

Better Homes and Gardens®

WOOD

8-Issue
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THE #1 MAGAZINE FOR HOME WOODWORKERS

JUNE 1992 • ISSUE NO. 52

Please display until June 8

TECHNIQUES

**SHARPENING CARVING
AND TURNING TOOLS**

**ROUGH 'N' READY
ROUGHOUTS
FOR CARVERS**

**HOW PROS RESTORE
CLASSIC "WOODIES"**

**MORE FUN
PROJECTS**

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Potpourri container
Carved Indian pendant
Maple quilt stand
Turned pincushions
Lovey-dovey
picture frame**

SUMMERTIME SIZZLERS...

**SUPERCOMFY
PORCH ROCKER**

Page 58



**DAZZLING
GLASS
SHOWCASE**

Page 47



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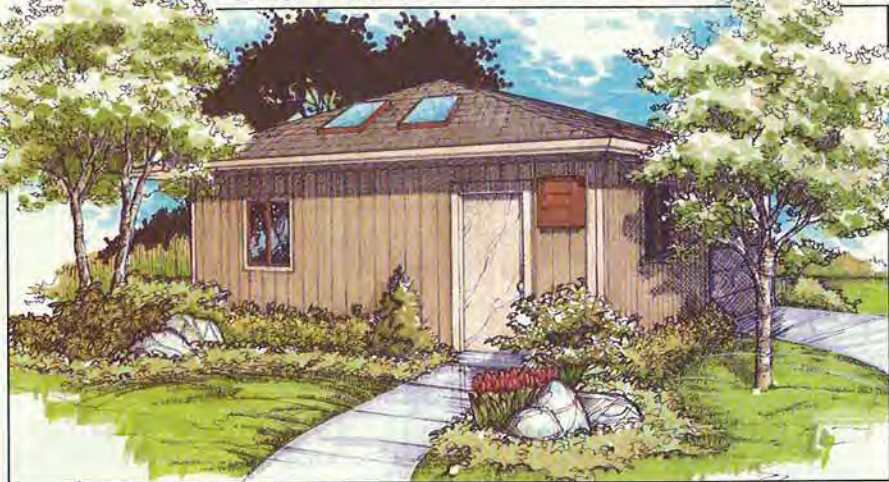


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THE EDITOR'S ANGLE

COMING IN SEPTEMBER...



The WOOD® magazine Idea Shop

During my eight years with WOOD magazine, I've visited lots of woodworkers in their shops, and do you know something? Almost everyone wishes that theirs was more organized or somehow better. And there are other people, such as soon-to-be-retired Bill Robinson, a reader from Aynor, South Carolina, who are just setting up shop. Bill told me recently, "Although I will probably never build the 'perfect' shop, I would like to know what things I need to keep in mind as I plan mine."

Well, I've got good news for all of you. For the last several months, the staff and I have been working with tool manufacturers, consultants, designers, and woodworking professionals in designing and building the WOOD magazine Idea Shop from the ground up. And in the September 1992 issue, we'll open the doors and share with you the fruits of our labor.

We'll start off with a photographic tour through the shop and explain why we arranged the machines and other equipment the way we did. Then, we'll show

you how to build several terrific projects featured in the Idea Shop. These include an innovative storage cabinet system, a rock-solid assembly workbench, an adjustable-height shop stool, and a handsome clock designed especially for woodworkers.

But that's not all. We'll also share pointers with you on heating/cooling, dust collection, lighting, security, safety, and other aspects of a pleasant workshop environment. In fact, we think that this information is so valuable to woodworkers that we'll be devoting more than two dozen pages to the Idea Shop.

This undertaking has caused us to do a lot of thinking about how to set up a full-service shop from scratch. And frankly, we've learned a bunch in the process. So, if you're one of the many woodworkers interested in making your shop all it can be, you won't want to miss the September issue. I think you'll be impressed. 🍷

Larry Clayton

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This issue's cover wood grain: koa Cover photos: John Hetherington, Wm. Hopkins

JUNE 1992

ISSUE NO. 52



CRAFTSMAN CLOSE-UP

The Major's marquetry 27

See the great outdoors artfully re-created in contrasting wood veneers by Air Force retiree Dave Peck. We visit Dave's shop in Mendocino County, California, and discover how he designs, cuts, and assembles his remarkable crafted wonders with only a handful of tools.

CARVING

Roughouts to the rescue 32

Today, many carvers buy partially completed machined-carved figures so they can devote their time to detailing the final form. See how these so-called roughouts are made and sold.



How to sharpen turning and carving tools 36

WOOD magazine calls on a pair of experts for advice on restoring and honing the cutting edges of your favorite hobbies' steely helpers.



TURNING

Pewter-topped potpourri bowl 42

This lovely walnut container makes scents wherever you place it.

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Find needed stories and project plans from recent issues in an eyewink using this reader-friendly reference. Located in the magazine's center, it pulls out for convenience and safekeeping. A special section let's you go to your favorite projects in a jiffy, providing you with the issue name and page number of every plan over the last eight issues.

Pedestal curio showcase 47

Construct this striking see-through cabinet and provide a special place for displaying porcelain figures, sculpture, and other fine expensive collectibles.



WOODWORKER'S SURVIVAL GUIDE 52

Buying electric motors Electrical engineer Gene Holladay fills in the blanks to the four most-asked questions *WOOD*® receives on induction and universal motors.

Classic column 54

A potted plant or sundial looks at home on this versatile stand.

DEVELOP YOUR SHOP SKILLS

How to install jointer knives 56

Follow our five easy steps for accurately setting your jointer's knives.

HEIRLOOM PROJECT

Lazy-days porch rocker 58

Make the most of summer by building this contoured oak beauty.

The great woodie revival 64

Feast on an engaging sampling of Detroit's wood-clad cars of old, and meet two resourceful craftsmen who restore them.



THE CRAFT SHOP

Standing-tall blocks box 68

Give the early learners in your family a step up with this fun project.

High-flying photo frame 70

Hearts and doves make this scrollsawer's delight picture perfect.

Country-colors quilt stand 72

Display several colorful patchworks at once with our dowel-bar design.

Turning scraps into pincushions 74

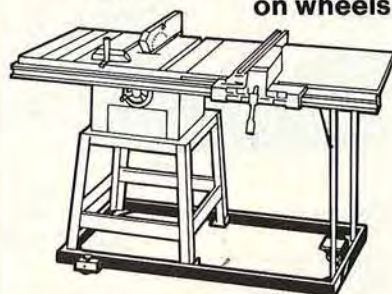
Use our templates to shape a pair of parking pads for needles and pins.

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WOOD Magazine Oct. 91

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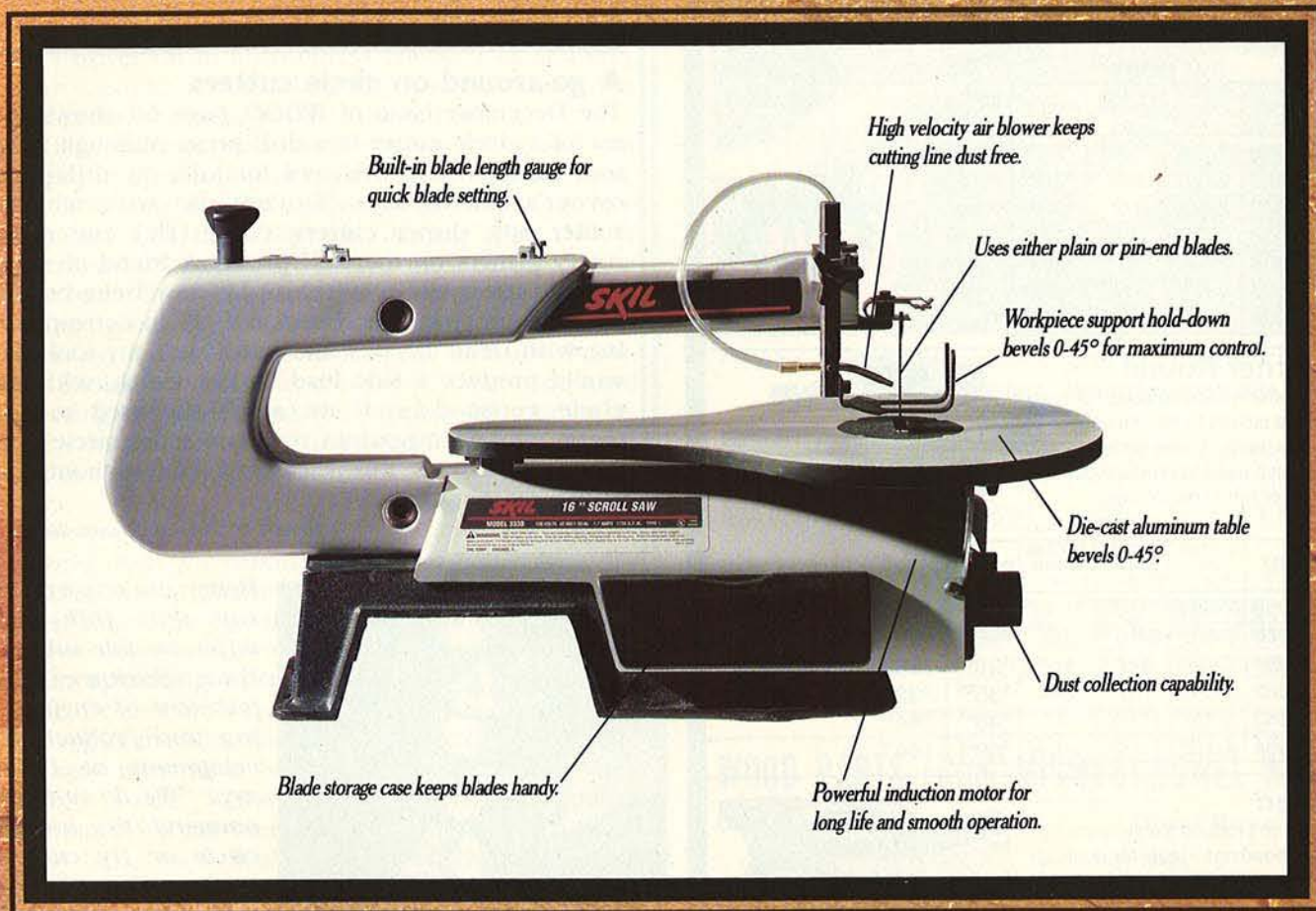
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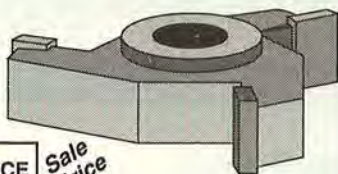
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Rabbeting

This indispensable cutter is used for many shaping operations from plowing to rabbeting.



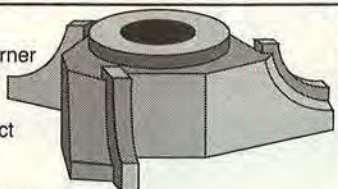
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PART	CUTTER DIA. A	CUTTING LENGTH B	PRICE	Sale Price
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C2032	2-5/8"	1/2"	\$28 ⁹⁵	\$26 ⁰⁵
C2033	2-5/8"	3/4"	\$32 ⁹⁵	\$29 ⁶⁵
C2034	2-5/8"	1"	\$36 ⁹⁵	\$32 ³⁵
C2035	2-5/8"	1-1/2"	\$38 ⁹⁵	\$33 ²⁵
C2036	2-5/8"	2"	\$50 ⁹⁵	\$53 ⁹⁵



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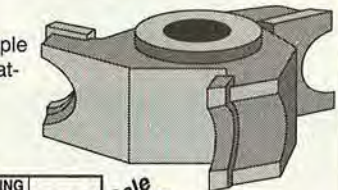
3/4" BORE

PART	CUTTER DIA. A	CUTTING LENGTH B	CUTTING RADIUS r	PRICE	Sale Price
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C2060	2-5/8"	9/16"	3/8"	\$26 ⁹⁵	\$24 ²⁵
C2061	2-7/8"	5/8"	1/2"	\$28 ⁹⁵	\$26 ⁰⁵
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Bead

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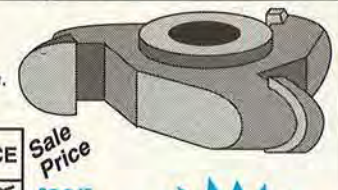
3/4" BORE

PART	CUTTER DIA. A	CUTTING LENGTH B	CUTTING DIA. d	PRICE	Sale Price
C2052	2-5/8"	1/2"	1/4"	\$24 ⁹⁵	\$22 ⁴⁵
C2053	2-5/8"	5/8"	3/8"	\$26 ⁹⁵	\$24 ²⁵
C2054	2-5/8"	3/4"	1/2"	\$28 ⁹⁵	\$26 ⁰⁵
C2055	2-5/8"	1-1/16"	3/4"	\$32 ⁹⁵	\$29 ⁶⁵
C2056	2-5/8"	1-1/4"	1"	\$36 ⁹⁵	\$32 ³⁵



Flute

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C2049	2-5/8"	3/4"	\$32 ⁹⁵	\$29 ⁶⁵
C2050	2-5/8"	1"	\$36 ⁹⁵	\$32 ³⁵



We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® WOOD® magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

A go-around on circle cutters

The December issue of WOOD, page 66, shows the use of a circle cutter in a drill press. Although most tool catalogs have this tool for sale, my drill-press owner's manual says, "Do not use wire wheels, router bits, shaper cutters, circle (fly) cutters or rotary planers on the drill press." A friend of mine tried to use a circle cutter on his new Delta bench-top drill press and the chuck fell off. In corresponding with Delta, he was told not to use any tool that would produce a side load on the chuck, which a circle cutter does. If we aren't supposed to use them, why do magazines regularly show circle cutters, and why is this accessory sold without the proper warnings?

—Henry W. Latsch, Huntsville, Ala.



Henry, we're sorry to say that folks do differ on this subject. Louis Brickner, vice president of engineering and product development at Delta says, "We do not recommend the use of circle or fly cutters because they place a side load on the drill press. It's okay to use router bits, Forstner bits, holesaws, or most any kind of bit as long as it places an even load on the workpiece, and the workpiece is securely clamped. But we can't recommend using a circle cutter."

On the other hand, WOOD magazine Project Builder Jim Boelling and Design Editor Jim Downing say circle cutters are okay to use, if you follow the guidelines on our Drill-Press Speed Chart. "We stand behind every bit and speed recommendation in this chart because we've tested and used them for years," says Boelling. "We developed this chart from scratch because manufacturers neglected to provide buyers with this much-needed information." To order our Drill-Press Speed Chart, send \$1 to WOOD magazine, using the address above.

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A better idea for threaded inserts

I would like to point out a much better method of installing threaded inserts in wood than you suggested in the January 1992 issue. Page 54 illustrates a method of installing threaded inserts with a screwdriver bit in a drill-press chuck. This is a very poor method of installing the inserts. Using the drill press is correct, but try this method.

Take whatever size insert you are using and cut off the head of a bolt of equal size. Chuck the headless bolt into the drill press. Then, screw on two nuts and lock them together leaving about 3/8" of threaded bolt below the locked nuts. Screw on the insert until it limits against the locked nuts.

Next, place the workpiece receiving the threaded insert on the drill-press table. (The hole for the insert should be drilled at this point.) With one hand lowering the chuck and the other hand rotating it, screw in the insert into the predrilled hole. It will seat in a perfectly square manner.

—Pete Petran, Mt. Prospect, Ill.

Thanks, Pete, for coming up with a better idea. We touched on a similar approach in our book 335 Great Shop Tips. (See the back issue ad on page 83.)

Plain speaking about planes

Your December '91 issue had us laughing at our meeting of the Mid-Atlantic Tool Collectors Association.

There must have been some foolin' about "Yesterday's Toolin'." First, in the top left of the photo accompanying the story is a plane that would more likely be a 604½; in the bottom left, we see a 605c rather than what was described. Second, I can find no mention of a 604¼ ever having been manufactured by Stanley. My friends and I believe this would more than likely be a 604½.

—Chester A. Spier, Wilmington, N.C.

You ain't foolin', Chester. The caption accompanying the three bedrock planes in the article missed inspection by our collectible tool consultant, but when notified of your letter he agreed with your assessment. Glad to see that you collectors go over Yesterday's Tools with a fine-tooth comb.



Continued on page 8

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TALKING BACK

Continued from page 7

Where, oh where, could MosSmith be?

I recently wrote to MosSmith Industries concerning a clamp which you had featured in an article in *WOOD* magazine, June 1988, issue 23, page 24. I have been unable to find them anywhere in a store and I wrote to the address you listed. They have either moved or gone out of business. I would appreciate any information as to the whereabouts of this mystery company.



—John Goode, State College, Pa.

John, you're not the only one looking for MosSmith Industries. We've been trying to locate them and have had no luck. So, we are asking for help. Does anyone know of their whereabouts? Or, does anyone know of a clamp currently on the market, similar to the one we featured in the June 1988 issue? If so, write to us at the address on page 6.

Weighty concerns about router table

In your February 1990 issue, page 50, you have plans for a heavy-duty router table. Am I assuming correctly that the Ryobi RE600 router with the 3/8" acrylic base is held in the rabbeted opening of the tabletop by the weight of the router? I do not read or see any other means for fastening the acrylic base to the tabletop.

—Rex Stoecker, Mukwonago, Wis.

Right on, Rex. Once you attach the acrylic base to the router (you must first remove the router's subbase), you then lower the tool and base into the rabbeted opening, allowing gravity to hold it firmly in place. This makes changing bits fast and simple.

Drawback of a direct-drive tablesaw

I was in the process of designing a fireplace mantel when the January 1991 issue of *WOOD* magazine arrived. The article on "Large-Scale Moldings" was exactly what I needed. I built the cove-cutting jig [in the article] for my 8" direct-drive tablesaw. However, owners of this type of saw should heed this word of caution.

I made several passes to complete two practice pieces, raising the blade very gradually with each pass. Both pieces turned out just as advertised. However, upon turning the saw off, the blade stopped so quickly that I was sure something had gone wrong. I removed the arbor assembly and discovered that the speed-reducing gear was badly damaged—the result of the transverse load applied to the blade during the cove cutting. ♣

—Dustin Chase, Austin, Texas

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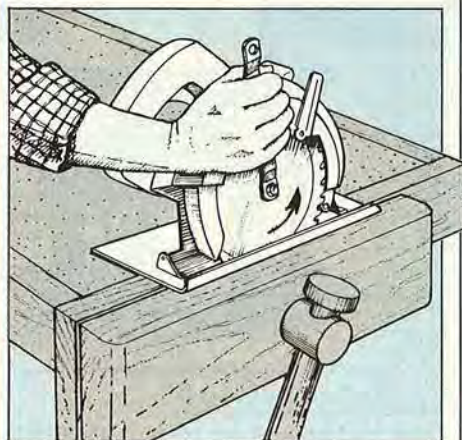
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Vise takes hold to help loosen circular saw blade

You just can't keep the blade from turning as you try to loosen the tightened arbor bolt or nut on your portable circular saw.



TIP: Place the saw on your bench vise, and clamp the blade in the jaws. Now, you can loosen that stubborn bolt with the blade held in a firm grip.

—Ed Smigowski, Comins, Mich.

Dab of hotmelt glue makes rocking shelf rock-steady

After carefully positioning four shelf standards inside a cabinet, you install the clips and put in the shelves. The shelves rock.

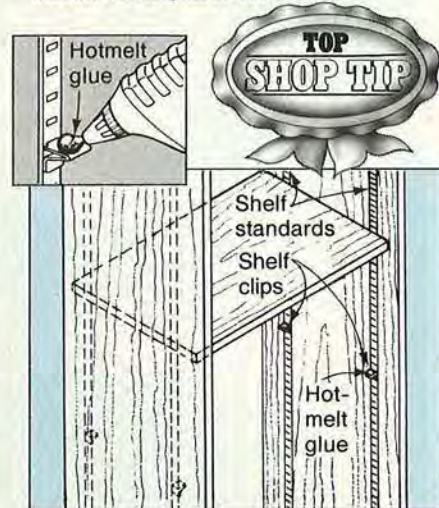
TIP: Place a drop of hotmelt glue on top of the shelf support that's too low. Set the shelf into place as the glue cools, and hold it level so that the glue forms a leveling pad on the support. Use this trick on

For his tip, Steve receives a Hitachi W6V2 drywall screwdriver, shown right.



wooden, plastic, or metal shelf supports. It works with glass shelves, too.

—Steven Caron, Aberdeen, S.D.



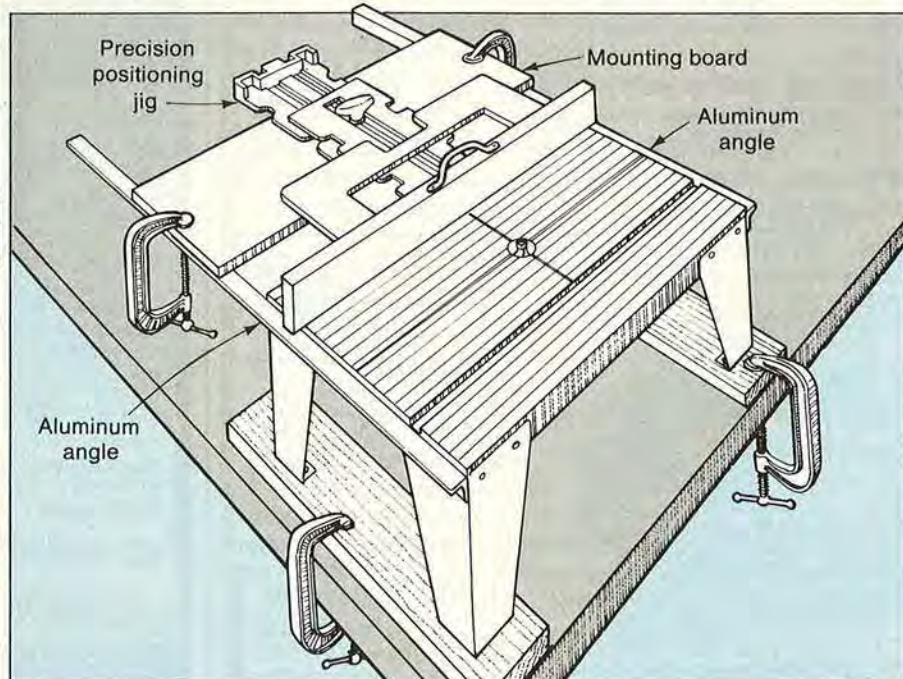
Attach a fancy-joint jig to a smaller router table

You'd like to make some fancy joints by using a precision positioning jig on your router table. The only hitch is that the device is too big to fit on your table.

TIP: Attach extension arms to your table to hold the jig. Mount an appropriate length of 1/8"-thick 1 1/2 x 1 1/2" aluminum angle at each end of the table, extending be-

yond the back edge. Drill mounting holes as necessary and attach the extensions with machine screws and nuts. Now, fasten the positioning jig to a piece of wood long enough to span the extension arms, and clamp it in place. Since the router table will now be tail heavy, screw it to scrapwood and clamp it to your workbench.

—Donald Flaig, Kenmore, N.Y.



Continued on page 13

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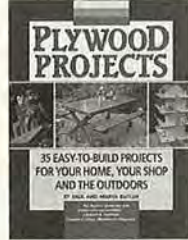
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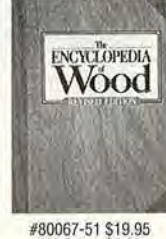
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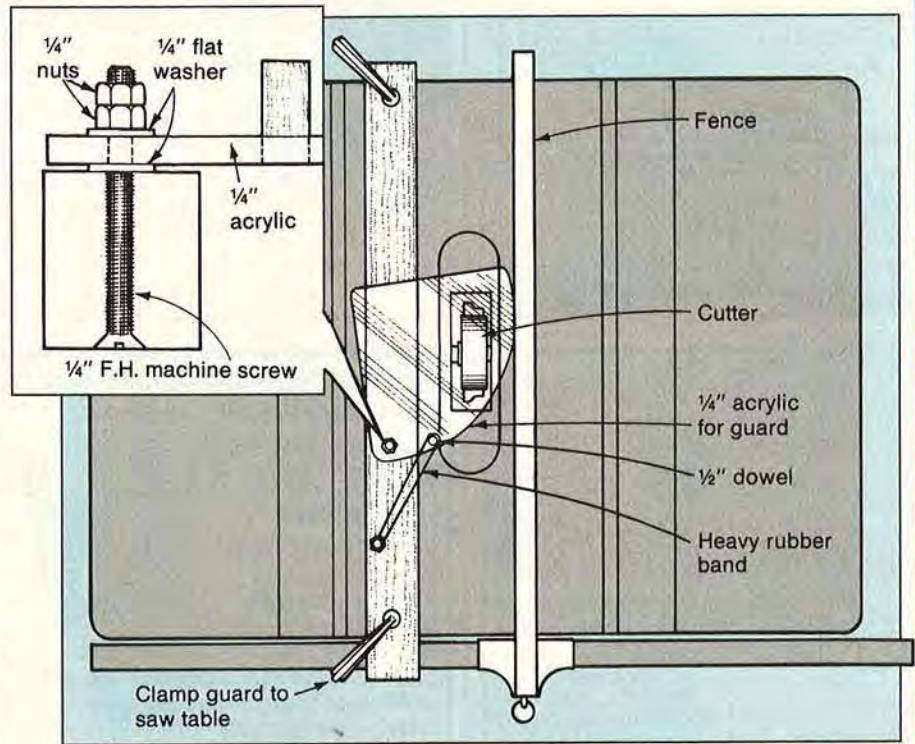
Continued from page 10

Pivoting protector keeps molding head under cover

You can do a lot with a molding head and cutters on your table-saw. One thing you can't do, though, is put the blade guard in place to protect your fingers.

