (middle) from Freud talk with Bob McFarlin, one of WOOD magazine's product testers, about our saw blade testing.

O f a l l o u r a r t i c l e s i n WOOD® magazine, none get a closer look from both readers and manufacturers than our tool articles. Small wonder! For many of our readers, our advice on this or that tool category represents their single best source of information available. And the manufacturers, not surprisingly, spend time poring over the test results to see if we gave their tools a fair shake.

Usually, when products/techniques editor Bill Krier lets a company know that we want to test one or more of its tools, our company contact sends us the tool(s), along with any information he thinks we might need. Then we test the product, and if we come up with something problematic, Bill calls back and asks the contact person to respond to our concern, and to supply more information if needed. We feel we owe manufacturers this courtesy.

Too, sometimes a company will send someone to Des Moines to demonstrate one or more of their products and explain features to Bill and other staffers. Such visits always tend to be educational for us. Recently, for example, the folks from Freud flew in to talk about circular saw blades and look in on our testing procedures. They actually saw us test their carbide-tipped saw blades for an issue 63 tool review.

You might wonder at this point: Do companies that represent their product in person have an edge on other companies when it comes testing time? Absolutely not! Do we allow manufacturers to preview our articles prior to publication? No way! What really counts, in the final analysis—and what you read about in WOOD magazine—is the quality of the product and how well it performs in our testing. For more, check out Bill Krier's article beginning on page 30.

Larry Clayton

SUBSCRIPTION SERVICE: For a change of address it is best for you to directly contact your local Postmaster who then will notify us. For any other service on your subscription, please write WOOD Customer Service, P.O. Box 55056, Boulder, CO 80322-5056 (enclose a recent label from your magazine for better service). Or you may phone toll-free 800-374-9663.

EDITORIAL MAILING ADDRESS: WOOD magazine, 1912 Grand Ave., Des Moines, IA 50309-3378.

With the NEW Fein "Triangle" Sander, time consuming, sore finger, bloody knuckle sanding is a thing of the past.

Imagine using a power tool to sand all those areas where before, you had to fold up a piece of paper and "finger sand."

You know all those difficult to sand areas; inside & outside edges, closed corners, coves, spots, glue marks, seams, moldings, intricate profiles and so on. With the Fein "Triangle" Sander, you can sand right up to, into and along edges & corners without dulling the edge or altering the profile.

Here's how it works.

Unlike ordinary sanders, the Fein "Triangle" Sander doesn't rotate. Instead it "oscillates" (a back and forth movement) at a blurring 20,000 times a minute.

New Low Price

We've gotten the price down as low as possible, with a new list price of only $275! (It was $365.00 in 1992).

The Fein "Triangle" Sander takes the drudgery out of hand sanding and frees up hours of your valuable time.

It's easy to get more information, simply call:

1-800-441-9878

FEIN Power Tools Inc.
3019 W. Carson St.
Pittsburgh, PA 15204
(412) 831-2825

©Fein Power Tools, Inc. 1993
MOBILE MACHINE BASES

- Increase your working area
- Store machines when not in use
- Hundreds of models available
- Precision welded steel construction
- Three 2-1/2" wheels for stability
- Dual wheel locks provide positive positioning
- Lifetime warranty

Call for a free catalog

HTC Products, Inc.
120 E. Hudson • P.O.Box 839
Royal Oak, Michigan 48068-0839
(800) 624-2027

Better Homes and Gardens®

WOOD®
The World's Leading Woodworking Magazine

This issue's cover wood grain: sycamore
Cover photograph: John Heibergeron

JUNE 1993

CRAFTSMAN CLOSE-UP

Wonderful willow works 23
A native of Punjab, India, Tchal Virk has discovered the American dream making and selling magnificent willow furniture in his new home, Belgium, Wisconsin.

TURNING

Jewel of a vial 28
Graceful contours, beads, and a spiraled top hint at the beauty of this perfume bottle. An inserted glass vial serves as the actual container.

How WOOD magazine tests tools 30
Look behind the scenes at how we conduct our tool comparisons, and meet the no-nonsense crew in charge of this demanding responsibility.

SHOP-TESTED TECHNIQUES

Leaded-glass panels 32
Learn about the tools, supplies, and processes used in constructing beautiful panels of leaded glass. You'll find this newly acquired skill a perfect fit for numerous woodworking projects.

NOW YOU CAN BUILD IT

Worth-every-minute wall clock 39
Put your leaded-glass skills to work by building this outstanding oak pendulum clock. Find the complete plans and our clock movement source inside.
Cumulative index—issues 50 to 58 43
Looking for the Shaker tall chest from a few issues back? Locate it and other stories quickly in this handy nine-issue resource.

DEVELOP YOUR SHOP SKILLS
How to clamp tricky mitered moldings 47
With this fail-safe process, you're only four steps away from making accurately mitered pieces join seamlessly.

Fun-in-the-sun furniture 48
Celebrate summer by making this handsome outdoor table-and-chair combo. Then, enjoy your handiwork with a cool, refreshing beverage.

CARVING
Barkrosing 54
Discover a decorative technique developed by old-world craftsmen for embellishing wooden spoons, bowls, and other household items.

Patterns, patterns, everywhere 56
Ever see a magazine photograph or other image that would make a great scrollsaw pattern? Here's how to put it to good use.

Smiley, the rocking snail 58
Add this happy-go-lucky mollusk to your playroom, and then watch your child's eyes light up as he or she takes it for a romp.

Tracking down good wood 62
Find out where the better North American woods hail from and why geographic origin makes a difference.

CRAFT SHOP
Olympian display 64
Show off your favorite faces in a classic photo frame.

Beauty and the box 66
Blend contrasting woods when making this captivating container.

Little red tote barn 68
Cows, horses, and fence sections all fit in this kid-pleasing carryall.

SHORT-SUBJECT FEATURES
Editor's Angle ................. 1  Great Ideas For Your Shop .... 16
Talking Back .................. 6  Ask WOOD ................. 19
Tips From Your Shop ........ 10  Products That Perform ....... 76
(And Ours) ................... 10  Finishing Touches .......... 88

Subscribe Now!

Glass Patterns Quarterly magazine brings you more than a dozen projects in every issue with full-size patterns right in the center of the magazine.

GPQ features the best designers in the industry and offers great patterns for every level of expertise.

Each issue also delivers step-by-step instructions, how-to photos, full-color photographs of completed projects, complete materials listings, color suggestions and more.

Glass Patterns Quarterly
P. O. Box 151 * Dept. WOOD 5/93
8300 Hidden Valley Rd., Westport, KY 40077
502-222-5631 * Fax 502-222-4527

Please allow 30 days for delivery of first issue.
HARDWOODS
EXOTIC & DOMESTIC
OVER 75 SPECIES
LUMBER • PLYWOOD • VENEERS
TURNING SQUARES & BLANKS

BOOK OF FINE HARDWOODS
$16.00 ppd in Cont US
Provides geographic source, description, uses and availability for over 250 woods. Over 70 woods shown in full color. Charts compare physical properties, strengths.

COLLECTORS SAMPLE KIT
30 GORGEOUS WOODS
Exotic & Domestic from Around the World
1/2" X 3" X 6" Sanded Finish
Ideal for Collectors, Schools, Craftsmen, Cabinet & Furniture Makers, Architects, Dealers.

PURPLE HEART IVORYWOOD
Deep true purple White to pale yellow
Brazilian Cherry
Salmon red to orange brown

Your Choice, ONLY $3.99/bd ft
20 BD FT MINIMUM, MIX OR MATCH, 3" - 16" WIDE, 3" - 7" LONG, 4/4 ROUGH THICKNESS, SURFACED 2 SIDES FOR PHOENIX

WE SHIP WORLDWIDE
1-800-423-2450
WOODWORKERS Source
5402 S. 40th Street • Phoenix, AZ 85040
602-437-4415

CRAY FOR COWS

These clever barnyard buddies are a sure bet to bring lots of smiles! You get FULL SIZE pattern for making all three projects shown. Hogs range height from 11" to 15". Made from 3/4" and 1-1/2" thick stock. Order hw. parts below:

#W1000 Take-Apart Holstein Plan (Crazy for Cows) $7.99 SET

Take-Apart Holstein Hardware Parts
This hardware package includes the eyes, nostrils, cowbells, screw eyes, and rope for three Holsteins. Project plan, wood, and paint not included.

#3400 Take-Apart Holstein Hdw Parts $5.37/PKG

HOW TO ORDER: List quantity, part number, item, price & total of order. Include $4.95 shipping & handling per order. MN residents add 6.5% sales tax. Mail check or money order. Credit card customers call TOLL FREE 1-800-441-8870.

MEISEL HARDWARE SPECIALTIES
P.O. BOX 7066, MOUND, MN 55364

YOU CAN'T AFFORD

to waste valuable time
Especially when
YOU CAN AFFORD

A PERFORMAX DRUM SANDER

Our wide range of models offer an affordable solution for every budget and need. Prices range from $300 for a 22" drum to $3495 for a 37" dual drum.

Select our 22" drum with an open-sided stock feeding area for 44" wide sanding in two passes, or our 25" or 37" single or dual drums to flawlessly finish without time-consuming hand sanding.

Even at our affordable prices our quality is unmatched. See Performax at the dealer nearest you. Over 100 stocking dealers nationwide. Call or write today.

1-800-334-4910 or (812) 655-9022
or write PERFORMAX PRODUCTS, WOOG 12211 Woodlake Drive, Burnsville, MN 55337

Better Homes and Gardens WOOD* (ISSN-0743-394X) is published nine times a year in January, February, March, June, August, September, October, November, and December by Meredith Corporation, 21717 1st St., Des Moines, IA 50309-3032. Second-class postage paid at Des Moines, Iowa, and at additional mailing offices. Better Homes and Gardens trademark registered in Canada and Australia, Marca Registrada en Mexico. ONE-YEAR SUBSCRIPTION PRICES: U.S. and its possessions, $24.75; Canada, $24; other countries, $34. POSTMASTER: Send address changes to WOOD, P.O. Box 35050, Boulder, CO 80322-8050. © COPYRIGHT MERIDITH CORPORATION 1993. ALL RIGHTS RESERVED. PRINTED IN U.S.A. Canadian GST Reg. #R1353858R7.
YOU CAN TELL A LOT ABOUT PEOPLE BY THE COMPANY THEY KEEP.

We're regarded as "good company" in many of the finest shops anywhere. We've worked alongside the best craftspeople in the country for well over 70 years now. Been privileged to plane and saw and join literally hundreds of thousands of miles of the most beautiful stock you'd ever want to lay eyes on.

We've shared in the joy of creating excellence. Spent months working on large production runs. Experienced moments of quiet pleasure, crafting one-of-a-kind treasures.

You might say we're a company who gets seen with all the right people. People who know full well that the work coming out of their shop is only as good as the equipment they've put into that shop.

Delta woodworking tools. For those of you who insist on quality.


Ronald Layport designs and builds one-of-a-kind furniture.
We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, Better Homes and Gardens® WOOD® magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Reindeer light up the night
I ordered your plans for the [two] reindeer last year and completed them. After painting them white, I drilled holes and inserted white Christmas lights in the antlers. The weight of the lights makes the [reindeer] heads sway in the wind and looks awesome! Thanks for the wonderful project.
Karen Dattalo, Elmwood Park, Ill.

Thank you, Karen. You might be interested to know that our Christmas holiday decoration plans now include a Santa, sleigh, and/or the reindeer. The price for one plan is $9.95. Two plans are $18.95, and three plans are $26.95. Be sure to write the name of the plan or plans you are ordering in the lower left hand corner of your check. To order, send either check or money order to:
Better Homes and Gardens® WOOD® magazine Project Plan Sales P.O. Box 9255, Dept. W4 Des Moines, IA 50306

WOOD a must-read
Your publication was recommended by a fellow woodworker as being a must if you enjoy woodworking of any kind. He wasn’t wrong. I read your magazine from cover to cover and have enjoyed doing several of the projects. I also make use of the advertisers, contacting them for several woodworking items. I look forward to being a regular subscriber for many years to come and plan to expand my hobby in a few years as I move into retirement.
—Fred Rankin, Northville, Mich.
Continued on page 8

We’ve helped hold it together... Since 1903
"Jorgensen"
"Pony"
‘Adjustable’

Quality in our products... dedication in our service. We’ve held to these commitments just as you’ve held up our Clamps and Vises as your standards to each new generation since 1903. We’ll continue to hold consistently to our traditions of excellence.

Write for our Catalog SEND $1.00
Adjustable Clamp Company
410 N. Ashland Avenue, Chicago, Ill. 60622
QUALITY TOOLS for Woodworking & Laminating

- Virutex Joiner & Biscuits (Rated Top Notch, Dec. '92 WOOD® Mag.)
- Carbide Bits & Cutters
- Slitters & Planers
- And many other Products $1.00

Practical Products Co.
3925 Virginia Ave.
Cincinnati, Ohio 45227
Tel: 513-561-6560

WOOD-MIZER®
Models from $6895*

Own a Sawmill!

1-800-553-0219

32-Page Full-Color Catalog $5.00
Business Profitability Booklet $2.00
68-Minute Demonstration Video $10.00
Mastercard or Visa Accepted
*Shown with optional trailer

Wood-Mizer Products, Inc.
8180 West 10th Street, Dept. 0975
Indianapolis, IN 46214-2400

Quality

STEEL CARVE &
ENGINEERED FOR PRODUCTION With
ROTOMAX & your table saw make wood shapes
fast, accurately, profitably.
Patterns duplicated in
minutes.
- Chair Legs
- Bed Posts
- Axle Handles..etc.
- Manual or Automatic Drive


ROТО-CARVE
WOOD CONTOUR SANDER

ROTOPRINT
2754 GARDEN AVE.
JANESVILLE, IOWA 50647 • 319-987-2511

WOOD CARVING
- Sander 3/4 x 60" Belt
- Horizontally Mounted
- Clear Working Area
- Soft Contact Wheels

440 DLT & 442 DLT multifunction...from $99 to $179 each

WOOD MAGAZINE JUNE 1993
Crib safety alert!

We've received several letters from readers pointing out a potential safety hazard in our baby crib (February 1993 issue). The corner posts (A) are too high above the top edges of the top rails (B). The posts in our crib project 1 1/8" above the top rails.

The regulations we received from the U.S. Consumer Product Safety Commission (USCPSC) do not mention this requirement. After a tip from a reader, we learned that the Juvenile Products Manufacturers' Association amended their voluntary standards to allow no more than 3/8" projection above the top rail. (See the corrected drawing.) The USCPSC supports that recommendation although it is not part of their written standard.

If you've already built the crib, or are planning on building one, trim 1 1/8" from the top end of the corner posts. We appreciate our readers informing us of this important amendment.

Biscuits soak up moisture

I have owned and used a Virutex 0-81 ever since they came on the American market. Biscuit joinery surpasses dowel joinery in many ways, but is not trouble free. Biscuits do not stay at their compressed thickness in the changing humidity of a nonhumidity-controlled shop. This can cause problems, especially if you've inserted a biscuit in a slot and have waited several days to join into the mating slot. Removing the offending biscuit can be a trying experience.

—Tom Moore, Clarksville, Va.

Sticky biscuits can be prevented, Tom. First, don't insert biscuits until you are ready to join the two pieces. We can think of no reason for doing so. Second, always store the biscuits in an airtight container. A lidded, air tight, plastic container or Ziploc resealable bags work great.

An apology to Jet

In our Ask WOOD of the January 1993 issue, page 78, we ran a photo of a jet drill press alongside an answer to a reader’s question. The reader complained that his drill press (manufactured by another company) ran so hot he could not touch the motor. The jet drill press photo was unintentionally run alongside the article. The truth is, we’re pleased enough with the jet drill press that we included one in our IDEA SHOP.
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 expand your routing skills instantly!

- Step-by-step instructions
- Clear, detailed photographs
- Hundreds of hints and tips
- 5 complete projects to test your new skills

TRIPLE THE VERSATILITY OF YOUR ROUTER!

Once you discover these professional secrets, you'll have the power to cut perfect dadoes, 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 detailed plans for building 21 jigs including an overhead routing jig... a dovetail spline jig... a router jointing jig... a router mortising jig... and many others!

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.

Each 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 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.

SEND NO MONEY NOW!

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.

NAME (First) (Last)
ADDRESS
APARTMENT #
CITY STATE ZIP

SEND THE ATTACHED CARD OR CLIP AND MAIL THIS COUPON TO: THE WORKSHOP COMPANION, c/o Rodale Libraries, P.O. Box 10848 Des Moines, IA 50336-0848

Printed in USA
Drilled can cap prevents spray straw from straying
You need to squirt some spray lubricant into a tight spot on one of your tools. Now, if you could just find that little red straw.

**TIP:** When you do find the elusive spray tube, don't lose it again. Simply drill through the plastic can cap with a drill bit the same diameter as the straw. (A 3/4 inch hole made a tight fit for the tubes in our shop.) Then, stow the straw by sticking it through the cap; it always will be right there with the can when you need it.


Eliminate fears when drilling spheres
It's always tricky drilling holes in wooden balls. You just can't quite get a good grip on them with a drill-press vise or clamp.

**TIP:** Make a simple set of auxili ary jaws that will give a vise or handscrew clamp a firm hold on wooden balls. Just cut two pieces of 3/4 inch-thick stock (use pine or some other soft-textured wood) to fit your clamp or vise jaws (the ones shown measure 2 x 4"). Then drill a 3/4 inch hole through the center of each. Sandwich the ball between the holes, and place the assembly in the vise or clamp for a solid grip. If you have a lot of balls to bore, affix the auxiliary jaws to the clamp or vise with double-faced tape.

—Vincent Ferello, Sarasota, Fla.
CRAFTSMAN's New Radials
Industry Leaders Any Way You Cut It.

Simple and accurate alignment. Fast, visible adjustments. Unparalleled safety. Craftsman's new radial arm saws offer you breakthrough technology and old-fashioned quality.

Just how good are these new radials? Well, we've released our revolutionary new blade guard design to competing manufacturers because a design this good should be shared. And that's just one of the many impressive features we designed into our new saws.

So visit your local Sears store and check out our new radial arm saws. Or, order direct from Sears catalog. There's a saw just right for you.

CRAFTSMAN®
Only at Sears
Horsepower shown on tools is maximum developed.
How to keep your duck from looking like a silly goose.

The Dremel Heavy Duty Flex-Shaft tool gives you the power and control you need to create birds so lifelike they can almost fly. That's why it's the official carving tool of the Ward World Championship. The big 1/5 hp motor gives you the power you need for "hogging" out wood. The smooth running Flex-Shaft and interchangeable hand pieces run smooth and cool. And the variable speed foot pedal gives you precise, hands-free control from 0-20,000 rpm. That's the kind of control that makes all the difference in your carvings.

For more information, or to order the Heavy Duty Flex-Shaft tool, call us at 1 800 437-3635, Ext. 3.
Motor for flexible shaft swivels on barstool stand

Mounting the electric motor for your flexible-shaft tool on the workbench isn't always convenient. You might want to use the tool somewhere else. And, anyway, you may need to move the motor to avoid kinking the shaft as you manipulate the handpiece.

TIP: Perch the motor on a stand made from an old swivel barstool (look for one at garage sales or secondhand stores). Replace the seat with ¾" plywood of suitable size, and then mount the motor to the plywood. Add weight to the bottom of the stool for stability, if necessary. Now, you can place the floor-standing motor wherever you need it in your shop. What's more, the motor will swivel easily to follow the shaft.

-Gene Kriememeyer, Columbus Grove, Ohio

Auxiliary handles aid arthritic woodworker

Arthritis makes it increasingly difficult for you to grip some of your power tools, but you don't even want to think about giving up the pleasure of woodworking.

TIP: An additional handle can help you hang onto many tools such as the sander shown right.

Form the handle from 1-1/2" aluminum strap stock ¾" thick, and attach it to the tool housing with hose clamps or other appropriate hardware. Do not drill holes or insert screws into tool housings without consulting a tool-service professional. Wrap the new handle with plastic foam and tape for more comfort.

-Wayne Pepper, Janesville, Wis.

Like Having A Lumberyard Right In Your Shop!

Craftsmen everywhere are using the low-cost Woodmaster to bring in welcome extra cash and to save on all their lumber needs. You can, too!

With the big 18-in. Woodmaster or the standard 12-in. model, you can quickly convert low-cost, rough lumber into valuable finished stock. You can cut out perfect frame moldings, crown, bed and base moldings, tongue & groove, door and window trim... all popular patterns... any custom design.

You can do custom work for friends, neighbors, lumberyards, picture framers, home remodelers, hobby shops and businesses.

Because it takes just seconds to convert a $2 rough board into $10 worth of finished trim, you can see why so many Woodmaster owners enjoy substantial extra incomes!

Variable Speed Makes The Difference!

Just a twist of the dial gives you perfect control for planing, sanding or sawing... from 0 to 1,000 cuts per inch. Creates mirror-smooth molding with no sanding required!

Here's what Woodmaster owner L.C. Griffin of Los Angeles writes: "The shop test article in Wood Magazine that said they loved your Variable Feed Rate is what sold me. They were right."

Call or write today for free facts on how you can try this American-made tool in your own shop for one full month. Easy terms.
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 13

Plastic dip works great on other end of tools, too.
There are all sorts of ways to protect wood from clamps. Unfortunately, most would be easier to do if you had three hands.

TIP: Coat the business end of your clamps with the plastic-dip material marketed to coat tool handles. It dries to a soft, flexible coating that will protect even finished wood. Apply it by dipping or brushing, taking care to keep it out of movable joints or threads. Coat the grip end of a pair of pliers or locking pliers, too, to make a handy tool for pulling out wooden axle pegs and the like.

—Raymond Babcock, San Angelo, Texas

MORE TIPS FROM OUR WOODWORKING PROS

• To rout a lengthwise groove in a dowel in a dowel, see the simple scrapwood jig on page 65.
• Mount heavy objects to the wall with our clever hanger block, shown on page 42.
• Looking for an alternative to time-consuming hinge mounting? Then give no-mortise hinges a try. See how we used them for our clock on page 40.
• Check out our tried-and-true painting process for wood projects on page 61.
• Refer to our step-by-step drawing on page 50 for a look at a way to form mortises for your next project.

Coat with plastic dip

Make yard shadows

Life-size figures that are sure to catch the eye of all who pass by!

Just trace our full-size patterns onto plywood, cut out with a saber saw, paint black and you have a finished, lifesize "YARD SHADOW!"

$5.00

Send $1.00 For Lumber Catalog

One pattern $5.00

2 or more only $4.50 each

Order from this ad or send for our free catalog of over 1,000 unique woodcraft projects!
Three totally new drills — perfectly balanced, packed with performance. These drills have won European awards for their ergonomic design. And they are as rugged as comfortable to use. The handle will not twist and distort once the battery is removed, common with most drills. See for yourself that these tools will withstand the punishment that job sites are known for.