TIP: Make a jointer-type pivoting guard of 1/4"-thick clear acrylic, shown right. Cut a curved edge where shown on a 6x8" piece of acrylic (or one large enough to cover your cutter) with a scroll-saw or bandsaw. Sand the curve smooth. Bolt the guard to a piece of 2"-wide stock the length of your saw table and thick enough to clear your molding cutter. Attach a rubber band where shown. Clamp the guard assembly to the saw table so that the guard rests against the saw's rip fence and over the cutter.

—Gerald Spalla, Canonsburg, Pa.



Continued on page 15

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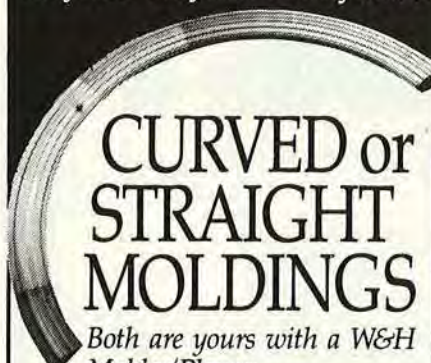


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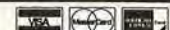
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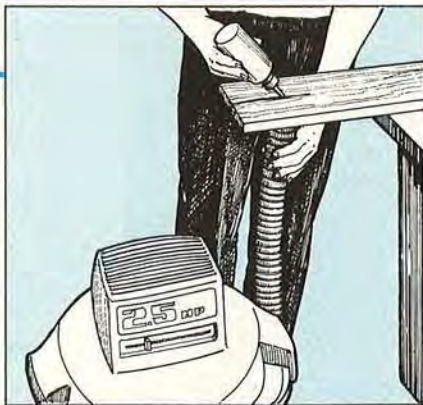
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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 13

Shop vacuum gets glue where it's needed

Trying to force glue into a tight spot such as a crack on a board or a split in an old furniture part can exasperate even the most patient woodworker. And sometimes the spot that needs the glue is so tight you can't even get a hypodermic in there.



TIP: Place the board so the place you need to glue hangs over the end of your bench. Now, bring over your shop vacuum, turn it on, and hold the nozzle underneath. Apply glue to the top, letting the suction pull it in. When glue comes out the bottom, clamp the workpiece.

—James Reister, Walla Walla, Wash.

Water and heat gun recycle pop bottles

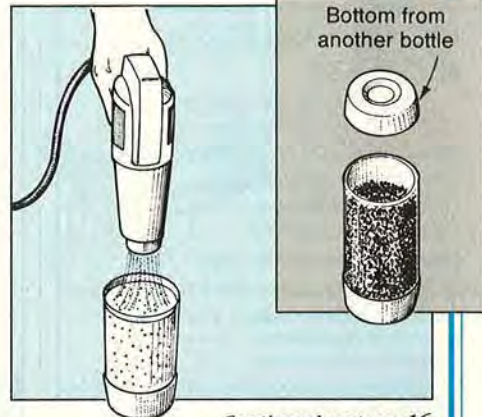
Clear two-liter plastic pop bottles seem ideal for small-parts storage—they're readily available and seem practically indestructible. With the label removed, you can easily see what's inside. The only catch is that when you cut the top off, the remaining edge is a little flimsy for holding hardware.

TIP: After you cut off the top (about 8½" from the bottom), stand the bottle on a level surface

and pour water in to within ⅜" of the rim. Hold your heat gun about 6" above the bottle and aim the hot air at the water surface. The plastic rim will curl inward, forming a sturdy lip.

Want a lid? Gently heat the black plastic bottom of another bottle to soften the glue holding it on, and then twist it off. It will slip right onto the top of your new container, as shown right.

—Anthony Quaglino, Jr., Harvey, La.



Continued on page 16

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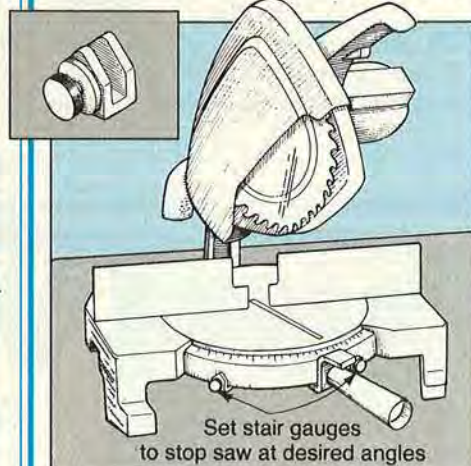
Continued from page 15

Framing square gauges mark mitersaw stops

Most mitersaws have stops at common angles so you can switch from left to right cuts quickly. Making cuts at some other angle isn't quite so easy, though, without a reliable stop.

TIP: On some saws, you can mark your angle with a pair of stair gauges, the ones hardware stores sell to clamp onto a framing square. To use them, swing your saw to the desired angle to the right, and then install a gauge on the saw's front apron. Repeat for the left side. Now, you can swing the saw from angle to angle quickly and accurately. 🌲

—James Marsh, USN



Set stair gauges to stop saw at desired angles

MORE TIPS FROM OUR WOODWORKING PROS

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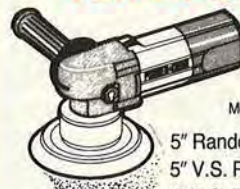
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PRODUCTS THAT PERFORM

Print this article

A welcome addition to any radial-arm saw
Up to now, I didn't trust my radial-arm saw for making precise cuts. Like most of these saws, mine had a 3/4 x 2" wooden fence that was susceptible to warpage. The miter scale on the saw proved accurate only to within a degree or two. And after every miter-cut, I had to tediously reset the blade carriage for square cutoffs. I needed some help!

The Doyel Fence System has solved my problem. The product consists of two halves made of heavy-duty, warp-free aluminum. The left half, shown in the photo at right, measures about 20" long and has a 12"-long miter fence that adjusts from 0° to 50°. This means you have to square your blade 90° to the fence only once, and leave it there for all subsequent cuts.



Because you no longer have to swing the arm for miter-cuts, this system offers two other advantages. First, it simplifies dust collection because the dust only flies in one direction. And, your miter-cutting capacity increases.

The right side of the fence, shown below, has a built-in stop and tape measure that extends 24". As the manufacturer claims, my tests produced cutoffs accurate to within 1/64". Installing the system was a snap because both sides of the fence slip into the 3/4" groove previously used for the wooden fence. Because of its sturdy construction, this product will last for years.

—Tested by Bob McFarlin

Doyel Fence System, \$84.25 ppd., from Doyel Enterprises, P.O. Box 315, Yorba Linda, CA 92686-0315.



Continued on page 21

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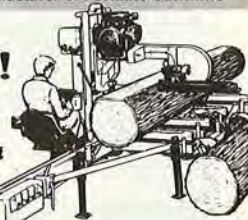
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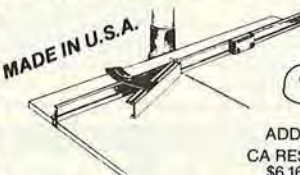
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MONEY BACK GUARANTEE

Continued from page 18

Straight bits in hard-to-find sizes simplify dados

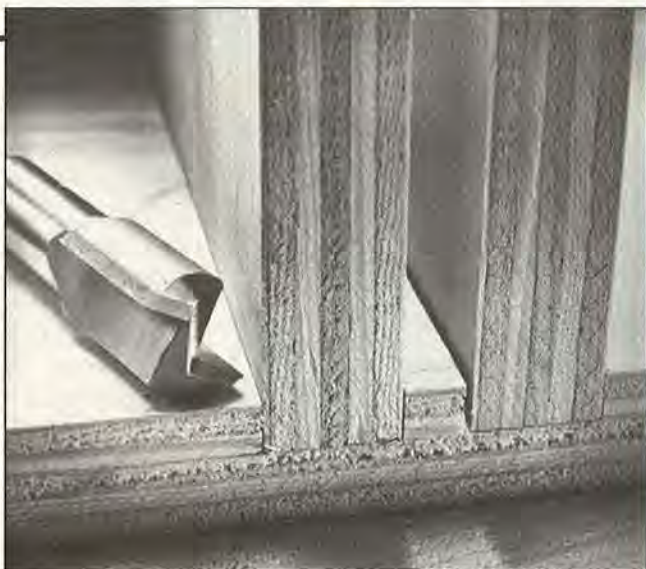
With a straight bit in your router, you can cut clean, flat-bottomed dados through hardwood plywood with almost no chipping. There is one problem though: You can't buy hardwood plywoods that will fit tightly into a 3/4" or 1/2" dado. Because these sheet goods are manufactured to a stated thickness (3/4" or 1/2"), then sanded smooth at the factory, they measure about 1/32" to 1/64" thinner than they did originally. With this in mind, Eagle America has come out with 23/32"-diameter and 31/64"-diameter straight bits.

As shown in the photo at right, 3/4" birch plywood fits tightly into the dado cut with the 23/32" bit (left side of photo), but loosely into the dado cut with a 3/4" bit. I tried both Eagle America bits and tested several types of hardwood

plywood for fit, including oak, birch, cherry, and walnut. About half of my 1/2" and 3/4" plywoods fit into the dados snugly. The other half were a little too snug, but with a small amount of sanding, they fit like a glove. Only one piece fit too loosely to work.

If you can't afford a good dado blade, these bits will allow you to quickly and inexpensively cut clean dados. Even if you own a good dado set, you'll find these bits invaluable for cutting those workpieces too large and cumbersome for your tablesaw.

—Tested by Bill Krier



Straight bits for hardwood plywood, \$15.95-\$16.99 plus shipping for 31/64" and 23/32" bits with 1/4" or 1/2" shanks. Many other sizes also available. Eagle America, P.O. Box 1099, Chardon, OH 44024. Call 800/872-2511 or 216/286-9334 to order.

Continued on page 23

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DELTA

PRODUCTS THAT PERFORM

Continued from page 21

Inexpensive brad-nailer speeds your work

If you like to get as much done in as short a time as possible (and who doesn't?), you ought to consider buying an air-powered nail gun. With one, you can quickly and effortlessly assemble projects made of hard or soft woods. Instead of clamping many workpieces, I often use a nail gun to hold them tightly together while the glue dries.

Quality nail guns typically cost several hundred dollars, and the special nails used in them cost a bundle, too. Unless you make a living from your craftwork, owning such a gun seems like an indulgence. So, when I noticed brad-nailers selling for around \$100 in the Grizzly Imports catalog, I ordered one for a tryout. I'm glad I did.

I chose the Model G1861 Super Brad-Nailer for \$129.95 (a smaller version sells for \$99). The gun holds 150 18-gauge nails, from 3/8" to 1 9/16" long, and weighs only 3.3 pounds. I've fired several thousand nails without a problem. The well-balanced gun loads and unloads easily.



If you've never owned a nail gun before, be sure to practice with scrap stock before trying one on a project. Hardwoods such as maple may split if you don't orient the nail body with the direction of the grain. This potential problem aside, a nail gun turns out to be the ideal tool for fastening moldings, door and drawer stops, and the backs on cabinets. I also use one for assembling craft projects and all sorts of irregularly shaped objects.

—Tested by Jim Boelling

Super Brad-Nailer, \$129.95 plus shipping from Grizzly Imports. To order, call 800/523-4777 (east of Mississippi River); or 800/541-5537 (west of Mississippi River).

These disposable paintbrushes have it all

I'm always amazed by the stream of innovative products manufactured by 3M. The company's latest product to impress me: the New Stroke disposable paintbrush.

Unlike other throwaways, these models have soft bristles with finely flaired ends that helped me achieve great results with every

paint and clear finish in my shop. The bristles are bonded to a sturdy handle made of laminated layers of recycled paper and paperboard. During my tests, not a single bristle pulled loose from the handle—even when I tried to yank them out.

You can buy three to five brushes in a pack (depending on the width of the brushes), and snap off each one as you need it. These brushes store flat, saving you valuable space.

—Tested by Bob McFarlin



New Stroke disposable paintbrushes by 3M. A 5-pack of 2" brushes sells for around \$8.49. For more information, or the location of your nearest dealer, call 3M at 612/731-6681.



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Moto-Tool, this ad would go on forever. However, you can get a 95 page, detailed guide that explains bits, speeds and 175+ uses, in specially marked Moto-Tool boxes at Hardware, Home Center and Hobby Stores. Or write to Dremel, Marketing Dept., P.O. Box 1468, Racine, WI 53406-1468, for a free copy.

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THE PARA RUBBER TREE

Its sap spawned a multibillion-dollar industry



A single rubber tree can produce 30 pounds of latex a year. But, except for carving, forget about using the wood in projects.



When Christopher Columbus visited South America on his second New World voyage, he was amazed to see native children bouncing black balls made from a gumlike substance. But it would be 300 years before the extract of the Para rubber tree entered European commerce as an erasing material for pencil marks. That discovery by Joseph Priestly, an English chemist, gave rubber its name. It wasn't until 1839 that American Charles Goodyear laid the foundation for the multibillion-dollar rubber industry by strengthening pure rubber with sulphur in high heat, a process called vulcanization.

The Para rubber tree (*Hevea brasiliensis*) grows in the Amazon forests in the Brazilian states of Para and Amazonas. And although widely planted throughout the East Indies (the reason rubber

was once called "India rubber") and Southeast Asia during the 1800s, the purest and best rubber still hails from the Amazon.

Ready for tapping at 5 years old, a rubber tree can yield as much as 30 pounds of latex (from the Latin *lactic*, which means milk) per year. Not unlike the tapping of North American sugar maples for syrup, a cup attached to the rubber tree collects the liquid latex from a slash in the bark.

Rubber trees are short-lived, and by age 60 must be felled and replaced. The wood goes for pulp, paper, fiberboard, and even furniture components. But, you'll probably never encounter rubber-tree wood, unless you're a carver. That's because a species of rubber tree, jelutong (*Dyera costulata*), from Malaya and Indonesia, rates as top notch for figures and decays due to its straight grain. ♣

Illustration: Jim Stevenson

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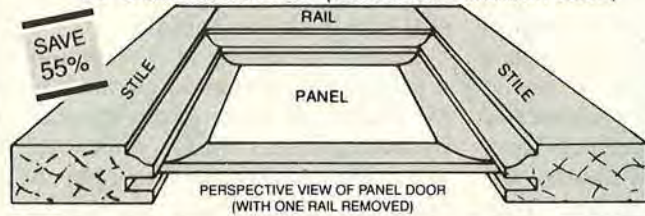
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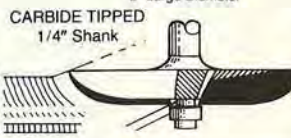
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#603		1/4" Spiral Cutter		1/4"	3/4"	1/4"	\$12.00
#903		1/4" Spiral Cutter		1/4"	3/4"	1/2"	\$12.00
#904		3/8" Spiral Cutter		3/8"	1"	1/2"	\$24.00
#905		1/2" Spiral Cutter		1/2"	1 1/2"	1/2"	\$29.00
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#531		5/16" Edge Beading	5/16" Dia. of Circle		1/2"	1/4"	\$15.50
#350		1/8" Round Over	1/8" R	3/4"	3/8"	1/4"	\$11.00
#351		3/16" Round Over	3/16" R	7/8"	1/2"	1/4"	\$11.00
#230		1/4" Round Over	1/4" R	1"	1/2"	1/4"	\$12.00
#353		5/16" Round Over	5/16" R	1 1/8"	1/2"	1/4"	\$14.00
#209		3/8" Round Over	3/8" R	1 1/4"	5/8"	1/4"	\$15.00
#355		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/4"	\$17.00
#655		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/2"	\$17.00
#656		3/4" Round Over	3/4" R	2"	7/8"	1/2"	\$21.00
#199		Multiform Mauling	Unlimited Patterns	2 1/4"	2"	1/2"	\$40.00
#205		1/4" Cove	1/4" R	1"	1/2"	1/4"	\$12.00
#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	\$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	\$14.00
#643		1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	\$15.00
#208		3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	\$26.00
#231		5/32" Roman Ogee	5/32" R	1 1/4"	1 9/32"	1/4"	\$16.00
#232	1/4" Roman Ogee	1/4" R	1 1/2"	3/4"	1/4"	\$17.00	
#506		1/2" Pattern	Flush Trim	1/2"	1"	1/4"	\$15.00
#508		3/4" Pattern	Flush Trim	3/4"	1"	1/4"	\$17.00
#366		1/8" Slot Cutter	3/8" Deep	1 1/4"	1/8"	1/4"	\$14.00
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	\$14.00
#204		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/4"	\$13.00
#670		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/2"	\$14.00

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#211		3/8" Core Box	round nose	3/8"	3/8"	1/4"	\$10.00
#212		1/2" Core Box	round nose	1/2"	1 1/32"	1/4"	\$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	\$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	\$17.00
#548		Lockmitre		2"	7/8"	1/4"	\$32.00
#214		1/4" Straight	plunge cutting	1/4"	3/4"	1/4"	\$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	\$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	\$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	\$ 9.50
#779		3/4" Straight	plunge cutting	3/4"	1 1/2"	1/2"	\$10.00
#462		1/2" Bull Nose	1/2" Dia. of Circle		3/4"	1/4"	\$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/4"	\$21.00
#764		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/2"	\$21.00
#545		Tongue & Groove	Straight	1 5/8"	1"	1/4"	\$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	\$29.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	1/4"	\$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	\$29.00
#450		1/8" Beading	1/8" R	3/4"	3/8"	1/4"	\$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	\$13.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	\$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	\$17.00
#500		3/8" Flush	Trimming	3/8"	1/2"	1/4"	\$ 7.00
#501		3/8" Flush	Trimming	3/8"	1"	1/4"	\$ 7.50
#503		1/2" Flush	Trimming	1/2"	1"	1/4"	\$ 8.50
#221		1/2" Flush	Trimming	1/2"	1 3/16"	1/2"	\$ 8.00
#558		Thumbnail		1 3/16"	3/8"	1/4"	\$18.50
#858		Thumbnail		2 1/2"	3/4"	1/2"	\$35.00
#579		Molding Plane		1 1/8"	1 3/4"	1/4"	\$31.95
#879		Molding Plane		1 1/8"	1 3/4"	1/2"	\$31.95

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THE MAJOR'S MARQUETRY

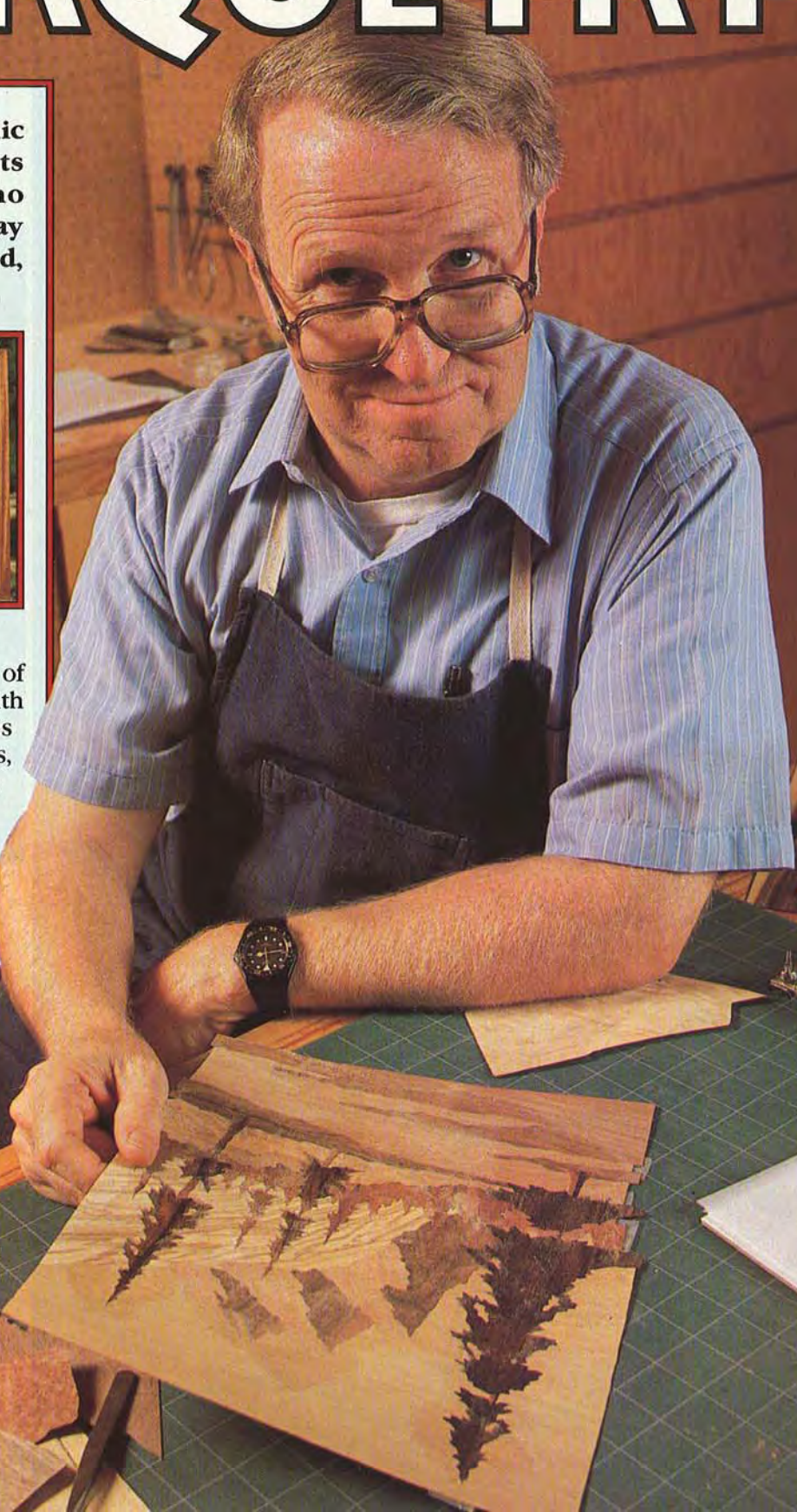
Northern California's scenic Mendocino County boasts craftsman Dave Peck, who composes scenes that display a fondness for detail, wood, and the wilds.



Yosemite Valley, 25½ × 35½"

Marquetrie, the method of decorating surfaces with designs or pictures made from thin wood veneers, was popular 3,000 years ago. Egyptians laid hand-sawed veneers on plainer wood. Artisans of Greece and Rome overlaid lesser stock with flamboyant assemblies of exotic species. And among today's marquetarians, little has changed.

Continued





“With marquetry, you don’t need near the space and tools that you do for regular woodworking,” says Dave Peck. His horn-rimmed glasses slip gently down his nose toward his welcoming smile as he peers up from the worktable. “Heck, the only drawback to it as a hobby is all the veneer I need to have on hand—about \$1,500 worth!”

The stacks of veneer covering the wall behind Dave back up his statement. From them, a practiced eye picks out bird’s-eye maple, zebra wood, olive burl, cocobolo, ash, Ceylon satinwood, madrone, and dozens of others from around the world. Above the shelved veneer, pictures of mountains and valleys, fishermen wading in streams, and wildlife in the forest decorate the wall, attesting to the destiny of the thin wood.

Because Dave, a retired U. S. Air Force major, works at marquetry half time, he refers to himself as a hobbyist. Yet, to those who have purchased his works from galleries in Northern California and Montana, Dave is a detail-oriented craftsman in love with all of nature’s grandeur.

Nature as inspiration

Dave and his wife Judy chose Redwood Valley, a minute Medocino County town 2½ hours north of San Francisco, for their home because it fit. In the surrounding mountains, redwood forests, and open grasslands live mountain lion, black bear, deer, elk, and valley quail. An hour’s drive west, at the mouth of the Noyo River, lies Fort Bragg and the breathtaking seascapes of the Pacific Ocean.

An Oregonian by birth, Dave, 54, always has loved the outdoors that he depicts in wood. Fishing and hunting were part of his boyhood. He never abandoned them.

When Dave squares up his marquetry for mounting, he relies on a metal straightedge and a German-made, reversible-blade veneer saw that makes perfectly straight cuts without tearing.

U. S. Air Force duty stations contributed their influence, too, especially the years spent in Alaska.

Then, in retirement, Dave lived memorable times in scenic Montana and Wyoming. Today, in daily walks near his home, Dave enjoys observing an abundance of wildlife. Even his four-acre wooded lot supports several large coveys of quail.



Down Redwood, Standing Redwood, each 9×12"



Bull Elk, Cow Elk, each 14×20"

"Mountains seem to work real well in marquetry—and that's good, because I love them," says Dave in describing his subject matter. "Seacoast scenes, such as those with a lighthouse, sell well along the coast. Fishermen move everywhere—I sell every one of them. But Yosemite scenes are always popular, too, so I'm doing more of them now.

"Of course, I'll make other subjects on commission," he adds, wrinkling his nose as he grins. "Last year I did the skull symbol of The Grateful Dead, that rock music group."

No matter the subject, Dave's marquetry brings a fair price. A 6×9" piece costs around \$60. A scene such as *Yosemite Valley*,

that measures 20×30", Dave has priced at \$900. He explains, "I don't price them by complexity so much, but more by size."

And although his pictures treat the eye with their beauty, they also educate. "I print a statement on the back of my pictures that lists the types of wood I've used in it," says Dave, "and that's often a dozen or more."

No equality with veneer

The 20'-long bank of shelves lining one wall of Dave's workshop holds nothing but veneer. But rather than haphazardly piling the sheets, Dave separates them into three stacks.

Pinching a sheet of ash between his thumb and index finger, Dave says, "If it's a U.S.-cut wood, it will be somewhere between 1/28" and 1/32" thick. It goes in the shelf on the right. But if it's a veneer from Europe or Africa, then it will be closer to 1/40" thick. And that difference can cause me a lot of problems. So, I put the thinner stuff on the left. In the middle goes the veneer that falls somewhere in between, because I can use them with either the thick or the thin."

After 30 years of marquetry, Dave can, of course, tell the difference in thicknesses just by feel. Yet, to be sure, he carefully checks each new shipment of veneer with a micrometer.

Dave has another space on his veneer-storage shelves. It's reserved for extraordinary pieces. "These are all burls here," he says, pointing to the pile far to the right. "Notice how curly they all are. That's what really causes me problems—curly wood."

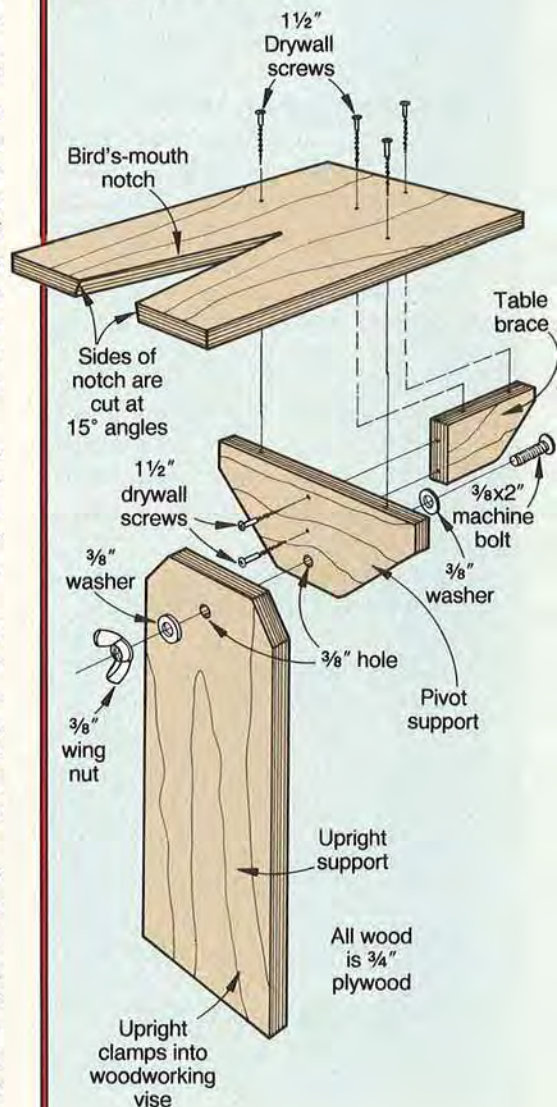
But, according to Dave, there's a cure. "I cut out a piece from the sheet [of burl or wavy veneer] just a little bigger than I need, then spray it down with water mixed with a drop or two of glycerin to assist penetration. Next, I take plain newsprint without any printing [available from local

Continued



The tiny 5/0 fretsaw blade bites quickly through veneer layers. Dave prefers the hand-powered fretsaw because he feels he has more control for complex cuts.

BIRD'S-MOUTH FRETSAW TABLE





newspapers]; otherwise the ink would transfer to the wood. I place one sheet of newsprint under and one on top of the damp wood. Then, I put it in the press and leave it for a couple of hours before I change the paper.

"The next day I change the paper again, and the following day, too," Dave continues. "It takes about three days to dry. Then, if you just left it without pressure it could bubble. So, I keep my curly veneers clamped under boards."

There's no doubt that Dave has learned the tricky stuff of handling veneers; he's worked with most of the species available in sheet form. "I probably have used about 200 different kinds of wood," he says, glancing at his stacks. "And I probably have about 100 kinds on hand."

Composing with wood

Over the years, Dave has developed a number of talents, including furnituremaking, drawing, and painting. They all come together in his marquetry. For instance, Dave often may refer to a magazine photograph or one he shot himself to recapture the scene in wood. But many times the picture develops in his mind.

Picking up a rough sketch, Dave describes the marquetry-to-



be. "This is my idea of what the Yosemite Valley would look like if I stood a little east of El Capitan," he says. "From this sketch I'll draw my pattern on a piece of tracing paper—it'll take maybe a few tries before I get it right. And if it's a complex picture, I'll shade in the thumbnail sketch for dark and light values. But no matter the pattern, I always assign numbers to the values—a scale, from 1–10, with 10 the darkest. Then, I select the veneers."

After Dave selects his wood, he begins tracing the necessary pattern lines on each piece that will contribute to the completed scene. "I usually start with the sky, or whatever is the farthest back in the picture so that anything in front can be nestled in," he says. After Dave traces the pattern part on the selected wood, he heads for the saw.

Fretting over angles

With the capability and popularity of scrollsaws today, it's a won-

der to find someone still cutting complex designs with a hand-powered saw, but that's exactly how Dave gets the job done. Why? "I use the fretsaw because I have more control guiding it," Dave explains. "I can probably cut five or six pieces out by hand faster than I can with a scrollsaw. And when I want to inlay a piece of wood into the center of another piece, it's so much easier to thread a fretsaw blade through the veneer than a machine blade."

Dave has two fretsaws to rely on. One has a throat depth of 18", the other 12". "Where I can, I use the short one," he says. "When it won't reach to the center of the pattern, I go to the longer one."

To check the proper alignment of the tiny 5/0 jeweler's blades that measure .009" in thickness and .017" in width, Dave feels the teeth with his finger because they're too miniscule to see. "With a fretsaw, the teeth face away from you and down," he adds with a whisper.

To support the veneers being sawed, as well as to give the 5"-long saw blade clearance, Dave built a bird's-mouth table. The term refers to the shape of the slot in the top surface into which he inserts the blade. His table also tilts, so he can cut out veneers at a 15° angle for invisible joints. "With that 15° bevel," says Dave, "I compensate for the kerf and the stock thickness."

Dave's skill with the fretsaw shows up in the jagged tree lines of his scenes, including the feathery outlines of pine needles. Indeed, with one end of a deep-throated fretsaw tucked under his right arm and his left hand turning the wood and pressing it against the blade, Dave makes



El Capitan Reflecting, 9×12"



Oval 2, 6×8½"



◀ Cabinet scrapers often do a better job leveling finished marquetry than sanding. Dave saves the scrapings, as well as sawdust, to mix with glue as filler.

▶ A veneer press like Dave's shop-made version flattens out krinkly scenes overnight. Waxed paper protects the wood.

cuts along erratic pattern lines look effortless.

"After I've cut all the pieces out," says Dave, "I join them on the face with Scotch tape. After joining all the pieces, I glue the back side with a mixture of Elmer's white glue and sawdust. Doing this seals up any gaps in the joints. Then, I let it dry."

Pressing matters

To flatten the assembled marquetry, Dave places it—with newsprint above and below—in his veneer press for a day or so. When it comes out, it'll be perfectly flat and ready for matching to the backing board (or mount) of $\frac{3}{4}$ " Phillippine mahogany plywood. But first, the scene must be squared up at the worktable with a veneer saw. When that's done, he's ready to start preparing for the finish.

"First, I gently go over the picture with a belt sander and 120-grit paper," says Dave. "Next, I use a pad sander with 220 grit. I might even start out with a cabinet scraper, especially if there's a pencil mark somewhere, because I've found that sanding drives the graphite down into the wood."

Once he's satisfied with the smoothness of his work, Dave sprays the picture with three coats of satin Deft, prints out a wood description for the back on his computer, attaches a hanger, and then hangs it in the storeroom. Time spent: 8 hours. And it went like clockwork. What could have gone wrong?

Dave laughs, nodding toward a flawed picture hanging on the back wall of the shop. "I've been known to get too rambunctious and sand right through the veneer. Can't mend that." ♣



Written by Peter J. Stephano Photographs: Dan Sullivan

ROUGHOUTS

INDUSTRIAL-STRENGTH HELP FOR CARVERS

Let's face it—not everyone can visualize a figure and sculpt it from a block of wood. That's why many woodcarvers now start with a roughout, a partially completed, machine-carved figure with the rough shaping and proportioning already done. Here's a look at machine-made roughouts: where they started, how they're made, and what they can—or cannot—do for you.

Helping the pros produce

For years, professional carvers selling to the wholesale and retail trade have relied on machine-made roughouts. They're the secret behind selling carvings profitably, according to Ron Conn of Ozark Mountain Crafts in Branson, Missouri. His firm manufactures roughouts for pros and amateurs alike and markets a line of finished carvings to retailers.

"Carvers doing work for stores are aiming at a price range; they have to work as economically as they can," Ron explains. So, while machines grind away at the grunt work, the carver concentrates on the final form and details. "Each piece takes less time, but still has the individuality people expect in a hand-carving," Ron says.

Machined roughouts turn up in classes as teaching aids, too. By

zeroing in on finishing and detailing techniques, some instructors say, students sharpen their skills in less class time. And students have the satisfaction of taking home a completed carving when the course is over.

Roughouts at retail

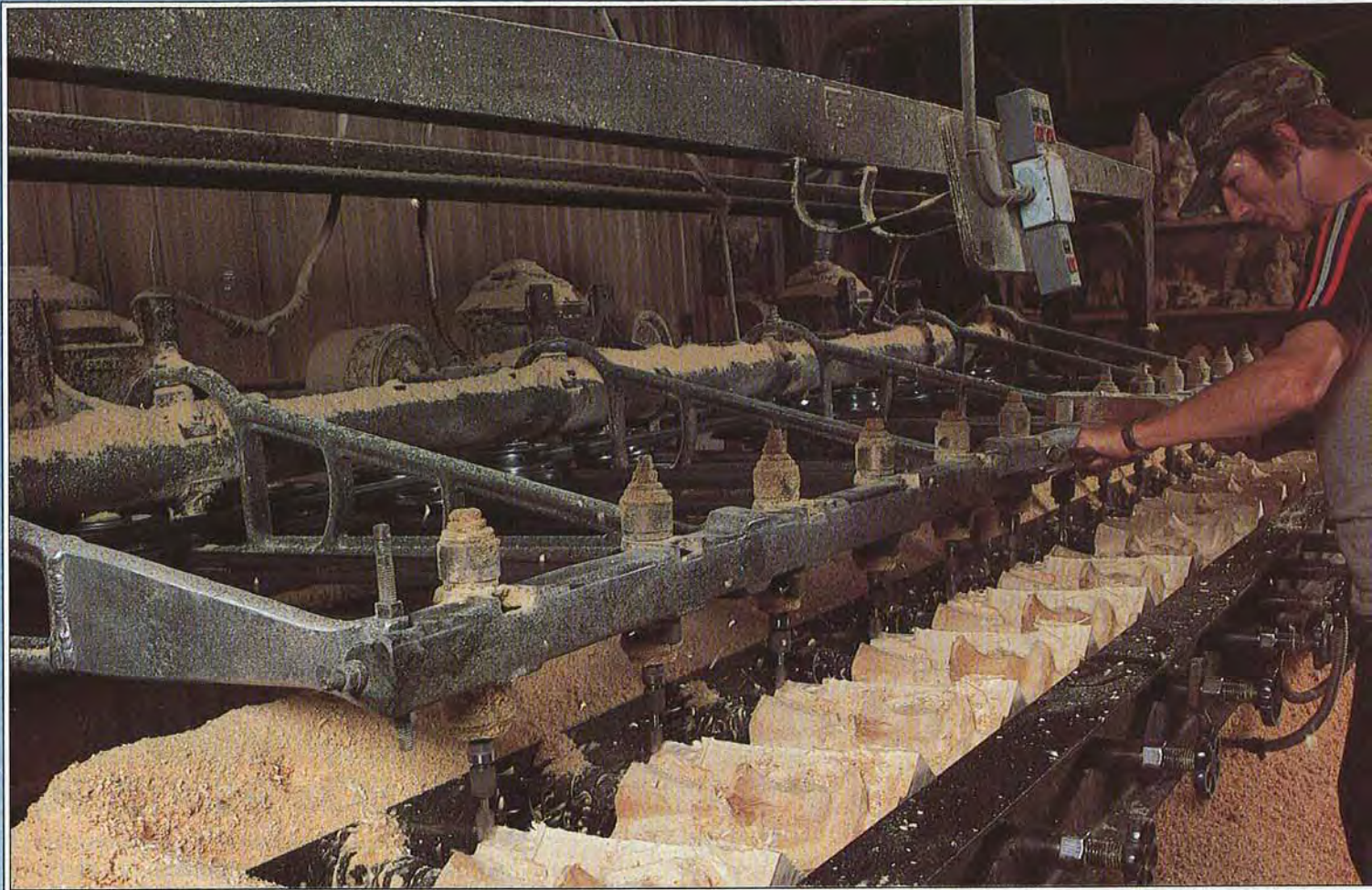
The popularity of roughouts has carved out several businesses in the last few years. Ivan and Trudy Rossiter, for instance, started manufacturing and marketing roughouts about four years ago. Since then, Rossiter Ruff-outs and Carving Supply in Wichita, Kansas, (formerly Duplication by the Dozen) has grown right along with the carving population.

"We started with about 50 models; now we have 200 or so," Ivan says. "We're always looking for new designs. We need to add 50 or 60 new ones to our catalog every year to keep up with demand." Some carvers allow the Rossiters to sell roughouts of their designs in exchange for a quantity of them. In addition, a customer can have any number of roughouts made from a carving—to make a series for sale or gifts, for instance.

Keeping up with the carvers can consume 3,000 to 5,000 board feet of northern basswood each month. So, people in the roughout business are sensitive to changes in the market. "Basswood prices are high now," roughout-maker Conn says. "Rough logs are selling overseas for what we used to pay for milled lumber," he adds. He deals with several suppliers, buying truckloads of RWL lumber (random widths and lengths) of a specified grade and moisture content (6 percent).

Cigar store Indian and raccoon, Ozark Mountain Crafts; coyote, Rossiter Ruff-outs and Carving Supply. Addresses on page 35.

TO THE RESCUE



Harold Davis carves a dozen goose heads at Ozark Mountain Crafts.

Old techniques for modern times

The machines and techniques that now hew out carving roughouts came from the furniture industry, commercial woodworking, and even shoemaking. The technology isn't new. Mechanized production carving of items as diverse as shoe lasts (the foot-shaped forms shoemakers use), fireplace mantels, table legs, waterfowl decoys, and foundry patterns has been going on for a century or more.

"Carousel horses are a direct link to carving's industrial past," Ron says. Once, they were carved completely by hand. But by the 1920s, commercial pressures had forced most makers to turn to a

hybrid process that parallels the way today's carvers use roughouts—hand finishing of machine-made rough carvings.

"These machines came out of a furniture factory, and we rebuilt them," he says, pointing to two duplicating carvers in his building. One machine makes four copies at a time of work up to 7' long—it once made fireplace mantels. The other one, shown *above*, makes a dozen copies at a time of smaller patterns.

On either machine, the roughouts start from a master pattern, the three-dimensional wood or metal original to be duplicated. "We can make a wooden master right on the machine from a fin-

ished carving, a rough carving, or even a clay model," Ron explains. "We have metal masters made for our high-volume carvings because they last longer."

The master mounts on the duplicator much like a turning mounts between centers on a lathe. The blocks of wood destined to become roughouts also mount between centers, parallel to the master and arrayed alongside it, as shown in the machine photo. A bar—suspended so it can move to either side, front to back, and up or down—spans the master and the blocks. Then, the machine operator manipulates the bar so that a stylus on it traces the surface of the master.

Continued

ROUGHOUTS

Above each block location, a spindle on the bar holds a rotating bit, similar to a router bit. It cuts away the block surface to match the profile traced by the stylus. Mechanical linkage between the mounting centers holding the master and the blocks enables the operator to rotate them to different positions simultaneously to cut from different angles, thus covering the entire surface.

After one pass, the operator can change to a smaller bit to carve

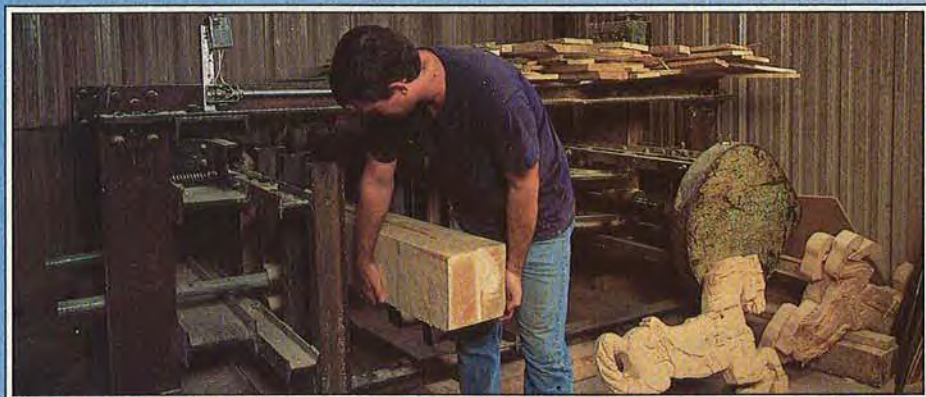
finer detail, if necessary. The level of detail put into a blank depends on who's going to be using the completed roughout—an amateur or a professional.

"Professional carvers don't like a blank that's cut too close; they want to have enough room to give each carving some personality," Ron comments. "Roughouts for general sale are usually cut closer to the finished carving."

A pair of hydraulically operated high-speed duplicating lathes in

the shop came from the shoemaking industry, where they carved shoe lasts. Ron has carved shoe trees, decoy bodies, and rolling pins, among other things, on the Italian-made machines.

A legacy of their shoemaking origins, they can create proportionally enlarged or reduced copies of three-dimensional patterns. So, a small carving pattern can be made quickly into something much bigger—just like the roughout business itself.



▲ Sidney Clevenger laminates stock for some roughouts. This hydraulic press will clamp pieces up to 24×24×60".

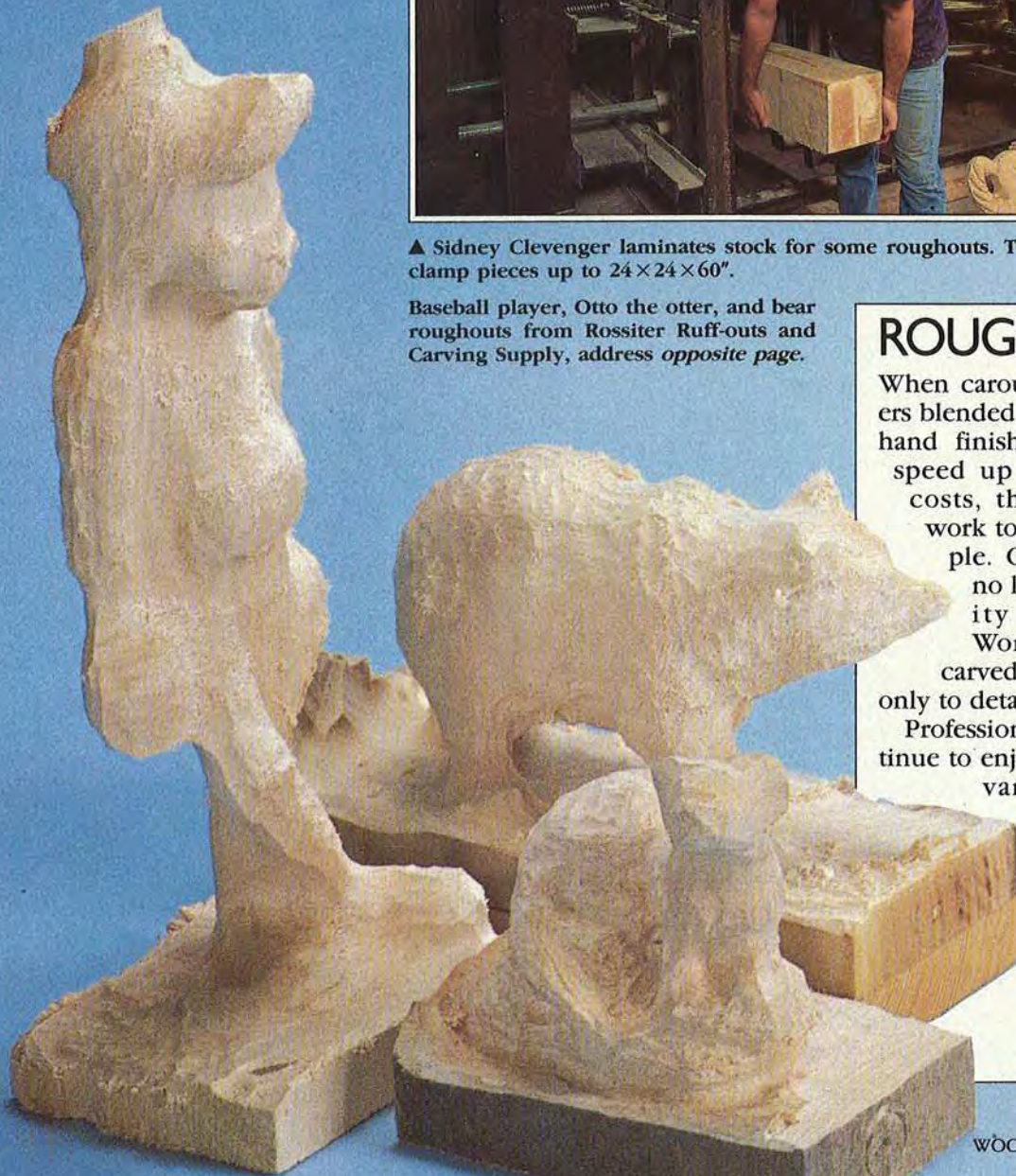
Baseball player, Otto the otter, and bear roughouts from Rossiter Ruff-outs and Carving Supply, address *opposite page*.