The high torque DC motors are equipped with “Necdyne” Magnets. Necdyne is one of the strongest rare earth magnets available, yielding a higher output than traditional ferrite magnet motors. To transfer this power, we equip our drills with a special heavy duty 2-speed transmission. Using precision planetary gears sealed in a custom gear housing, this transmission will withstand years of use under the most grueling environments. Freud’s 5 level torque system gives 30% more torque in reverse rotation for enhanced screw removal.

Freud’s extended life high Amp-hour batteries outlast competitors by 25 to 100 percent. The computer-controlled charger helps prolong the battery life by impulse charging batteries after fully charged to maintain charge level.

Look at these features:
- Robust keyless chuck with lock function.
- Unique rubber grip pad for better handling.
- Quick stop on switch release for complete control.
- High performance NiCad batteries.
- All 3 drills use the same battery charger.
- Quick-change hex bit adaptor.

Get a FREE Freud 30-piece Drill Bit Set from your dealer when you buy one of these drills between April 1 and August 31, 1993. Call 800-472-7307 for names of participating dealers.

Precisely what you need.

FREE!
HANDY HARDWARE HAULER

ISN'T IT TIME YOU GOT YOUR NUTS AND BOLTS TOGETHER

Organize your hardware and do a bit of recycling at the same time by building a few of these handy carriers. Perfect for wood buttons, dowel pins, and other small parts, they're stackable too. You'll need several margarine tubs, 1/4” plywood, dowels, and wood screws.

Project Design: Philip Belanger, Kissimmee, Florida
Illustration: James A. Downing
Photography: Wm. Hopkins
A NEW WAY TO CARRY ON A FINISHING TRADITION.

The Wagner FineCoat is unlike any finishing method you've ever seen before. But it can put a classic, professional finish on the woodworking projects you're doing now, right in your own workshop.

FineCoat's secret is Wagner's High-Volume, Low-Pressure (HVLP) technology. It allows you to spray with very little bounceback or over-spray. You don't need a spray booth, just an open mind and a few minutes to read about FineCoat's advantages.

Spray any finish on the shelf.

The FineCoat can give you the type of finish you had in mind, from the start of the project. It handles urethanes, oils, varnishes, shellacs, lacquers, stains, even enamel paints. Every FineCoat unit also comes with helpful hints for thinning and spraying different materials.

Your hand has never had this much control.

With FineCoat you can get close, without dripping, or cover large areas. The spray width adjusts from ¼" to a foot wide. You can also adjust to a vertical, horizontal, or circular pattern, without changing nozzles.

While your coats are drying, the spray gun stands ¼" to 12" wide securely in its own unit. And when the last coat is on, check your watch. You'll most likely be done finishing and cleaning-up, in less time than you used to spend on the finishing process alone.

To find out more about FineCoat, call 1-800-328-8251. We'll send you more information or refer you to a FineCoat dealer.

Send for free literature or a helpful demonstration video.

Check the first box below and we'll send you more literature on HVLP spraying and the FineCoat sprayer. Or check the second box and send $3 to cover postage and handling. We'll send you the literature along with a videotape demonstrating the usage and applications of FineCoat.

☐ Send me more information, free.
☐ I enclose a check payable to Wagner Spray Tech or I'll charge it to my MasterCard #_________ or your Visa #_________.

NAME________________________
ADDRESS_____________________
CITY________________________
STATE _______ ZIP_______

Mail to: Wagner FineCoat, 1770 Fernbrook Ln., Plymouth, MN 55447

THE BT3000 IS MORE THAN JUST A TABLE SAW — IT'S A PRECISION CUTTING SYSTEM. IT COMBINES THE PERFORMANCE OF A STATIONARY TOOL WITH THE CONVENIENCE OF A PORTABLE TABLE SAW. USING SOPHISTICATED ENGINEERING AND DESIGN, THE BT3000 OFFERS MORE FEATURES, GREATER PRECISION AND MORE VERSATILITY THAN ANY OTHER TOOL IN ITS PRICE RANGE. SEE THE BT3000 AT A QUALITY TOOL SUPPLIER NEAR YOU. THERE'S NOTHING LIKE IT ON THE MARKET. NOTHING.
Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send questions to:

Ask WOOD
Better Homes and Gardens®
WOOD® Magazine
1912 Grand Ave.
Des Moines, IA 50309-3379

Making tenons on round stock
I'm building a quilting frame for a ladies sewing group. I need to make a 3⁄8" tenon, 3" long, on each end of an 8" long dowel that's 1 1/4" in diameter. How can this be done with such a long piece?

—Fred Dreswette, Lake Elsinore, Calif.

Here's how, Fred. Mount a 1/2" straight bit in your table-mounted router. Then construct a V-block according to the dimensions shown below. Attach the V-block to an auxiliary wood fence with wood screws. (An ordinary straight 2x4 will work for this.) Clamp the fence and V-block to the table securely. The groove in the V-block should align with the center of the router bit. Set the bit 1 1/2" above the table. Next place a stop block against the fence and 3" to the left of the far edge of the bit. (See below.) Now lay your 8" dowel in the V-block and place a support under the part of the dowel that extends beyond the table. Begin routing.

Note: When using this set-up, make multiple passes by sliding the dowel into the bit, making each succeeding cut by rotating the dowel counter clockwise. After the desired material is removed, clean off the tenon lip by rotating the dowel in a clockwise motion.

Continued on page 20
Turn your router table into a handy jointer
From necessity, virtually everything I have built I've made from edge-glued scrap. I joint every piece on a router table without using a split fence. I simply clamp a straightedge to the table and run the workpiece between it and a straight bit, adjusting the straightedge to take off whatever amount I want. Since I have never seen this technique suggested in any literature, I assume there must be something dangerous or unsuitable about it. Could you please enlighten me?

—Bert Mason, Jr., Milwaukee, Ore.

Your premise is good, Bert, but we'd suggest changing your technique. Running a router bit in the open as you describe can be dangerous. Plus, binding and even kickback could occur at any time. However, using your router table as a jointer works well on stock up to 1⅛" thick.

We asked router expert Brad Witt, owner of Woodhaven, Davenport, Iowa (800/344-6657), to tell us how you can safely and easily joint stock on a router table. According to Brad, "You need to build an offset fence to make it work effectively and safely. Instead of spending money on a commercial split fence, here's what I advise: construct a fence extension like the one shown above. Along the edge of one half, laminate a ¼" piece of plastic laminate (⅛" for finish work).

"This extra thickness of laminate corresponds to the amount of material you are removing. So now, you have a solid surface to run your workpiece against," says Witt. ♠

---

Quality Woodworking Machines at Affordable prices from Penn State Industries

Dept. W, 2850 Comly Road • Phila, Pa. 19154 • Info: 215-676-7609
Order Toll Free 1-800-377-7297 • Visa, Master, & Discover Cards accepted
When ordering, Add UPS Shipping Charges as noted • Pa. residents add 7% Sales Tax
Call or Write for our New 32 Page Color Catalog

Two Way Sanders
Features of both models:
• Dust collector on belt
• Tables tilt to 45°
• Sealed ball bearings
• Easy belt tracking
6x9 Sanders:
• Includes stand
• 2½" Disc, 9x48" Belt
• 3/4 HP, 1720 RPM
• Free Belts & Discs worth $21.00
#560 ... $219.95 (UPS $30)

4x8 Sanders:
• 8" Disc, 4x36" Belt
• 1/3 HP, 1720 RPM
• Free Belts & Discs worth $14.00
#948 ... $109.95 (UPS $8)

Super 125 Planer
only $359.95
This machine will pay for itself time and again by planing your own wood. Finishes wood like machines many times its price.
• Portable at 65 lbs
• 26.2 rpm power feed
• HSS Knives 12-1/2" wide
• Motor: 16 Amp, 8000 RPM
• 2HP, 115V
• 1/8" Max depth of cut
• Pลา $359.95 (UPS $50)

Variable Speed Scroll Saw
only $169.95
Cuts intricate patterns in many different materials. Electronically controlled motor gives full power at all speeds 400-1800 rpm.

FREE ACCESSORIES:
• Dust blower • 3" dust blades
• EZ set up for top arm blade holders • EZ jig to attach standard holders • 4 blade holders • Neptune 1-1/2" lettering guides with patterns
Specifications:
• Motor: 1.3 Amp, 110V
• Throat: 18" deep • Stroke: 34" • Tilts 0-45° left • Cut Depth: 2" • Blades: uses pins & plain end
#115A ... $169.95 (UPS $10)

Dust Collectors
750 CFM Portable Dust Collector:
This 1-1/2HP model is lightweight and portable at less than 50 lbs.
• 1-1/2HP, 110/220V • 1 outlet @ 4" • 1 Bag @ 20 gal • Wt: 40 lbs • 750 CFM • Free: 8' of hose, 1 ea 4" to 3", 1 ea 4" to 2" adapters...
• $15 Value
#DC3 ... $209.95 (UPS $10)

900 CFM Dust Collector:
This 1-1/2HP model allows for use in 2 or more machines & gives improved service for long runs of hose.
• 1-1/2HP, 110/220V • 2 outlets @ 4" • 2 Bags @ 30 gal • Wt: 120 lbs • 900 CFM • Free: 50' of hose, 1 ea 4" to 3", 2 ea 4" to 2" adapters...
• $40 Value
#DC2 ... $299.95 (UPS $30)

700 CFM Dust Collector:
This collector is perfect for hookups to almost any single machine.
• 1HP, 110/220V • 2 outlets @ 4" • 2 Bags @ 25 gal • Wt: 75 lbs • 700 CFM • Free: 8' of hose, 1 ea 4" to 3", 1 ea 4" to 2" adapters...
• $15 Value
#DC1B ... $209.95 (UPS $30)
### DOVETAIL BITS 2 Flutes

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>ANGLE</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1058</td>
<td>3/8&quot;</td>
<td>3/8&quot;</td>
<td>1-1/4&quot;</td>
<td>1/4&quot;</td>
<td>$5.00</td>
</tr>
<tr>
<td>C1059</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1-3/4&quot;</td>
<td>1/4&quot;</td>
<td>$5.00</td>
</tr>
<tr>
<td>C1071</td>
<td>3/4&quot;</td>
<td>1-1/16&quot;</td>
<td>2-1/8&quot;</td>
<td>1/4&quot;</td>
<td>$7.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>ANGLE</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1074</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>2-1/4&quot;</td>
<td>1/4&quot;</td>
<td>$5.00</td>
</tr>
<tr>
<td>C1076</td>
<td>3/4&quot;</td>
<td>3/4&quot;</td>
<td>2-1/2&quot;</td>
<td>1/4&quot;</td>
<td>$8.00</td>
</tr>
</tbody>
</table>

### COVE BITS 2 Flutes with Bearing Guide

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>RADIUS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1141</td>
<td>1&quot;</td>
<td>1/2&quot;</td>
<td>2&quot;</td>
<td>1/4&quot;</td>
<td>$1.20</td>
</tr>
<tr>
<td>C1142</td>
<td>1-1/4&quot;</td>
<td>5/8&quot;</td>
<td>2-1/4&quot;</td>
<td>3/8&quot;</td>
<td>$1.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>RADIUS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1147</td>
<td>1&quot;</td>
<td>1/2&quot;</td>
<td>2-1/4&quot;</td>
<td>1/4&quot;</td>
<td>$1.20</td>
</tr>
<tr>
<td>C1150</td>
<td>1-1/8&quot;</td>
<td>5/8&quot;</td>
<td>2-1/2&quot;</td>
<td>3/8&quot;</td>
<td>$1.40</td>
</tr>
</tbody>
</table>

### DOUBLE FLUTED STRAIGHT BITS

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>PRICEx</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1108</td>
<td>1/4&quot;</td>
<td>3/4&quot;</td>
<td>3-1/4&quot;</td>
<td>$7.00</td>
</tr>
<tr>
<td>C1109</td>
<td>5/16&quot;</td>
<td>3/4&quot;</td>
<td>3-1/2&quot;</td>
<td>$7.00</td>
</tr>
<tr>
<td>C1110</td>
<td>3/8&quot;</td>
<td>3/4&quot;</td>
<td>3-1/2&quot;</td>
<td>$7.00</td>
</tr>
<tr>
<td>C1111</td>
<td>1/2&quot;</td>
<td>3/4&quot;</td>
<td>3-1/2&quot;</td>
<td>$7.00</td>
</tr>
</tbody>
</table>

### ROUNDROVER BITS with Bearing Guide

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>RADIUS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1175</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>2&quot;</td>
<td>1/8&quot;</td>
<td>$10.0</td>
</tr>
<tr>
<td>C1177</td>
<td>1&quot;</td>
<td>1/2&quot;</td>
<td>2&quot;</td>
<td>1/4&quot;</td>
<td>$11.0</td>
</tr>
<tr>
<td>C1178</td>
<td>1-1/4&quot;</td>
<td>5/8&quot;</td>
<td>2-1/2&quot;</td>
<td>3/8&quot;</td>
<td>$14.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>RADIUS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1184</td>
<td>1/2&quot;</td>
<td>1-1/4&quot;</td>
<td>2-1/4&quot;</td>
<td>1/4&quot;</td>
<td>$11.0</td>
</tr>
<tr>
<td>C1185</td>
<td>1-1/8&quot;</td>
<td>1/2&quot;</td>
<td>2-3/4&quot;</td>
<td>5/16&quot;</td>
<td>$12.0</td>
</tr>
<tr>
<td>C1188</td>
<td>1-1/4&quot;</td>
<td>5/8&quot;</td>
<td>2-1/2&quot;</td>
<td>3/8&quot;</td>
<td>$14.0</td>
</tr>
</tbody>
</table>

### SOLID CARBIDE SPIRAL 2 Flutes

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1441</td>
<td>1/8&quot;</td>
<td>3/8&quot;</td>
<td>2&quot;</td>
<td>$15.0</td>
</tr>
<tr>
<td>C1442</td>
<td>3/16&quot;</td>
<td>3/8&quot;</td>
<td>2&quot;</td>
<td>$15.0</td>
</tr>
<tr>
<td>C1454</td>
<td>7/32&quot;</td>
<td>3/4&quot;</td>
<td>2&quot;</td>
<td>$19.0</td>
</tr>
<tr>
<td>C1443</td>
<td>1/4&quot;</td>
<td>3/4&quot;</td>
<td>2&quot;</td>
<td>$15.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA. A</th>
<th>CUTTING LENGTH B</th>
<th>OVERALL LENGTH C</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1555</td>
<td>5/16&quot;</td>
<td>7/8&quot;</td>
<td>3&quot;</td>
<td>$25.0</td>
</tr>
<tr>
<td>C1446</td>
<td>3/8&quot;</td>
<td>1&quot;</td>
<td>3&quot;</td>
<td>$30.0</td>
</tr>
<tr>
<td>C1447</td>
<td>1/2&quot;</td>
<td>1&quot;</td>
<td>3&quot;</td>
<td>$30.0</td>
</tr>
</tbody>
</table>

Due to the nature of solid carbide, these bits are not warranted against breakage.

### ROMAN Ogee 2 Flutes with Bearing Guide

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICEx</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1153</td>
<td>1-1/8&quot;</td>
<td>1/2&quot;</td>
<td>2-1/16&quot;</td>
<td>$16.00</td>
</tr>
<tr>
<td>C1154</td>
<td>1-1/2&quot;</td>
<td>1/2&quot;</td>
<td>2-1/16&quot;</td>
<td>$18.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1155</td>
<td>1-1/8&quot;</td>
<td>1/2&quot;</td>
<td>2-1/4&quot;</td>
<td>$18.00</td>
</tr>
<tr>
<td>C1156</td>
<td>1-1/4&quot;</td>
<td>1/2&quot;</td>
<td>2-1/4&quot;</td>
<td>$18.00</td>
</tr>
</tbody>
</table>

### ROMAN Ogee 2 Flutes with Bearing Guide

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1299</td>
<td>1-1/4&quot;</td>
<td>5/8&quot;</td>
<td>2-1/8&quot;</td>
<td>$25.00</td>
</tr>
<tr>
<td>C1290</td>
<td>1-1/2&quot;</td>
<td>3/4&quot;</td>
<td>2-1/4&quot;</td>
<td>$25.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1290</td>
<td>1-1/2&quot;</td>
<td>3/4&quot;</td>
<td>2-1/2&quot;</td>
<td>$25.00</td>
</tr>
</tbody>
</table>

### REVERSIBLE STILE & RAIL

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICEx</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1392</td>
<td>1-5/8&quot;</td>
<td>13/16&quot;</td>
<td>2-7/8&quot;</td>
<td>$4.95</td>
</tr>
<tr>
<td>C1652</td>
<td>1-5/8&quot;</td>
<td>13/16&quot;</td>
<td>2-7/8&quot;</td>
<td>$4.95</td>
</tr>
<tr>
<td>C1654</td>
<td>1-5/8&quot;</td>
<td>13/16&quot;</td>
<td>2-7/8&quot;</td>
<td>$4.95</td>
</tr>
<tr>
<td>C1653</td>
<td>1-5/8&quot;</td>
<td>13/16&quot;</td>
<td>2-7/8&quot;</td>
<td>$4.95</td>
</tr>
</tbody>
</table>

### 2-5/8" PANEL CUTTERS

<table>
<thead>
<tr>
<th>PART</th>
<th>CUTTER DIA.</th>
<th>DADO LENGTH</th>
<th>OVERALL LENGTH</th>
<th>PRICEx</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1399</td>
<td>2-5/8&quot;</td>
<td>1/2&quot;</td>
<td>1-1/16&quot;</td>
<td>$29.95</td>
</tr>
<tr>
<td>C1400</td>
<td>2-5/8&quot;</td>
<td>7/16&quot;</td>
<td>1-1/16&quot;</td>
<td>$29.95</td>
</tr>
<tr>
<td>C1401</td>
<td>2-5/8&quot;</td>
<td>9/16&quot;</td>
<td>1-1/16&quot;</td>
<td>$29.95</td>
</tr>
<tr>
<td>C1402</td>
<td>2-5/8&quot;</td>
<td>7/16&quot;</td>
<td>1-1/16&quot;</td>
<td>$29.95</td>
</tr>
<tr>
<td>C1403</td>
<td>2-5/8&quot;</td>
<td>2-1/4&quot;</td>
<td>1-1/16&quot;</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

ORDER 24 HOURS A DAY!
PHONE: 1-800-235-0272
FAX: 1-800-392-5077

$4.00 shipping charge on orders less than $100.00

CASCADE TOOLS, INC.
EXCLUSIVE DISTRIBUTOR OF INDUSTRIAL CARBIDE TOOLING
## CARBIDE TIPPED ROUTER BITS

**PROFESSIONAL PRODUCTION QUALITY GUARANTEED**

When ordering any three or more deduct $1.00 each. **FREE SHIPPING IN CONTINENTAL U.S.**

### Item No. | Best Cut Price | Description | Angle/Depth/Radial Diameter | Large Dia. | Cutting Length | Shank | Price |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8051</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$6.00</td>
</tr>
<tr>
<td>8052</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$7.00</td>
</tr>
<tr>
<td>8053</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$8.00</td>
</tr>
<tr>
<td>8054</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$9.00</td>
</tr>
<tr>
<td>8055</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$10.00</td>
</tr>
<tr>
<td>8056</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$11.00</td>
</tr>
<tr>
<td>8057</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$12.00</td>
</tr>
<tr>
<td>8058</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$13.00</td>
</tr>
<tr>
<td>8059</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$14.00</td>
</tr>
<tr>
<td>8060</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$15.00</td>
</tr>
<tr>
<td>8061</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$16.00</td>
</tr>
<tr>
<td>8062</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$17.00</td>
</tr>
<tr>
<td>8063</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$18.00</td>
</tr>
<tr>
<td>8064</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$19.00</td>
</tr>
<tr>
<td>8065</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$20.00</td>
</tr>
<tr>
<td>8066</td>
<td></td>
<td>1/4&quot; Spiral Cutter</td>
<td>1/4&quot; x 1/4&quot; x 1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>$21.00</td>
</tr>
</tbody>
</table>

**FREE —  NEW 32-PAGE CATALOGUE** While in the Philadelphia area visit our fully stocked showroom (call for easy directions)

---

### CONTROL THE SPEED OF YOUR ROUTER

**Rout at the Speed That Gives the Best Results with the Wood and Bit You Are Using!**

**SALE**

$29.95

Order Item #197

**FEATURES:**
- Works with all routers 3/4 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!

### FORSTNER BITS

**For Perfect Holes**

Forstner bits are designed to drill flat bottom or through holes cleanly in end grain, thin stock, veneers and regular stock. Comes with its own attractive wood box and includes the following sizes: 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1 1/8", 1 1/4", 1 3/8", 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2", 2 1/8".

Regularly $39.95

**SPECIAL SALE**

$79.95

Order Set #314

© 1993

To order by Master Charge, Visa, or Discover Call Toll Free, 7 Day - 24 Hour Order Service 1-800-533-9298 or send check to: MLCS Ltd. P.O. Box 4053 DU, Rydal, PA 19046
Tehal Virk’s WONDERFUL WILLOW WORKS

A mason in his homeland of India, this craftsman now turns his skilled hands to working an abundant native Wisconsin stock.

Belgium, Wisconsin, a neat-as-a-pin rural community that’s little more than a stone’s throw from Lake Michigan, has become culturally enriched in the past few years. And it’s due to Tehal Virk, a former mason from Punjab, India.

How does he do it? Some townsmen would say through his schoolbook English. Others would point to his friendliness, sharp wit, and obvious craftsmanship. All true.

Tehal (pronounced “Tall”), an expert with brick and stone, left India in 1985 to join cousins in the U.S. At first, the American Dream evaded him as he found himself near Milwaukee pumping gas for a living. But things changed as soon as he met Zaida Thompson, an antique dealer, small-town entrepreneur, and now his wife.

Through Zaida’s encouragement, Tehal tested skilled hands by creating new things. But it was when he began crafting willow furniture that he hit pay dirt. “Zaida had a photograph of some,” Tehal recalls fondly. “She asked me, ‘Do you think you can do this?’ I said no problem at all, I’m a handy guy. But it wasn’t so easy!’

That was seven years ago. Now, Tehal, 40, fills orders for his “Wonderful Willow” business from as far away as France.

Continued
There's tromping in the willow thicket, but no one is visible. Then suddenly, a bundle of sticks appear, their ends poking through the near-impenetrable mass of saplings and branches. Next comes a smiling brown face framed by black hair. Attached to it, a compact body sways slightly under the load.

"I have to cut and carry like this at least twice a week nearly every week of the year to keep up with my furnituremaking," says Tehal, puffing. Bending, he tosses the bundle of furniture-to-be to the ground from his shoulder. "But for each one I cut, five come up from the stump in the spring. So, if I cut 100 sticks, I get 500 next year in their place. I guess I'll never run out."