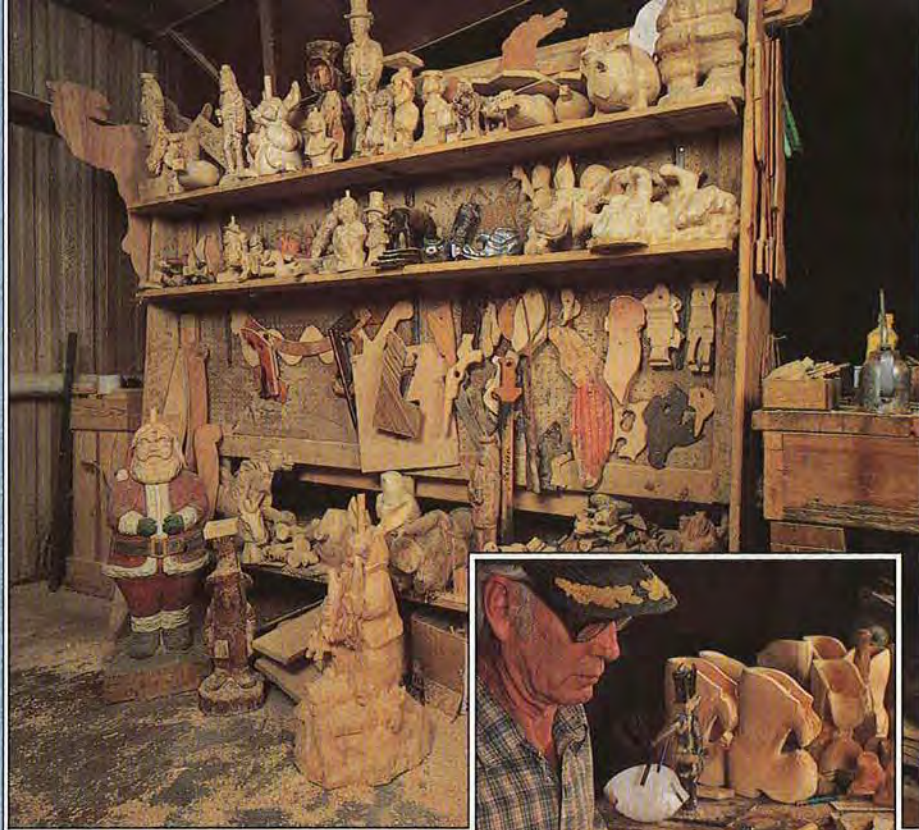
ROUGHOUTS HAVE

When carousel-horse manufacturers blended machine carving with hand finishing 70 years ago to speed up production and cut costs, they also opened the work to a wider range of people. Carousel-horse carvers no longer needed the ability to sculpt a horse.

Working with machine-carved blanks, they needed only to detail and finish the horse. Professional carvers today continue to enjoy the commercial advantages of roughouts.

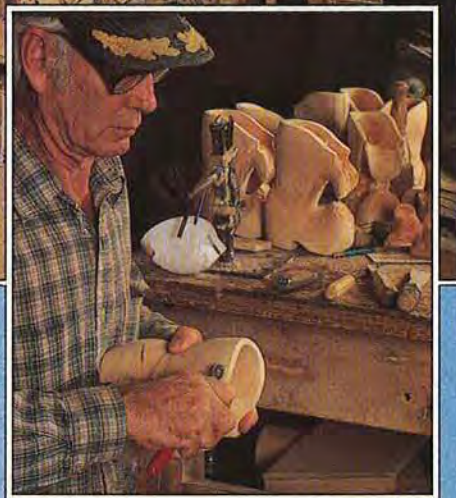
But, it's the ease roughouts bring to carving that's helping push them to new heights of popularity. For some hobbyists, it's the only way to carve.





▲ Patterns line shelves at Ozark Mountain Crafts. The popular boot pattern on the middle shelf is made of metal to resist wear.

▶ Gene Clevenger finishes a carved boot for retail sale. Carvers note: He's using a pounce pattern wheel to simulate stitching.



DRAWBACKS, TOO

Like assembling a model airplane kit, finishing and detailing a roughout provides hours of pleasure and relaxation. By starting the job with important shapes and proportions already established, novice carvers can avoid the disappointment of carving a deer that looks more like a moose.

But some carvers warn that there's a danger in leaning too heavily on roughouts, especially for anyone who wants to pursue carving seriously. "Roughouts speed up a project, and they work fine for someone who wants to do only details," woodcarver and instructor Dave Rushlo of Scottsdale, Arizona, says.

But he adds, "To become a good carver, you need to know how to lay out a carving. You should pick your subject and keep working at it. You should

develop your own style." That's particularly important advice for anybody who plans to enter carving competitions, since many shows and contests bar carvings made from roughouts.

Roughout makers Ron Conn and Ivan Rossiter agree in part with the Arizona carver. But, they say, roughouts are just the thing for the 80 or 90 percent of carvers who are in it purely for enjoyment. "It's true, you're always working on someone else's design," Ron says, "but not everyone is able to, or even wants to, draw up an original design, plan the carving, saw the blank, rough it out, and finish it." Adds Ivan, "Many people just don't have much time for carving. Roughouts let them spend the time they do have on the most enjoyable part of the job."

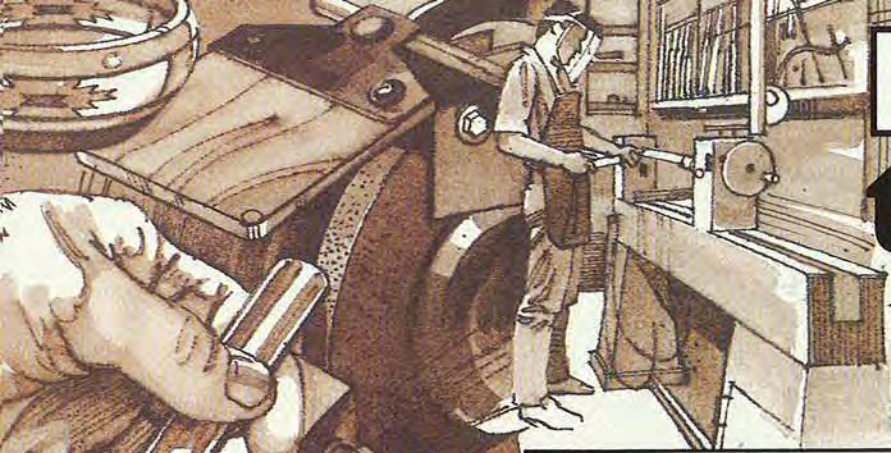
Buyer's guide to roughouts

Here are some firms that supply carving roughouts. Call or write for a catalog.

- Big Sky Carvers
8256 Huffine Lane
Bozeman, MT 59715
406/586-0008
Blanks of waterfowl, fish, and songbirds.
- Dupli-Tech, Eric Farner
Box 51
Charleroi, PA 15022
412/483-8883
Game birds, songbirds, and birds of prey. Custom roughouts.
- Huggler-Wyss America, Inc.
541 SW Pacific Ave.
Willmar, MN 56201
612/235-6020
European-style precarved Nativity scene.
- Laughlin's Wood Carving Supplies
Rt. 6, Box 147
Harrison, AR 72601
501/741-4757
General line of figure, caricature, and wildlife blanks.
- Ozark Mountain Crafts
Box R
Branson, MO 65616
417/561-8275
General line of figure, caricature, and wildlife blanks.
- Rossiter Ruff-outs and Carving Supply
1447 S. Santa Fe
Wichita, KS 67211
800/8 BLANKS
Figure, caricature, and wildlife blanks. Custom roughouts.
- Wetherbee Studio
Rich Wetherbee
3370 N. El Paso, Unit Q
Colorado Springs, CO 80907
Figure and animal blanks with reference casts.
- Wood Carvers Supply, Inc.
Box 8928
Norfolk, VA 23503
800/AT HOBBY
Hobo, cowboy, and cowgirl caricatures, Nativity figures. ♣

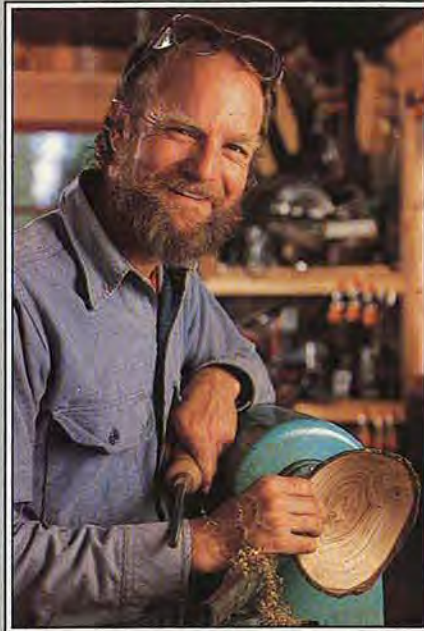
HOW TO turning and

Two pros share their



TIPS FOR GETTING AN EDGE ON

Carving or turning wood with dull tools is like trying to cut tough steak with a butter knife. You simply don't get the desired results. To help you start sharp and stay sharp, we paid a visit to two accomplished craftsmen—one a turner, the other a carver—who know full well the value of sharp tools. Starting with turning tools, here's what they had to say about getting a good edge.



Rus Hurt

From his secluded shop in the northern woodlands of Wisconsin, Rus Hurt quietly turns objects of exquisite beauty. Many of these pieces will find their way into art galleries and juried shows. Not bad for someone who describes himself as “just another guy out in the tules who happens to turn well.”

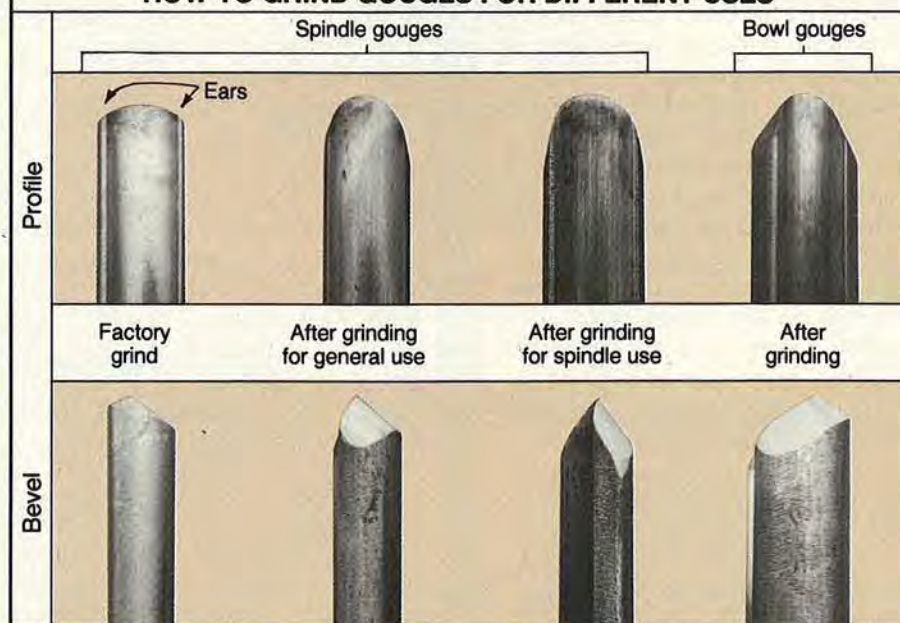
Rus especially enjoys passing along the secrets of his craft to aspiring turners at seminars and in one-on-one sessions in his own workshop. His first lesson: How to properly sharpen your turning tools. Says Rus: “With dull tools you don't cut the wood; you tear it off, and that's how *not* to have fun with turning.”

Determine the correct bevel and profile for your tools

After buying a turning tool, Rus regrinds its tip to match its intended purpose. “New tools are ground by machines that don't produce the necessary angles for smooth cutting,” Rus said. “With most tools, the tips are too blunt, so you have to lengthen the bevel and taper the profile slightly.”

For example, the photos at *left* show the degree to which Rus grinds away the ears of his gouges and increases the length of the bevels to match the work at hand. As you can see, he recommends using a long bevel when you're turning spindles, and a shorter one for bowl turning. If you use a single gouge for both purposes, a compromise such as the “general use” example will work well.

HOW TO GRIND GOUGES FOR DIFFERENT USES



SHARPEN

carving tools

secrets for success



YOUR TURNING TOOLS

PROFILES AND BEVELS FOR A BASIC TURNING SET

	3/8" spindle gouge	1/2" spindle gouge	7/16" bowl gouge	5/8" bowl gouge	1 1/4" roughing gouge	1/8" parting gouge	1/2" skew chisel	3/4" roundnose scraper
Profile								
Bevel								

To show you how to grind a variety of turning tools, we asked this longtime turner to select eight basic tools (see photos above). "With these tools, most turners can tackle 90 percent of all projects," he said.

Note: Rus' bevel grinds should work well for you if you adjust the height of your lathe so the headstock center is about 1" above your elbow.

Rough-grind your tool tips into shape

Using the photos above as your guide, mark the necessary profile as shown at *right top*. Then, hold the tip of the tool as shown at *right bottom*, and grip its handle with your other hand.

After grinding the ears (outer corners of the edge) down to the line, grind the entire bevel in one smooth and continuous motion by swinging the handle in an arc and simultaneously rolling the tool's edge. The new profile

Continued



Before grinding, mark the tool's new profile with a pencil.



Keep the tool moving as you grind it to avoid overheating.

How to keep your tools cool when rough-grinding

Whenever you grind a tool, try not to overheat it. (When the steel turns blue, it has lost its temper and will not hold an edge.) Follow these pointers:

- Use a coarse stone.
- Keep the tool moving when it's against the stone.
- Be aggressive. Apply plenty of pressure to remove as much material as possible, then quickly get the tool off the stone before it overheats.
- Dip the tool in water frequently to lower its temperature.
- Because there's little steel near the cutting edge to dissipate heat, use a lighter touch when grinding near the tip.
- Practice your grinding on a piece of scrap steel. "I put in many hours at the grinding wheel before I became good," Rus reminded us, "and I still burn the steel occasionally."

should be a smooth arc, with equal amounts of steel removed from both sides. Try to minimize the number of facets (flat spots) on the bevel.

Put the final edge on the tool

With the tip now reshaped, you shouldn't have to rough-grind the tool again unless you nick or damage it in some way. You need only refine the bevel with the fine stone of your grinding wheel. Start by touching the heel of the bevel to the stone as shown at *right*, and ease the rest of the bevel into the grinding wheel. Smooth the entire bevel in a continuous arcing motion, and use a light touch. Again, aim for one continuous facet.

"I'm usually done at this point unless I'm turning a fragile burl or expensive piece of stock," said Rus. "In these instances, I'll hone the edge for an extra margin of sharpness." To do this, Rus gives the inside of the edge a few strokes with a coarse India slipstone as shown at *far right* to remove the fine burr left from grinding. Then, he also strokes the bevel a few times as shown at *right bottom*, rolling the tool as he pulls it.

Two more tips from Rus

- "Buy high-speed steel (HSS) tools. You'll more than make up the higher cost in time saved from not having to sharpen them as much. And, HSS tools resist burning better than carbon-steel tools."

- "Get in the habit of touching the tip of your turning tool with your finger each time you're ready to turn with it. The edge of a sharp tool will drag when you lightly run your thumb perpendicularly over the edge. You'll get a good feel for what 'sharp' means, and it could save you from damaging a turning with a dull tool. Just be careful not to cut yourself in the process!"



Touch the heel of the bevel to the grinder first, then ease the toe into the wheel before grinding the entire bevel. This helps you avoid burning the edge.

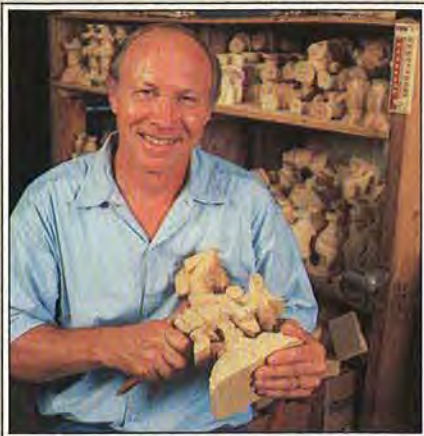


With a slipstone you can quickly remove the burr from the edge of a gouge.



Stroke the tool's bevel several times with the flat side of a slipstone.

A PROVEN SYSTEM FOR SHARPENING CARVING TOOLS



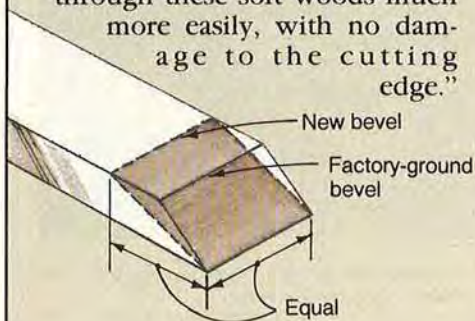
Harold Enlow

Harold Enlow, noted author and caricature carver, makes no bones about the importance of using sharp carving tools. "Some people complain that I put too much sharpening information in my books (he's published eight titles so far), but I ignore 'em because their tools are usually real dull," he told us with a chuckle.

To see firsthand Harold's tried-and-true sharpening technique, we paid a visit to his shop in the Ozark Mountains of northern Arkansas. Here's what we learned.

If you carve softer woods, grind the bevel longer

"I would guess that 90 percent of the wood being carved is soft—mostly basswood," said Harold. "But most carving tools come with a short bevel that works OK with harder woods, but not with softer woods. After I grind the bevel longer, the tool slices through these soft woods much more easily, with no damage to the cutting edge."



Note: The following procedures work well with chisels, gouges, and bench knives. V-tools require special treatment (see page 41).

As shown in the drawing *below left*, Harold lengthens the bevel on chisels and gouges so it's equal to the width of the tool. To do this, use a coarse grinding wheel to remove steel from the bevel's heel. As you grind closer to the toe, be careful not to scorch the thin edge. (See the tips on *page 37* for more advice on keeping your tools cool.)

Harold guides the tool by grasping its handle in one hand, and putting downward pressure on the tool with the thumb of his other hand as shown *below*. This way, your thumb tells you when



Your thumb helps steady the tool as you grind it, and also warns you when the tool gets too hot.

the tool gets too hot. When you're done grinding, there should be a slight burr on the edge (opposite the bevel surface). "At every stage of sharpening, I always feel for that fine burr. Then, and only then, can you be sure that you've reached the edge," Harold told us.

Use sharpening stones to flatten and smooth the bevel
Harold goes directly from the

coarse grinding wheel to a coarse India bench stone to flatten the bevel and remove scratches. First, he applies an oil (motor oil or automatic-transmission fluid) to the stone and lays the bevel flat on the stone as shown *below*. "It's important that you apply plenty of pressure as you stroke the bevel several times," Harold said. "Your knuckles should turn white."



Hold the bevel flat on the stone as you stroke it heelfirst.

When working on a stone, remember to push and pull the tool for speedy metal removal. With gouges, you need to roll the tool as you push and pull it.

A note about stones: "I use an India stone with a coarse and fine side, and a hard Arkansas stone, but most any combination of coarse, fine, and hard stones will work," Harold told us. "Other carvers get good results with diamond stones, water stones, you name it."

As you work, frequently check the tool's bevel in a strong side-light. When most of the scratches disappear, switch to a fine stone. Harold repeats this process on the fine side of his India stone. When he's satisfied that he's removed all of the visible scratches, he removes the burr by stroking it lightly once or twice along the fine side of the stone. For gouges, use the long edge of the stone.

Next, Harold repeats everything he did on the fine side of the India stone on a hard Arkansas

Continued



stone. "Some people skip this step and go directly to a strop [a leather strap with polishing compound on it] for the final honing, but this step saves you time on the strop. And, the less time you spend on the strop the better, because stropping tends to round the edge slightly."

The final step—stropping

To polish the edge and remove any traces of a burr, Harold strokes both sides of the cutting edge on a strop charged with Zam polishing compound (see the Buying Guide on the *opposite page* for a source). "You need to press hard and stroke each side of the tool five or six times," according to this seasoned carver. Because of its soft surface, you'll cut the strop if you try to push the tool across the leather, so only pull it along the surface.

As shown in the photo at *top right*, Harold cuts off chunks of the compound and works it into his strop with the tool. When the Zam turns black, you'll need to add more compound. Polish the concave edge of a gouge by rolling it along the edge of the strop as shown at *bottom right*.

How to tell when to resharpen your carving tools

To check his tools for sharpness, Harold shaves a few hairs off his arm. If the hairs don't shave easily, he gives the tool a few more strokes on the strop. Just be careful not to cut yourself.

Harold finds that he can restrop a tool two or three times before taking it back to the fine-India-stone stage of his sharpening process. "You don't have to go back to the grinder or coarse India stone unless the tool gets accidentally nicked."



As you strop the tool, mash the bits of compound into the leather surface. Press hard as you pull the tool along the strop five or six times.



Roll the concave side of a gouge as you pull it along the strop's edge. For each stroke, roll the tool completely from one corner of the edge to the other.

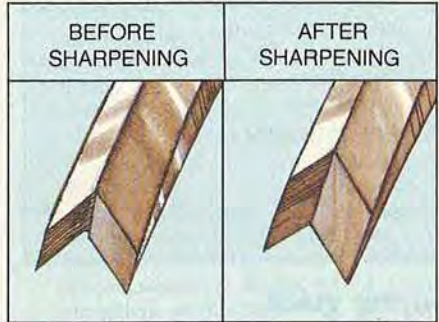
CARVING TOOLS

How to get your V-tools shipshape

"In my seminars I find that few people know how to sharpen a V-tool," Harold said. "You can get by with a chisel or knife that's half-dull, but a V-tool has to be perfect or it'll give you fits."

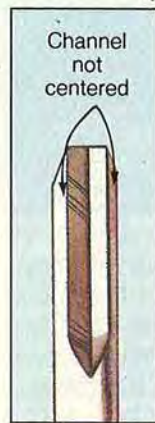
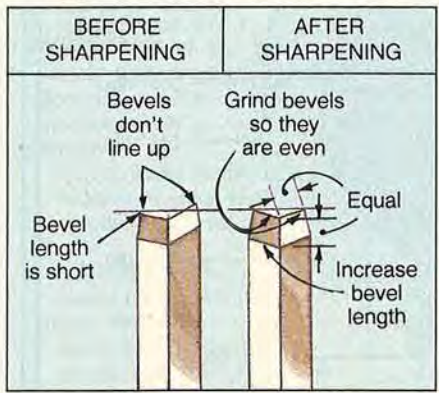
To achieve victory with your V-tool, follow the sharpening sequence for other carving tools, but with these differences:

- First, you need to check the V-tool's edge for squareness. If it looks like the example shown on the left side of the illustration below, you'll need to grind it square



as shown on the right side of the same drawing. As also shown in this drawing, you should lengthen the bevels so they equal the width of one side of the V.

- Check to make sure that the two edges of the tool meet in a perfect V as shown in the "After sharpening" example below. (You may need a magnifying glass and strong light.) If they don't, you'll



need to grind them into shape.

Doing this may prove impossible if the channel machined down the shank of the tool isn't centered as shown at left. So, check your V-tools for this defect before purchasing them.

- On small V-tools, you may want to skip the grinding-wheel stage and only work on India stones to help you maintain control over steel removal.

- Use thin, hard Arkansas slipstones to remove the burr on V-tools as shown below. For small V-tools, Harold sharpens and shapes his slipstone on an India stone to make the slipstone's edge fit into the V.



A slipstone with a fine point helps you deburr the inside edge of a V-tool.

- The inside of the V should have some roundness, so slightly round over the outside of the V on a fine India stone to match the inside as shown below.



Gently round the outside of the V on a fine India stone, so it matches the roundness on the inside of the V.



To polish the inside surface of a V-tool, pull it along the strop's edge.

- To polish the inside surfaces of the V-tool, stroke it along the edge of a strop as shown above.

Buying guide:

- **Zam polishing compound.** One 1-pound tube, \$7 ppd. Laughlin Woodcarving Supply, Route 6, Box 147, Harrison, AR 72601. Call 501/741-4757.

- **Two-sided India stone.** One 8x2x1" coarse/fine stone, item No. 08M04.01, \$19.95 plus postage. Garrett Wade, 161 Avenue of the Americas, New York, NY 10013. Call 800/221-2942. (All types of sharpening accessories available. Call 212/807-1155 for information.)

A turning that's heaven scent

PEWTER-TOPPED POTPOURRI BOWL

Here's a project that makes scents. Turn this stylish bowl and fill it with potpourri—a fragrant mixture of flowers, herbs, and spices. Then, top it off with a rich-looking pewter lid. It's a project that not only looks great, it freshens the air, too.



Attach an auxiliary faceplate of $\frac{3}{4}$ "-thick scrapwood to a 3" faceplate. Draw diagonal lines to locate the center on the back of a $3 \times 6 \times 6$ " bowl blank. Then, scribe a 3"-diameter circle (or one the size of your faceplate) and a 6"-diameter circle around the center. Bandsaw around the larger circle. Then, glue the faceplate to the workpiece inside the smaller circle, and mount it on your lathe.

Transfer the template *below right* to cardboard, and cut it out. With your $\frac{3}{8}$ " gouge, turn the blank to $5\frac{1}{4}$ " diameter, and then to the profile. Square the edges of the raised band. To form the grooves, lay the parting tool flat on the rest, and then gently touch the turning with the point. Cut just deep enough to leave a shallow groove—about $\frac{1}{16}$ ".

Now, burn in the grooves. Firmly tie each end of a 12" length of wire, such as single-strand picture-hanging wire, to a piece of dowel. With the lathe running, press the stretched wire into each groove.