After a half-dozen or so more excursions back into the thicket, Tehal has enough stock to haul to the shop. "We have about six acres of willow around the house here," he says, sweeping his arm before him. "And I also cut on land near the lake that belongs to a friend—he likes me to thin it out. But I may be getting too old for all this work," he laughs, hoisting a bundle into the back of his truck.

**Worthy willow**

North America claims at least 100 species of willow, many growing only to shrub size. But, there are at least 40 species that attain tree status. And around eastern Wisconsin where Tehal gathers stock, he has the choice of several.

"Some people call it swamp willow, others say sandbar willow, but I like to call it diamond willow," Tehal notes. "See the little diamond marks in the bark?" He points to a diamond-like spot on the slender stalk.

**Editor's note:** Actually, to be botanically correct, Tehal's "swamp" willow is peach-leaf willow. His "sandbar" willow happens to be exactly that. But his "diamond" willow we know as black willow, and it has the potential to become the largest of the three. For Tehal's use, though, all of them will work if he harvests with a selective eye, and then cares for the wood properly.

"When I started, I didn't have anyone to teach me, and the sticks I picked up weren't nearly as good as the ones I use now," he says. "In my sticks there are no knots. Because if there are knots, the stick will crack there when you bend it."

According to Tehal, there's also a difference between fast-growing and slow-growing willow. "Willow growing in water will be lighter and softer because it grew fast, like it had fertilizer."

In cool weather, freshly cut willow can remain green for several months. But Tehal prefers to process right away the sticks he hauls from the thicket to be bent. With a portable circular saw, Tehal cuts a load to length.
Although this willow worker utilizes a variety of sizes in his pieces—from pencil-thin on mirror frames to 4"-diameter for legs—he thinks not in inches, but in ages. "The sticks I put on the seats are at least two years old," he explains. "The sticks for arms are about three years old. And the sticks I put on the rounds [backs] average four to five years old. For the frame, I use pieces 10 to 15 years old." Tehal doesn't count growth rings to help with this reckoning, though. He relies on memory.

"Whenever and wherever I cut, I know the shoots will come in the spring. So after a couple of springs, I know that the shoots in one place will be good for seats, in another, arms. I know where they all are," he says as he heads his truck toward town.

**Stowing a stock of sticks**

Behind Tehal's shop on Belgium's main street, stacks of willow cuttings, organized by diameter, fill the spaces between outbuildings. Walking and talking, he comments on them.

"All the willow I cut doesn't have to be worked green, but it does have to have the bark on tight. That's why I pile it in the shade or under cover—it will dry slowly then."

Tehal won't bend frame parts, such as legs and crosspieces, so he lets them dry out as they came from the thicket. But for willow that he must bend, the processing begins almost as soon as

Continued
he unloads the truck. "I must have really fresh willow for seats, arms, and backs; otherwise, it is not going to bend," he comments. Then he adds, "Of course, I can rewet the wood in a bathtub, if it is skinny. And sometimes I have to do it when they dry out." Usually, Tehal won't let that happen.

At a crude worktop straddling a pair of sawhorses set up in the open, the willow worker snips off the slender top of each stick with pruning shears. Then, he crosscuts the willow to length. A yardstick nailed to the worktop and highlighting his most-used measurements shows him the length of various parts.

Tehal also does the chamfering outside. "I trim back the bark on the ends of exposed sticks with a butcher knife, so it won't catch on the floor or clothes and start the bark peeling," he explains. "It looks good, but it's really to keep the bark on that I hand-hew them."

Galvanized, ring-shanked nails won't rust or pull loose from the green willow. Tehal uses a pneumatic nailer to attach the multitude of sticks that make up a seat because it sinks the fasteners below the surface of the wood.

Simple plywood jigs, such as this one with holes for spacing, help the willow worker hold subassemblies together while he fastens them. Here, with a nail gun, Tehal secures the top supports to the tripod of sticks that will become a planter.
Bend-by-bend furniture

Tehal’s line of worked willow includes chaise lounges, settees, chairs and rockers, tables, headboards, planters, magazine racks, mirror frames, birdhouses and feeders, and plant stands. In fact, if it can be made of willow, Tehal will make it. “I keep playing to see what I can come up with,” he says.

Tehal likes to point out the sturdiness of his furniture. He prides himself on it. “At a show, a woman came up to me and said that she was afraid her kids would break my furniture,” he says, a toothsome smile spreading across his face. “I told her, ‘Ma’am, you can get up and jump on it if you want to. You can’t hurt it.’”

To back up his words, Tehal bounds to the seat of a settee and, as if on a trampoline, bounces up and down. “I tell the people, ‘If anybody can find better quality than this, I’ll take my piece right back.’”

With care, Tehal shows why his willow furniture ranks as the best you can buy. “Some makers put the sticks on the seat 3” apart, then you need a cushion for them. These, you don’t,” he notes. “I also give a pitch to the seat so you don’t slide off.

“And, my arms go all the way through down to the legs and behind to brace the whole piece. Others build in heart designs or other things, and I can do that, too, but I tell people that the sticks will be too far apart and make it uncomfortable and weak.”

Quality construction shows up in the fastenings, too. Tehal sinks only galvanized metal into the wood. On large sticks, he prefers ring-shanked nails that won’t pull loose. He attaches smaller sticks, such as those on a seat, to the frame with headless nails driven into the willow with a pneumatic nailer.

And although willow’s bark has a natural tan beauty, Tehal enhances it. Two spray coats of Thompson’s Three-Way Wood Protector preserves the wood as well as slows the seasoning process. Says Tehal, “Indoors, the pieces will last as long as we do. Outdoors, they should be sprayed with wood protector every season to fight mildew and bugs.”

Even then, still-green willow furniture can spring a surprise on you—by sprouting! “A few years ago, I made a big willow headboard for us, but I got busy and left it out leaning against the garage.” Tehal laughs remembering. “By the time I got back to it, the legs had sprouted roots right into the ground and there were little branches everywhere. It was truly living furniture!”

Wondering about willow?

For more information on Tehal’s willow furniture, write him at The Wonderful Willow Works, 218 Main St., Belgium, WI 53013.

Written by Peter J. Stephano  Photographs: Wm. Hopkins
JEWEL OF A

With a fanciful spired stopper, this graceful perfume bottle towers above the ordinary. We think you'll find extraordinary enjoyment in turning the delicate details that give it that exotic look.

Start with the urn. For your stock, saw a 4½" length from a 1½" x 1½" x 10" turning square. Write top on the sawed end. Mark the remaining part bottom on the sawed end, and set it aside to use later when you turn the stopper.

Locate the center on each end of the urn stock. Bore a 5/8" hole 2½" deep into the top. Drill a pilot hole for your lathe's screw center at the other end. Use a screw that extends 3/4" or less into the stock.

Attach the urn stock to the screw center, and mount on the lathe. Support the tailstock end with a revolving cone center in the 5/8" hole. A short tool rest will come in handy for this project.

With a roughing gouge or other large gouge, round down the stock to 1½" diameter. Mark the turning ¾" and 3½" from the tailstock end. With a parting tool, cut in to 5/8" diameter on the waste side of each line.

Following the diameters shown on the Full-Sized Template, turn the outside profile of the urn between the marks, with the top at the tailstock end. (Step 1 in the Turning the Urn drawing.) Shape it with a gouge or skew, maintaining a slight curve along the side. Slide the tailstock back, and then complete the bead around the opening. Sand and finish.

Part the urn from the lathe. Make the base slightly concave on the bottom by anglng the tool tip slightly toward the top of the urn. Since the bottom will show whenever anyone tips the container to remove the vial inside, sand and finish it carefully.

Now, let's turn that show-stopping stopper
Mount the remaining part of the turning square between centers, with the bottom at the headstock. Round it to 1" diameter.

At the headstock end, turn a cone tapering to 5/8" diameter 1" from the end of the stock. Starting there, form a tenon on the bottom.
VIAL

A fanciful flask for perfume

of the stopper, shown by Step 1 of the Turning the Stopper drawing. Measure the tenon as you work to ensure that it fits into the hole in the urn. It doesn’t need to be a snug fit; an O-ring holds the stopper in place. Cut the O-ring groove ½”-wide and ¼” deep where shown.

Then rough the turning to approximately the shape shown by the red line on the drawing. Using the Full-Sized Template, draw pencil lines on the roughed-out turning to lay out the features.

Form the profile with small gouges (we used ¼” and ⅜” miniature gouges). A good approach is to bring the finial almost to final form early. Leave it about ⅜” diameter at the tip as you turn the stopper. This helps prevent breaking the fragile turning. Further stave off problems by taking light cuts as you develop the shapes.

Note that the sharp-edged discs vary in thickness as well as diameter. Turn square-edged discs of correct diameter and thickness, and then form the curved top and bottom surfaces with your small gouge. Cut the shallow step around the top and bottom of the large bead with a ⅛” parting tool.

Then, carefully complete the finial. Don’t damage the fine point on the tip as you separate the waste from the turning.

Finish the stopper to match the urn. Chamfer the bottom about ½”, and part off the stopper.

Roll a ¼”-I.D. O-ring (available in the plumbing department at most hardware stores) into the groove around the tenon. Try the stopper’s fit in the urn. If it’s too loose, try an O-ring made of slightly thicker material or wrap a few strands of black sewing thread into the groove under the O-ring. Fix a lid that’s too tight by sanding or filing the groove or changing to an O-ring of smaller-diameter material.

Buying Guide

Glass vial. Vial with screw-on lid, ¼-oz. size., five for $3.50 ppd. in U.S. Add $9.95 for drill bit (fits ¼” chuck). Craft Supplies USA, 1287 E. 1120 S., Provo, UT 84601 or call 801/373-0917

Project Design: ©Deborah Doyle
Illustrations: Mike Henry
Photograph: Wm. Hopkins
Have you ever wondered how woodworking tools and accessories come to appear on the pages of WOOD magazine? Why does one tool rate a "10" and another something less? We get a lot of questions from readers and manufacturers about our tool tests, so we’d like to share the behind-the-scenes story with you.

A basic tool in our testing arsenal: a decibel meter to measure the noise level of power tools.

Why we take our tool testing so seriously
For many woodworkers, their tool collection may be the most valuable asset after their home and autos. (Although many of us would trade in our autos before our tool collection!) With that much investment on the line, and a bewildering number of choices in the marketplace, we think there's a clear need for help in selecting those tools that offer the best value. After all, few readers have the time, energy, or resources to personally test every tool model before making a purchase. And today, an increasing number of woodworkers purchase their tools virtually sight-unseen through the mail, making our recommendations more important than ever.

Our motto: Tell it like it is
Whenever you read a WOOD magazine tool review, you can be sure that you're getting an honest evaluation not swayed by the interests of tool manufacturers. We wouldn't have it any other way. After all, you pay a premium price for this magazine, and you deserve nothing less than a straightforward review that tells the good and the bad. At WOOD, the reader always comes first.

To assure you of honest evaluations, we insulate our tool testers from any pressure on the part of tool manufacturers. The products/techniques editor serves as the contact with manufacturers, except in rare instances when a tester needs to speak directly with a manufacturer to clarify a technicality. We encourage our testers to give us honest evaluations, and we don't change their recommendations for any reason.

And, we listen. Some of our best ideas come from readers, so please let us know your suggestions for articles on tool buying.
Meet the team that puts it all together

A face-to-face look at the WOOD magazine product-testing team (from left): George Granseth, Bill Krier, Chuck Hedlund, and Bob McFarlin.

Technical illustrator Kim Downing (right) dismantles woodworking machines to help you understand them.

To make sure you get the best tool-buying advice, we've enlisted the help of an enthusiastic group of independent woodworking-tool experts. Their job: to thoroughly test, evaluate, and make buying recommendations for the tools that appear in WOOD magazine. Here's a look at each of the individuals in the photo above.

- **George Granseth** has been a technical consultant with WOOD magazine since the first issue in September 1984. In addition to his tool-testing responsibilities, George operates a five-man custom cabinetry shop.
- **Bob McFarlin** came on board in January 1991. Bob is an avid woodworker and co-owns an auto-body shop.
- **Chuck Hedlund** has tested tools since the August 1992 issue. He also builds some of the projects in this magazine. A former finish carpenter and production manager for a millwork shop, Chuck works as a self-employed cabinet and furniture maker.
- **Bill Krier**—that's me. I serve as the team's quarterback in my role as products/techniques editor. For every product-buying article, I gather the latest tools and put them in the hands of our testers. After the completion of the tests, I write up the results, put together a comparison chart, and choose the necessary photos and illustrations. For an exact idea of how this system works, see the charted information above right.
- **Kim Downing**, shown above inset, helps readers understand the complexities of power tools through his detailed technical illustrations. His work has graced the pages of this magazine since November 1984.

**WOOD MAGAZINES TOOL-TESTING PROCEDURES**

**TESTING STRATEGIES PLANNED**
- Tool-testing team meets regularly to:
  - Determine type of tools that need testing.
  - Select models to include in test.
  - Formulate testing procedures.

**MANUFACTURERS SEND REQUESTED TOOLS**
- Products/Techniques editor requests product samples from manufacturers.

**SIDE-BY-SIDE COMPARATIVE TESTING**
- Tools assembled.
- Features and components examined.
- Identical tests performed on all models.

**ASSEMBLING THE DATA**
- Comparison chart with ratings and specifications developed.
- Photographs and illustrations created.
- Articles produced.

A few words about “Products that Perform”

From time to time, we hear from readers who think that our “Products that Perform” department consists of paid advertisements. Nothing could be further from the truth. Here's why.

To find products for this section, we scour press releases, trade shows, and catalogs. When we come across something that seems unique, of good value, and, most of all, of usefulness to our woodworking audience, we order a sample for testing. Many of these products meet our expectations, but some do not. Only the tools or accessories that pass our tests with flying colors will see the light of day in this publication.

Written by Bill Krier
Photographer: John Hechelinger
GLASS PANELS

If you've admired the striking beauty of leaded panels made of clear, stained, or beveled glass, you may be surprised at how easily you can make one. With our instructions and a modest investment in tools and supplies, you can create simple, but elegant, panels such as the one shown in the inset left. And, you'll find endless woodworking applications for such panels—as with the pendulum-clock project on page 39.

A handful of items to help you get started

For an investment of less than $150, you can buy the essential tools and supplies for making leaded-glass panels. Here's a listing and the approximate prices of the items shown below.

1. Whiting powder
   ($2 for 1 pound)
2. Glazing cement
   ($6 for 1 pound)
3. Round-H lead came, ¼" wide
   ($2.30 for a 6' length)
4. Came-stretching vise ($4)
5. Glass ($4-$10 per square foot for most types)
6. Horseshoe nails
   (75¢ per dozen)
7. Glass cutter ($4-$30; the least expensive models
   work fine, and the higher-priced versions have carbide wheels for longer life)
8. Cork-backed
   straightedge ($4)
9. Three-bladed
   pattern shears ($10)
10. Running pliers ($10)
11. Breaker/grozer pliers with
    ¾"-wide jaws ($10)
12. Flush-cutting lead nippers
    ($7-$22)
13. Flux ($3 for 4 ounces)
14. Flux brush (35¢)
15. 80- to 100-watt soldering iron with
    700° temperature control and ¾"-wide
    tip ($40-$70)
16. 50/50 solder
    ($6 for a 1-pound spool)

Let's start by making our pattern

To keep things simple, we'll show you how to make a panel with glass pieces having straight edges only. As your skills improve, you may want to try free-form design using curved pieces of glass.

First, determine the exact width and height of your panel. Lay out these dimensions on a piece of paper (shown by the dashed line in the drawing on page 34), and mark solid lines ¼" inside the dashed lines on all sides.

Note: We suggest you use H-channel lead came for the inside and border of your panel. This way, you can trim some of the lead from the border of the panel to help it fit into its frame. U-channel lead came does not afford you this option.

Now, select the beveled pieces for your design. You can choose these pre-cut pieces in many sizes and shapes such as squares, rectangles, diamonds, and triangles. The catalog listed in the Buying Guide on page 38 carries a full line of beveled glass.

Continued
LEADED GLASS

Draw centerlines for locating the beveled glass as shown right. Place and align the bevels on the paper, being careful to leave a ¼ in. gap where they meet each other. With a sharp pencil trace around the bevels.

Now, lay out the rest of your pattern as shown far right. We refer to this pattern as the glazing copy because you'll use it to reassemble your glass pieces later.

Choose your glass for the rest of the pattern. We selected glue-chip glass, a heavily textured clear glass, for the border pieces of the finished panel on page 32. You also can substitute a colored glass for these border pieces as we did in the how-to photos throughout this article. For the interior pieces we chose antique glass with subtle distortions.

Now, with carbon paper make a cutting copy by tracing the solid lines of your glazing copy onto a piece of heavy paper. With the carbon paper still in place, number each pattern piece. Separate the two patterns, and cut the cutting copy into separate pieces with a three-bladed shears. As shown below, the shears remove ⅜ in. of your pattern to make room for the lead came. Cut carefully and in straight lines. Since your bevel pieces come precut, you must be sure to cut on the outside of the lines touching or surrounding the bevels (that's why we placed the bevels ¼ in. apart).

Ready to cut some glass? It's a snap!

Although cutting glass may seem at first to be a hazardous activity, we found it safe and easy to do once we learned a few basic methods. To get started, attach a cutting-pattern piece to a piece of glass with rubber cement.

If you're working with a textured glass, attach the pattern to the smooth side of the glass. Done this way, the textured side of the glass will face away from you when you look at the front of the completed panel (the side with the bevels facing you). However, if you want the textured side of the glass to face you, just reverse the pattern before attaching it to the smooth side of the glass.

Safety Note: Always wear eye protection whenever you cut, groze (chip away), or grind glass.

To make a cut, score along one side of the pattern with your glass cutter. Be careful to keep your score line right alongside the edge of the pattern or just inside it. Use a straightedge to keep your long cuts straight. Now, grasp the glass on either side of the scoring line as shown opposite page, top.

To break the glass, twist both wrists so your palms face upward. This may be hard to do when cut-
You can use a running pliers (left) or your hands to break glass along straight scoring lines. The pliers come in especially handy when cutting narrow pieces.

A breaker/grozer pliers helps you trim glass to fit within your pattern lines. Remember to keep the curved jaw down, and take small, controlled bites.

Hold the lead came firmly in a pair of pliers and stretch it 1" for every 1' of length. This quick procedure straightens the came and makes it stiff.

Cutting narrow pieces, so at these times use a running pliers as shown on the left side of the photo top. These pliers have curved jaws that create the same pressure that your hands would otherwise. The drawing above shows a typical succession of cuts.

After cutting each piece, check to see if any portion of the glass extends past the pattern. If so, you'll need to carefully gnaw away at these protrusions with a breaker/grozer pliers as shown left, middle. When using this handy tool, remember to keep the curved jaw down.

It's time to assemble the glass and lead
To determine how much lead came you'll need, add up the length of all the solid pattern lines.

Continued
LEADED GLASS

and add 15 percent. The came comes in limp, 6'-long strands. Before using the came, you need to straighten and stiffen it by stretching it as shown on the bottom of the previous page. To do this, lock one end of the strand in a came-stretching vise clamped to one end of your bench. Now, hold the other end solidly in a pair of hand pliers, and pull the came, stretching it about 6'. Be careful not to bend the taut came. Then, cut it into two equal lengths for convenient handling.

Note: For health reasons, do not eat or drink while handling lead came. And, be sure to wash your hands after every work session.

Set the came strips aside, and staple your glazing copy to a flat piece of ¾” plywood that's at least 2” larger than the paper pattern on all sides. Position the plywood and pattern on a bench so the longest side of the panel faces you. Screw two 36'-thick, 1”-wide wooden cleats with straight edges along the dashed lines on the bottom and left side of the pattern. (If you're lefthanded, screw the cleats to the bottom and right side of the pattern.)

With your flush-cutting lead nippers, cut two lengths of lead that fit along the inside corner of the two cleats. (Because solder will cover this joint later, you don’t need to miter the ends.) Cut these so they extend slightly past your outside pattern lines. To make a clean cut, hold the came and nippers as shown below.

Starting in this corner, tuck your first piece of glass into the channels in the lead came. Tap Position your lead came and nippers this way for clean cuts.

Some tips for cutting and positioning the lead came

For smooth-looking soldered joints later, you should cut your lead pieces so they butt up against each other without a gap. (Never leave a gap greater than ¼", if you do, you'll have to fill it with a small piece of lead before soldering.) And, be sure to position the came in straight lines throughout the panel. To ensure your success, follow these tips:

• Hold your glass and came in place with horseshoe nails as you work. Use scraps of came as cushions between the nails and glass. Also use scraps to help you mark the position of your cuts with a slim knife as shown bottom left.

• Since solder covers joints completely, you usually don’t have to miter lead came at corners. But, diamond-shaped bevels do require mitered cuts. In our sample we cut the miters on the right and left corners of the beveled pieces by eyeballing the necessary angle and nipping the lead until it fit. At
this piece (and all others) to make sure it goes completely into the channel. Then, check that the piece does not go beyond your pattern lines. If so, trim away some glass with your breaker/grozer pliers, or by lightly touching the edge to a belt sander with 120-grit abrasive. Assemble your panel by working out from the bottom left corner toward the top right corner.

Note: Plan the joints of your inside lead pieces so your panel has as many long pieces as possible and a minimum number of joints. The drawing right shows how we worked out the joint placement in our sample panel.

The top and bottom of the bevels, we marked the cut by following the line formed by the intersecting bevels as shown on the opposite page, bottom right.

- When cutting miters of 45° or more, you may find that the "heart" of the lead came interferes with your nippers. In these cases, remove a short length of the heart as shown below left. To do this, cut along both sides of the heart, then bend the heart back and forth until it breaks off.
- To butt a piece of came up against the mitered joint at the bottom of a diamond-shaped bevel, make cutoff marks on the mitered pieces as shown below right.
- Don't jam your glass and lead tightly together. A slight amount of play helps you adjust the pieces for proper alignment during soldering. However, don't leave so much space between the glass and came that you have visible gaps in the panel.

With your flush-cutting lead nippers, remove the heart of the lead came prior to cutting miters of 45° or more.

Mark and cut mitered lead pieces so they form clean, gap-free joints with butting pieces of came.
LEADED GLASS

Add solder for solid joints
With your glass and lead came in place, tack two more cleats around the perimeter of your pattern as shown right. Make certain that the panel does not extend past your dashed line. If it does, check the fit of your glass pieces against your pattern, and readjust as needed. Also, double-check to make sure that all of the lead pieces align in straight rows.

Note: You'll find that with time and practice your soldering technique will improve greatly, so it pays to practice on scrap came.

Brush some flux on all of the joints on the top side of the panel. The flux helps the solder adhere and flow into the joint.