Next, hollow out the bowl with your gouge. Before cutting the rabbet in the top, measure the lid. "They're all hand-cast lids. They can vary, and sometimes they aren't perfectly round," explains Darryl Nish of Craft Supplies USA. "Turners need to make the hole fit the lid they have."

Sand with progressively finer sandpaper, from 100 to 320 grit. Spray on three or four coats of lacquer, rubbing with 000 steel wool between coats. Part from the lathe, and finish the bottom. Apply paste wax and buff. 🍷

Project supplies

We used the following tools and supplies:

Stock

Walnut bowl-turning blank, $3 \times 6 \times 6$ "

Lathe tools

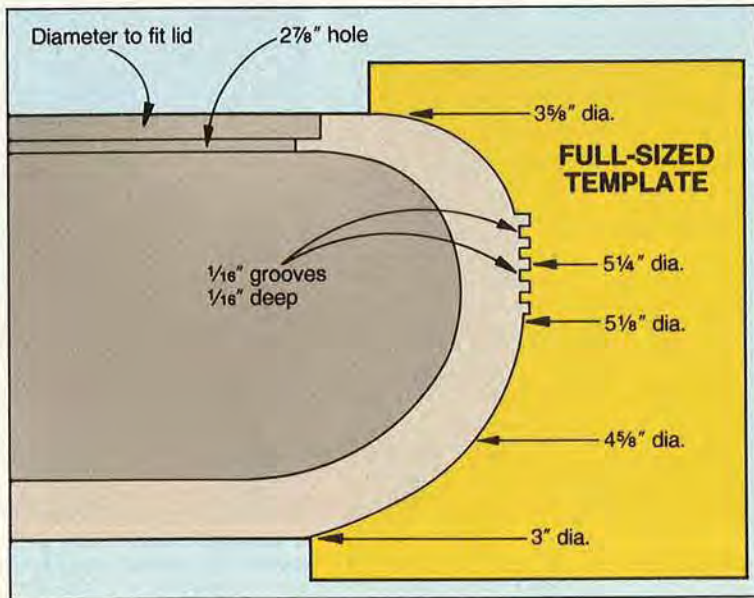
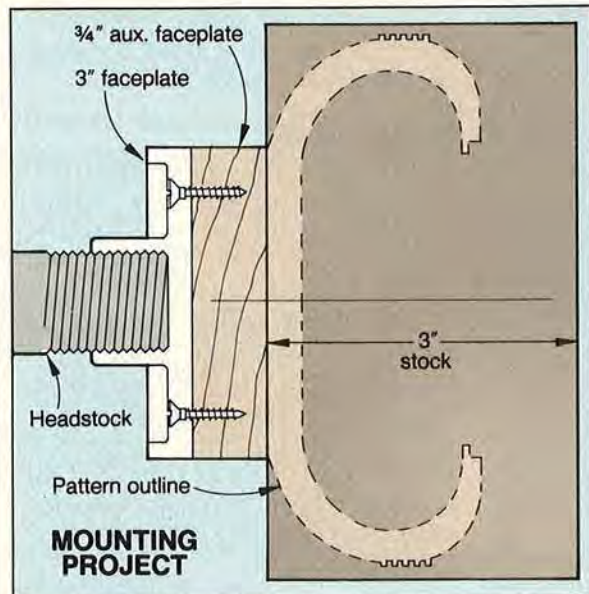
3" faceplate with scrapwood auxiliary faceplate
 $\frac{3}{8}$ " gouge
 $\frac{1}{4}$ " roundnose
 $\frac{1}{8}$ " parting tool

Lathe speeds

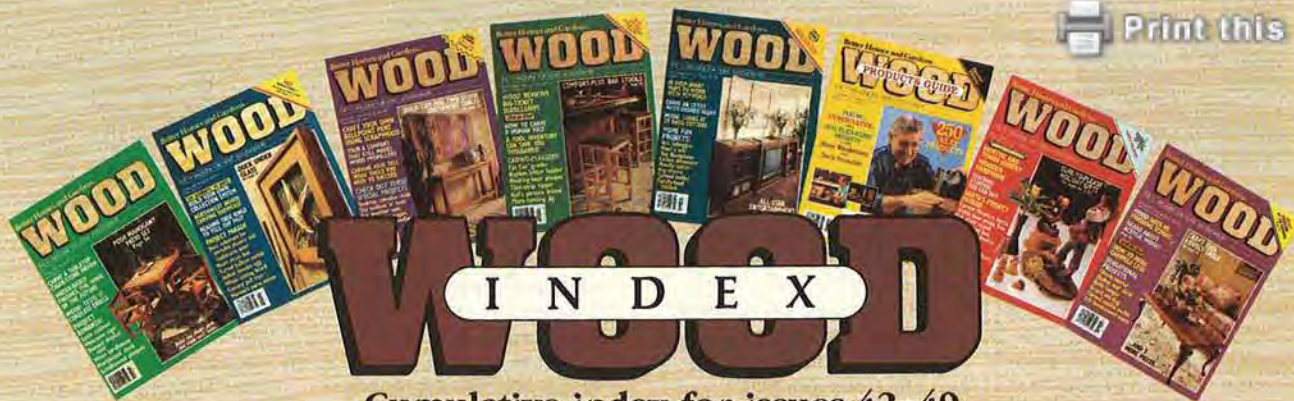
Roughing:
 600-900 rpm
 Finishing and sanding:
 1,200-1,500 rpm

Buying guide

Lid, potpourri. Pewter hummingbird-design lid, \$9.95 ppd. in U.S. Add \$2 for 1 oz. potpourri. Craft Supplies USA, 1287 E. 1120 S., Provo, UT 84601, 801/373-0917.



Project Design: C. L. Gatzke Illustrations: Kim Downing; Mike Henry Photograph: Wm. Hopkins



Cumulative index for issues 42-49

If you save back issues of WOOD® magazine, this index will help you quickly find articles in issues 42-49. We kept it simple. For instance, after the listing "Balloon mobile," you'll find the numbers 43:50-52. This means the article appears in issue 43, pages 50-52. The project in-

dex is on page xx. The index for issues 1-8 appeared in issue 9 (February 1986), 9-16 in issue 17 (June 1987), 17-24 in issue 25 (October 1988), 25-32 in issue 34 (April 1990), and 33-41 in issue 43 (June 1991). A cumulative index for issues 1-30 is available for \$4.95 (Canada, \$5.95).

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PEDESTAL-SIZED CURIO SHOWCASE

If you've been searching for a great-looking cabinet that allows you to show off a prized collection in style, look no further. Our unit, which we designed to match a larger, taller one featured in the October 1988 issue, page 60, has a surprising amount of dust-free storage inside. And the cabinet is just the right height to use as a pedestal for a piece of sculpture, a flower arrangement, or any number of eye-catching decorative accents.

Start with the four frames

1 From $\frac{3}{4}$ " cherry, cut the side, back, and door frame stiles and rails (A,B,C,D,E) to the sizes listed in the Bill of Materials.

2 Dry-clamp each frame as shown on the Side Frames drawing. Make marks for a pair of dowel holes at each glue joint where dimensioned on the Dowel Location drawing. Remove the clamps.

3 With a doweling jig for alignment, drill $\frac{3}{8}$ " holes $1\frac{1}{16}$ " deep at each joint where marked.

Note: When working with cherry, or any other wood, for that matter, immediately remove excess glue to prevent light-colored marks from appearing after staining. We wiped off all the glue squeeze-out with a damp cloth after clamping.

Continued



CURIO SHOWCASE

4 Glue, dowel, and clamp the side frames, back frame, and door, checking for square.

5 Mark the centerpoints, and drill the $\frac{1}{4}$ " shelf holes $\frac{5}{16}$ " deep where dimensioned on the Side Frames drawing.

Now, build the top frame and bottom panel

1 Cut two pieces of $\frac{3}{4}$ " cherry to 2×60 ". Using a dado blade and your tablesaw, cut a $\frac{1}{4}$ " rabbet $\frac{1}{4}$ " deep along the top inside edge of each strip.

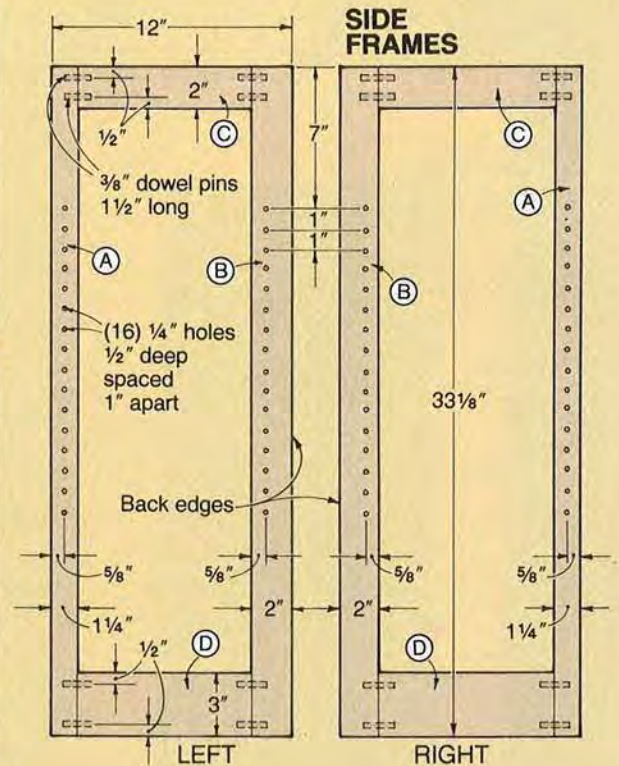
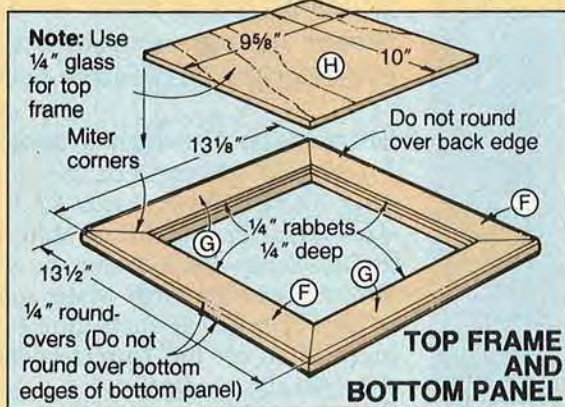
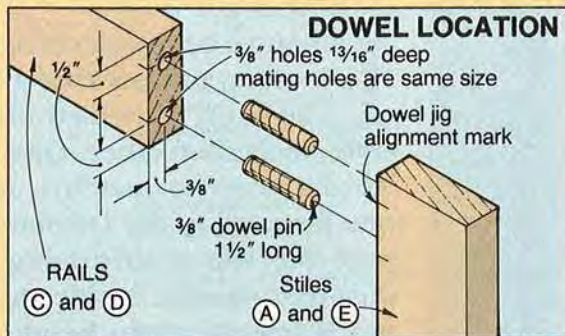
2 Miter-cut the fronts and backs (F) and sides (G) to the lengths specified in the Bill of Materials from the 2"-wide strips.

3 Using band clamps or a four-corner framing clamp, glue and clamp each frame together, checking for square. Later, remove the clamps, and sand both frames.

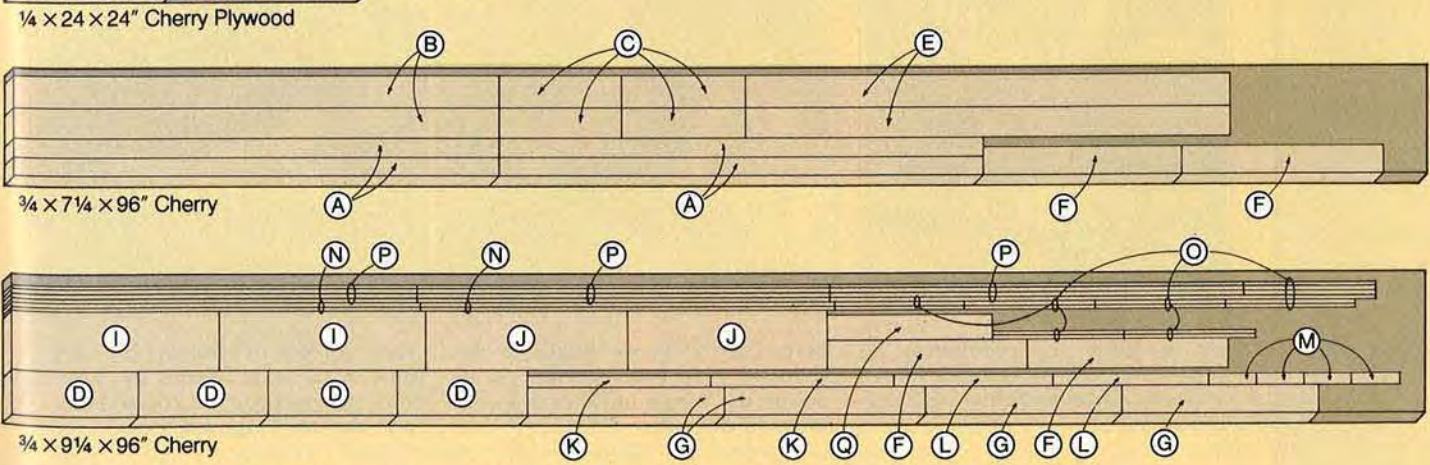
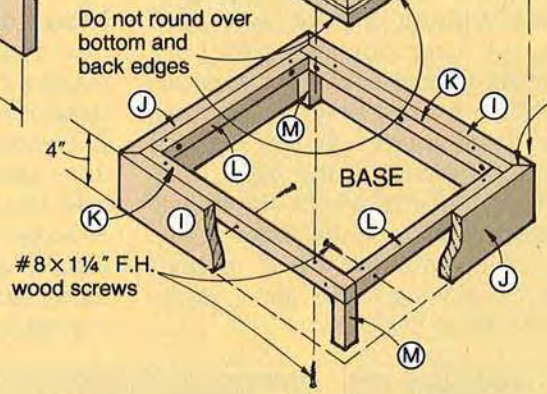
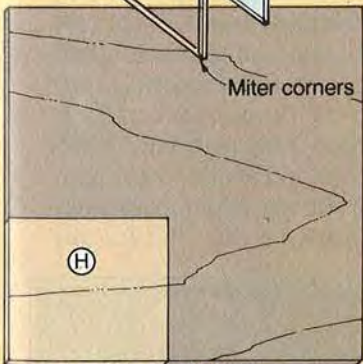
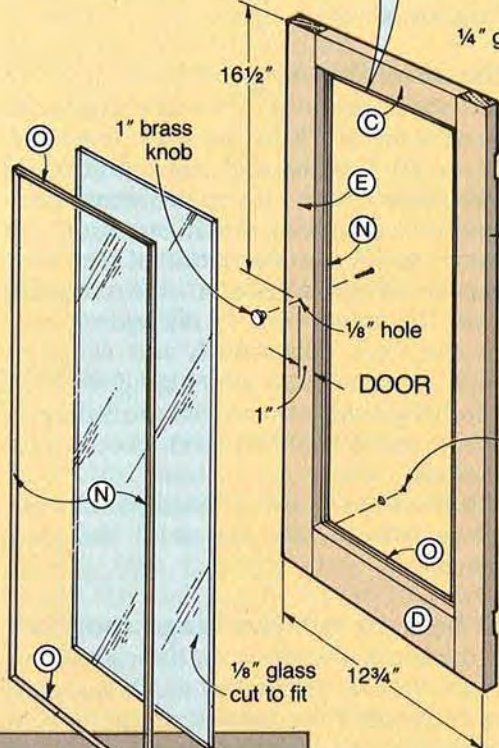
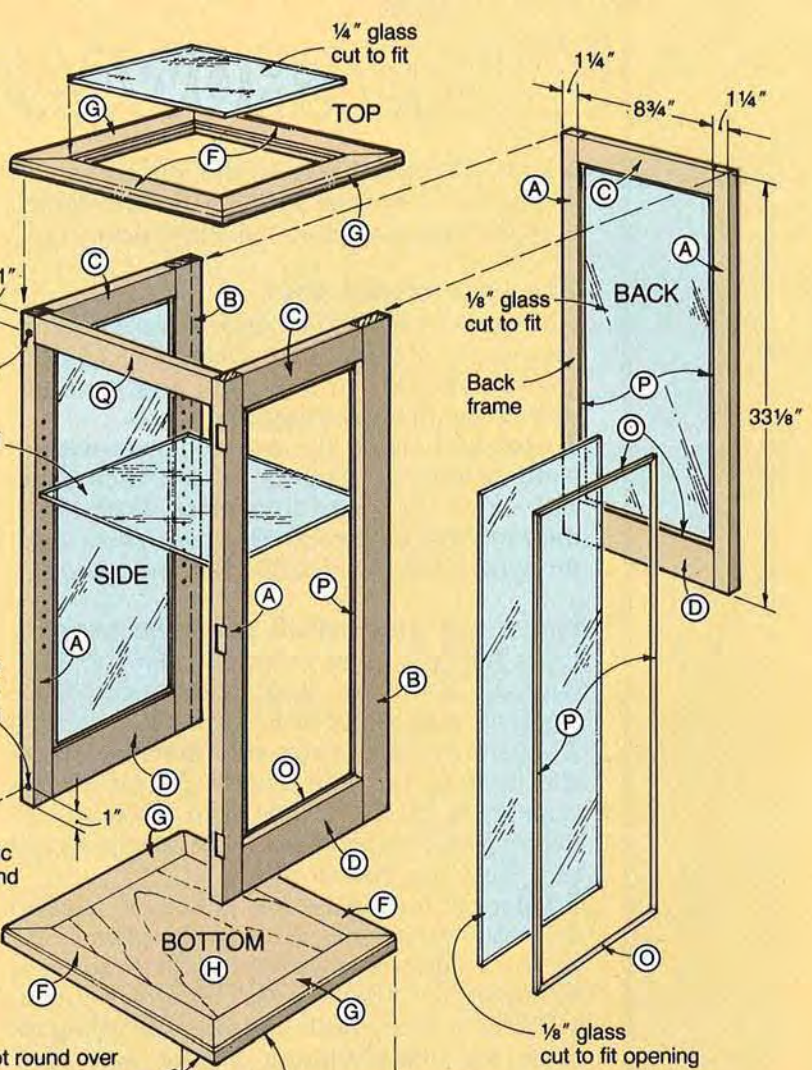
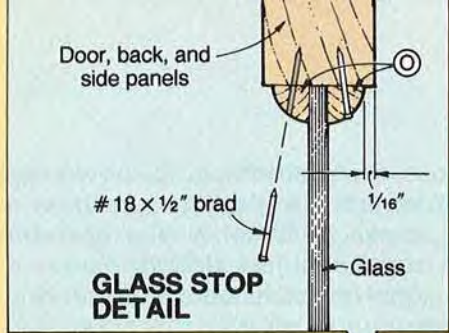
4 Measure the rabbeted opening in the bottom panel, and cut the insert panel (H) from $\frac{1}{4}$ " cherry plywood.

5 Glue and clamp the insert in place in the bottom frame.

Continued



Bill of Materials												
Part	Finished Size			Material	Qty.	Part	Finished Size			Material	Qty.	
	T	W	L				T	W	L			
SIDE FRAMES, BACK FRAME, AND DOOR					BASE						<p>*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.</p> <p>Supplies: $\frac{3}{8}$" dowel pins $1\frac{1}{2}$" long, #8 $\times 1\frac{1}{4}$" flathead wood screws, 3-$1\frac{3}{8} \times 2$" brass hinges with 12 #4 $\times \frac{1}{2}$" flathead brass wood screws, #18 $\times \frac{1}{2}$" brads, 1" brass knob, two round magnetic catches and two strikes, $\frac{1}{8}$" glass, $\frac{1}{4}$" glass (for top frame), shelf clips.</p>	
A	$\frac{3}{4}$ "	$1\frac{1}{4}$ "	$33\frac{1}{8}$ "	cherry	4	J	$\frac{3}{4}$ "	4"	$13\frac{3}{8}$ "	cherry		2
B	$\frac{3}{4}$ "	2"	$33\frac{1}{8}$ "	cherry	2	K	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$12\frac{1}{2}$ "	cherry		2
C	$\frac{3}{4}$ "	2"	$8\frac{3}{4}$ "	cherry	4	L	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$10\frac{3}{8}$ "	cherry		2
D	$\frac{3}{4}$ "	3"	$8\frac{3}{4}$ "	cherry	4	M	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$3\frac{1}{4}$ "	cherry		4
E	$\frac{3}{4}$ "	2"	33"	cherry	2	GLASS STOPS AND BACK						
TOP FRAME AND BOTTOM PANEL					N*	$\frac{1}{4}$ "	$\frac{1}{4}$ "	28"	cherry	4		
F*	$\frac{3}{4}$ "	2"	$13\frac{1}{2}$ "	cherry	4	O*	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$8\frac{3}{4}$ "	cherry		16
G*	$\frac{3}{4}$ "	2"	$13\frac{1}{8}$ "	cherry	4	P*	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$28\frac{1}{8}$ "	cherry		12
H	$\frac{1}{4}$ "	$9\frac{5}{8}$ "	10"	cherry plywood	1	TOP RAIL						
						Q	$\frac{3}{4}$ "	$1\frac{1}{4}$ "	$11\frac{1}{4}$ "	cherry	1	



CURIO SHOWCASE

6 Rout $\frac{1}{4}$ " round-overs on the framed panels where noted on the Top and Bottom Panel drawing and the Exploded View drawing.

The base comes next

1 Miter-cut the base exterior parts (I, J) to size. Now, cut the base cleats (K, L) and glue blocks (M) to size. Drill and counter-sink screw holes through the cleats.

2 Glue and clamp the exterior parts with a band clamp, checking for square. Then, glue and screw the cleats into place, flush with the top edge of the exterior base parts. Add the glue blocks, and sand the base smooth.

Next, cut and install the glass stops

1 Cut four pieces of $\frac{3}{4}$ "-thick cherry to $1\frac{1}{2}$ " wide by 36" long. Rout a $\frac{1}{4}$ " round-over along all four edges of each piece.

2 As shown in the two-step drawing *opposite, middle*, cut four quarter-round cherry stops from each $1\frac{1}{2} \times 36$ " strip. (We used a follow block to prevent kickback when cutting the long, thin stops.)

3 Miter-cut the glass stops (N,O,P) to length.

4 To drill pilot holes through the glass stops for the brads, start by snipping the head off a 4d finish nail. (Since a $\frac{1}{16}$ " bit won't chuck securely in many drills and because trying to drive the brads without a pilot hole may cause splitting, we made our own pilot bit.)

5 Chuck the headless nail into your portable drill. Turn the drill on, and hold the rotating nail against a drum sander or disc sander and decrease the diameter of the nail to the same diameter as the brad where shown on the drawing *opposite, top*. Then, sharpen the point. Use the drill and "pilot bit" to drill the angled holes through the glass stops. Space the holes about 7" apart.

6 Construct the positioning jig shown *opposite, bottom left*. Use the jig to position the stops as shown in Photo A. Tap brads into place in the holes just drilled. Fasten the *outside* stops on each side frame and the front stops on both the door and back frames. Set the brads and putty the holes. (You'll use the remaining stops later when installing the glass.)

Let the assembly begin

1 Cut the top front rail (Q) to size. Then, cut a piece of scrap stock to the same length.

2 Glue the back frame and top rail (Q) between the side frames. Insert the scrap spacer between the bottom front corners of the side frames to prevent distortion. *Check that the top and bottom edges of all the pieces are flush and the inside corners are square.*

3 With the back edges flush and centered from side to side, glue and clamp the top frame and the bottom panel to the side and back frame assembly. Wipe off excess glue with a damp cloth.

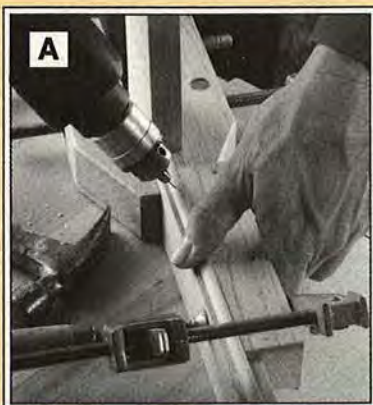
4 Clamp the base to the bottom panel, centered from side to side and with the back edges flush.

Here's how to cut the hinge mortises

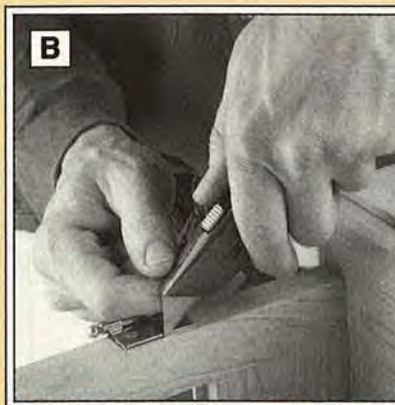
1 Mark the hinge locations on the right-hand side frame where shown on the Hinge and Mortise drawing. (The middle hinge is centered from top to bottom.)