When your soldering iron becomes hot enough to melt the solder, hold the solder between the joint and the soldering iron as shown on page 32. The iron will quickly melt the solder. Hold the soldering iron on the joint for two or three seconds, until the solder flows evenly across the joint. You may need to move the iron in a small circular motion to smooth the solder, but be careful not to spread the solder more than 1/4" past the joint. Then, lift the iron straight up and off the joint.

Use no more solder than necessary for a smooth joint. (See the photo below for examples of well done and poorly executed soldered joints.) Try to keep the joint as flat as possible. To fill small gaps, turn the tip of your soldering iron vertical before lifting it off the gap.

Work the glazing cement under the came with a scrub brush.

When you finish soldering, wipe away all excess flux. Temporarily remove two cleats and flip the panel over. Flux and solder the joints on the other side. Check both sides to make sure you didn't miss any joints.

The final steps: glazing and cleaning
To prevent the glass from rattling within the lead channels, and to weatherproof the panel, you need to work glazing cement into the space between the lead came and the glass. To do this, apply a glob of cement to the panel and work it under the lead, using a scrub brush as shown above left.

After glazing both sides, sprinkle some whitening powder onto one side and work it around with a clean scrub brush as shown above right. The whitening will pick up the excess glazing cement and leave the glass looking smooth and polished. Repeat this procedure on the other side of the panel. Lay the panel on a flat surface and let the cement cure for about 24 hours.

With a toothpick or other pointed object, remove the excess cement from along the edges of the lead came. Finally, lightly sprinkle some whitening on the panel and scrub it again with a clean brush. You're done! (For information on how to install leaded glass panels in a wood frame, see the instructions in the Pendulum Clock project on page 42.)

Buying Guide:
For a complete catalog of leaded-glass supplies, including tools, glass, books, videos, kits, and designs, contact Delphi Stained Glass, 2116 E. Michigan Ave., Lansing, MI 48912; 800/248-2048.

Written by Bill Krier with Jim Downing Technical consultant: Jeff Kolker Photographs: Hopkins Associates Drawings: Jim Downing

WOOD MAGAZINE JUNE 1993
Now that you've read our leaded-glass technique article on the preceding pages, why not practice what we've preached by building this beautiful wall-mounted pendulum clock? You'll be surprised how easy the whole project goes together (we've kept the clock and glass-panel construction simple on purpose). See the Buying Guide at the end of the article for our source of supplies.

Note: See the preceding techniques article for information on assembling the glass-panel insert used in the door of this clock.

Let's start with the solid oak clock case

1. From 3/4" oak stock, cut the clock case sides (A) and upper and lower members (B) to the sizes listed in the Bill of Materials.
2. Cut or rout a 3/4" rabbit 1/2" deep across both ends of each side piece (A). Cut a 1/4" rabbit 1/2" deep along the back inside edges of the sides (A). See the Exploded View drawing for reference.
3. Sand the inside surfaces of parts A and B. Glue and clamp the pieces. Check for square and that the front edges are flush.
4. Cut the top and bottom pieces (C) to size.
5. Tilt your tablesaw blade 45° from vertical, position your fence, and cut a chamfer along the front and side edges of the top and bottom. Use a pushblock for stability and to minimize grain tear-out. Sand the chamfers to remove the machining marks.
6. Center the top and bottom pieces (C) side-to-side on the top and bottom of the clock case.

Build this statement in leaded glass

Print this article
Then, with the back edges flush with the sides (A), glue and clamp them in place.

**Now, let's construct the door frame**

1. Cut the door stiles (D) and rails (E) to size plus 2" in length.
2. Cut or rout a ¼" rabbet ¾" deep along the back edge of each piece. See the Door drawing and accompanying Glass Stop detail for reference.
3. Miter-cut the stiles and rails to length. Glue and clamp the pieces together, checking the door frame for square and that it lies flat.
4. Using a doweling jig for alignment, drill a ¼" hole in each corner of the door frame where shown on the Door drawing.
5. Cut four pieces of ¼" dowel stock to 1½" long. Sand a chamfer on one end of each dowel. Apply glue and insert the dowels—chamfered end first—into the dowel holes just drilled. Later, trim the protruding ends of the dowels flush with the edges of the door frame.
6. Assemble the glass insert for the door using the method described in the techniques article and the Leaded-Glass Pattern shown on the opposite page.
7. Cut the glass stops (F, G) to size, miter-cutting the ends.

**Next, machine the remaining pieces**

1. Cut the clock-face supports (H, I) to size. Drill pilot holes, then glue and brad them to the inside of the clock case where shown on the Exploded View drawing. Immediately remove excess glue.
2. From ¼" oak plywood, cut the clock face (J) to size. Check the fit in the opening. Then, mark the shaft hole centerpoint where dimensioned on the Exploded View drawing, and drill the shaft hole through the face. Check the fit of the clock shaft through the hole. Some movements might require a different sized hole.
3. Cut the clock-face ledge strip (K) to size, and glue and clamp it to the front of the clock face.
4. Glue and clamp the clock-face assembly (J, K) to the supports (H, I).
5. Mark the finger recess on the front outside edge of the left-hand side piece (A) where shown on the Finger Recess drawing. Wrap sandpaper around a 1"-diameter
Wrap sandpaper around a 1" dowel and sand the finger recess to shape.

6 Measure the rabbed opening, and cut the clock-case block (L) to size. Lay out the 4½"-square access opening, drill a blade-start hole, and cut the opening to size.

7 Cut the clock-hanger block parts (M, N) to size. Drill mounting holes and glue and screw the parts. To help keep the completed
clock plumb and prevent the hanger block from rubbing against the wall, adhere a piece of sandpaper to the exposed face of part N where shown on the Hanger Block drawing.

Add the finish, glass panel, hardware, and movement

1. Finish-sand the clock case, door, stops, and back panel. Stain as desired, and apply a clear finish.
2. Install the glass panel in the door. To do this, snip the head off a 3/4" X #17 brad, chuck the brad into your portable drill, and use the brad as a bit to drill angled pilot holes through the glass stops and into the door frame. See the Glass Stop detail accompanying the Door drawing for reference.
3. Center and brad (or epoxy) the timing ring to the front of the clock face (J).
4. Attach the no-mortise hinges to the front edge of the right-hand door stile (D) where dimensioned on the Exploded View drawing. Then, fasten the hinges to the door stile. When positioning the door for attaching the hinges to the clock case, leave an 1/8" gap between the clock case and top and bottom of the door.
5. Attach the ball catches to the clock case and mating positions on the back of the door.
6. Stick the clock shaft through the hole in the clock face (J), and fasten the movement (minus the pendulum) to the clock face with the external-threaded nut and washer. Trim the metal hands (we used a scissors) to the lengths stated on the Section View drawing. Add the hands to the protruding clock shaft.
7. Drill mounting holes, and screw the oak plywood back panel (L) into the rabbet in the rear of the clock case.
8. Fasten the hanger block to the wall, and slip the clock onto it. See the Section View drawing for reference.
9. Cut the wood pendulum arm to 13¾" long. Hang the pendulum and set the time.

Buying Guide

- **Clock movement and hardware.** Mini-quartz movement with wood pendulum and brass disc, etched time ring, straight hands, antique brass no-mortise hinges, and two polished-brass ball catches. Stock no. 4910, $29.95 plus $4.95 shipping and handling per order. Turncraft Clocks, Inc., P.O. Box 100, Mound, MN 55364-0100. Or call 800/544-1711 to order.
- **Glass and leading.** 6—1 1/8 X 1 1/2" beveled-glass squares, 1—10 X 15" clear semi-antique glass, 1—18 X 2 1/4" single chip glass, 1—8 X 10" clear double-strength glass, 3—6 pieces 1/4" RH lead came. Kit no. 8030VM, $28.95 ppd., Delphi Stained Glass, 2116 E. Michigan Ave. Lansing, MI 48912. Or call 800/248-2048 to order.
INDEX

Cumulative index for issues 50–58

If you save back issues of WOOD® magazine, this index will help you quickly find articles in issues 50–58. We kept it simple. For instance, after the listing “Baskets, split-ash,” you’ll find the numbers 54:35–39. This means the article appears in issue 54, pages 35–39. The in-magazine index for issues 1–8 appeared in issue 9, 9–16 in issue 17, 17–24 in issue 25, 25–32 in issue 34, 33–41 in issue 43 and 42–49 in issue 52. Watch for the advertisement for our all-new cumulative index in an upcoming issue.

A–C


grades of, 51:73; 57:83
tracing, 51:21
Bookcase, 50:38–43; 56:12
Bookends, 57:72–73
Bows, turning, 57:77–80
with green wood, 50:72–75
for potpourri, 52:42
Boxes: booster, child’s, 52:68–69 jewelry, 55:58–61;
51:16
music, 50:5; 53:69–71
tissue, 54:50–51
Box-joist jig, 53:77
Brad-nailer, 52:23
Brad-point bits, 50:90
Brushes: disposable, 52:23; 56:22
stencil, substitute, 50:20
Build-a-Toy® contest, 55:8, 68–70, 72–73, 57:60–65
Burnisher for scrapers, 56:50
Butternut, 55:23–24
Buy-inards, 56:64–79
bandsaws, 51:66–71
biscuit joiners, 57:42–47
boards, 51:72–73
drill presses, 56:66–67
drills, cordless, 56:64–65
dust collectors, 54:42–47
finish removers, 53:54–59
joiners, 56:68–69
miters, power, 50:48–55
planes, thickness, 51:54–55;
56:78–79
routers, 56:72–73
sanders, belt, portable, 56:70–71
scrollsaws, 56:74–75
tablesaws, 56:76–77
Cabinets: air-filtration, 55:48–51, 74
curio, 52:47–51
mitersaw, 50:56–61
pic safe, 53:47–52
system for workshop, 54:32, 74–75; 58:10
Calendar/clock, 50:5
Caliper holder, 54:78–79
Carvers: Chesser, G. Jr., 55:25–29

designs: Barton, W., 50:44, 46–47
Hagensick, J., 53:60–63
Harrington, E., 56:40–41
Lockwood, C., 57:38–41
Reisal, H., 56:44–47
Rosauer, H., 55:44–47
Sanders, G. O., 58:34–37
Thurman, B. K., 53:53
Brolow, H., 52:39–41
Harney, R., 50:33–37
Harrington, E., 56:37–39
Tweet, R., 54:40–41
Carving: chip carving, 50:44–47
daffodil, 53:60–63
decors, 55:25–29
feather pin, 55:44–47
Intrigue, 56:37–41
kachina-style pendant, 53:53
Pilgrims, 56:44–47
positioner for, 55:54
relief carving, 50:33–37
roughout for, 52:32–35
Santa on skis, 56:48–49; 57:38–41
thumb protection, 50:14
tools, sharpening, 52:39–41
trade sign, 51:40–43
trout, 58:34–37
whitling, 54:40–41
Caterpillar puzzle, 53:72–73
C-clamp coarc, 55:62–63
Celina, 57:84
Chairs:

Amish, 51:35–39

high chair, 51:56–63; 53:14

joints, loosening, 57:82

Cherry, finishing, 55:78

Chestnut, 52:88

Chests:

oak blanket, 58:56–61
tall, Shaker-style, 55:36–43

Children’s items. See also Toys.

boost box, 52:68–69
clothes tree, 51:78–79

high chair, 51:56–63; 53:14

Chisel, corner, 54:24

Chisels:

racks, 51:10; 55:76

Christmas items:

ornaments, 57:66–67, 70–71

Santas, 56:48–49; 57:38–41

Chuck key handle, 54:18

Chucks, lathe, 55:54–55

Circular saw blades, 55:20

holder for, 58:16

Circular saws, portable:

loosening blade on, 52:10

sheet goods cut with, 50:14

Clamps:

collectable, 53:87

flexible, 52:8; 57:12

Jig for, 53:22

pipe, use of, 51:16, 20

Quick-Grip, 56:52–53

from scrapwood, 53:120

track system, 58:20

Clocks:

calendar, 50:5

man-in-the-moon, 55:64–65

turned, 58:70–72

workshop, 54:80–81

Clothes tree, child’s, 51:78–79

Coatrack, C-clamp, 55:62–63

Collectable tools:

clamps, hand, 53:87

miter trimmer, 50:31

WOOD MAGAZINE  JUNE 1993  43
Cumulative index for issues 50 to 58

pump-log tools, 57:86
Column, classic, 52:54–55
Combination planes, 51:82
Combination squares, 55:56
Cookie mold, 57:12
Cordless tools:
  battery charger for, 51:30
drills, 56:64–65
  recycled batteries, 55:88
Cords, power:
  color-coded, 58:12
LED, 50:27
  safety with, 58:8
Corner chisel, 54:24
Coves, cutting, 52:8, 53:12
Cracked finishes, 51:24
Craftsman Close-ups:
  baskets, split-ash: S. Zeh, 54:35–39
  birdhouses and feeders, redwood: G. Schodt, 58:27–31
  carved intarsia:
    E. Harrington, 56:37–39
    chairs, Amish: D. Swarcy, 51:35–39
  decoys: G. Chesser, Jr., 55:25–29
  marquetry: D. Peck, 52:27–31
  relief carving: R. Harney, 50:33–37
  toys: H. Gorczynski, 53:37–41
  violins: B. Rohde, 57:33–37
Curio showcase, pedestal, 52:47–51
Cutting diagrams, making, 55:78
Cutting instructions, tapped-on labels for, 55:12

D-E

Dado bits for routers, 52:21
Daffodil, carved, 53:60–63
Darah darah, 53:33
Decorations, Christmas trees, 57:66–71
Decoros, 55:25–29
Dents, removing, 51:6
Desk set, 57:54–59
Dibasic ester finish removers, 53:57, 59
Discs, sanding, 57:29
Distressed finish, 53:52
Dolly for sheet goods, 54:17
Dovetail joints:
  bandsawed, 51:44–53
  drawers with, 55:30–35
  with Incra Jig, 58:32–33
Dowels:
  cutting, 53:18
  57:25

F-G

Feather boards:
  for radial-arm ripping, 56:18
  for routing, 58:47, 51
Feather pin, 55:44–47
Fences for routers, 58:50
  system, 58:44–47
Finishers:
  antique look, 53:52
  cherry, 55:78
  crackled, 51:24
  linedese-turpentine-variash (LTV), 54:48–49
  milk paint, 51:8
  oil-based bleeding, 50:8
  removers, 53:54–59

H-I

Hamper, woven, 58:38–43
Handles, turned, 56:88
Hand saws:
  fretsaw, bird’s-mouth table for, 52:29
  pull-stroke, 51:29
  rack for, 57:18
Handscres, antique, 53:87

Hand tools. See Tools.
Hickory, 51:33–34
High chair, 51:56–63; 53:14
Hold-downs:
  anti-kickback, 55:55
  for router workpiece, 51:21
  hole-spacing jig for drill press, 51:19
Hollow-wall fasteners, 51:28
Horn of plenty, carved intarsia, 56:40–41
IDEA SHOP, 52:1, 54:1, 58:63–67
  58:8, 10–11, 78, 80
airfiltration cabinet, 55:48–51
  74
clock, 54:80–81
coatrack, C-clamp, 55:62–63
  masonry screws, 57:20
  router aids, 58:44–49
  stair, 50:70–73
tools and supplies:
  holders, 55:76
  56:80–84
  57:30, 58:16
innovations, 55:54–57
list, 54:82–85
  wall cabinet system, 54:32
  74–79
  58:10
workbench, 54:64–69
Inca Jig, 58:32–33
  alternative to, 58:74
Indian kachina pendant, 53:53
Inlaid music box, 53:69–71
Insurance, product liability, 57:82
Intarsia, carved, 56:37–41

J-M

Jewelry:
  pendant, kachina, 53:53
  pin, feather, 55:44–47
Jewelry box, bandsawed, 55:58–61
Jigs:
  box-joint, 53:77
  clamping, 53:22
  dovetail, 51:49–51, 54:8
  stand for, 55:53
  use of, 51:44–48
  hole-spacing, 51:19
  Incra Jig, 58:32–33
  jointTECH, 58:74
  precision positioning, 52:10
Joiners, 56:68–69
Knives, installing, 52:56–57
Joints and joinery:
  biscuit, 57:42–53; 58:54–55
  box, jig for, 53:77
  dovetail, 58:32–33
  bandsawed, 51:44–53, 54:8
drawers with, 55:30–35
dowel, test-fitting, 55:15
fancy, jig for, 52:10
with Inca Jig, 58:32–33
screw, holes for, 55:12, 15
 spline, for edging, 57:82
Kachina pendant, 53:53
Knitting carrier, 51:52–53
Knobs, adjustment, easier
turning of, 50:14, 19; 58:14
Lamps:
magnifier, 55:57
oil, turned, 51:64–65
reading, 56:20
table, 56:58–59
Lathes, 56:28
chuck for, 55:54–55
small, 51:8; 56:53
Legs:
leveling, 53:68; 57:11
tapering, 56:18
Liner openers, 54:52–53
Level, 55:55
Unseed turpentine varnish
(LTV) finish, 54:48–49
Logging:
Anderson-Tully Company,
58:62–67; 53:14; 57:8
Lubricants, 56:51
Magazine rack, 58:64–65
Maple species, 55:78
Marquetry, 52:27–31; 55:88
Mass:
floor, 54:28; 55:8, 57
Metal:
punched-tin items,
53:42–52, 74–75; 57:8
Methylene chloride (MC)
finish removers, 53:54–59
using, 58:62–63, 76
Mildew, eliminating, 50:91
Milk paint, 51:8
Miscled joints with biscuit
joiner, 57:51, 52
Miter fence for radial-arm saw,
52:18
Miter saws, power, 50:48–55;
56:51; 58:78
cabinet for, 50:56–61
stops for, 52:16
Miter trimmer, 50:31
Moldings:
miter-cutting, 50:30
small, routing, 58:52
Mortiser, hollow-chisel, 56:56
Mortises, corner chisel, 54:24
Motors, electric, 52:52–53
Music boxes, 50:5; 53:69–71

N-P

Nail gun, 52:23
N-methyl pyrrolidone (NMP)

Q-S

Quassia, 51:31; 56:12
Quilt stand, 52:72–73
Radial-arm saw:
alignment tool for, 57:26
fence system for, 52:18
vs. mitersaws, 58:78
ripping with, 56:18
Rain forest, 51:80; 53:96; 57:9
Ramin, 56:34
Redwood, 52:88, 58:27–31
Relief carving, 50:33–37
trade sign, 51:40–43
Resawing, 51:53
Resin finishes, 54:8
Rocheur, porch, 52:58–63
Rockingham Community
College, Winston-Salem, N.C.,
53:65–66
Rolling pins, 55:52–53
Rotary tool, support for, 57:30
Roughouts, 52:32–35
Rotors, 56:72–73; 57:27
biscuit joinery with, 57:52–53;
58:54–55
bits, 53:31; ball-bearing
pilots, 57:76
dado, 52:21
flush-trimming, 53:28
kickback-preventing,
51:27
stile-and-rail, 58:53
box parts, trimmed, 51:16
burns on work, 57:76
dust protection for, 56:16
fences, 58:50
system, 58:44–47, 81
hold-down for, 51:21
as planer, 53:20
for round-overs on dowels,
57:14
tables, 52:8; 55:10
crosscut, 58:48–49
mounting screws for,
56:10
plate levels, 55:55
precision positioning jig
attached to, 52:10
techniques with, 58:50–55
Rubber tree, Para, 52:25; 56:8
Rule/pocketknife, 56:56
Sabersaws, cutting with, 50:19
Safety, 54:63; 57:12
during carving, 50:14
with chisel rack, 51:10
with drop cords, 58:8
equipment, gathering, 54:15
with finish removers, 53:55,
56; 58:62
scrollsaw, 57:14
Sanders:
belt, 56:70–71
belts for, 56:52; 58:12
cord, suspending, 51:23
drum: sandpaper for, 56:23
organizer, 56:80–84
spindle, oscillating, 56:55
Sanding discs, 57:29
Sanding sticks, 53:22; 58:22
Sandpaper:
buttons sanded with, 57:16
for drum Sanders, 56:23
file folder for, 57:23
Sawdust. See also Dust
collectors.
Saw blades, circular, 55:20
catalog, Freud's, 57:9
holder for, 58:16
Schools, woodworking,
53:64–67, 90
Scrapers:
burnisher for, 56:50
sharpening and using,
56:60–61
Screwdriver attachment for
drill, 57:26
Screwdriver holder, 54:78–79
Screwdriving drill bits, 56:54
Screw holes, making, 55:12, 15
Screws:
mosaic, 57:20
Scrollsaw, 56:74–75; 57:28
blade organizer, 56:90
blade-tenon knot, gripper for,
50:14
Cumulative index for issues 50 to 58

dust blower, 53:24
magnifier lamp for, 55:57
noise reduction, 55:8
photo frame, 52:70–71
silhouettes, 50:10–11, 78–79
stack cutting with, 56:20
SUPER SCROLLSAW
PATTERNS™, 55:1
welcome sign, 58:66–67
windmill plaque, 55:66–67
Shaker furniture, 57:12
tall chest, 55:36–43
Shalako pendant, 53:53
Sharpeners, raised-panel-door set for, 56:57
Sharpening:
carving tools, 52:39–41
scrapers, 56:60
stones for, cleaning, 55:12
turning tools, 52:36–38
Sheet goods:
cutting, 50:14
dolly for, 54:17
plywood:
edging, 57:82
Shelves:
bookcase, 50:38–43
steadying with glue, 52:10
Shop skills:
jointer knives, 52:56–57
legs, leveling, 53:68
router burns, avoiding, 57:76
scrapers, sharpening and using, 56:60–61
Shop-tested techniques:
bandsawed through-dovetail joints, 51:44–48
biscuit joinery, 57:48–53
dovetails, 53:20–35
router, use of, 58:50–55
pin baking, 53:42–46
Shop vacuums:
vs. dust collectors, 54:42
hose hookups for, 50:18
Showcase, pedestal, 52:47–51
Sliding-compound miter saws, 50:48–55, 56:51, 58:78
Snowshoes, 51:6
Solvent dispenser, 55:56
Spindle sander, 56:55
Spline joints for edging, 57:82
Sprayer, HVLP, 51:26
Squares:
combination, 55:56
holder for, 54:78–79
Stains:
antique finish, 53:52
bleeding, preventing, 50:8
water-based, gelled, 56:52
Stencil brush, substitute, 50:20
Stool, shop, 54:70–73
Storage:
air hose, 55:54
chisels, 51:10; 55:76
drawer div., 51:16; 55:57
finishes, water-based, 53:12
magnetic, 55:56
planes, 56:9
sanding supplies, 56:80–84
sandpaper, 57:23
saw blades, 56:90, 58:16
saws, 57:18
totable, 54:12
wall-cabinet system,
workshop, 54:32, 74–79,
58:10
wrenches, 51:12; 56:10
stripers, finish, 53:54–59
using, 58:62–63, 76
Screwdrivers.
Toxic woods, 56:92–93
Toys:
Build-a-Toy contest, 55:8,
68–70, 72–73, 57:60
caterpillar puzzle, 53:72–73
by H. Gorczynski, 53:37–41
liability insurance for, 57:82
periscope, 57:68–69
train, 57:60–65
wagons, 53:76–80, 56:10
Radio Flyer, 56:104
wrecker, 56:68–71
Tray, toy, 57:60–65
Transitional planes, 56:96
Trees. See also Wood species.
logging operations, 50:62–
67; 53:14, 96
medicinal uses of, 57:74–75
rain forest, 51:80; 53:96;
57:9
trivia about, 50:96; 53:96;
54:100, 56:104; 58:88
Tout, carved, 58:34–37
Truck, toy, 50:68–71
Turkey centerpiece, 56:42–43
Turners:
Hurt, R., 52:36–38
Klein, B., 54:7
Tubbs, C., 54:55–57
Turning:
bowls, 57:77–80
green wood, 50:72–75
poppourri, 52:42
butternut, 55:24
Christmas ornament, 57:70–71
clock, shelf, 58:70–72
colored-coded, 50:21; 57:18
green wood, 50:72–75
handles, tool, 56:88
hickory, 51:34
lathes, 56:28
chuck for, 55:44–55
small, 51:8; 56:53
music box, 53:69–71
oil lamps, 51:64–65
pillowcases, 52:74
pine, eastern white, 53:36
rolling pins, 55:22–53
sanding stick for, 53:22
tagua, 54:54–57
tapers, 56:18
tools: 50:21, 53:29; 54:55
sharpening, 52:36–38
wheels, toy, grooves on,
58:14
willow, 58:26
TV retrofits, 50:82–83; 51:10
Vacuums, shop, 50:18; 52:15;
54:42
Valentine cutout, 50:78–79
Varnish:
linseed-turpentine, 50:32
(LTV) finish, 54:48–49
satin finish, 53:18
Vegetable ivory, 54:54–57
Viols, 57:33–37
Vicc end, 51:20
V-tools, sharpening, 52:41