2 Position the hinges on the marked outlines, mark the screw hole centerpoints, and drill the pilot holes.

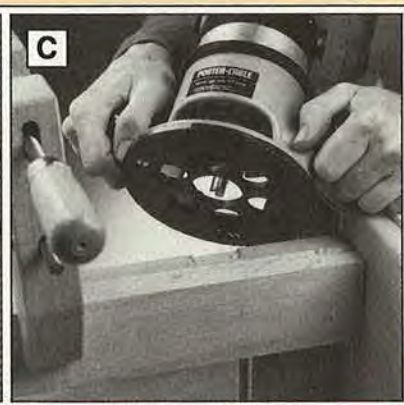
3 Screw the three brass hinges to the side frame, and score their outlines into the frame stile (A) where shown in Photo B. Remove the hinges.



Use the glass stop positioning jig to position the glass stops. Then, drill pilot holes and brad the stops into place.



Screw the 2" brass hinges to the cabinet side frame stile. Next, scribe the hinge outlines into the front of the stile.



Clamp a piece of scrapwood to the front of the side frames for additional support for the router base, and rout the hinge mortises.

4 Chuck a $\frac{1}{4}$ " or $\frac{3}{8}$ " straight bit into your router. Clamp a piece of scrap stock to the inside edge to the side frame, making sure to keep the top edges of the scrap stock and frame flush. The scrap stock helps support and level the router when routing the hinge mortise. Next, rout three $\frac{1}{16}$ "-deep mortises just inside the scribed lines as shown in Photo C. Use a sharp chisel to finish cutting to the scribed outlines.

5 Clamp the door in position in the cabinet front opening with an equal gap ($\frac{1}{16}$ ") at the top and bottom of the door. Transfer the hinge locations to the door. Remove the door from the cabinet, and finish marking the hinge outlines. Using the routing and chiseling method just described, rout $\frac{1}{16}$ "-deep mortises on the back side of the door frame stile (E).

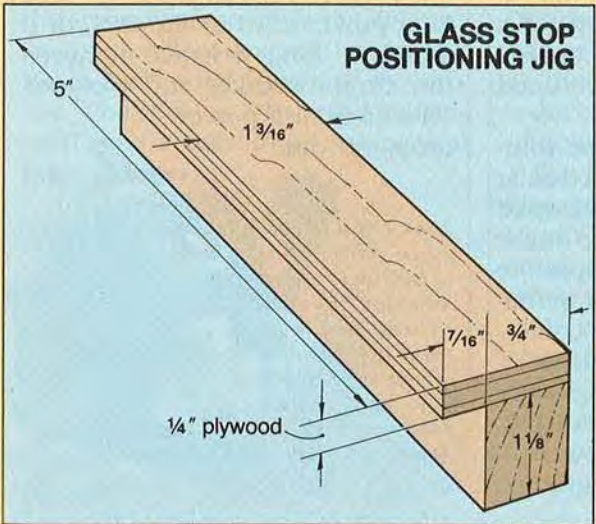
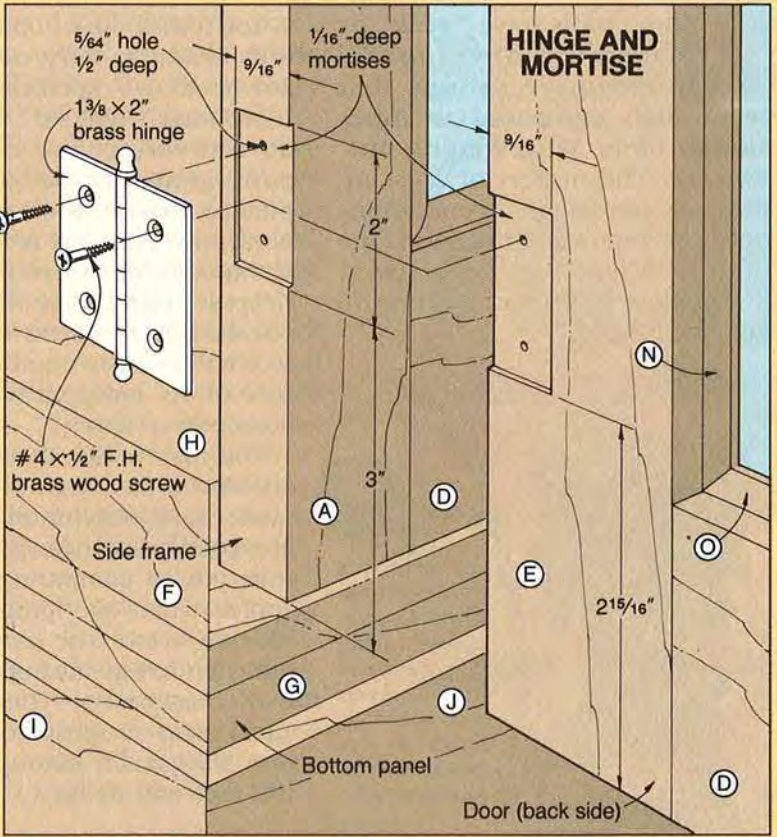
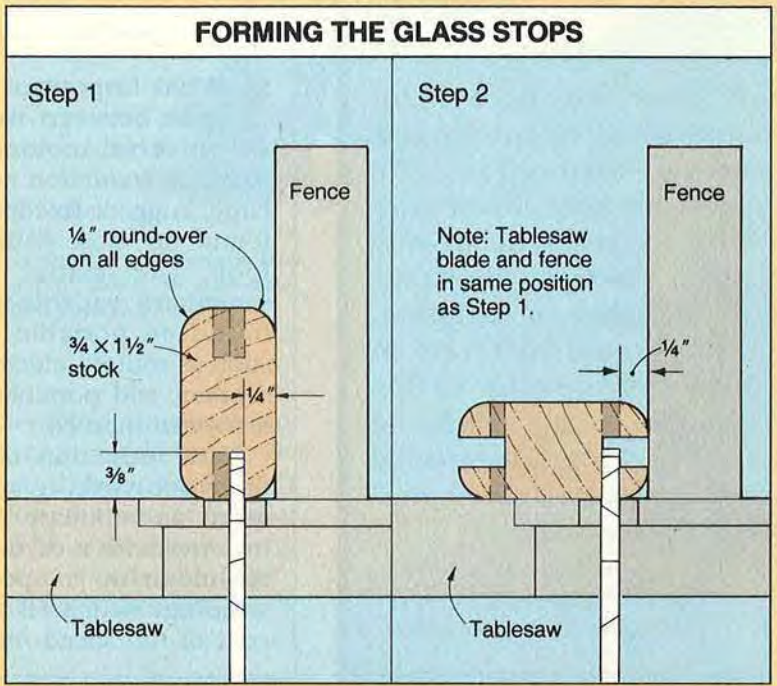
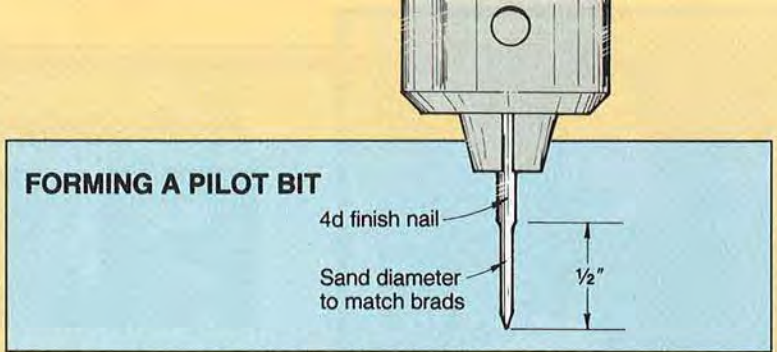
Finishing up your cabinet

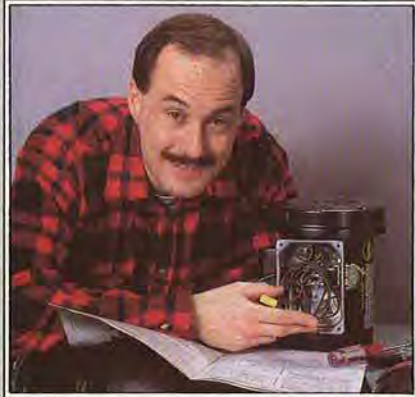
1 Carefully measure the openings in the side and back frames and door. Then, install the shelf clips, and measure the distance between the clips for the glass shelves. Order glass cut to fit the openings and for the shelves. (We had the glass pieces for the frames cut $\frac{1}{16}$ " less in length and width to allow for movement of the wood.)

2 Locate and drill the door-knob holes where shown on the Exploded View.

3 Remove the hardware from the cabinet and door. Mask off both sides of the glass. Stain the cabinet and doors if desired (we left ours natural), and apply the finish.

4 Fasten the knob to the door. Attach the door to the cabinet. Then, add the magnetic catches and strike plates to the door and side-frame stile. Set the top piece of glass in the rabbet, and add the glass shelves.





Ask your woodworking friends about electricity and motors, and you'll be amazed by how much confusion exists. One of our readers, electrical engineer Gene Holladay of Audubon, Pennsylvania, offered to help us clear up some of this confusion. In this article, he answers four commonly asked questions about motors. Thanks Gene!

Bill Kier

Products/Techniques Editor

The woodworker's survival ELECTRIC

What important differences exist between induction and universal motors?

Answer: Induction motors are the large, rugged, fixed-speed motors found on most stationary power tools. The smaller, lighter, and sometimes variable-speed motors found on portable power tools such as routers, electric drills, belt sanders, and portable planers, are universal motors.

Most induction motors found on woodworking machines require an auxiliary start-winding in series with a capacitor to bring the motor up to speed. The start windings switch off at 70–80 percent of full speed. Induction mo-

tors operate on alternating current (AC) only, at a fixed voltage (either 115 or 230 volts) and a fixed speed (1,725 rpm for a four-pole motor and 3,450 rpm for a two-pole motor). Induction motors maintain their speed over a wide range of loads, but will stall if heavily overloaded. Changing speeds usually requires some mechanical means, such as pulleys. An example of this would be a drill press or lathe, both of which require that you change belt positions between its pulleys to change speeds.

A universal motor gets its name from its ability to operate on either AC or direct current (DC), al-

2 Some tools have “peak” or maximum-developed” horsepower ratings that seem high compared to other similar tools. What’s going on?

Answer: The makers of most induction motors list “continuous-duty” horsepower. This means the motor will deliver its claimed horsepower hour after hour without overheating.

You'll find peak horsepower ratings listed mostly on portable power tools, especially so-called “consumer” models. These ratings do not reflect the continuous power output of the tool. You can push a power tool to its peak horsepower for no more than 20 seconds or so before it overheats. Keep in mind that the continuous-duty horsepower rating for a tool will be only one-third to one-half of its maximum-developed horsepower rating.

You may notice that some routers, and a few brands of circular saws, have maximum-developed horsepower ratings. Just to make sure you're comparing apples to apples when shopping for portable power tools, be sure to compare amperage ratings rather than horsepower. The amperage rating roughly translates into how much cutting power the tool will deliver.

3 Do I gain any significant advantages by wiring an induction motor for 230 volts rather than 115 volts?

Answer: You should wire any induction motor with 2 horsepower or more to a 230-volt line. It also may make sense to wire induction motors of less than 2 horsepower for 230 volts if you need to run a long power cord to the tool, or if there's a long distance between the circuit breaker and the tool. That's because power drops off over



A motor's continuous-duty horsepower rating can be one-half or even one-third as high as its peak horsepower.



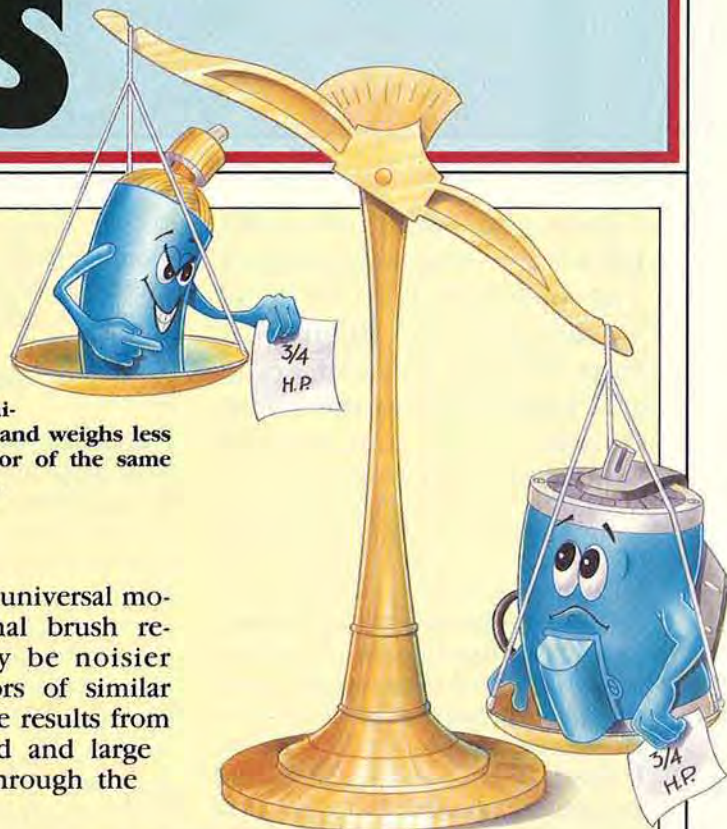
guide to understanding MOTORS

though those with internal variable-speed control usually operate only on AC. These motors have a high starting torque, so the motor accelerates rapidly without an auxiliary start-winding and capacitor.

The speed of universal motors varies depending on the voltage applied and the work load. Under no-load conditions (such as a free-spinning router before it engages a workpiece) motor speeds reach up to about 25,000 rpm. Under a load (when removing or cutting wood, for example) the speed will drop. Because of these high speeds, universal motors are smaller and lighter for a given horsepower compared to induction motors.

Because of its higher operating speeds, a universal motor is smaller and weighs less than an induction motor of the same continuous horsepower.

On the other hand, universal motors require occasional brush replacement, and may be noisier than induction motors of similar horsepower. The noise results from the high motor speed and large volume of air flow through the motor and fan.



distance—a phenomenon electricians call line loss.

A motor will develop the same horsepower whether it's wired for 115 volts or 230 volts, but at 230 volts it will operate with half as much line current. The reason: watts equal volts times amps. If you double the voltage, only half the amps (or current) are required for the same wattage (power). So lower line current means lower line losses and more power to the motor. That's why electric utilities send power over long distances at high voltages.

Because of lower line losses, 230-volt motors have more power available to them than 115-volt motors. Keep this in mind if you must locate your power tool a long distance from your service panel.

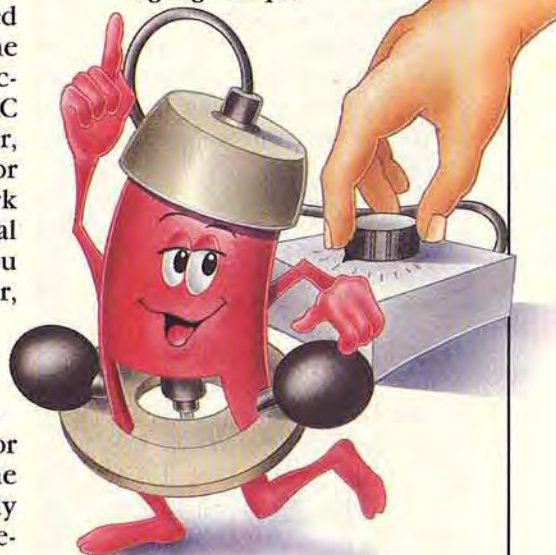


4 How do electronic variable-speed controls work, and why do they only work with universal motors?

Answer: Electronic variable-speed controls switch the voltage to the motor on and off 60 times per second, in effect converting the AC voltage to DC voltage. (Remember, universal motors operate on AC or DC, but induction motors work only with AC.) As you turn the dial of the variable-speed control, you reduce the voltage to the motor, which reduces operating speed.

Electronic speed controls also give you the advantage of electronic feedback. This feature increases the current to the motor when you apply a work load to the tool, keeping the speed relatively constant. Nonelectronic speed reducers, such as rheostats, do not have this feedback characteristic, so the speed drops off rapidly when you apply a load to the tool. ♣

With an electronic variable-speed control, you can operate a router at a lower speed while maintaining high torque.



Illustrations: Mike Henry
Photograph: John Hetherington



CLASSIC

A STUNNING STAND

I think you'll find our pedestal a very adaptable project. The painted pine version works great for displaying your favorite piece of art or as a plant stand in the home. Outside, turn it into a stylish sundial support.

A. R. Downing
Design
Editor

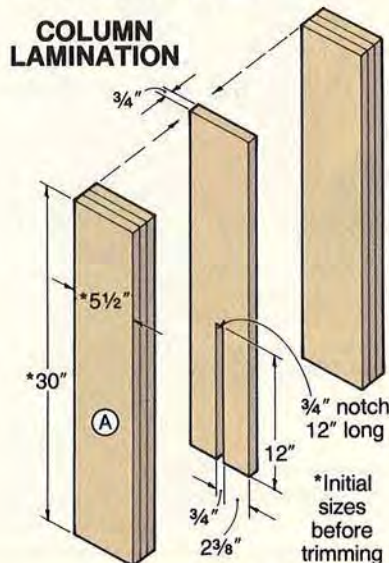
Form the laminated column

Note: For outdoor use as a sundial stand, use slow-set epoxy or try the new Titebond II glue listed in the Buying Guide.

1 From $\frac{3}{4}$ "-thick white pine (we purchased kiln-dried 1×8s), cut seven pieces to $5\frac{1}{2} \times 30$ " for the column pieces (A).

2 Select one piece for the center, and cut a $\frac{3}{4} \times 12$ " notch where shown below. Glue and clamp the column pieces face-to-face with the edges and ends flush.

3 Scrape the excess glue from both edges of the lamination, and plane or joint $\frac{1}{8}$ " from both edges so the lamination is $5\frac{1}{4}$ " square.



4 Tilt your tablesaw blade 45° from vertical, and bevel-rip the edges of the lamination where shown in the drawing on the opposite page. Crosscut both ends for a $29\frac{3}{4}$ " finished length.

Add the molding and top and bottom

1 Using the dimensions on the Exploded View drawing, cut the top and bottom pieces (B) to shape. (We edge-joined narrower stock to achieve the $9\frac{1}{2}$ " width, and cut the piece to shape on the bandsaw.) Rout a $\frac{1}{2}$ " round-over along the edges of each. Bore a $\frac{7}{8}$ " hole centered in the bottom piece.

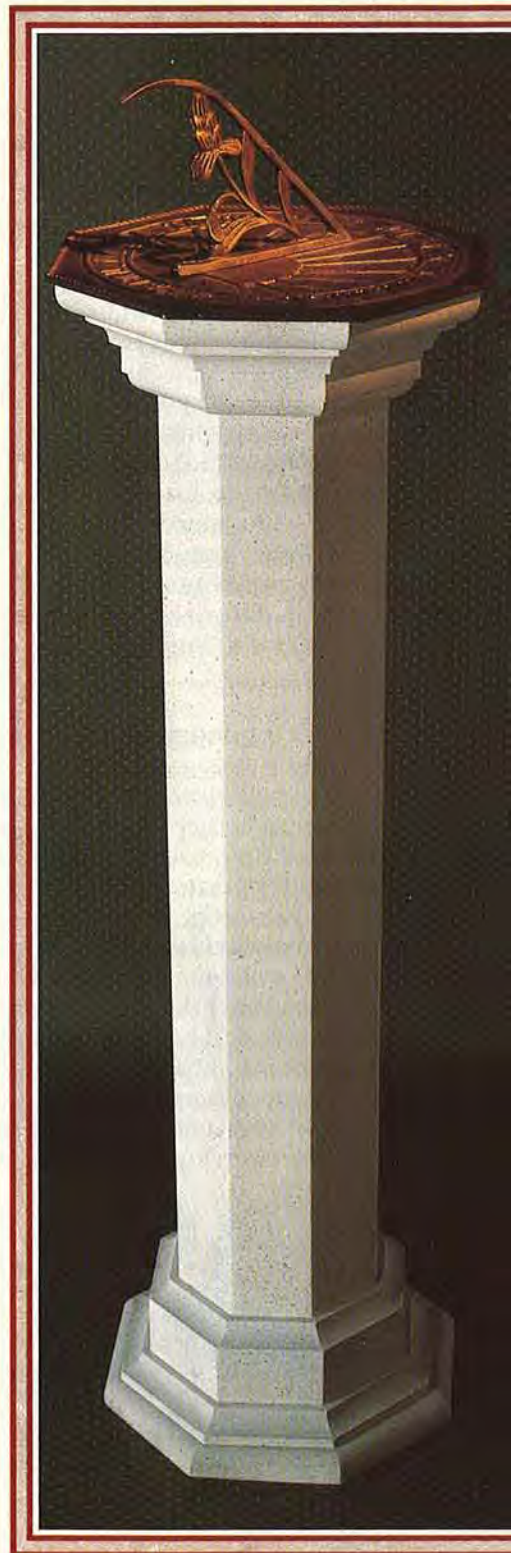
2 Center, glue, and nail the top and bottom pieces to the column.

3 Cut a piece of $\frac{3}{4}$ " stock to 3×30 " for the lower molding parts C. Rout a $\frac{1}{2}$ " cove along one edge of the strip.

4 Using a stop for consistent lengths, miter-cut to length eight molding pieces (C) at 22.5° . (Before miter-cutting the trim pieces, we miter-cut a piece of $\frac{3}{4}$ " scrap, and held it in position against the column to check the length.) Glue and nail the pieces to the column where shown on the Exploded View drawing and accompanying Lower Trim detail.

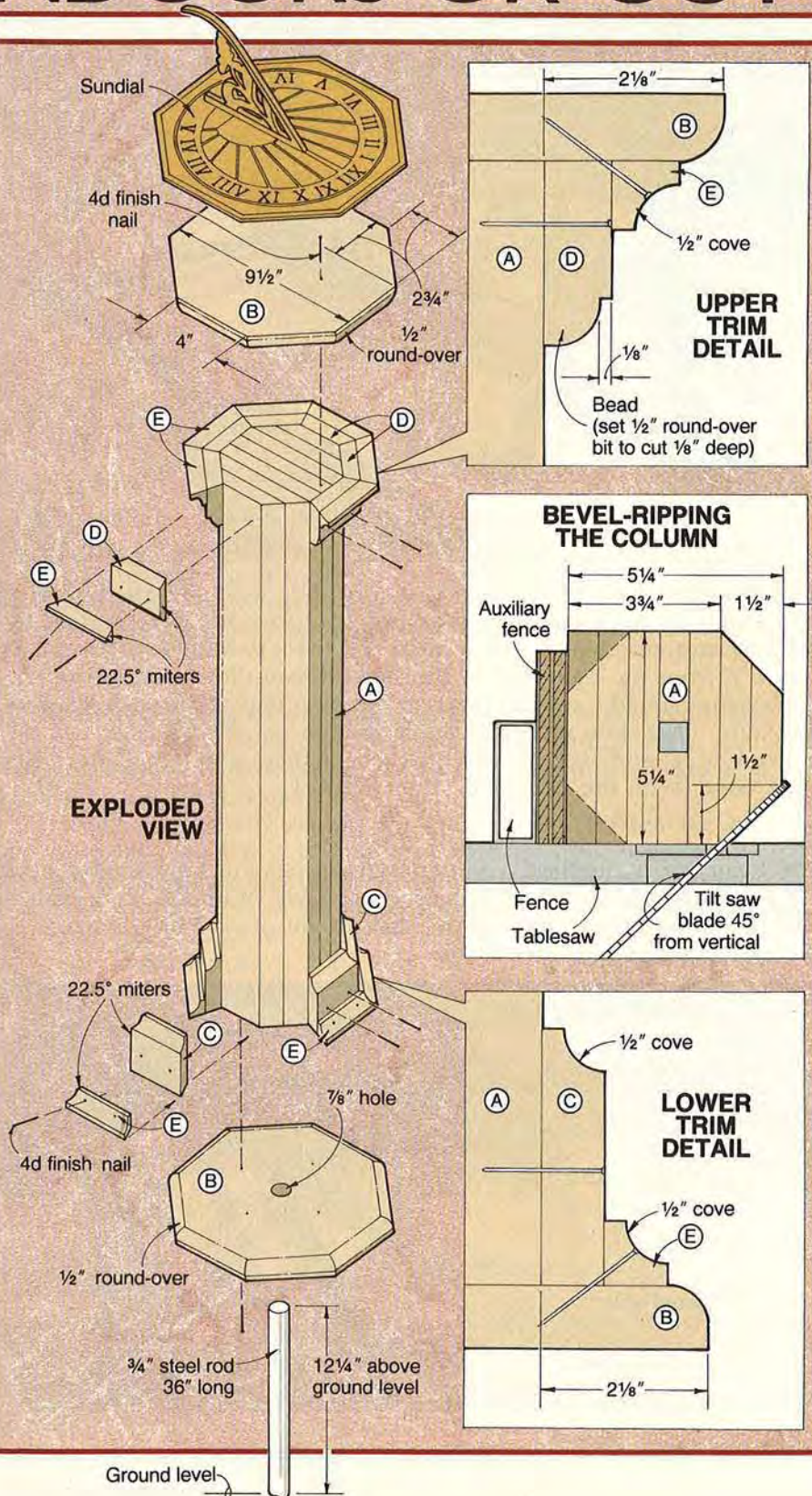
5 Cut a second piece of $\frac{3}{4}$ " stock to 2×30 " for the upper molding parts D. Rout a $\frac{1}{2}$ " bead along one edge of the strip. Miter-cut the pieces (D) to length. Glue and nail them in place.