W-Z
Wagons, toy, 53:76–80, 56:10
Radio Flyer, 56:104
Wall-cabinet system,
workshop, 54:32, 74–79,
58:10
Water-based finishes, 50:91
eelam paints, 56:57
Galileo spent, 56:52
Water systems, wood, 57:86
Weather station, 50:44–47
Welcome sign, 58:66–67
Whale decoration, 50:80–81
Wheels:
tools on, 58:12
toy:
bushings for, 53:18
turning grooves on, 58:14
Whitling, 54:40–41
Willow, black, 58:25–26
Windmill plaque, scroll sawed,
55:66–67
Woodies (cars), 52:64–67
Wood species, 56:11
butternut, 55:23–24
ceiba, 57:84
cherry, finishing, 55:78
chestnut, 52:88
darrah darrah, 53:33
deadendared, 51:80, 57:9
Gur aragic, 54:92
hickory, 51:33–34
maple, 55:78
pine, east, white, 53:35–36
quassia, 51:31; 56:12
ramin, 56:34
redwood, use of, 52:88;
58:27–31
rubber tree, 52:25; 56:8
Toxic, 56:92–93
willow, black, 58:25–26
Workbenches, 54:64–69
couper, 51:20
proctoring, from thieves,
56:62–63
proctoring top of, 50:20
scrounging work on, 56:16
stop for, 57:20
Woven wood:
baskets, split-light, 54:35–39
hamper, 58:38–43
Wrecker, toy, 50:68–81
Wrench rack, 51:12; 56:10
Yarn carrier, 51:52–53
Yestermorrow school, Warren,
Vt., 53:66–67

W OOD MAGAZINE JUNE 1993

46
HOW TO CLAMP TRICKY MITERED MOLDINGS

At one time or another, you’ll probably face a mitered joint that seems to defy assembly. As an example for this article, we came up with a doozy: an intricately shaped picture molding with precious few flat surfaces for clamping. Here’s how we make quick and simple work of this challenging situation.

First, you need to build an auxiliary work surface like the one shown above. We assembled ours from a 16"x24" piece of 3/4" plywood and a cleat of scrapwood screwed to its underside. With the cleat secured in your vise, this work surface gives you greater working freedom to take on the following steps.

**Note:** Before you get to the following steps, dry-assemble your mitered workpieces to ensure that they form a square frame without gaps at the joints.

2. Now, position and clamp a scrap piece of your molding face side down and rabbet side out as shown top left. This clamping block protects your molding and provides a flat area for your clamp’s pad to rest on. This usually does the trick, but if the scrap of molding slides off the workpiece, then you need to try a different clamping block.

3. Apply glue to both mitered ends of the joint. Then, position the other mitered workpiece, and repeat the clamping procedure. Adjust the clamps for light pressure—enough to hold the workpieces flat, but not so much that you can’t slide them back and forth slightly.

4. With a narrow piece of duct, strapping, or some other fiber-reinforced tape, bring the mitered joint tightly together. (Masking tape does not have sufficient strength.) You should see a small amount of squeeze-out along the joint line. If possible, reinforce the joint with nails after the glue dries. Be sure to drill pilot holes to avoid splitting the wood.

Illustration: Jim Stevenson
In the June 1992 issue of WOOD magazine, we featured the porch rocker shown below. Since that time, we’ve been flooded with requests for full-sized patterns for the project. We’ve also been hearing that you’d like a matching table and chair. Now you can build a patio-full of furniture that’ll be the envy of the neighborhood, and at a price that won’t break the bank.

Perk up your patio or deck with this handsome table and chair.

Note: For your convenience, we’ll supply you with full-sized patterns for the slat supports (parts F, G). Or, if you just can’t wait to get started, enlarge the grid on page 51. To receive the full-sized patterns, send $3 and a #10 business-sized (4¼ x 9½”) self-addressed envelope with 58¢ postage to Outdoor Chair Patterns, WOOD Magazine, 1912 Grand Ave, Des Moines, IA 50309-3379. (Foreign readers: Please include an international reply coupon.) If you missed the porch rocker in the June 1992 issue, send an additional $2 for a photocopy of the article.

Let’s begin with the legs, rails, and armrests

1. From 1¼” genuine mahogany (not Philippine mahogany, which is not a true mahogany), cut the legs (A, B) to size plus 1” in length. Miter-cut the top end of each leg at 4° to cut the legs to the finished length stated in the Bill of Materials and shown on the End Frame Assembly drawing.

2. From ¾” genuine mahogany, cut the rails (C) to size.

3. Using the dimensions on the End Frame Assembly drawing, carefully mark the mortise and ¾” hole centerpoints on each leg (A, B). Following the four-step procedure on the Forming the Mortises drawing, drill and chisel the mortises through the legs.

4. Drill and countersink a ¼” hole in each front leg (A) and two in each back leg (B).

5. Mark the tenon locations on the ends of each rail (C). (See the...
Tenon detail in the End Frame Assembly drawing.) Then, cut tenons on both ends of each rail.
6 Cut two armrest blanks (D) to 3¾ x 21¼ from ¾"-thick white oak. Using the Armrest drawing for reference, transfer the outline to one of the blanks. Tape the armrest blanks together (we used double-faced tape), with the edges and ends flush. Bandsaw the armrests to shape, sand the edges smooth, separate the armrests, and remove the tape.
7 Mark (but don't drill) the centers for two pair of screw mounting holes on the top of each armrest.

**Constructing the end frame assemblies comes next**

*Note: Construct your chair using Titebond II water-resistant glue, slow-set epoxy, or resorcinol so it can stand up to the elements.*

1 Rout ¼" and ¼" round-overs on parts A, B, C, and D where shown on the End Frame Assembly and Exploded View drawings.
2 Glue and clamp a rail (C) between a front and back leg. Using a framing square, check that the legs are square to the rail.
3 Clamp an armrest on the top of each end frame assembly (A, B, C). Verify that the marked mounting holes are located on the top of the legs. Re-mark if necessary.
4 Drill the mounting holes through the armrests and into the top ends of the legs. Screw the armrests to the leg tops, plug the holes, and sand the plugs flush.
Now, add the stretchers, and join the end assemblies
1 Cut the stretchers (E) to size. Cut 1¼"-long tenons on the ends of each stretcher.
2 Rout ⅛" round-overs along the edges of each stretcher.
3 Glue the pair of stretchers between the end frames. (To ensure that the end assemblies would stay square to the stretchers, we clamped square corner braces in place and left them there until the glue dried.) Sand the chair frame.

Let's make the slat-support assemblies
1 Cut two pieces of 1¼" mahogany to 4¾ × 21" for the bottom-slat supports (F) and two pieces to 3 × 23" for back-slat supports (G).
2 Using the Slat Support drawing for reference, mark the location of a half-lap joint on one end of each slat support (F, G).
3 Mount a ¾"-wide dado blade to your tablesaw and an auxiliary miter gauge to your miter fence. Elevate the blade to cut exactly half the thickness of your stock. (We used scrap of the same thickness as the supports, and made test cuts to verify blade height.) Angle the miter gauge 20° from center, and clamp a stop to your auxiliary miter-gauge fence. Cut a half-lap on one end of each of the four slat supports where dimensioned on the drawing at left.
4 Dry-clamp the two supports (one F and one G per support) to check the fit. Glue and clamp each of the two slat supports.
5 Following the method described to form the matching armrests, tape the slat supports (F, G) together, transfer the pattern outlines to the slat supports, cut the supports to shape, and sand the edges smooth. Then, using a try square, transfer the slat (H) locations to the top front edge of each slat support. Pry the pieces apart, remove the double-faced tape, and finish-sand the slat supports, being careful not to sand away the slat location lines.
6 Rout ⅛" round-overs along the bottom and back edges of each slat support where shown on the Exploded View drawing.
**FURNITURE**

Fasten the slats to the slat supports

1. From ¾"-thick white oak (we planed thicker stock to size), cut 20 seat slats (H) to 1⅛ × 21". From ¾" stock, cut the top slat (I) to size.
2. Rout a ½" round-over along the top edges and ends of each ⅞" slat (H) and a ½" round-over along the top edges and ends of the top slat (I). See the Exploded View and accompanying Screw Hole detail for reference. Next, rout a ½" round-over along the bottom front edge of the top slat.
3. Drill countersunk screw holes in each slat where dimensioned on the Exploded View drawing and accompanying Mounting Hole Location detail. Note that the bottom and top two slats have only one hole per end. (We clamped a fence and a stopblock to our drill-press table to consistently position the holes from slat to slat.)
4. Place the two slat supports on your benchtop. Clamp a large handscrew clamp to each to hold them upright.
5. Screw the top slat (I) to the slat supports. Fasten one of the ⅞" slats (H) to the opposite bottom end of the assembly. Following the layout marks on the slat.

---

**Build a table to match the chair**

To build the matching table, follow the same construction procedure used to build the chair, and refer to the Table Exploded View drawing and the Bill of Materials for the table.

---

**TABLE CUTTING DIAGRAM**

- **F** ¾ x 3⅛ x 36" White Oak
  - Note: Cut parts (F) from ¾" stock, then resaw in half to form ⅞" slats

- **C** 1⅛ × 5⅛ × 60" Genuine Mahogany

- **B** ¾ × 3⅛ × 96" Genuine Mahogany

---

**TABLETOP**

- ½" spline slot 2¼" long
  - Note: Spline slot starts 1" in from outside end

- ½" groove ¼" deep
  - ⅛" from top edge

- ⅛" round-overs

- 1¼ × 1 x 2½" spline

- ¼" rabbets ⅛" deep on ends of (F)

- Miter corners

---

**TONGUE AND GROOVE DETAIL**

- ½" groove ¼" deep
  - ⅛" deep
supports, fasten the remaining seat slats (H). Check that the slats are square to the supports.

**Attach the seat assembly to the chair frame**

1. With a helper, position the seat assembly on the chair frame where dimensioned in the tinted boxes on the Exploded View drawing. Once positioned, firmly clamp the seat to the frame.

2. Using the previously drilled ¼" holes in the front and rear legs as guides, drill ¼" holes through the supports. Using ¼" brass machine screws, flat washers, and cap nuts, connect the two assemblies.

3. Working from the back of the chair, drill a 7/8" countersunk shank hole through the back seat supports (G) and a ¼" pilot hole 1" deep into the inside edge of the armrests. Drive a #12 × 2" flathead brass wood screw through each support and into the armrests.

4. Remove the wood screws and machine screws to separate the seat assembly from the chair frame. Finish-sand both assemblies and apply a quality exterior finish. (We applied three coats of spar varnish.) After the finish has dried, fasten the two assemblies back together.

Using your router and a slot-cutting bit, rout ¼" spline slots 2 3/4" long in the mitered ends of the tabletop banding pieces (D, E). See the drawing at left for reference. Next, turn the banding pieces on edge, and cut a ¼" groove along the inside edge of each (to accommodate the slats [F]) on your tablesaw. Then, use your tablesaw fitted with a dado blade and a miter-gauge fence to cut ¼" rabbets across the ends of the slats (F). Check the fit of the slats into the grooves cut in the banding pieces.

Assemble the table base, and then the tabletop. Finally, screw the two assemblies together and add the finish.

---

**Bill of Materials**

<table>
<thead>
<tr>
<th>Part</th>
<th>Finished Size</th>
<th>Mat.</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>A legs</td>
<td>1 1/4&quot; x 2&quot; x 20&quot;</td>
<td>M</td>
<td>4</td>
</tr>
<tr>
<td>B stretchers</td>
<td>¾&quot; x 2&quot; x 12&quot;</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>C rails</td>
<td>¾&quot; x 2&quot; x 9&quot;</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>D banding</td>
<td>¾&quot; x 3&quot; x 18&quot;</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>E banding</td>
<td>¾&quot; x 3&quot; x 13&quot;</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>F slats</td>
<td>¾&quot; x 1½&quot; x 8&quot;</td>
<td>WO</td>
<td>7</td>
</tr>
</tbody>
</table>

Material Key:
- M - genuine mahogany
- WO - white oak

Supplies: #8 × 2" galvanized deck screws, clear exterior finish.

---

**TABLE EXPLODED VIEW**

1/2"-wide mortise centered along edge

---

BARKROSING
A nifty Nordic decorative technique you'll want to try

You won't find an easier way than barkrosing to dress up anything wooden. With a knife, some sandpaper, and a chunk of bark, you have what it takes to make a plain object look like an old-world treasure.

"Anybody can do barkrosing," says woodcarver Harley Refsal as we sit at his dining room table, etching patterns into pieces of wood. He's right; it's easy. And it's a great embellishment for almost anything wooden.

Barkrosing, coloring a knife-cut design with tree bark, originated in Norway centuries ago. Historians don't know precisely when, however. That's partly due to its humble beginnings.

"This wasn't fine art," explains Harley, WOOD® magazine's carving consultant. "It was decoration for everyday items. Such things were used until they wore out, then were thrown away. So, they never made it into museums for study."

Despite being a carved decoration, barkrosing leaves a smooth surface, an advantage for at least two common early-day uses. Kitchenware, such as bowls and spoons, wiped clean easily. And on skis, barkrosing didn't collect snow and ice as raised carving or open engraving would have.

An adaptable adornment
Today, barkrosing still fills the bill for quick, easy-to-do decoration on utilitarian wooden objects. "It's a great way to make a nice, quick, handmade gift," Harley points out. "Just buy a plain wooden spoon and dress it up with a little barkrosing."

To try out that idea, we head downtown in Harley's hometown, Decorah, Iowa. There, a quick search nets a wooden spoon with a plain, flat handle. Follow along now as Harley transforms it from ordinary into distinctive in a few easy steps.

Pencil a few doodles
The first step is to draw a design onto the handle. "A simple geometric pattern looks good and follows tradition," Harley explains. "But, you could do monograms or designs as fancy as you dare."

"When in doubt," he suggests, "draw two parallel lines as a border, and crosshatch between them. Diamonds make a nice ornament." (See the samples around the pages.) He decides on a crosshatched border and stacked diamonds for our spoon.

Harley sketches the major elements onto the spoon handle, as shown in photo A. He doesn't draw in all of the details—just indications where they will go. "You can follow a fine line better with the knife blade, so use a sharp pencil," he advises.

Engrave those fine lines
Next, he inscribes the design. "Any sharp knife will suffice, but the closer to the tip you can grip it, the better," Harley says. He uses a 6mm Swiss knife blank (catalog no. 05512, from Woodcraft Supply Co., 800/225-1153), but you may find an X-Acto knife more comfortable to use because of its thicker grip.

The technique is simple: just grip the knife as you would a pencil, and score along the guidelines, shown in photo B. A simple incision with the knife perpendicular to the surface works best.

Harley presses the knife tip into the wood just deeply enough to open a visible slit. "For hollower lines, cut a little deeper and wider," he says, "but keep each line uniform." Pay attention to the grain lest it steer your knife off in a direction you weren't planning to go. Erasing a mistake, when it's possible, calls for a lot of sanding.

Now, Harley grabs a chunk of walnut bark scavenged from his yard. He rubs the corky outside of the bark along a piece of 180-grit sandpaper, making fine, brown dust (photo C).

Go ahead, rub it in
Then, he picks up a pinch of the bark powder and rubs it into the incised design with his fingertip (photo D). He works bark dust into all parts of the design. Next, he lightly sands the carved and filled area with 400-grit sandpaper to remove the edges raised by the blade.

Finally, he applies a clear oil finish (photo E). For the spoon, which could be used for serving or preparing food, he uses Behlen's Salad Bowl Oil. ♦

Written by Larry Johnston
Photographs: Chip Pekoson
Illustrations: Kim Downing
**A** Draw light guidelines. That way, they'll come off without excessive sanding. Too much sanding to remove the guidelines after you've cut your design into the wood will ruin your work. Try out your design first on paper.

- Hold the knife as close to the tip as possible for maximum control. Be sure to use a sharp knife for clean, crisp lines.

- A piece of 180-grit sandpaper produces fine bark dust in a hurry. We show walnut here, but other tree barks will work.

**C**

**D**

**E**

**F**

- Rub the bark powder into the lines with your fingertips. This really isn't as messy as it looks, but do it over paper, anyway.

- Salad-bowl oil brings out the color of the barkose and soaks into the powdered bark to bind it to the base wood. You also could apply lacquer or polyurethane for a protective coating on decorative items.

- Harley Refsal used the 6mm Swiss knife blank shown to carve the design into the spoon handle. Any knife you can grip near the tip will work.

- You can combine elements from traditional designs such as the ones around these pages to make borders and ornaments. Any geometric designs, old or new, adapt well to the technique.
We have yet to meet a scrollsawer who couldn't use a few more patterns. So here are some methods you can use to turn almost any printed photograph or illustration into a scrollsaw project.

A king's ransom in scrollsaw patterns awaits you at the newsstand. In magazines, children's storybooks, picture postcards, greeting cards, calendars, and coloring books, you'll find a marvelous array of photographs and illustrations. And there's all potential scrollsaw patterns!

Whether you like airplanes or zebras, you're sure to find something appealing. When you do, you can take any of several approaches to using it as a pattern. Here are three of our favorite methods for making patterns from pictures.

- **Tracing.** Line drawings, such as coloring-book illustrations, make great silhouette patterns. Enlarge or reduce the artwork on a photocopier if you wish. Then, simply trace the outline onto your stock with carbon paper or transfer paper. (You can trace photographs, too, as we did with the gymnast silhouette shown.) These cutouts lend themselves to painting or woodburning, too.

- **Direct mount.** Attach illustrations or photographs directly to your stock with spray adhesive. If the art is strictly a cutting pattern, follow the spray-can instructions for temporary mounting. Peel the pattern off after cutting.

If, on the other hand, you want the printed image to be part of your design, as we did with the car key hanger and jukebox CD rack, follow...
the instructions for permanent mounting. Spray the completed cutout with lacquer or clear acrylic for protection.

When you're using an illustration from a magazine this way, mount a small piece of the page first and spray it with acrylic to make sure that the type from the back won't show through and spoil your picture. If it does, use the next method.

*Transfer.* Lift an image right off a printed page—color or black-and-white—and stick it onto your stock with the simple process we used for our Kachina doll. It's like converting the published artwork into a decal.

First, lay the page faceup, and brush an even coat of acrylic transfer medium over the picture you want to save. (We used Picture This Transfer Medium, which we bought at a craft store.) Allow an ample margin around the picture as you brush on the medium. (See photos below.) Let dry, and then apply another coat crosswise to the first. Flow the medium on smoothly to prevent brush marks. When dry, cut out the coated area and lay it facedown on a smooth surface. Wet the back with water, and rub the paper off, leaving a decal-like image on the acrylic film.

Brush a coat of thinned medium onto your stock. While it's still wet, smooth your acrylic decal onto the surface faceup, as shown below. Smooth out the air bubbles carefully. Let it dry before scrollsawing. ❄️

With the picture facedown, wet the uncoated back with water and rub gently with a sponge or clean foam brush to remove the paper. The image remains on the acrylic film.

Brush water-thinned medium onto the wood, and carefully lay the picture faceup on the wet surface. Work out bubbles and wrinkles, taking care not to stretch the pattern out of shape. Light-colored wood preserves more detail.

Photographs: John Henderson; Wm. Hopkins Jr.
SMILEY the rocking

We're not sure if our happy-go-lucky snail rocker is a boy or a girl, but we are certain of one thing. Your special little one will fall in love with this perky playroom pal the first time he or she takes it for a test ride. In addition to its winning looks, this project features sturdy construction held together by glue, dowels, and screws.

Note: To lay out the rocker and body patterns, you can enlarge the gridted patterns on page 60 or order full-sized patterns from us. To order, send $3 and a #10 (4 3/8 x 9 3/4), self-addressed envelope with 58c postage to WOOD Magazine's Smiley the Rocking Snail, 1912 Grand Avenue, Des Moines, IA 50309-3379. (Foreign readers, please include an international reply coupon.)

Start with the rockers to get things moving
1 Cut two pieces of clear pine, spruce, or fir to 6" wide by 31" long for the rocker blanks (A). Plane or joint the top edge of each piece.
2 Using double-faced (carpet) tape, adhere the two rocker blanks together face-to-face, with the edges and ends flush.

Cutting diagram:
- A: 1 1/4 x 7 1/4 x 72" Pine (2x8)
- C: 1 1/2 x 7 1/4 x 60" Pine (2x8)
- B: 3/4 x 5 1/2 x 96" Pine (1x6)

Text continues on page 60
SMILEY the rocking snail

3 Cut a piece of paper to 6x30", and mark 1" grid lines on it. Lay out the shape of the rocker on the gridded paper. To do this, mark the points where the rocker outline crosses each grid line. (To lay out the curved bottom, we cut a 3/16"-thick strip of wood to 1" wide by 36" long. Using a helper to position the flexible strip, we positioned one edge of the strip against the marked points on the gridded paper, and marked the curves for the rocker bottoms.)