6 Cut two pieces of $\frac{3}{4}$ " stock to 2×32 " for the coved molding pieces (E). Rout a $\frac{1}{2}$ " cove along both edges of each strip. Next, rip two $\frac{3}{4}$ "-wide pieces from each 2" strip. Miter-cut the pieces (E) to length, and glue and nail them to the column assembly.



COLUMN

INDOORS OR OUT



Sand and finish

1 Set the nails and fill the holes with putty. Sand smooth.

2 Paint the column (including the top and bottom surfaces) with two coats of primer. Finally, paint the entire column as desired.

3 To use the pedestal with the sundial, run a bead of caulk 1" in from the edge on the bottom of the sundial. Center the sundial on the top piece. Drive a 3/4" steel rod 36" long into the ground so 12 1/4" protrudes. You could also cement the rod in place. Position the column on the rod, and rotate the column/sundial assembly as described in the instructions supplied with the sundial.

Bill of Materials

Part	Finished Size			Material	Qty.
	T	W	L		
A*	5 1/4"	5 1/4"	29 3/4"	lam. pine	1
B*	3/4"	9 1/2"	9 1/2"	pine	2
C*	3/4"	3"	21 3/16"	pine	8
D*	3/4"	2"	21 3/16"	pine	8
E*	3/4"	3/4"	37 1/16"	pine	16

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Supplies: 3/4"-diameter solid steel rod 36" long, 4d finish nails, primer, paint.

Buying Guide

• **10" brass sundial.** no. 28852, \$23.98 ppd. For a 16 oz. bottle of Titebond II water-resistant glue, no. 35766, add \$4.99 (plus 3.99 shipping if ordered separately). Or, order both for \$29.97 ppd. Leichtung Workshops, Dept. P140, 4944 Commerce Parkway, Cleveland, OH 44128-5985. Or call 800/464-6764 to order. 🌿

Photographs: John Hetherington

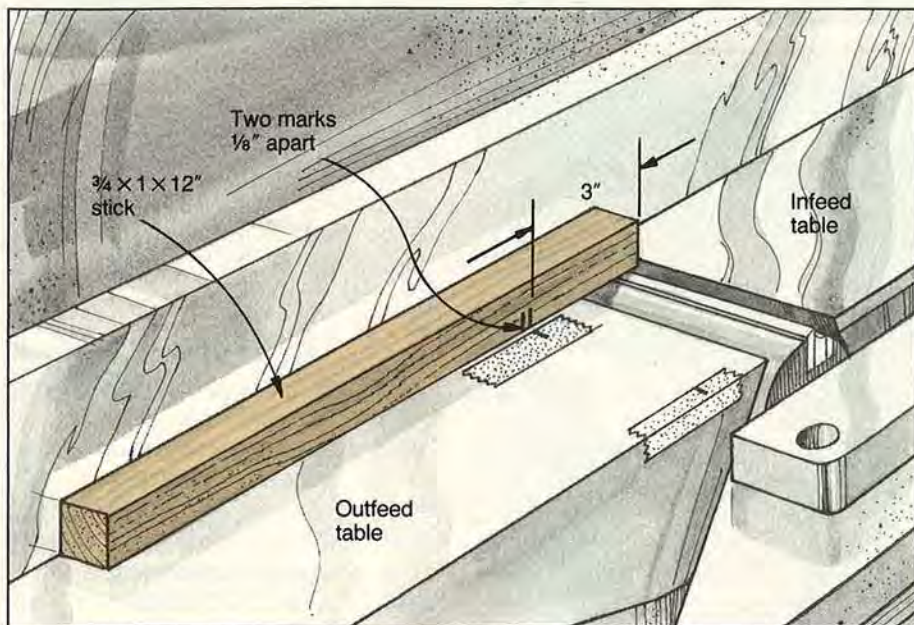
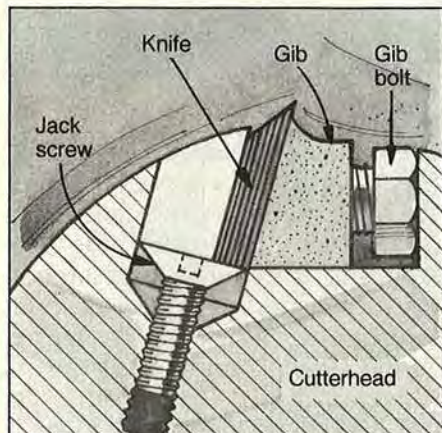
Illustrations: Kim Downing; Bill Zaun

HOW TO INSTALL JOINTER

To properly install jointer knives, all you need is a small wooden stick and a little patience. Here's the goof-proof method we use in the **WOOD®** magazine shop.

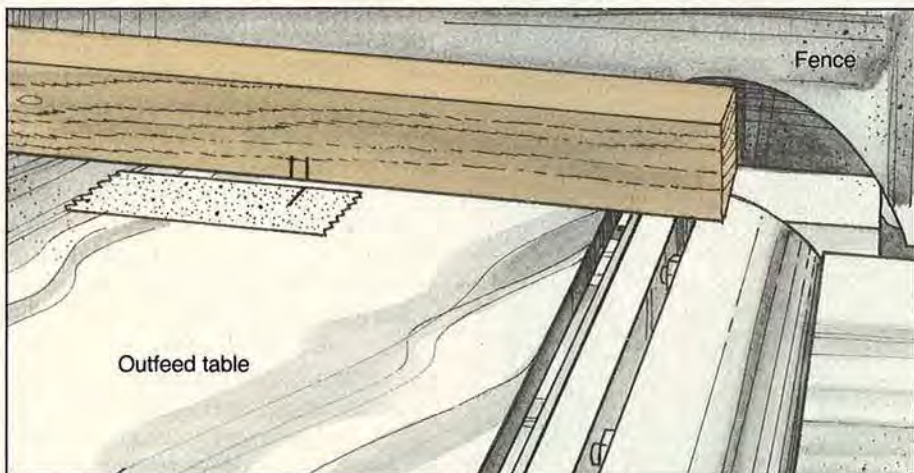
Note: This system works well with jointers that have jackscrews for raising the knives. A few jointers use springs in place of the jackscrews, and with these we advise you to follow the manufacturer's knife-setting instructions. If the machine has no jackscrews or springs for raising the knives, you'll need to use a pair of long magnets to hold the knife edge flush with the outfeed table. Remember to always unplug your jointer before performing any maintenance procedures on it.

With a solvent-dampened cloth, clean all pitch and other residue from each knife, gib, and gib bolt (see illustration below). Insert all of the parts for one knife into the cutterhead, and adjust the infeed table so it's about $\frac{1}{4}$ " lower than the outfeed table. Tighten the gib bolts just enough to hold the blade and allow the jackscrews to still work.

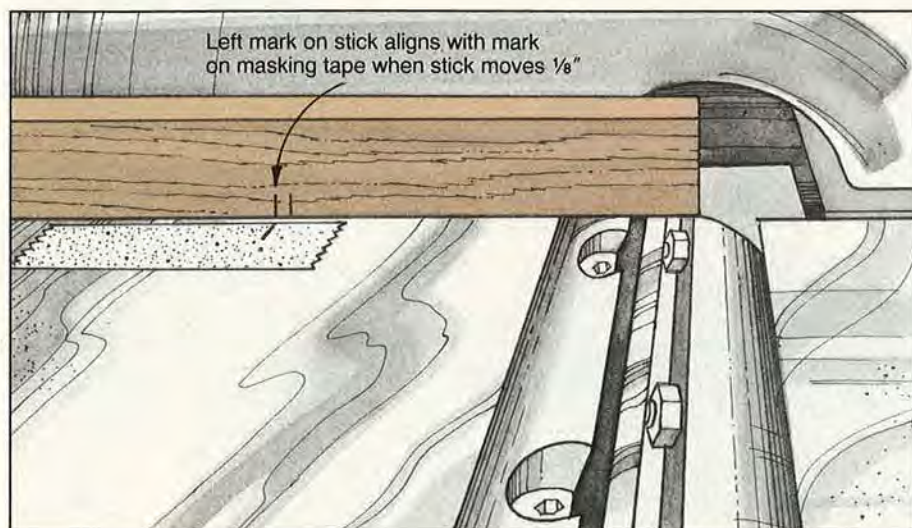


2 Make a $\frac{3}{4} \times 1 \times 12$ " hardwood stick with at least one trued surface. Using the drawing above as your guide, place the trued surface on the outfeed table of your jointer, and mark two lines $\frac{1}{8}$ " apart and about 3" from the right end of the stick. Rotate the cutterhead so the knife stands straight up, and position the right end of the stick just past the knife. Place two pieces of masking tape on opposite sides of the outfeed table, and mark a line on each of them about $2\frac{1}{2}$ " from the knife edge (with the knife still at top center).

3 Rotate the cutterhead counterclockwise so the knife's edge goes clearly below the edge of the outfeed table. With the stick against the jointer's fence, line up the stick's right mark with the mark on the masking tape as shown below.



KNIVES

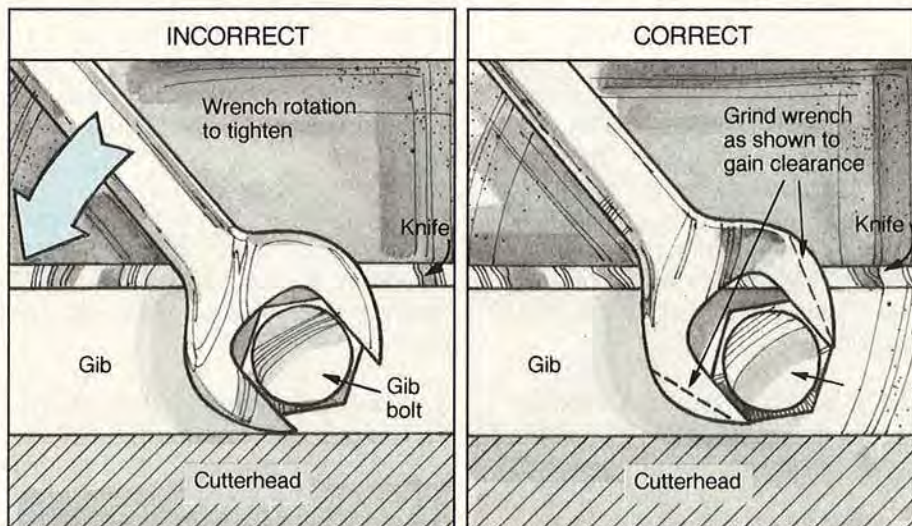


4 Rotate the cutterhead clockwise about a quarter-turn (so the knife travels from the outfeed table toward the infeed table). If you have the knife at the proper height, it will move the stick $\frac{1}{8}$ " as shown *above*. If the stick moves *less* than $\frac{1}{8}$ ", you need to raise the knife. If the stick moves *more* than $\frac{1}{8}$ ", lower the knife.

5 Raise the far end of the knife to the correct height, gently tighten the gib bolt at the far end, and recheck the knife's height. To make sure that the knife is resting atop the jackscrew, push down on the knife with a softwood block.

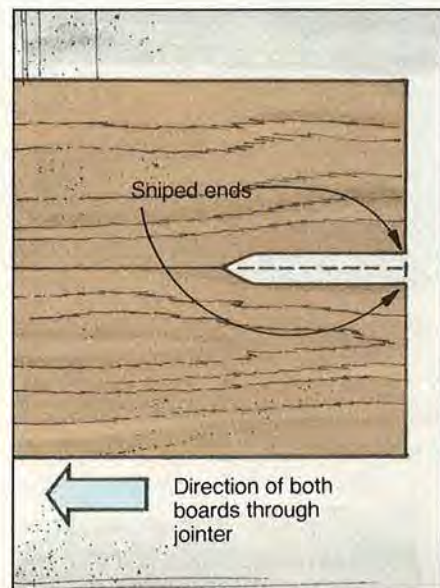
To avoid accidentally raising the knife as you tighten the bolt, as shown in the "incorrect" illustration *below*, try these strategies:

- Grind the jaws of your bolt-tightening wrench as shown *below*.
- Do not slip the jaws of the wrench completely down onto the bolt.



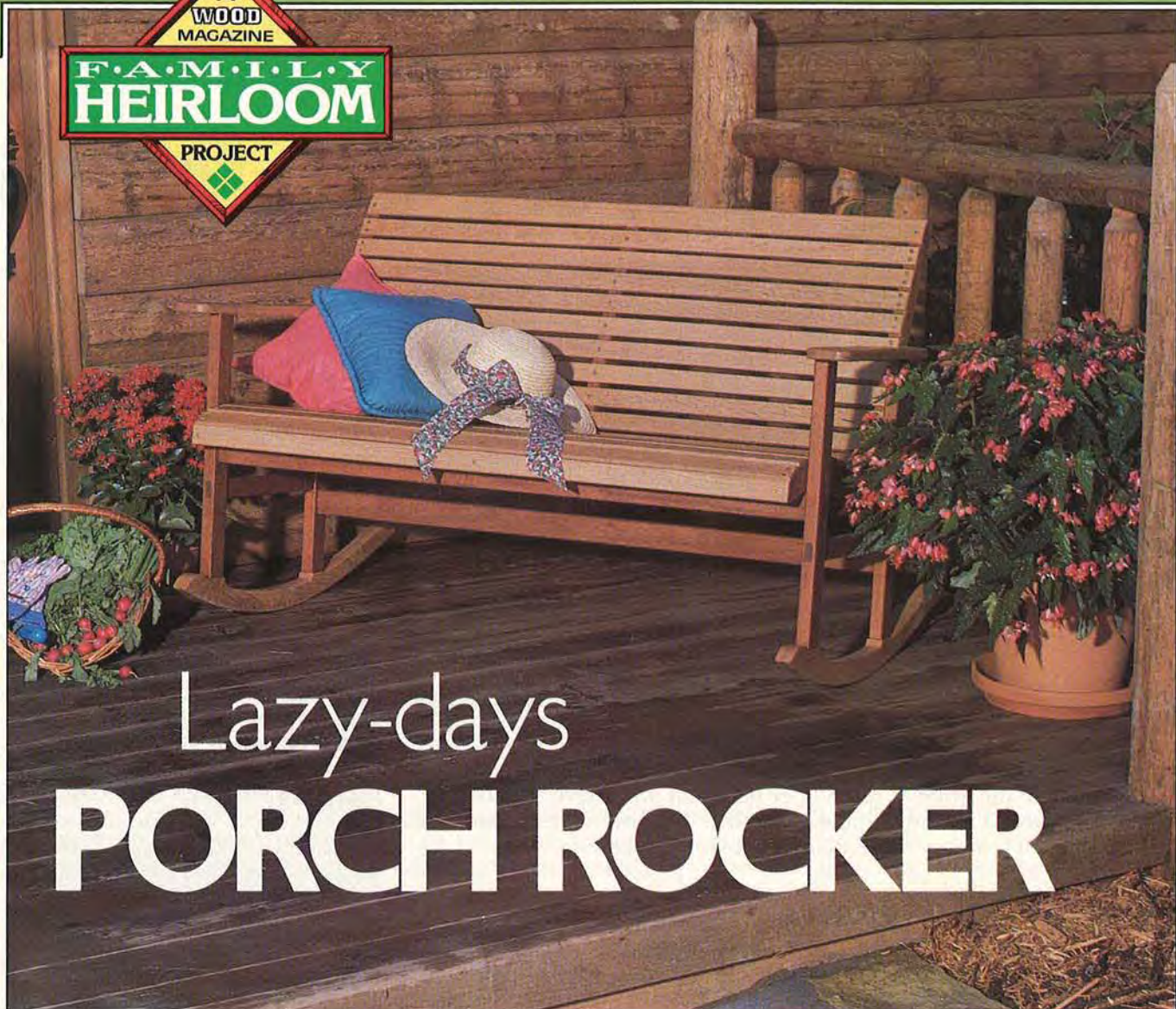
6 Now, repeat the previous procedure at the opposite end of the knife. With both ends adjusted correctly, tighten the gib bolts. Recheck the height of the knife at both of its ends. If you're like us, you'll probably have to repeat these procedures several times before you get the knife adjusted properly. Be patient. We've spent as long as 15 minutes on one knife.

Repeat these adjustments for the other knife(s) in the cutterhead. As a final check, joint an edge on two boards and place the edges against each other. This will magnify any sniping at the ends of the boards as shown *below*.



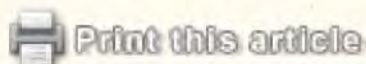
Sniping results from the knives being too high. Under these circumstances, the jointer knives remove extra material at the end of every pass. If you spot any sniping, and feel that it will cause you to waste too much wood, you'll have to lower the knives. 🍷

Written by Bill Krier
Illustrations: Kim Downing; Jim Stevenson



Lazy-days PORCH ROCKER

After a hard day's work, what could be more relaxing than sitting back with a tall glass of lemonade in this sturdy, attractive porch rocker? We contoured the seat and back for maximum comfort. For the wood parts, we chose weather-resistant white oak and mahogany so the rocker can be used outdoors.



Note: For your convenience, we'll supply you with full-sized patterns for the rocker and seat supports. Or, if you just can't wait to get started, enlarge the gridded patterns shown on the opposite page. To receive the full-sized patterns, send \$2 and a 7½ × 10½" self-addressed envelope with two 29¢ stamps attached to Porch Rocker Patterns, WOOD® magazine, P.O. Box 11454, Des Moines, IA 50336-1454. (Foreign readers: Please include an international reply coupon.)

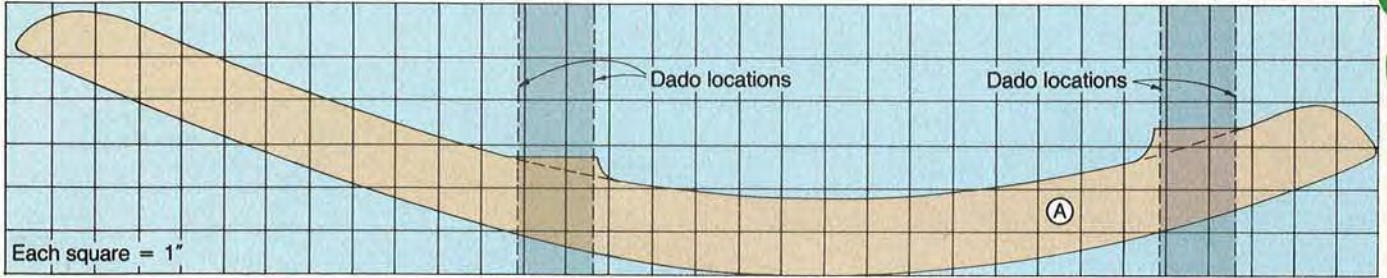
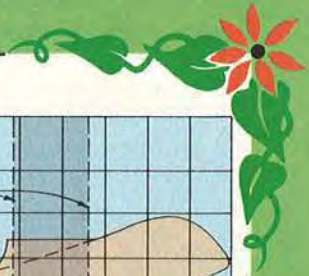
Let's begin with the rocker

1 Cut four pieces of ¾" white oak to 6¼" wide by 32" long for the rocker blanks (A). Plane or resaw each piece to ⅝" thick.

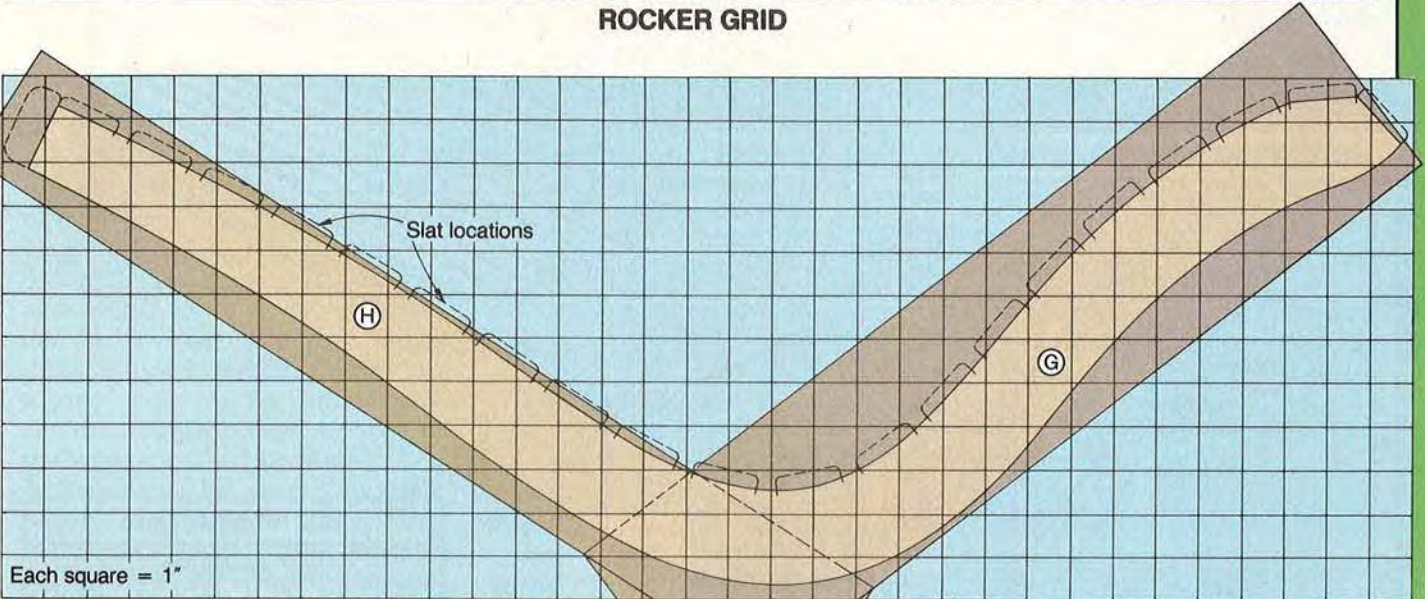
2 Using the dimensions on the Rocker Lamination drawing, mark the dado locations on each rocker blank. Cut the dados. (We attached an auxiliary fence to our miter gauge, and clamped a stop to the fence to ensure the dados were consistently positioned from blank to blank.)

Note: So your porch rocker can stand up to the elements, construct the rocker using Titebond II water-resistant glue, slow-set epoxy, or resorcinol.

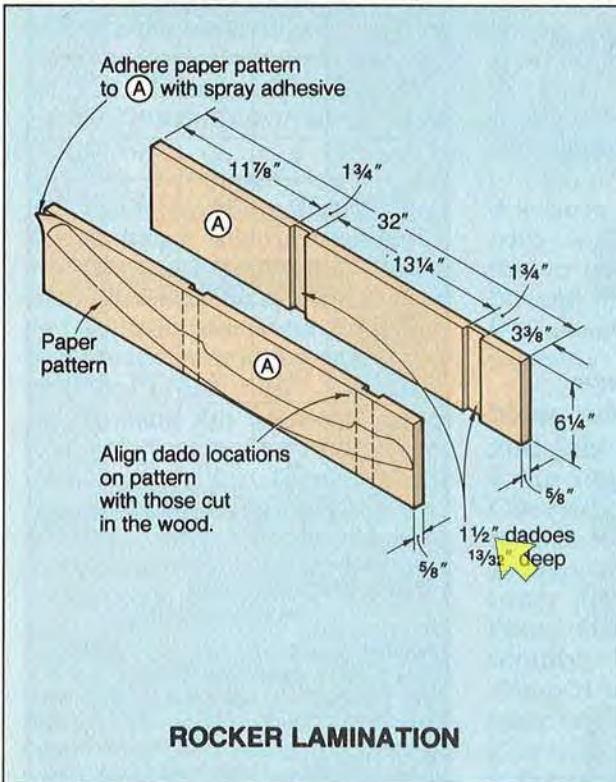
3 Glue the mating rocker blanks (A) face-to-face, with the dados aligned and the ends and edges flush. Immediately remove glue squeeze-out from the mortises.