4 Using spray adhesive, adhere the paper pattern (or the full-sized pattern you ordered from us) to the rocker blanks. Center the pattern from right to left and keep the top edge of the pattern flush with the planed top edge of the taped-together rocker blanks.

5 Use a square to transfer the slat location lines to the planed top edge of the rocker blanks.

6 Bandsaw the rockers to shape (we used a 1/4" blade). Sand the bandsawed edges smooth to remove the saw marks. Using a wood wedge, pry the rockers apart. Peel the pattern from the rocker. If necessary, splash a bit of lacquer thinner onto the paper pattern to dissolve the spray adhesive holding it down.

For lots of support, add the rocker slats
1 Cut the rocker slats (B) to size.
2 Rout 3/4" round-overs along the top edges of each slat and along all edges of the rockers where shown on the Exploded View.
3 Drill mounting holes through the slats where dimensioned and to the sizes shown on the Exploded View drawing. Sand the rockers and slats smooth.

It's time for the main body section
1 To form the main body section (C), edge-join 1 1/2":thick stock to form a blank 12" wide by 28" long. Important: For additional strength across the neck, notice how we slanted our pattern on the grid and wood blank.

2 Using the method described under the heading Start with the rockers, repeat the process to transfer the pattern, and cut the body section (C) to shape. Next, cut the mouth kerf where marked.

3 Bore the holes for the eye, handle, shell dowels, and antennae where marked on the body section. See the Antenna detail for reference when drilling the antenna holes.

Now, build your snail a home
1 Mark the diameters on 3/4":thick stock for the shell parts (D, E, F, G). (We edge-joined narrower stock for the largest shell piece D.) Rip the top and bottom edges of part D where shown on the Parts View drawing. Bandsaw the remaining pieces to shape, and sand the edges smooth.

2 With the centerpoints used to mark the radii, drill a 3/4" hole through shell pieces D, E, and F. Drill a counterbore and screwmounting hole into the outermost shell part G to the sizes stated on
3 Rout a ¾" round-over along the outside face of shell pieces D, E, F, body section C, and eye openings where shown on the Exploded View drawing. Do not rout the bottom edge of the body section or along the top and bottom of the large shell parts D. Rout ¼" round-overs on part G. (To keep our fingers safely away from the router bit, we cut a board 4" wide and as long as our router table. Then, we bored a 1 ½" hole and cut a V-shaped notch to the hole where shown on the Router Fence drawing. As shown below, we used this for support when routing the smaller shell pieces.)

2 Cut a piece of ¾" dowel to 8 ¼" long for the handle. Locate and mark the center ⅜" section of the dowel that will fit inside in the snail's head. Then, use a bandsaw or handsaw to cut three ⅜" kerfs ⅜" deep and ⅜" apart (glue grooves) within the marked area.

3 Apply glue to the kerfs. Next, center and glue the handle into the ⅜" hole in the snail's head. Wipe off the excess glue.

4 Bore a ¾" hole ⅜" deep into a pair of 1½" wooden balls. (To drill the holes, we clamped a ball in a handscrew clamp. Then, we centered the ball under the point of the Forstner bit, and clamped the handscrew clamp to the drill-press table to steady it.)

Sand, finish, and assemble
1 Finish-sand all the pieces. Stain the rockers, rocker slats, handle dowel, and main body section.
2 Paint the shell pieces, antennae, handle balls, and wooden buttons. Next, paint the bottom and edges of the seat (you'll do the top later). See the introductory photo for our color selections.

To paint the pine pieces, first apply a coat of lacquer sanding sealer—especially to the porous end grain. Let dry, and lightly sand with 220-grit sandpaper. Apply a second coat. The sanding sealer helps seal the wood, allowing the paint to build a more even coat than if painting bare wood. (We supported the pieces on blocks of wood, and painted one side of each piece. Later, we painted the other side. Next, we applied a second coat, being careful to avoid runs. We used a high-quality spray enamel paint.)

3 Using ¾" dowels to center the pieces, screw the shell pieces (D, E, F, G) to the main body section.
4 Drill the mounting holes and fasten the slats to the rockers. Then, drill the holes and fasten the seat to the slats. Glue the handle and dowel handle.
5 Screw the seat to shell pieces (D). Plug the holes and sand them flush. Mask the rest of the snail, and paint the top of the seat.
6 Sand the mating surfaces for a good glue joint. Glue the ½" and ¾" wooden buttons in place.

Buying Guide
• Wood parts. Two 1½"-diameter wooden balls, two ½" wooden buttons, two ¾" wooden buttons, and two ⅝"-diameter by 2½"-long toy pegs. Kit no. WMSNAIL, $7.45 ppd. Cherry Tree Toys, P.O. Box 369, Belmont, OH 43718. Or call 800/848-4363 to order.

Produced by Marien Kemmet
Project Design: Barrels of Fun, Mariposa, Calif.
Photographs: John Hetherington
Illustrations: Kim Downing
Wood is wood, right? Wrong! Hardwood trees with all the favored woodworking attributes of their individual species don't grow just anywhere. Neither do your favorite softwoods. Here's where professional lumber buyers seek super stock.

Have you ever wondered why one board, say of red oak, machines better than another from a batch you bought at your wood supplier? Or why a piece of ash stock you hefted in your friend's shop seemed heavier than one you have on hand? Well, commercial hardwood buyers will tell you that the reason for the difference stems from the wood's origin. And that also holds true for softwoods.

"By and large, the majority of the best North American hardwoods are harvested from the northern tier of states, not the Deep South. That's from Wisconsin east to the Atlantic, then south through the Allegheny and Appalachian mountains to about the South Carolina border," claims Bob Stark. Bob is the vice-president in charge of lumber purchasing for the Kansas City-based Frank Paxton Lumber Company, one of the nation's largest marketers of cabinet-grade stock.

And exactly what does "best" mean? Bob Carr, Jr., president of the Educational Lumber Company (EDLCO), a mail-order firm specializing in Appalachian hardwoods, explains. "Hardwood—and softwood, too—from high altitudes or in cold climates—grows slower, is finer in texture, and thus easier to work than the faster-growing, less-dense woods.
from warmer climates and lower altitudes," he says. "The slower-growing trees also have tighter [more even] grain and are less likely to be discolored from mineral deposits. In fact, the reason we are located in Asheville, North Carolina, is because this [the Appalachians] is where a lot of the good wood grows."

Of course, trees depend on soil nutrients, moisture, and climate for their existence. But within those needs, every species has a unique set of demands to achieve the optimum attributes that woodworkers prefer. That's why, even within a geographical region, some conditions prove better for the growth of quality hardwood than others. Choice white oak, red oak, and walnut, for instance, tend to anchor in the humus-covered bedrock (preferably limestone) of north-facing slopes, where moisture clings and coolness reigns.

But, even given these species' preferences for growing conditions within their range, those who commercially buy hardwoods and other trees on the stump still migrate toward traditional sources that deliver an abundance (rather than just a few trees) of the good wood. The map shown, above, illustrates the present origins of the most popular woodworking hardwoods and softwoods, according to the wood experts we talked to.

"That's good to know," you say, "but how can I find out where the wood I want to buy comes from?" It's simple. Just ask. Reliable dealers have your satisfaction in mind. They know where the best wood in a species comes from, and they purchase it there if they possibly can. 

Illustrations: Mike Henry
Make a snapshot something special by displaying it in imposing surroundings—a Greek temple. This stately project goes together easily, and it's just the right size for a standard 3½ x 5" print.

To build the frame, you'll need stock ¾" and 1" thick. You could substitute 1½" stock for the 1" material. We used maple, but whatever turns up in your scrapwood pile will work.

Rip and crosscut the base to ¾ x 2 x 7½". On 1 x 2 x 7½" material, lay out the triangular top, and mark the center for the 1" hole where shown.

See the Bottom View of Top and Top View of Base drawings, and mark the location of the ¾" holes on both pieces. Bore the holes ¾" deep with a Forstner bit chucked into a drill press.

Change to a 1" bit, and bore the hole through the face of the top piece. Back it with scrapwood to prevent tear-out.

Fit your table-mounted router with a ¼" straight bit, and adjust the fence to center the bit side-to-side on the top piece. Now, rout a ¼"-deep groove connecting the ¾" holes. (We clamped stopblocks to the fence 6½" from either side of the bit.) For a clean job, make several light cuts.

Next, make the dowel carrier shown in the Column Routing drawing. Nail two ¾ x 1½ x 12" pieces of scrapwood to a ¾ x 3 x 12" piece (we used plywood). Leave a ¾" gap between the narrow pieces.

Place a ¾ x 10" dowel into the channel on the jig. Hold it in place with hotmelt glue at each end. Adjust the router-table fence to center the bit under the dowel, and rout the ¾ x 1¼" lengthwise groove. Cut two ¾" lengths from the dowel for the columns.

Change to a ¾" piloted rabbeting bit, and rout the top of the base (the side with the holes) ¾" deep on both ends and both sides. Again, take several light cuts.

 Bandsaw the top. Sand all parts, and then apply a clear finish to the base and top. Paint the columns black with white spatters to simulate marble. (For grooved, prepainted columns, see the Buying Guide, opposite page.)

Drill the ¾" holes through the base where shown, and countersink them on the bottom. Place a column into each base hole, with the groove facing the center. Secure the columns with a 1" drywall screw from the bottom.

Sandwich your photograph between two ½ x 3½ x 5" acrylic sheets and slide them into the column grooves. Finally, set the top onto the columns.
DISPLAY  Heroic surroundings for a favorite photo

Buying Guide
Acrylic sheets, columns. Two 3½ x 5” acrylic sheets, $4 ppd. in the U.S. Add $4.50 for two grooved, finished columns. Schlabaugh & Sons, P.O. Drawer 327, Kalona, IA 52247, call 800/346-9663.
BEAUTY AND

Looking for a great way to show off a fine figure in a piece of wood? Inlay it into the top of a box. It's an easy scroll saw process that yields striking results.

You'll need 1/4"-thick stock in two contrasting woods, one with distinctive grain for the inlay piece. We used walnut for the box and figured oak for the inlay.

Cut parts A, B, C, D, E, and F to the sizes shown in the Bill of Materials. Groove the front (B) and back (C), and rabbet the bottom (E) where shown in the joint detail. Select a contrasting figured wood as stock for part G. Start with a piece larger than the 4 x 7 1/4" size you'll end up with.

Cut a 4 x 7 1/4" opening in a sheet of plain paper. Lay the paper on the stock for part G and move it around to explore inlay designs. Look for boomerang-shaped patterns, diagonal lines, waves, or other attractive features.

When you find one you like, hold the paper in position and mark the outline of part G by drawing around the inside of the rectangular cutout.

Cut out part G, making it slightly larger than the lid (A) by sawing just outside the line. With the good side of each piece facing up, fasten part G to the top of the lid with double-faced tape. Sand the edges of part G flush to part A. Then, draw a cutting line around the inlay figure.

Tilt your scroll saw table to 4°, and saw out a test inlay, using two taped-together layers of 1/4" thick scrapwood. Keep the inlay on the table's low side, as shown on the opposite page. Drop the inlay cut from the top layer into the bottom-layer opening to check for a flush fit.

If necessary, adjust the table tilt slightly and test again. When you achieve a flush fit, saw the lid inlay (G) along the marked lines.

Glue the inlay and the lid parts together on a scrap piece of plywood covered with waxed paper. Clamp by pinning around the outside with brads.

Sand the lid, and glue part F on the inside along the back edge. Assemble parts B, C, D, and E, but do not glue E.

Place the hinged lid in position, and then secure it with masking tape. Drill the 1/8" holes 3/8" deep where shown. Glue the dowels into the front holes and lower back hole on each end.

Cut two 1" lengths of dowel for the hinge pins. Sand one end of each to a slight taper. With the pins temporarily in place, test the lid action. Sand the bottom of part F and round over its back edge as necessary to allow the lid to open and close smoothly.

Install the pins, gluing on the box end only. Saw the pins flush, and then sand the box. Apply a clear oil finish.

Illustrations: Mike Henry
Photograph: Wm. Hopkins

WOOD MAGAZINE JUNE 1993
THE BOX: A happy marriage of contrasting woods

EXPLODED VIEW

Bill of Materials

<table>
<thead>
<tr>
<th>Part</th>
<th>Finished Size</th>
<th>Mat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14&quot; 4&quot; 7 1/8&quot;</td>
<td>W 1</td>
</tr>
<tr>
<td>B</td>
<td>14&quot; 2 1/8&quot; 7 1/8&quot;</td>
<td>W 1</td>
</tr>
<tr>
<td>C</td>
<td>14&quot; 1 1/2&quot; 7 3/4&quot;</td>
<td>W 1</td>
</tr>
<tr>
<td>D</td>
<td>14&quot; 2 4&quot;</td>
<td>W 2</td>
</tr>
<tr>
<td>E</td>
<td>14&quot; 3 1/4&quot; 7 1/8&quot;</td>
<td>W 1</td>
</tr>
<tr>
<td>F</td>
<td>14&quot; 1 1/2&quot; 7 1/8&quot;</td>
<td>W 1</td>
</tr>
<tr>
<td>G+ Inlay</td>
<td>14&quot; 4&quot; 7 3/4&quot;</td>
<td>O 1</td>
</tr>
</tbody>
</table>

*Before cutting this piece, follow the steps in the text to determine the inlay design. Material Key: W-walnut, O-oak

Cutting the Inlay (Section View)

Keep inlay on low side of table

Saw table tilted 4°
City kids and country kids alike love to play with toy tractors and farm animals. Here's just the barn for them—one that doubles as a colorful tote box for carrying the complete spread out to the sandbox south 40. There's plenty of room, too, for storing livestock and equipment.

**Bill of Materials**

<table>
<thead>
<tr>
<th>Part</th>
<th>Finished Size</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1” 6½” 8”</td>
<td>P 2</td>
</tr>
<tr>
<td>B</td>
<td>1” 4½” 11½”</td>
<td>P 2</td>
</tr>
<tr>
<td>C</td>
<td>1” 7½” 11½”</td>
<td>P 1</td>
</tr>
<tr>
<td>D</td>
<td>1” 2¼” 12”</td>
<td>P 2</td>
</tr>
<tr>
<td>E</td>
<td>1” 1½” 2½”</td>
<td>P 1</td>
</tr>
<tr>
<td>F</td>
<td>1” 3” 4½”</td>
<td>P 1</td>
</tr>
<tr>
<td>G</td>
<td>1½” 1½” 1½”</td>
<td>P 8</td>
</tr>
<tr>
<td>H</td>
<td>1” 1½” 2½”</td>
<td>P 2</td>
</tr>
<tr>
<td>I</td>
<td>1” 1½” 2½”</td>
<td>P 2</td>
</tr>
<tr>
<td>J</td>
<td>3” 3” 6”</td>
<td>B 6</td>
</tr>
<tr>
<td>K</td>
<td>3” 1½” 8”</td>
<td>P 6</td>
</tr>
<tr>
<td>L</td>
<td>½” dia. dowel 13½”</td>
<td>B 1</td>
</tr>
</tbody>
</table>

*Cut the doors (H) out of front (A) according to the how-to instructions. Use waste cut from the door frame (F) for door trim (I).

*Do not cut fence bases to length until you have cut the groove in accordance with the how-to instructions.

Material Key: P-Baltic birch plywood; B-birch

**Fence and Base**

1/8” groove 1/4” deep centered on stock
TOTE BARN

Rip and crosscut parts A, B, C, D, E, F, and G to the sizes shown in the Bill of Materials. Tilt your table saw blade to 45°, and rip the top edge of each part B, cutting so the width of the good face of the stock is 4\(\frac{1}{4}\)".

Photocopy the Full-Sized Front Pattern for the barn on page 70. Adhere the pattern to one part A with spray adhesive or rubber cement. (You also could trace the pattern onto your stock with carbon paper.)

Stack the patterned piece on top of the other part A, holding them together with double-faced tape. Scroll saw or bandsaw along the outside pattern line. Then, with a \(\frac{1}{2}\)" Forstner bit chucked into a drill press, bore through the top piece and \(\frac{1}{4}\)" into the bottom piece, a total depth of \(\frac{3}{4}\)". Separate the two pieces.

Transfer patterns for parts E and F to the stock. Scroll saw the loft door trim (E) along the outside pattern line, and the door frame (F) along the inside line. Glue both to the barn front (the piece with the hole through it).

Drill a blade start hole where shown, and scroll saw the loft-door opening. Then, saw the door opening, guiding on the inside edge of the door frame. Cut the waste in half for the doors (H). Scroll saw the inside cuts on the door trim (I), and then glue the trim to the doors. Make mirror-image doors by flipping one trim piece over before gluing it on.

Sand the edges of the trim flush to the door edges. Cut out the window frames (G). Saw the door latch from \(\frac{1}{8}\)" scrap material.

Assemble parts A, B, C, and D with glue and brads. Cut a 13\(\frac{3}{4}\)" length of \(\frac{1}{2}\)" dowel, and glue it into place where shown.

For the fences, center a \(\frac{1}{8}\)" wide saw kerf \(\frac{1}{4}\)" deep lengthwise on \(\frac{3}{4}\times\frac{3}{4}\times37\)" stock. Cut six 6" lengths for parts J. Then cut parts K, lay out the fence pattern on one, and stack-cut.

Continued
Sand the barn and glue on the window frames. Prime the barn and fence parts for painting. Acrylic gesso, available from art-supply dealers, makes a great primer for craft projects when thinned slightly with water.

Paint with acrylic artist's colors. (We mixed the traditional barn red by adding a bit of red iron oxide color to bright red acrylic.) Paint the fences white and their bases burnt umber to look like soil.

After the paint dries, attach the barn doors (we used brass dollhouse T-hinges from a crafts shop). Center the door latch above the doors, letting it swing freely, and glue each fence section into a base.

Project Design: Larry Johnson  Illustrations: Mike Henry, Kim Downing  Photograph: Wm. Hopkins
FATHER'S DAY

Gift List

Father's Day is June 20th. Mark the items you want, tear out this section and casually leave it where your family can find it. They'll get the hint!

STAINED GLASS

- Compliment your wood cabinets and closets with stained glass or leaded glass! Informative, 80-page color catalog shows you how. Complete line of glass, patterns, tools, and supplies. Send $4.50 for catalog. DELPHI STAINED GLASS, 2116 E. Michigan Ave., Lansing, MI 48912. 1-800-248-2048.

- Craft Supplies USA offers the finest selection of woodworking tools, machinery and accessories available anywhere. Also available are plan and pencil kits as well as many other project kits. Send $2.00 for a 48-page color catalog, refunded with order. CRAFT SUPPLIES USA, 1287 E. 1120 S., Provo, UT 84606. Phone 801-373-0917.

- $25 takes home this Dewalt heavy duty plate jointer kit model number DW748K. Drillats are limited, so order yours today to assure delivery for Father's Day. We offer FREE FREIGHT to the 48 contiguous states and same day shipping. Order now from the TOOL CHIR, P.O. Box 1716, Grand Forks, ND 58207. Toll free 1-800-359-5086. Fax 1-701-746-3657. Visa, MasterCard and Discover accepted.

- The best handsaw for ALL woodworkers! Craftsmen around the world have discovered the secret of better quality work. The Razor saw cuts by pulling, and will give a cleaner, more accurate cut in half the time. ORDER NOW! ONLY $23.95, postpaid. 800-637-7400. THE JAPAN WOODWORKER, 1731 Clemont Avenue, Alameda, CA 94501.

- Family favorite from yesteryear! Build this Tazo-style daybed with over 20 cubic feet of cedar-lined chest beneath for year round enjoyment. Perfect for reading or lounging by the window, spare bed, toy or storage chest. Over 6 feet long, but specially designed seating is light and useful saw. Steel 94 for glue $31 (refunded with order) for brochures showing other southwestern furniture classics. DEBERT ROSE, P.O. Box 776, Denver, CO 80201.

- The Ultimate Sawing Belt Industrial Abrasives new WHITE BELT has a slaterate non-loading top coat which lubricates the belt and eliminates the buildup of pitch and sawdust. Get consistently great finish with 50% less dust. On all your woodworking jobs! Call 1-800-426-2222 for information on this revolutionary new product. INDUSTRIAL ABRASIVES CO. P.O. Box 14655, Reading, PA 19612.


- Variable Speed Scroll Saw from Penn State Industries. A variable speed scroll saw is necessary for cutting metals, plastics and hardwoods where slow speeds are necessary. Penn State's new US-15 saw features infinitely variable speeds from 400-1,800 rpm with full power at all speeds. Only $169.95 (and $10 UPS shipping) from PENN STATE INDUSTRIES, 2650 County Rd., Philadelphia, PA 19154. Credit card orders taken by phone: 1-800-288-7289.

- Eagle America introduces their new line of U.S.A. made industrial quality, carbide tipped saw blades! The line includes radial arm, mitre and compound tablesaw and rip saw blades as well as their special Eagle Everyday and Eagle Thin blades. As a Father's Day Special cut out this section and mail it along with a copy of your invoice and receive a $10 rebate. This offer is available until May 31, 1993. Call or write for introductory brochure which includes useful saw blade knowledge and tips. EAGLE AMERICA, P.O. Box 1099, Chardon, OH 44024. 1-800-872-2511.

- Every woodworker needs a wood moisture meter to insure the quality of his project. The Delimhorst Model 388 has an easy-to-read LED display which indicates 11 ranges of moisture content between 6% and 20%. This instrument is ideal for a woodworking shop or the serious craftsman. Makes a great gift for Father's Day! For a complete catalog or to place your order, call 1-800-222-0638. DELIMHORST INSTRUMENT CO.

- Genuine Aladdin® Solid Brass Lamp with Ogal Waterfall scene shade. Functional, beautiful, complete lamp features little from original 1908 Aladdin design. Choose oil burning #1550 or electrified #1557, both $119.95 plus postage and handling. 800-843-3320. VAN DYKES, Box 278, Woonsocket, SD 57385.
A spreader clamp that's easy to use

In the past, whenever I needed a spreader clamp, I would turn around the jaws on a 1/2" pipe clamp. Now, I've found a product that's faster, easier, and can't mar the surfaces of my project.

The new Quick-Grip spreader works like the manufacturer's line of other Quick-Grip clamps. You can quickly adjust the movable jaw with one hand by repeatedly squeezing its handle. With this tool, though, the manufacturer, American Tool, has turned the jaws around so you can spread objects in a range from 7 1/4" (with the jaws together) to 27 1/4" (jaws fully extended).

So far, I've used the product mostly for disassembly of antique furniture. I've also used it in conjunction with normal clamps to help me position face-frame partitions. Because of its soft, plastic pads, I don't have to put small blocks of wood between the clamp's jaws and my workpieces to prevent marring.

—Tested by Chuck Hedlund

Quick-Grip spreader clamp by American Tool Companies, about $25 through woodworking catalogs or at hardware stores nationwide. For more information, call American Tool Companies at 402/683-2315.

Continued on page 78
INTERESTED IN WOODTURNING?

Join the American Association of Woodturners!
- Quarterly Journal - American Woodturner
- National Symposia
- 55 Local chapters

call or write:
AAW - Dept. W
667 Harriet Ave.
Shoreview, MN 55126
612/484-9094

CRAFTER'S MART
P.O. BOX 2342-W • GREELEY, CO 80632
72-Page CATALOG: $1, Free with any order. Check, MasterCard or Visa (include daytime phone, card no., exp., date & signature). PROCESSING CHARGES: Continental U.S.: $4; AK, HI, APO/FPO $10; Canada $16; Foreign 20% plus $10 (U.S. Funds). CO Res. add 3% tax. Info: (303) 351-6678 PHONE ORDERS: 8am-5pm Monday-Friday.

P a l e o C a n o e

BUILD YOUR OWN CEDAR STRIP CANOE
- 2½ HR STEP-BY-STEP VIDEO INCLUDES FREE FORM TEMPLATES AND ALL THE KNOW HOW TO GUIDE YOU FROM BEGINNING TO END. $39.95 plus $3.00 S&H.
- DO-IT-YOURSELF KITS INCLUDE ALL MATERIALS NEEDED TO BUILD A 14' OR 16' CANOE PLUS OUR STEP-BY-STEP VIDEO.

FOR MORE INFO & PRICES CALL OR WRITE
PALEO CANOE CO., P.O. BOX 481
BEDFORD, MA 01730, (617) 275-3004

CLOCK

MOVEMENTS
Quartz movements are 2-1/8" sq., 1-1/2". Accurate to 15 seconds per month. Operates on AA battery (not included). Comes complete with mounting hardware, hour, minute and second hands.

#10102 5/16" Shaft
#10103 5/16" Shaft
#10104 3/16" Shaft
4.25/Each, 9.49/Sq./Each, 7.36/Each, 10.24/3.50/Each, 25 or more: 3.00/Each

CLOCK MOVEMENTS

BRANDING IRON
$29.00
Plus $3.00 for shipping and handling. Neat, rounded edges lettered.

CALL TOLL FREE...
1-800-826-7606
NOVA TOOL CO.
12500 Filling Rd., Dept. B8
P.O. Box 2341, Lincoln, NE 68539

MCFEELY'S SQUARE DRIVE SCREWS
P.O. Box 3 • 712 10th St
Lynchburg, VA 24501
Fax: 434-845-7937

OCTAGON PICNIC TABLE
Plans $16.75
Designed to last with bolted construction, having no exposed hardware. Walk through seating for eight people and accepts umbrella. Easy to follow plans, instruction sheet and step by step pictorial.

TRANSPower

FOR EXPRESS NEW CATALOGUE CALL
1-800-654-7702

SCHNEIDERS

Econ-Abrasives

WE MAKE ABRASIVE BELTS ANY SIZE, ANY GRIT!

Standard Abrasive Sheets

CABINET PAPER
50 100/pc
600 $15.00 $27.00C
800 14.00 25.00C
100 thru 1500 13.00 23.00C

FINISHING PAPER
80A 10.00 17.00C
100 thru 280A 9.00 15.00C

NO LOAD PAPER (white)
100 thru 400A $11.00 19.00C

"C" = 100 SHEETS

"Valvo® Vacuum Discs"

8 Hole pattern for Bosch sanders

ΑΒΡΑΣΙΟΥ ΒΕΛΤΙΤΙΣ ΚΑΙ ΚΥΚΛΟΣΕΙΣ

ABRASIVE BELTS
PLEASE SPECIFY GRITS

1/2 3/4 1 1-1/4 1-1/2

1X30 .73 ea 2X30 .64 ea
1X42 .73 ea 2X42 .87 ea
1X44 .73 ea 2X44 .96 ea
2X1/2X16 .77 ea 2X24 .99 ea
3X18 .79 ea 3X24 1.40 ea
3X21 .81 ea 3X24 1.20 ea
3X23 3/4 .84 ea 3X42 1.20 ea
3X24 3/4 .84 ea 3X42 1.20 ea

OTHER SIZES ON REQUEST

HEAVY DUTY SPRING CLAMPS
Clamps come w/PVC tips and grips. No split. Size Price
4" 1.75 ea
6" 2.25
8" 3.50

JUMBO ROUTER PAD(24" x 36")

This will not allow small blocks of wood to slip out under router or sanding applications. ROUTER PAD ONLY $5.95 ea.

JUMBO BELT CLEANING STICK
ONLY $8.80

Econ-Abrasives
P.O. Box 885021
Plano, TX 75086
(214) 377-9779

TOLL-FREE ORDERING LINE (800) 367-4101
PRODUCTS THAT PERFORM

Keep your jointer and planer knives sharper longer

Let's face it: Few of us look forward to changing jointer and planer knives. It's time-consuming and tedious work that keeps us away from what we really like to do—work wood! Well, here's a product that helps postpone knife changes for as long as possible.

With the Hone-Mate, you hone knife edges without removing the knives from the machine. You simply dip the Hone-Mate in oil, and then give the knife edges a few strokes with each of the 180- and 400-grit stones contained in the Hone-Mate. The stones automatically index against the knife edge for perfect results every time.

I've made a practice of honing the knives in my planer and jointer at least once a week with this little sharpener. As a result, I'm rewarded with better cuts and I regroup the knives from the machine only when they become nicked and require grinding.

—Tested by Bob McFarlin

Hone-Mate knife hone and holder, item 95-240, $27.50 ppd. from Woodworker's Supply. Call 800/645-9292.

Continued on page 80

SERIOUS Power TOOLS

WE PAY ALL SHIPPING CHARGES ON TOOLS SHIPPED WITHIN THE CONTINENTAL U.S.A. and ACCESSORY ORDERS OVER $50.00!!!

BLADES DECKER

3/4" VSR Cordless Screwdriver Kit With Free Second Battery

Model Description List TDT
0284-1 3/4" VSR Cordless Screwdriver Kit $120 $110
1189 3/4" VSR Cordless Screwdriver $120 $130
1273 3/4" VSR Cordless Drill with case $300 $270
1285 1" Impact Wrench with case $95 $90

TEPPER DISCOUNT TOOLS

MAIL ORDER DIVISION
107 W. SPRINGFIELD, CHAMPAIGN, IL. 61820

ORDER LINE
1-800-626-0566

PORTER-CABLE

7 1/4" Top Handle Circular Saw

Model Description List TDT
0309-1 7 1/4" Top Handle Circular Saw $200 $190

BOSCH

3/4" Cordless Screwdriver Kit

Model Description List TDT
0284-1 3/4" VSR Cordless Screwdriver Kit $120 $110
1189 3/4" VSR Cordless Screwdriver $120 $130
1273 3/4" VSR Cordless Drill $300 $270
1285 1" Impact Wrench with case $95 $90
Start Your Own Business! Be Your Own Boss!

BE A HOME INSPECTOR

...Unlimited opportunities for ambitious people! No previous experience needed!

Make $100.00 an Hour—or more!

Make no mistake—the number of home inspections being done each year is on the rise. With today's low home mortgage interest rates, real estate sales are way up—banks and mortgage companies often insist that a home inspection be conducted by a qualified professional prior to sale. This means an incredible increase in demand and in money-making opportunities for trained Home Inspectors. Qualified Home Inspectors are earning anywhere from $100 to $500 per inspection—and the average home inspection only requires a few hours of time to complete. Think what that means in terms of total weekly earning potential.

WORK PART-TIME HOURS... MAKE A FULL-TIME INCOME!

Another advantage of the home inspection field is that you can work full or part time—often you can pick and choose the hours you work as well. Many Home Inspectors make a very comfortable income just working on the weekend. So whether you want to make additional money in your spare time or start your own full-time business, ICS can help you with training that includes all the basics you'll need.

Don't be fooled by other schools who try to duplicate ICS training—we give you all the lessons and equipment you'll need for much lower tuition!

ICS urges you to compare our training to other schools offering similar courses—with ICS you'll get everything you need—lessons, equipment, special supplements for far less tuition. And, with ICS, you can choose from several low monthly payment options at 0% interest!

Course designed by top leaders in the field!

This course was especially developed by experts in the field of home inspection and follows guidelines established by the American Society of Home Inspectors—the premier organization representing the field of Home Inspection nationwide. With this course you'll train at home in all the important areas of home inspection—from the roof to the foundation, you'll have the knowledge you need to get started fast!

No matter where you live—big city, small town or rural community—you can get the skills you need to break into this lucrative field with the ICS proven home study "Quick-Learn" method of instruction.

☑ Train at home, the hours you choose.
☑ Keep your present job while you train for a better one.
☑ No previous experience or special talent needed.
☑ No technical jargon or boring textbooks.
☑ Everything is explained in plain English.
☑ Lessons are broken into "bite-sized" units for quick mastery.
☑ The most affordable tuition—and the most convenient payment plans—fit every budget. No interest or finance charges ever!

You'll get plenty of practical "hands-on" training, so you'll have the confidence you need to make your home inspection career or business a success.

Mail coupon today for your free information package with all the facts about training at home to be a Home Inspector.

Growth in the real estate market is on its way up. Be ready to take advantage of the unprecedented opportunities that are waiting. Find out how you can train at home in your spare time to make money as a Home Inspector by sending for the complete information package shown here. We'll rush it to you by mail as soon as we receive the coupon below.

If coupon is missing, write directly to:
ICS School of Property Management
925 Oak Street, Scranton, PA 18515

SEND TODAY FOR FREE FACTS...

ICS SCHOOL OF PROPERTY MANAGEMENT Dept. A8D934S
925 Oak Street, Scranton, PA 18515

YES! Tell me how I can train at home in my spare time for a better job, more money, and a new career or business of my own! No obligation. No salesman will visit. CHECK ONE! ONLY!

☐ HOME INSPECTOR ☐ Air Conditioning/Refrigeration ☐ TV/VCR Repair
☐ Real Estate Appraiser ☐ Auto Mechanics ☐ Drafting
☐ Electrician ☐ Gun Repair ☐ Desktop Publishing/Design
☐ PC Repair ☐ Computer Programming ☐ High School

Name________________________________ Age_________
Address______________________________ Apt. __________
City/State____________________________ Zip________________
Phone ________________________________
**PRODUCTS**

**THAT PERFORM**

Continued from page 78

**Drill kit gets you into and out of tight spots**

Getting into tight areas in your woodworking projects with standard drills can be difficult or downright impossible. The Omni Tight-Fit Drill Kit helps you by converting your drill to a right-angle drilling or driving tool.

With this accessory, you can work in as little as 2" of space, because the right-angle attachment (shown at work in the photo below) has a threaded end for holding threaded drill bits (instead of a space-consuming chuck). The kit I tried comes with threaded drill bits in short lengths, a threaded holder for screwdriving bits, a collet adapter for holding nonthreaded bits with 1/4" shanks, various screwdriving bits, extended rods for deep, hard-to-reach spots, and a tightening wrench.

This sturdy accessory works well. The only time I experienced a problem was when I tried to back out an embedded screw. In this application, the threaded screwdriver-bit holder tended to come loose.

—Tested by Chuck Hedlund

---

**SUPER BINDER**

**Stops Cord Hassle**

Strong nylon loop attaches to item. Wrap 2 ply Velcro strap around coil either way to secure. Pull thumb tab to release. Weatherproof.

Order special 10/pk... (Bin) $17 12/cn. $19 12/cn. $21 Assorted $22 12/cn.

MA Residents add 5% Sales Tax
NC/VA GA or Mail Check or M/C to...

MEGAMARK Products Co.
9 Jerome St. Medford, MA 02155
1-800-543-5904 24 HOUR ORDER LINE

---

**The Japan Woodworker's Catalog is . . .**

The Japan Woodworker's Catalog is . . .

Loaded with the best tools you can get your hands on. In our catalog you will find a large selection of Japanese saws, waterstones, chisels, planes, Japanese tools and accessories.


$1.50 for our catalog and supplements during the next 2 years.

THE JAPAN WOODWORKER
1731 Ciemment E-24, Alameda, CA 94501
Phone 1-800-537-7820

---

**ONE-MAN SAWMILL**

Turns Timber into CASH!

NOW! CHOOSE FROM CIRCULAR OR BANDSAW MODELS!

The Sawmill goes right to the trees and turns out smooth, true-cut lumber — even beginners get excellent results. Just one man or crew needed can easily cut enough on weekends to save hundreds of dollars on high lumber and wood. Use as little as 25 horsepower. Factory-Direct selling keeps price low, and convenient time payments may be arranged.

PHONE TOLL FREE 1-800-942-4046 Ext. TW9
TIMBER\*KING, INC. DEPT TW9
1431 W. TOPPING KANSAS CITY, MO 64120

---

**The DR® TRIMMER/MOWER**

Takes the place of both your hand-held trimmer and steel-bladed mower!

The DR® TRIMMER/MOWER rolls "light as a feather" on two BIG WHEELS! TRIMS for easier, better, more precisely than hand-held trimmers. Plus MOWS everything from whole lawns (even well!) to tough, waist-high growth with ease. Rocks, roots, stumps, etc., do not harm because the DR® has no steel blade to bend or dull. Perfect for ALL mowing and trimming around smaller properties, vacation homes, etc., or for finish-up mowing and trimming after riding mowers on larger parcels. A delight for anyone to use!

Please mail this coupon today for FREE DETAILS about the Revolutionary DR® TRIMMER/MOWER, including prices of Manual, Electric Starting and ALL-ELECTRIC Models; "Old-Scarer" Savings now in effect, and 30-Day Risk-Free Trial. There is no obligation.

**SEND $1.00 FOR CATALOG TO:**

VAN DYKE'S RESTORERS
Dept D55, P.O Box 279, Woonsocket, SD 57385

---

**SIGNCARVING**

IS FUN & PROFITABLE

And it's easy, if you use the Martin Woodcarver and accessories. You can carve signs quickly at home or at swap meets. No special training is required. The machines do the work, the operator has the fun and the profit. These machines will also 3-D carve panels and plaques. Our templates work well with other machines.

SEND FOR OUR FULL LINE BROCHURE AND PRICE LIST AND START PLANNING YOUR FULL OR PART TIME BUSINESS.

MARLIN INDUSTRIES, INC.
Rt. 70, Box 191, Dept 036
Chelmsford, NC 28717
(704) 741-5051

---

**Van Dyke's**

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

Many Hard-To-Find Items!

SEND $1.00 FOR CATALOG TO:

VAN DYKE'S RESTORERS
Dept. D55, P.O. Box 279, Woonsocket, SD 57385

---

**DRAW & SAW**

Scale A Pattern, Stick It Down & Cut!

Adhesive film with 1/4" grid backing makes tracing and upassembling easy. No marks or mess on out piece. Made of durable, clear mylar to see the wood being cut. Draw with a pencil, pen or run through copier.

12" x 15" Roll
Only $15.95 each

20" x 15" Sample Sheet
$1.00 (includes product info)

Send Check, Visa, or MC
(with phone number and exp. date)

Graphic Arts Systems, Inc.
1400 Mills Road
Cleveland, Ohio 44108
(216) 581-9050

---

**The Japan Woodworker's Catalog is . . .**

Loaded with the best tools you can get your hands on.

In our catalog you will find a large selection of Japanese saws, waterstones, chisels, planes, Japanese tools and accessories.

Drawing tools, cutters and books. 100% Japanese made.

$1.50 for our catalog and supplements during the next 2 years.

THE JAPAN WOODWORKER
1731 Ciemment E-24, Alameda, CA 94501
Phone 1-800-537-7820
Domestic and exotic hardwood plywood and lumber, marine plywood, over 30 species in stock—all under one roof.

Custom cutting services to your exact specifications with little or no waste at competitive prices!

We specialize in bundling and shipping.

Call (617) 666-1340 today for catalog and quote.

Boulter Plywood Corp.
24-WD Broadway, Somerville, MA 02145

335 GREAT SHOP TIPS
THE BEST IDEAS COLLECTED FROM OUR POPULAR COLUMN
"TIPS FROM YOUR SHOP (AND OURS)"

IN WOOD. MAGAZINE

335 GREAT SHOP TIPS contains valuable information from the editors and readers of WOOD magazine—shared knowledge that makes working in your shop better, faster, safer, and easier. We've organized the tips into 24 convenient categories with an index for easy accessibility to any subject.

HOW TO ORDER

To order 335 Great Shop Tips, send your name, daytime phone number and address, city, state and zip, plus $10.95 (Canadian readers add $1.00), which includes postage and handling to:

335 GREAT SHOP TIPS
P.O. Box 9255
Des Moines, IA 50306

Allow 6-8 weeks for shipping and handling.

To order by phone, call 1-800-374-9663 (9 a.m. to 5 p.m. CST)
POWER TOOLS

SCROLL SAW, CRAFT & WOODWORKING CATALOG—Specially products from the exclusive distributors of HEGNER, the precision saws with SCROLL-LVIERNUGNE. Complete information on scroll saws, including blades and accessories. Also JET Clamps. HEGNER Lathes, PLANO Vertical Glide Press, and more. Toll-free customer service hotline included. AMI LTD. $2.00, Circle No. 3.

TOOL CRIB CATALOG—Since 1948, woodworkers, hobbyists, and industries across the country have turned to the Tool Crib as their source for power tools and equipment. Our prices are low, our sales people are knowledgeable, and our service is first rate! We stock over 10,000 tools with names like Black & Decker, Delta, Ryobi, Genesis, Power Mowers, Unique Bosch, Porter Cable, Milwaukee and many more. We offer competitive prices with quality service and same day shipping. Send for our NEW 1993 catalog! It’s worth it at TOOL CRIB! Circle No. 43.

TRANSPOWER, CP TOOLS INC.—A fine line of quality woodworking machinery, saws, shapers, planers and more. Send for free catalog. CP TOOLS INC. Free. Circle No. 15.

DREMEL’S MINI-MITE MODEL 750—Compact cordless rotary tool provides pinpoint accuracy for precision wood working, finishing modeling & other detailed oriented craft projects. The lightweight tool delivers 2 speed operation powered by a 4.8 volt motor & rechargeable, replaceable battery pack. Catalog. DREMEL. $1.00, Circle No. 33.

ENLON IMPORT CORP. GRAND OPENING—We would like to recognize you as our most important asset. We offer a large selection of fine woodworking machinery, tools and accessories for your business and home workshop. Take advantage of our grand opening specials. Send for catalog. ENLON IMPORT CORP. Free. Circle No. 35.

NEW POWER TOOL ELIMINATES HAND SANDING—No more bloody knuckles, sore fingers, sanding dust. Unique sander, sanding discs and edges and corners, without bored out or running away. The secret is a distinct triangular sanding pad, combined with a high speed oscillation. Germany shows this sander in action. FEIN POWER TOOLS, INC. $1.00. Circle No. 37.

INCA MACHINERY INFORMATION—Complete information on the famous line of Inca woodworking machines. Designed for precision work by the small to medium sized cabinet shop. Used by thousands of hobbyists and professionals. Table saws, bandsaws, panel saws, planers, drill press, radial arm saw. GARRETT WADE CO. Free. Circle No. 44.

HOME LUMBER—For the largest selection of Makita at the right price. We also provide great pricing on Amana Carbides, DeWalt power tools, Bosch, Delta, Milwaukee, Hitachi, and many, many more. We offer same day shipping, the most knowledgeable sales staff and fast shipping on most UPS orders in the continental U.S. INTERNATIONAL TOOL CORP. Free. Circle No. 49.

LOBO POWER TOOLS—Fine crafted woodworking power tool, top quality, affordable prices. A commitment of customer satisfaction—10 years warranty. We sell a complete line with many options for our band saws, table saws, planers, routers, double drum Sanders, edge Sanders, wide belt Sanders, power feeders and many more. Send for free brochure. LOBO POWER TOOLS. Free. Circle No. 57.

WOODWORKING MACHINE CATALOG—New 24-page color catalog introduces many new do-it-yourself woodworking machines. Includes planners, dust collectors, drill presses, Sanders, lathes, and Sanders in scroll saws and accessories. PENN STATE INDUSTRIES. Free. Circle No. 75.

DUST COLLECTOR SYSTEMS—Keep your shop clean and safe from saw dust spills of your latest capacity Commercial Style Dust Collection Systems. Features our new DCS-1 1/2 HP. Portable System. Free host and adapters are supplied with any purchase. Full line of Dust Collection accessories is available from Penn State Industries Catalog. PENN STATE INDUSTRIES. Free. Circle No. 76.

SURFACE PLANE—Information package available from Penn State Industries describing the specifications and applications of their 12 inch surface planer. Special discount pricing available on current promotion. PENN STATE INDUSTRIES. Free. Circle No. 77.

GET TO THE FINISH LINE FASTER—with a Performance drum sander. Don’t spend hours with a hand-held belt sander. Get the ultra-wide, ultra-smooth finish in just minutes. Models start at $300 to $3495. Select the model that fits your budget and your needs. New metal abrasive fasteners keep sandpaper tight without re-wrapping. Performax Performance Drum Sanders. Catalog. PENN STATE INDUSTRIES, INC. Circle No. 64.

HAND LAMINATE & WOODWORKING TOOLS—A new catalog is now available that groups 25 groups of special hand-to-fine-quality tooled. Included are VIRUTEX® sizers, PLASTIC-UT® files, laminate shears, scoring cutters, emery, paper and more. Practical Products Co. $1.00. Circle No. 80.

WOODWORKING TOOLS & ACCESSORIES—While the history of RBIndustries goes back 60 years, this is the first time we’ve brought together all our precision made tools and accessories in one catalog. The Hawk Precision Scroll Saw, 4-in-1 Woodplaner, Panel Master Door Machine, Router System, and much more. Quality equipment built in the rock states of America. When you buy from us, you deal directly with the manufacturer. Our prices, quality, and 3 year Warranty will reflect our commitment. Send today for FREE information. RB INDUSTRIES, INC. Circle No. 64.

MINI POWER TOOL CATALOG—Designed for easy reference, Ryobi’s pocket guide Power Tool Catalog includes our complete line of power tools, categorized by type; bench top, cordless, hand-held and stationary models. It features individual tool photographs with specifications and clear descriptions that offer specific uses and benefits. Accessories are also listed. Send for catalog. Ryobi. Free. Circle No. 86.

TOOLS ON SALE—A division of Sawyer-Cornell Ace Hardware, Inc. offers a catalog of over 400 pages of the most popular brands of power tools available anywhere, all at discounted prices. Included are saws, planers, Sanders, routers, drills and more from manufacturers such as Black & Decker, Makita, Porter Cable, Black & Decker, Dewalt, Freud, Bosch, Delta, and many more. Introducing a full range of Wernb ladder tools. Tools on Sale!, division of SAWYER-CORNELL ACE HARDWARE, Inc. $1.00. Circle No. 79.

PORTABLE SAWMILLS—Convert logs into valuable lumber—Wood-Mizer® Products manufactures a line of portable sawmills that offers the best with the same precision sawyer to safely convert standing logs into lumber. Then, with the use of our SolarDry® Kiln or Vac-U-Kiln™ to dry your lumber, you could increase the value of every board you produce. We manufacture some of the most progressive sawing equipment on the market today. Product videos available. Send for our 31-page catalog. WOOD-MIZER PRODUCTS. $2.00. Circle No. 94.

SERIOUS POWER TOOL CATALOG—16 pages plus a and yard accessory products of many more! Simple and Tupper Discount Tool prices on Black & Decker Industrial, Bosch, Porter Cable, and Milwaukee variable power tools stocked by Tupper Discount Tools. These are serious tools for the serious tool user. Cost is $1 to cover postage and handling. TEPPEr DISCOUNT TOOLS. $1.00. Circle No. 100.

HAND TOOLS

PERSONAL BRANDING IRONS—Brochure describes ironing tools that inscribe your name, or your work quickly and easily. Made especially for branding wood, they are available in 1, 2, 3 or 4 lines of copy. Changeable date also available. NOVA TOOL CO. $1.00. Circle No. 120.

IMPROVE YOUR WOODWORKING SKILL!—Craftsmen around the world have discovered the secret of better quality work. The 72 page Japan Woodworker Catalog is loaded with a huge selection of Japanese saws, watersheds, chisels, gouges, carving tools, planes, cutters and garden tools. Send for 1992 catalog and all supplements for two years. THE JAPAN WOODWORKER. $1.50. Circle No. 190.

STAINS/FINISHES

AMAZON’S PREMIUM FINISHING OILS—These are the finest, environmentally friendly oils. Available since 1978. Golden Teak oil—Mahogany oil—Oakwood oil—Pure Tulip oil—Danish oil—Cedar & Lemon oils. Sold and used, worldwide, in fine furniture finishing as well as toys. All imported and refined oils formulated for all projects. Catalog. AMAZON PRODUCTS. $1.00. Circle No. 200.

PLANS

OVER 1500 WOODCRAFT PATTERNS—Enjoy making gifts, toys, lawn ornaments, holiday designs, whistles, folk art, bird houses and feeders, household items, and so much more! Perfect for the beginner, fun and profitable for the pro. Send for catalog plus sample pattern. ACCENTS IN PINE. $2.00. Circle No. 310.

SALES TESTED DESIGNS—As available plans only, parts kits or plans and parts kits. Complete stock of parts, tools and supplies. Door Harps to Digital Electronic/Wood Projects. Full satis plans! Catalog. CRAMFORD’S MART! $1.00. Circle No. 328.

EXCLUSIVE SOUTHWESTERN HOME FURNISHINGS—Illustrated brochure describes over 200 plans for making furniture of quality found in museums and fine furniture stores. Plans include rook desk top, cradles, dinging tables, chairs, buffets, chairs, gun cabinets, poker tables, children’s furniture, rocking horse, spinning wheel, etc. And more. Bill of materials exploded drawings assist the woodworker. FURNITURE DESIGNS, INC. $3.00. Circle No. 345.

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 86

IT'S A TRAIN AND A WHISTLE!—This unique, all wood train engine, with its internal double whistling system creates a dual pitch sound like a real train. Kids and adults are delighted when run in parade or while a real attention getter. Send for info. LACK WOOD PRODUCTS. 50c. Circle No. 395.

PROJECT PLANS—Full-size patterns for over 500 easy-to-build woodworking projects. Nation's leading source for scroll saw patterns, cow projects, toy plans, yard ornaments, etc. Over 1000 plans with full size patterns. Send for your big 80-page catalog. MEISEL HARDWARE SPECIALTIES. $2.00. Circle No. 401.

NEW DESIGNS, LAWN FURNITURE, GARDEN STRUCTURES, NEW COLOR CATALOGs—Just completed rose archway with seats and pillars; mosaic tic-tac-toe game; many other items. New catalog has many new patterns to choose from including parts and wheels. Send for new catalog and receive a coupon for free wheels and axle pegs. TOYS AND JOYS. $1.00. Circle No. 468.

THE COMPLIMENTS NEVER END—When you show off your completed projects people only say, "I wish I could make wood like that." Over 1800 unique, easy to make designs include popular folkart, wind action whirligigs, old world Santas, country furniture, shelves and shadow boxes, action toys, 3d layered animals, country critters, yard ornaments, Christmas yard decorations and more! No enlarge- ing required—just trace our patterns onto wood and cut out. Fast service, satisfaction guaranteed. Send for our latest catalog. THE WINFIELD COLLECTION. $1.00. Circle No. 480.

LUMBER
QUALITY EXOTIC LUMBER/TURNING WOOD—We offer a comprehensive selection of fine quality exotic woods also known as turning woods. Some of the woods are: ambrosia maple, pokeberry, purple heart, tuya, laurel, cherry, white oak, red oak, royal oak, yellow poplar, walnut, cedel, and many more. We ship all by UPS and generally ship orders within 10 days. We also offer a large selection of woods for Turning Projects, woodturners and woodcarvers. Send for free catalog. WOODTURNERS Catalog, 1350 S. 12th St., Corpus Christi, TX 78404.

WOOD-CUTTER PATTERNS—Patterns for all ages including children's patterns and executive a couple. New catalog has many new patterns to choose from including parts and wheels. Send for new catalog and receive a coupon for free wheels and axle pegs. TOYS AND JOYS. $1.00. Circle No. 468.

SHOP ACCESSORIES
WOODWORK MEASURE METER—measures the quality of every project using a woodworking tool. ROYCO MODEL 3-88 is ideal for a woodworking shop or the serious craftsman. Easy to read LED display indicates 10 ranges of moisture content between 6% to 30%. Send for catalog and demonstration video. ROYCO. $10.00. Circle No. 363.

GENERAL WOODWORKING CATALOGS
THE WOODTURNERS CATALOG—48 color pages of the finest woodturning tools, machinery and supplies available. Featuring Henry Taylor, Scotty, Richard Raflan and Dale Nichols. Our price list is reissued with our new catalog. CRAFT SUPPLIES USA. $2.00. Circle No. 830.

MASTER TOOLS CATALOG—1992-93 336-page master woodturning tools catalog. Full line of the best hand tools, power tools & accessories, machinery, glues, finishing supplies, workbenches, and much more. Over 4000 items included. All items are detailed in technical information. GARRETT WADE CO. $4.00. Circle No. 855.

GRIZZLY IMPORTS, INC.—is now in its 10th year of providing woodworking enthusiasts with an incredible selection of machinery, tools that have been selected at the right price you can afford. Send for our free 1994 catalog today and see the savings you can make with tremendous savings on all your woodworking needs. GRIZZLY IMPORTS INC. Free. Circle No. 860.

MINI POWER TOOL CATALOG—Designed for easy reference. Ryobi's "shirt pocket" Power Tool Catalog includes everything in the complete line of power tools, organized by type: bench top, cordless, hand-held and stationary models. It features individual tool photographs with specifications and detailed descriptions that other specific uses and benefits. Accessories are also listed. Send for catalog. RCYBL. Free. Circle No. 926.

KITS
OUR QUEEN ANNE FURNITURE KITS—are ready to assemble and finish yourselves. They include dining room table, chairs, hutch, sideboard, a variety of occasional tables, and a personal desk. All are made in solid cherry, oak, walnut, and mahogany. We also stock individual Queen Anne legs for every project. Complete information in our brochure packet. ADAMS WOOD PRODUCTS. Free. Circle No. 1002.

DO-IT-YOURSELF KITS—Choose from a large selection of grandfather, wall and mantel clocks, as well as elegantly styled accent furniture pieces. Kits are made of solid wood, real glass, and either black or white walnut. Buy direct from the factory and save. Send for 36 page color catalog. EMPEROR CLOCK CO. $1.00. Circle No. 1030.

ATTENTION WOOD READERS—if you want to spend more time in your wood shop and less time shopping for woodworking projects. Our catalog contains over 100 PROJECT-PAKs of projects originally built in WOOD Magazine. Send today and enjoy hassle free woodworking. Catalog, HERITAGE BUILDING SPECIALTIES. $1.00. (Refund with purchase). Circle No. 590.

SHIP MODELING CATALOG—Historic Ship Models—Museum quality replicas you build yourself. Pre-cut wood parts, metal and brass fittings, cloth sails, plans and instructions. Send for 8 page color catalog. EXPO, INC. $1.00. Circle No. 1075.

CANOE—Are you looking for a unique Do-It-Yourself Project that is truly a project of incomparable, hard to understand instructions? Then look no further. Build a beautiful Cedar Strip Canoe following our complete instructional video. All you need are simple tools, 60-80 hours and basic woodworking experience and for brochure. PALEO CANOE. 50c. Circle No. 1083.

PUBLICATIONS
WOODBURNERS! THE AMERICAN ASSOCIATION OF WOODTURNERS can help you! Join over 3600 woodturners who are already members. You will receive: a quarterly journal filled with woodworking articles, tips, and projects; a directory of AAW members, local chapters, instructors, and suppliers; information about national symposiums. Send for information. AMERICAN ASSOCIATION OF WOODTURNERS. $1.00. Circle No. 1110.

SHOP ACCESSORIES
WOOD-MOUNTURE METER—measures the quality of every project using a woodworking tool. ROYCO MODEL 3-88 is ideal for a woodworking shop or the serious craftsman. Easy to read LED display indicates 10 ranges of moisture content between 6% to 30%. Send for catalog and demonstration video. ROYCO. $10.00. Circle No. 363.

LUMBER DRYING SYSTEMS—Ebac Lumber Dryer offers a wide variety of sizes from 50 B.F. to over 10,000 B.F. Three prices are priced under $3000. You get the highest quality lumber dried down to 6% - 8% moisture content. Our controllers make them easy to operate and energy efficient. Kit construction guide included. To build your chamber, EBAC LUMBER DRYERS. Free. Circle No. 1228.

ECON-ADRASIVES—manufactures abrasive belts up to 52" wide in any grit. We carry hundreds of woodworking related accessories including: Velcro® backed discs, bar clamps, wood glue, drawer slides, chisels, hinges and hundreds of sanding accessories. Send for our 1992 catalog, ECON-ADRASIVES. Free. Circle No. 1229.

EASY DOES IT—with HTC's power tool accessories. Discover many unique items, designed only with you, the do-it-yourselfer, in mind. Save time, money and make a safer, increase the working area of your shop and accomplish nearly impossible tasks easily, quickly, accurately. Full-line catalog and price list. HTC PRODUCTS, Inc. Free. Circle No. 1246.

ROTTER SPEED CONTROL—Reduces speed electronically without reducing torque. Rotter is capable of the speed that gives best results with the wood and bill you are using. Speed adjustable from full speed to 0 RPM. Less tear out—stops burning—the stress on your machine is reduced. Send for information. MLCS LTD. Free. Circle No. 1251.

WHOLESALE SANDPAPER, BELTS, SHEETS, CLOTH & PAPER DISCS—for orbital sanders. Shop rolls, flap wheels, hot melt glue sticks, dust masks, scuff pads, tack cloths, tape, wipers, etc. Super grit offers quality abrasive and more accurate. Save at wholesale priced available directly to the consumer. $25.00 minimum order. Prompt, free UPS shipment to most areas. 20 page catalog RED HILL CORP. Free. Circle No. 1267.

ROTO CARVE—AMERICA'S MOST UNIQUE CARVING MACHINE—Now you can duplicate 3 dimensional patterns with extreme accuracy using ROTO CARVE and your table saw. Many shapes from round to square or tapered, without time consuming setup changes. Furniture restoration or reproduction, gun stocks, decorative items, and a few of the items produced on the ROTO CARVE. Free brochure, ROTO CARVE. Free. Circle No. 1270.


BITS, BLADES, CUTTING TOOLS
CASCADE TOOLS—The 1993 Cascade Tools catalog is the finest ever. It's jammed with great buys on 500+ bits, blades, and cutting tools. We offer a complete line of excellent assortment of hard-to-find accessories. You'll have to see it to believe it. CASCADE TOOLS, INC. Free. Circle No. 1315.

1992 EAGLE AMERICA WOODWORKING CATALOG—All new 1992 woodworking catalog featuring over 10,000 new woodworking supply and hardware items. Includes a complete line of router bits, shaper cutters, brad point drills, forster bits, plug cutters, counterbits and sines, router sets, and many other hard to find and exclusive "Made in America" items. EAGLE AMERICA CORP. Free. Circle No. 1320.

FREUD—Premiere line of carbide-tipped sawblades, router bits, shaper cutters and other woodworking tools, Freud offers a full-line on anti-kickback carbide-tipped router bits. Send for a free new router bit catalog. FREUD. Free. Circle No. 1352.

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 88

85

WOOD MAGAZINE JUNE 1993
SUPER-SMOOTH, EXTRA-DURABLE, CARBIDE-TIPPED CIRCULAR SAW BLADES—Get a smooth-sanded surface with our all-purpose 40-tooth Woodworker Blade. You will be able to rip and cross-cut 1–2 in. rock and soft woods with an unbelievably smooth finish. You will also be able to cross-cut oak and birch ply-veneers with no bottom splinters. Send today for our information pack. FORREST MFG. CO., INC. $1.00. Circle No. 1322.

THE SOURCE FOR KNIFE-MAKING SUPPLIES—We have PRE-SHAPED Blades, Rivets, Handle Materials, Balder butchers and grinders, Polishing Wheels and Compounds, Dremel tools and Accessories, Belt Grinders and Abrasive Belts, Starrett Precision Tools, Files, Punches, Drill Bits, Panavise and Panapres, Woodcarving Tools and much more! Send for our Complete line catalog and we will include our KNIFE-MAKING PROJECT booklet at no extra charge. JANZT SUPPLY. $3.00. Circle No. 1330.

PRODUCTION QUALITY CARBIDE TIPPED ROUTER BITS—MLCS Ltd. has a new 35-page catalog featuring hundreds of high quality carbide tipped router bits, shaper cutters, the Rocker Speed Contour, the "Merle Adjustable Corner Clamp," plus other Professional Woodworking Products. Prices 50% to 70% lower than elsewhere. Value, quality and prompt service guaranteed! MLCS LTD. Free. Circle No. 1390.

HARDWARE/WOOD PARTS

HARDWARE CATALOG—A unique 48-page catalog of the very finest in classic, traditional solid brass cabinet hardware. American made, Double & single post handles, knobs, escutcheons, standard & specialty hinges, box hardware, brass screws, castors, latches, catches, locks, and more. GARNETT WADE CO. $3.00. Circle No. 1407.

INCOME OPPORTUNITIES

MAKE MONEY IN FURNITURE RESTORATION THE MINUTEMAN WAY—Earn $200-$1000 per day stripping, refinishing, repairing, and final finishing, all income, at home in shop, spare time or full time. We provide complete training; no experience necessary. Free workshop teaches you latest in furniture restoration.

You have to see it to believe it! Business preview price $19.95. Send for catalog. MINUTEMAN. $2.00. Circle No. 1661.

MISCELLANEOUS


HVL & AIRBRUSH SPRAYING—Award winning HVL technology available in touch-up spray gun. Lightweight (10 oz.) design complies with current regulations. Available in silicon, pressure, and gravity feed models. Also, a full line of airbrushes and accessories. Products range from tiny color cups and bottles to complete airbrush outfits and compressors. BINKS MFG. CO. $1.00. Circle No. 1905.

DELPHI STAINED GLASS—80-page color catalog of stained glass and related supplies. Beveled glass, hard-to-find tools, hundreds of unique patterns, kits, books, videos, and more. For 18 years, we've supplied both hobbyists and professionals with quality products, friendly advice, and fast 24-hour shipping. All products guaranteed 100%. DELPHI STAINED GLASS. $4.50. Circle No. 1920.

DRAW & SAW—Quick and easy new method of tracing and upscaling patterns with adhesive film imprinted with ¼" grid lines. No more messy glues, expensive enlargements or pattern shifting. leaves no residue or pattern lines. Works on all woods, scoops up pen, pencil or print directly on it and it a copier machine. Great with scroll, jig or band saws. Saves time and eliminates extra tracing. Send for 9 x 12" sample and product information. GRAPHIC ARTS SYSTEMS. $1.00. Circle No. 1950.


STEELMASTER BUILDINGS—are available in almost any size for almost any use. From 10' to 102' wide and any length imaginable. Whether you need a back yard shop... an industrial shop... equipment storage building... whatever your requirements, you'll find a Steelmaster that's just the right size for the job. Our buildings are easy to construct, and home owners can construct their buildings themselves which adds up to even bigger savings. Send for information. STEELMASTER. $1.00. Circle No. 2030.

IF YOU ARE INTERESTED IN RESTORING ANTIQUES—this 264-page catalog packed with unusual, hard-to-find items is just for you. Included are hundreds of essential items for antique restoration including top quality brass reproduction hardware, oil lamps and accessories, numerous wood component repair parts and kits, caning and basketry supplies, everything needed for wood refinishing, related tools, books, and a complete line of upholstery equipment and supplies. All at wholesale prices. Send for this informative catalog. VAN DYKE'S RESTORERS. $1.00. Circle No. 2077.

LEGAL IVORY—Virtually identical to animal ivory. Tagua is the nut from a tropical palm tree. Ideal for jewelry, knobs, small turnings, inlay, or scrimshaw. Available in 3 sizes. Send for information. WOODWORKERS SOURCE. Free. Circle No. 2090.

"THE WOODWORKING SHOWS" MACHINERY, TOOLS AND SUPPLIES—Hundreds of products for the woodworking show. Get your show certificate and buy at wholesale prices at every "Woodworking Show" in-depth seminars and free workshops on a variety of woodworking topics. Shows are scheduled in 27 cites. Send for free brochure. "THE WOODWORKING SHOWS". Free. Circle No. 2095.

CARRYING SUPPLIES

WOOD CARVING MACHINES AND ACCESSORIES—make all types of wood carving easy, fun and profitable. The machines do the work. Whether for sign carving, flat 3-D, decoys, panels, gun stocks or furniture, we have the proper machine for the job. Professional woodcarving for the discerning craftsman and sculptor. Wholesale prices. Buy from a reputable woodworking pro or full-time business by ordering our catalog and price list. MARLIN INDUSTRIES. $1.00. Circle No. 2150.

ELECTRIC WOOD CARVING TOOLS—Sugino Auto-Knich electric carving tool chisels wood at up to 10,000 RPM. Safe, lightweight, easy-to-use, the pressure-activated head controls carving speed and depth, speeds carving faster than mallet and chisel methods. Professional quality suitable for novice and journeyman carver, Wide variety of hardened steel cutting blades. Operates on household current. SUGINO CORP. Free. Circle No. 2170.

WOODCARVING TOOLS—Whittlers and carvers—Waren Tool Co. offers a complete catalog of whittling and carving, hand-power tools, sharpening aids, wood cut-outs, and related wood carving supplies. WAREN TOOL CO., INC. $1.00. Circle No. 2185.

CLAMPS

MERLE ADJUSTABLE CORNER CLAMP—Quick and easy to use. It forces your work into square. Fully adjustable 15° to 90° angle. 2" x 2" x 2". Packed for framing, clamping picture frames, cabinets, or anything that requires 90° corner clamping. The Merle Clamp is cast aluminum & steel construction, a true industrial quality tool. Send today for information. MLCS LTD. Free. Circle No. 2250.

FASTENING PRODUCTS

SQUARE DRIVE SCREWS—Thousands agree—once you try them you will never want to use anything else! The square drive recess virtually eliminates work-demanding drive bits "car-out", the deep threads result in exceptional head retention power, and they are heat treated for strength. Sizes from 2 x 2" to 12 x 4", with stainless steel, solid brass, brass plated, and zinc plated available. Quantity discounts. Send for literature. McFEELY HARDWOODS. $1.00. Circle No. 2450.
**FINISHING TOUCHES**

**FORECAST WEATHER WITH A STICK**

Every time Harley Refsal, our carving consultant, returns from a teaching stint in Norway, we expect to hear some folklore. Last time, it was the weather stick.

It seems that rural Norwegians have more faith in weather sticks than media forecasters. A glance out the window at the trusty predictor indicates rain or shine for the day ahead.

Made from a section of green branch cut from a live tree (the tree species doesn't matter) so as to leave one long twig attached (see left), the weather stick reacts to barometric pressure. When the twig's up, expect a clear, pleasant day; with the twig down, inclement weather's on the way. No incline, no change.

**Environmentally correct wood**

In its effort to alert woodworkers about the responsible use of often-endangered tropical hardwoods, the Woodworkers Alliance for Rainforest Protection (WARP) has urged the use of wood species new to the world timber trade. Termed "lesser-known species" (LKS), these woods are responsibly harvested on a sustained-yield basis by small rainforest cooperatives and marketed in the U.S. and elsewhere by environmentally sensitive companies or individuals. For a list of LKS wood species and who sells them, send a SASE to WARP, Box 133, Coos Bay, OR 97420.

Photograph: Fein Power Tools, Inc. Illustrations: Jim Stevenson

---

First power tool honor claimed by Fein

Cris Cable, vice-president of marketing for Fein Power Tools, Inc., of Pittsburg, replied to our story in the December 1992 issue about Black & Decker's invention of the portable electric drill with a pistol grip. He enclosed the photo right of the world's first hand-held power tool, an electric drill developed by Wilhelm Emil Fein in Germany in 1895.

The direct-drive drill's chuck capacity was 3/8", it weighed 16½ pounds, and operated on DC current that was only available by plugging it into a light socket. Today, the family owned company, headed by Hans Wolfgang Fein, manufactures over 200 types of high performance power tools.

---

OVERLOOKED TREES CATCH EYE OF SCIENCE

If you haven't heard, the yew tree (Taxus brevifolia) of the Pacific Northwest has risen to national prominence from its former lowly economic status. That's because Taxol, a drug derived from its bark, can treat certain types of cancer. With this find in mind, scientists now seem to be increasingly scanning the globe for new remedies from trees, and with some success.

According to researchers at Purdue University, the pawpaw (Asimina triloba) of the eastern U.S. may also hold a cancer-fighting key. Preliminary tests indicate that the branches and twigs of the shrublike tree yield a chemical about one million times as potent as the cancer drug Adriamycin.

Then there's neem, the probable all-time wonder tree. A report published by the National Research Council says that the neem tree (Azadirachta spp.), of tropical America, could solve several of man's problems. Although the wood is used locally for furniture and cabinets, the leaves can produce pain-killing drugs and healing skin ointments. From its seeds come environmentally friendly insecticides. Even the tree's twigs, with one end fuzzed, prove to be decay-preventing toothbrushes! ♦
All this adds up to—

THE BEST REASON OF ALL...

Whether for pleasure or profit the **rbI** Hawk is the perfect tool to begin or complement any home or professional workshop. When quality matters—the **rbI** Hawk is your best choice.

Call today for your FREE Info Kit — 1-800-487-2623.