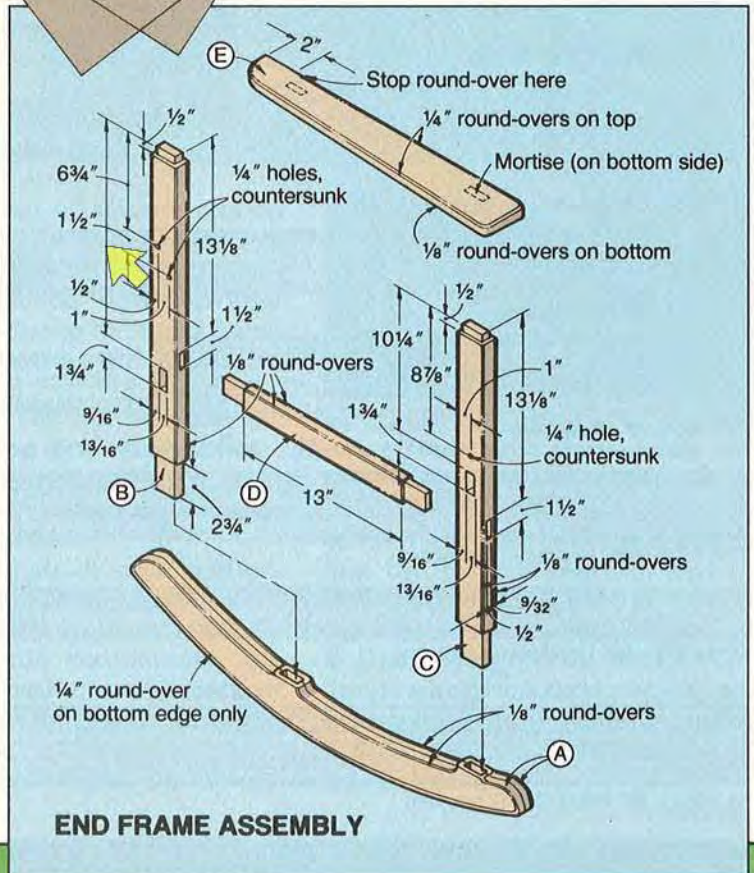
ROCKER GRID



SEAT SUPPORT GRID

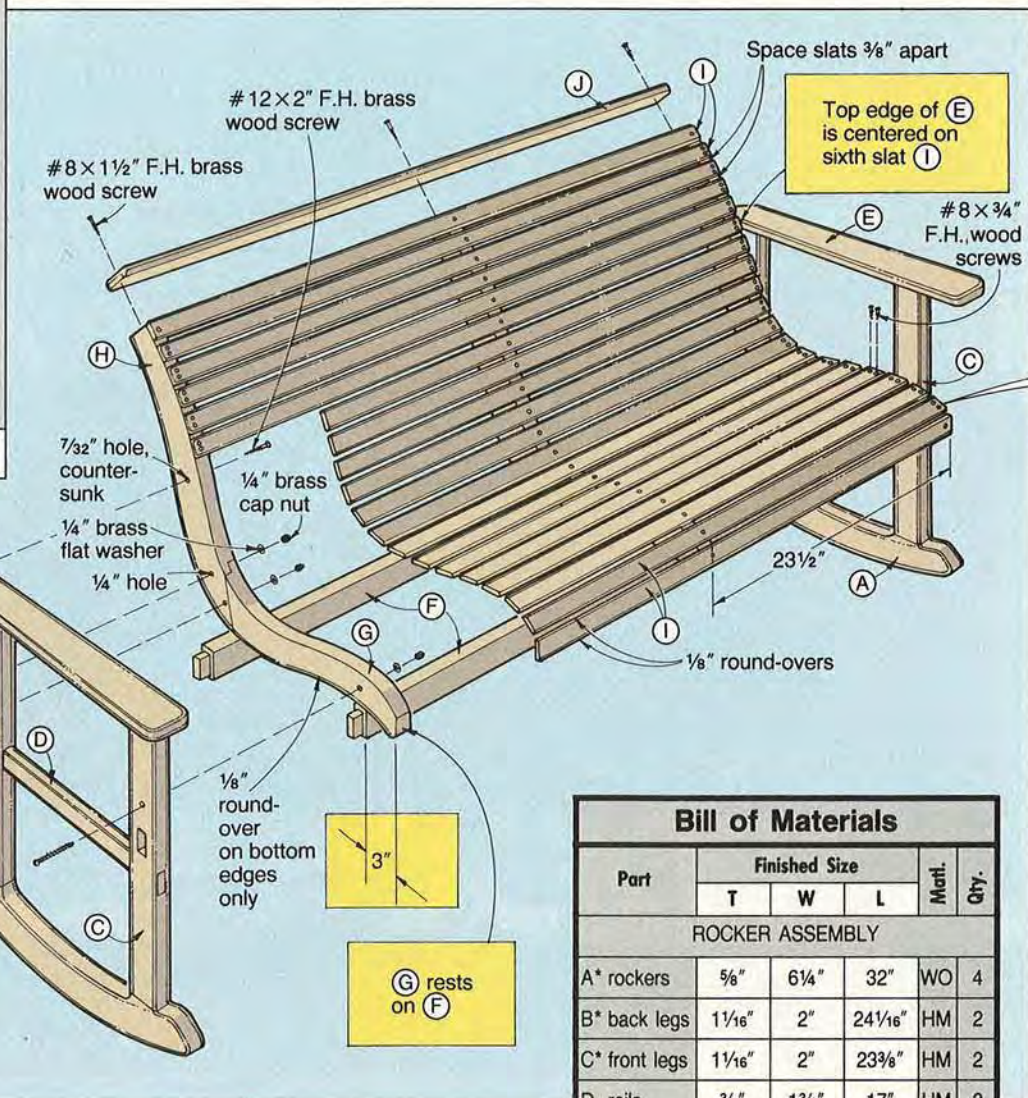
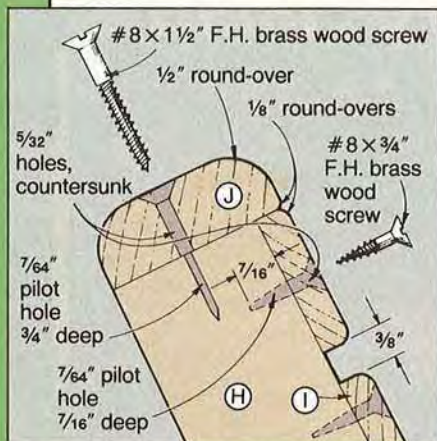


ROCKER LAMINATION

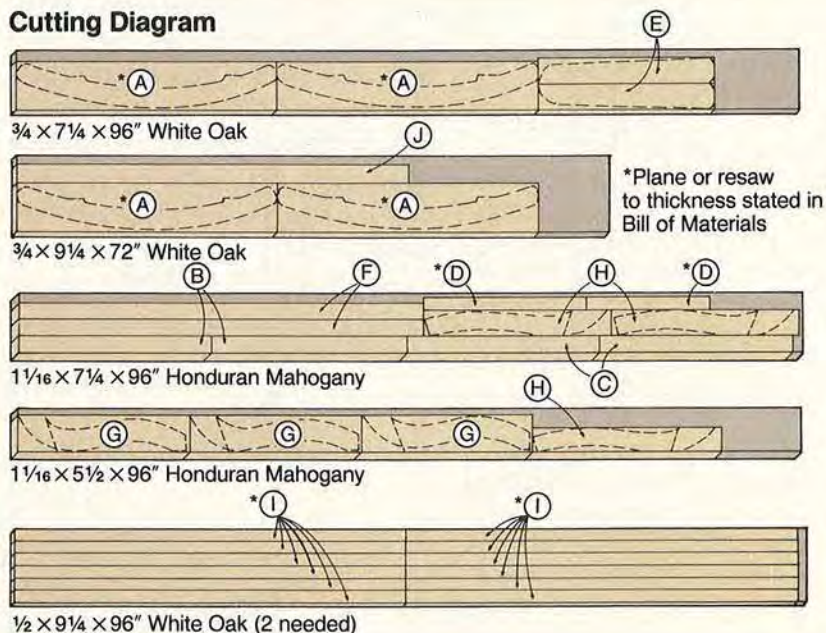


END FRAME ASSEMBLY

PORCH ROCKER



Cutting Diagram



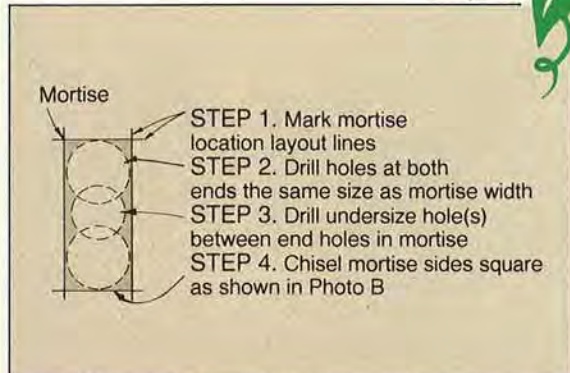
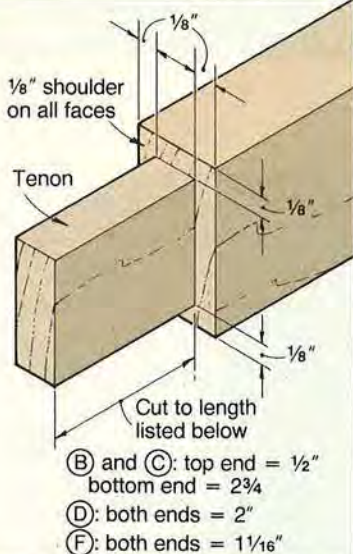
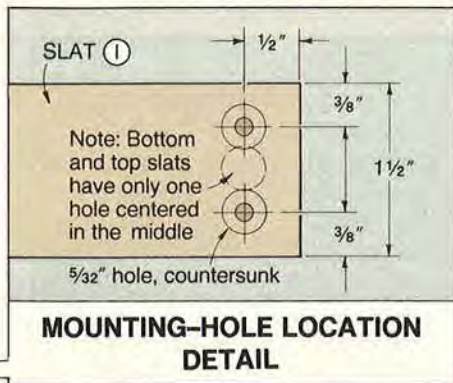
Bill of Materials

Part	Finished Size			Mati.	Qty.
	T	W	L		
ROCKER ASSEMBLY					
A* rockers	5/8"	6 1/4"	32"	WO	4
B* back legs	1 1/16"	2"	24 1/16"	HM	2
C* front legs	1 1/16"	2"	23 3/8"	HM	2
D rails	3/4"	1 3/4"	17"	HM	2
E armrests	3/4"	3 1/4"	21 1/4"	WO	2
F stretchers	1 1/16"	2"	50 1/8"	HM	2
SEAT ASSEMBLY					
G* bottom supports	1 1/16"	4 3/4"	21"	HM	3
H* back supports	1 1/16"	3"	23"	HM	3
I* slats	5/16"	1 1/2"	48"	WO	20
J top slat	3/4"	1 15/16"	48"	WO	1

*Dimensions given are initial thickness, length, and width.

Material Key: WO—white oak, HM—Honduras mahogany

Supplies: double-faced tape, spray adhesive, 6-1/4 x 2 1/2" flathead brass machine screws with 1/4" brass flat washers and 1/4" brass cap nuts, #8 x 3/4" flathead brass wood screws, 3-#8 x 1 1/2" flathead brass wood screws, 2-#12 x 2" flathead brass wood screws, clear exterior finish.



4 Using double-faced tape, stick the two rocker blanks together face-to-face, with the edges and ends flush.

5 Transfer the Rocker Grid pattern to a 6 x 32" piece of paper (or order our full-sized patterns). Using spray adhesive, adhere the pattern to one of the rocker laminations, aligning the dados on the pattern with those cut in the wood.

6 Bandsaw the taped-together rocker laminations to shape. Sand the rocker edges flush. Separate the rockers, and remove the tape.

Next, complete the end-frame assemblies

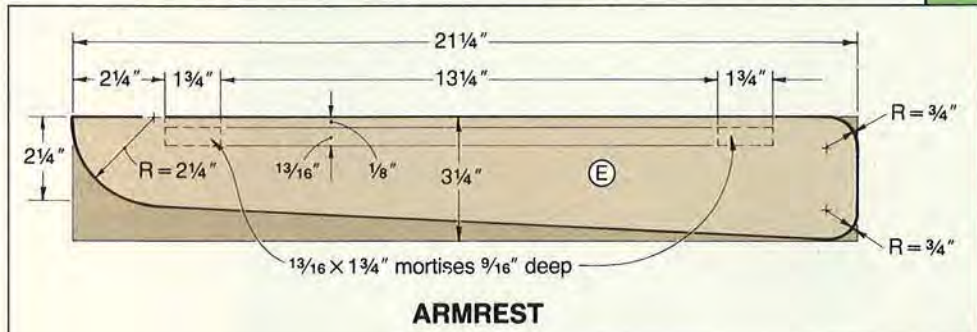
1 From 1 1/16" Honduras mahogany, cut the legs (B, C) to size. From 3/4" mahogany, cut the rails (D) to size.

2 Using the dimensions on the End Frame Assembly drawing and the drawings titled Forming the Mortises and Forming the Tenons, carefully mark the mortise, tenon, and hole locations on each leg. Next, mark the tenon locations on each end of the rails.

3 Following the four-step procedure on the drawings right above, form the mortises. Then, cut tenons on the legs and rails.

4 For securing the seat assembly to the end frames later, drill and countersink a pair of 1/4" holes in each back leg (B) and one in each front leg (C).

5 Cut two armrest blanks (E) to 3 1/4 x 21 1/4" from 3/4"-thick white oak. Using the Armrest drawing for reference, transfer the pattern



to one of the pieces. Next, using the method described earlier, tape the armrests together, cut to shape, sand the edges smooth, separate the armrests, and remove the tape.

6 Mark the location for a pair of 9/16" deep mortises on the bottom of each armrest.

7 Rout 1/8" and 1/4" round-overs on parts A, B, C, D, and E where shown on the End Frame Assembly and Exploded View drawings.

8 Glue and clamp each end frame assembly, checking for square.

Now, add the stretchers, and join the end assemblies

1 Cut the stretchers (F) to size. Cut 1 1/16"-long tenons on the ends of each stretcher.

2 Glue the pair of stretchers between the end frames as shown in Photo A. (To ensure that the assembly would stay square, we clamped square corner braces in place and left them there until the glue dried.)

3 Position an armrest on the top



We used 90° corner braces to hold the rocker frame pieces square while the glue dried.

of each end assembly, and verify that the marked mortises match the tenon locations on the top of the legs. Re-mark if necessary.

4 Drill overlapping holes 9/16" deep where marked. Then, as shown in Photo B, chisel the mortise sides square, and finish forming the mortise.

Continued

PORCH ROCKER



After drilling the holes, use a mallet and chisel to finish shaping the armrest mortises.

5 Glue an armrest to the top of each end-frame assembly. Sand the rocker assembly smooth.

And now for the slat-support assemblies

1 Rip and crosscut three pieces of $1\frac{1}{16}$ " mahogany stock to $4\frac{3}{4} \times 21$ " for the bottom-slat supports (G) and three pieces to 3×23 " for back-slat supports (H).

2 Using the Slat Support drawing for reference, mark the location of the half-lap joint on one end of each slat support (G, H).

3 Mount a $\frac{3}{4}$ "-wide dado blade to your tablesaw. Elevate the blade to cut exactly half the thickness of

your stock. (We used scrap the same thickness as the supports, and made test cuts to verify blade height.) Angle the miter gauge 20° from center. Cut a half-lap on one end of each of the six slat supports where shown on the drawing above.

4 Dry-clip the three supports (one G and one H per support) to check the fit. Glue and clamp each of the three supports.

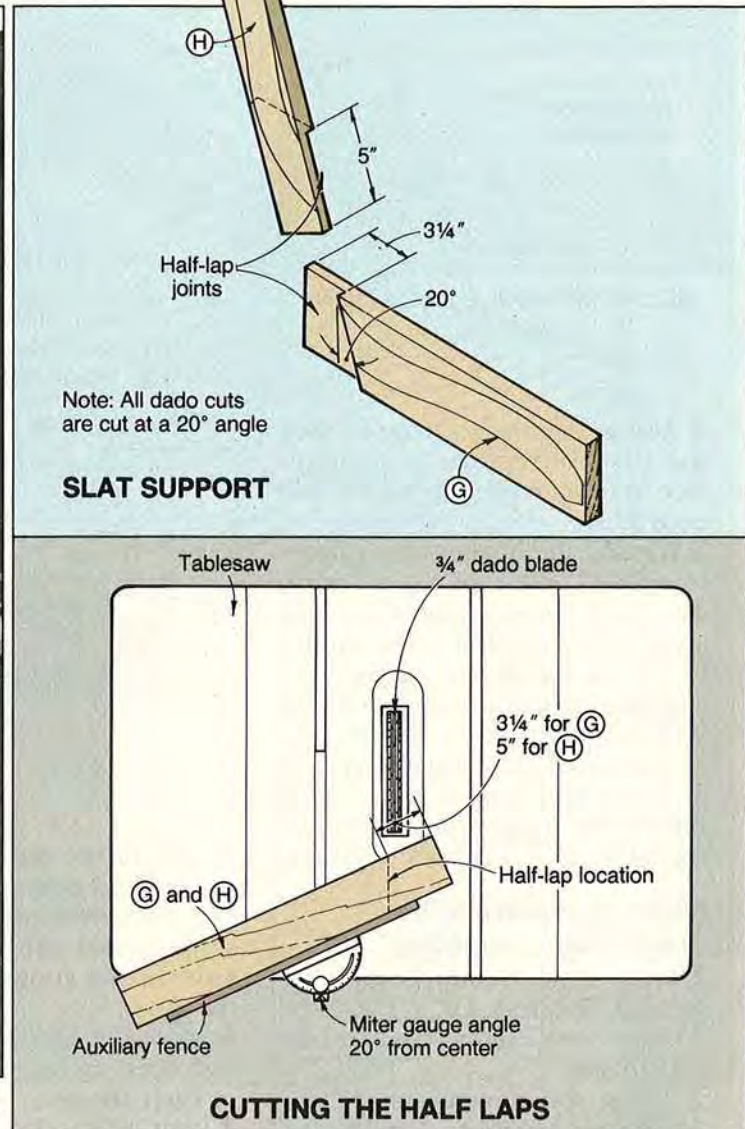
5 Following the method described to form the rockers and armrests, tape the supports together, transfer the pattern outlines, cut the supports to shape, and sand the edges. Then, using a try

square, transfer the slat (I) locations to the top front edge of each slat support assembly (G, H). Pry the pieces apart, remove the double-faced tape, and finish-sand the supports, being careful not to sand away the slat location lines.

6 Rout $\frac{1}{8}$ " round-overs along the bottom and back edges of each slat support where shown on the Exploded View drawing.

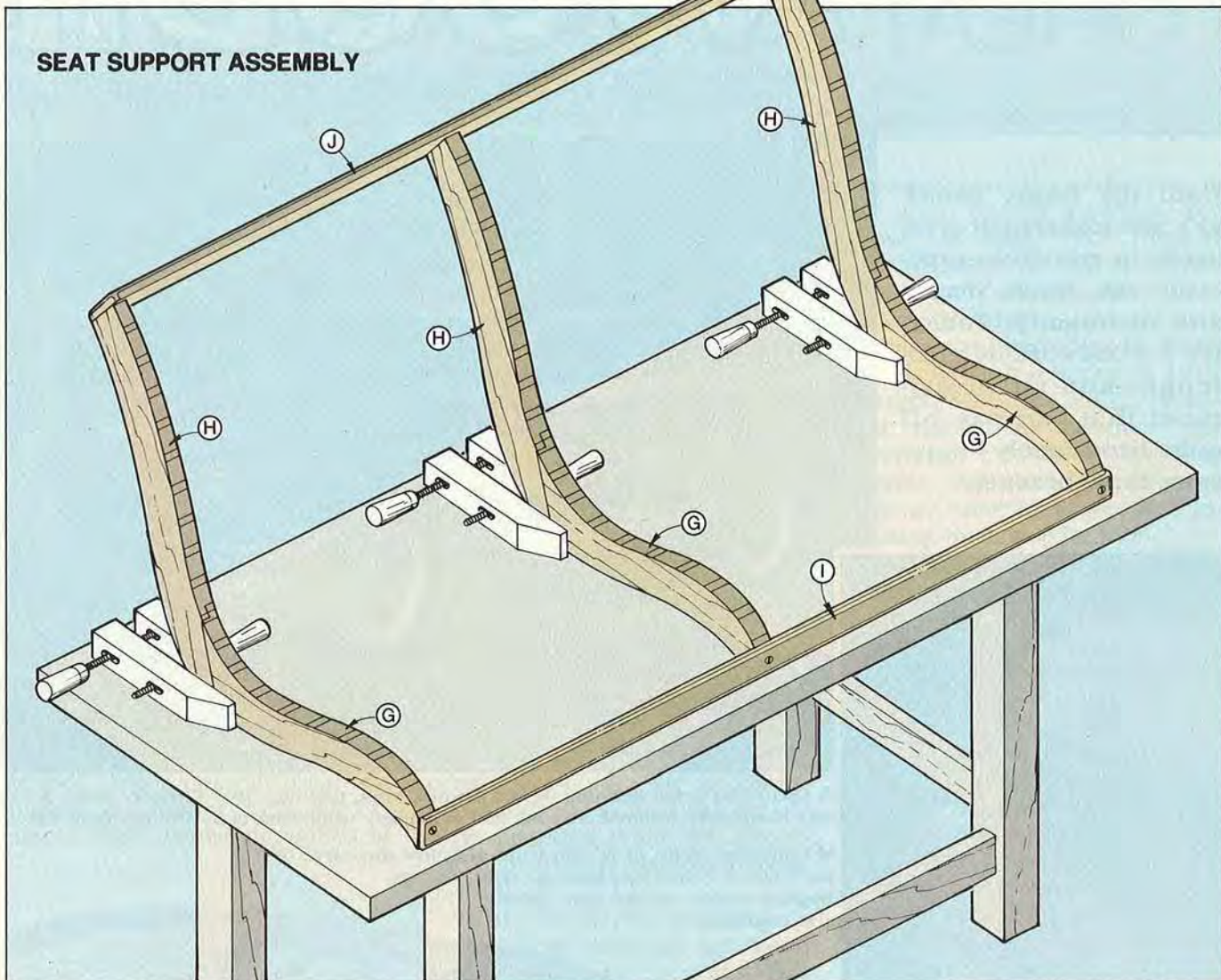
It's time to fasten the slats to the slat supports

1 From $\frac{5}{16}$ "-thick oak (we planed thicker stock to size), cut 20 seat slats (I) to $1\frac{1}{2} \times 48$ ". From $\frac{3}{4}$ " stock, cut the top slat (J) to size.





SEAT SUPPORT ASSEMBLY



2 Rout a $\frac{1}{8}$ " round-over along the top edges and ends of each $\frac{5}{16}$ " slat (I) and a $\frac{1}{2}$ " round-over along the top edges and ends of the top slat (J). Next, rout a $\frac{1}{8}$ " round-over along the bottom front edge of the top slat.

3 Drill the countersunk screw holes in each slat where dimensioned on the Exploded View drawing and accompanying Mounting-Hole Location detail. (We clamped a fence and a stop-block to our drill-press table to consistently position the holes from slat to slat.)

4 As shown in the drawing above, place the three slat supports on your benchtop. Clamp a large

handscrew clamp to each to hold the pieces upright.

5 Screw the top slat (J) to the three slat supports. Then, fasten one of the $\frac{5}{16}$ " slats (I) to the opposite end of the assembly where shown in the drawing on page 59.

6 Following the layout marks on the slat supports, fasten the remaining seat slats (I).

Finishing up

1 With a helper, position the seat assembly on the rocker assembly where dimensioned in the tinted boxes on the Exploded View drawing. Once correctly positioned, clamp the seat in place.

2 Using the previously drilled $\frac{1}{4}$ "

holes in the front and rear legs as guides, drill $\frac{1}{4}$ " holes through the slat supports.

3 Working from the back inside, drill a $\frac{7}{32}$ " shank hole through the back seat support (H) and a $\frac{3}{64}$ " pilot hole 1" deep into the inside edge of the armrests. Drive a #12 x 2" flathead brass wood screw through the support and into the armrest.

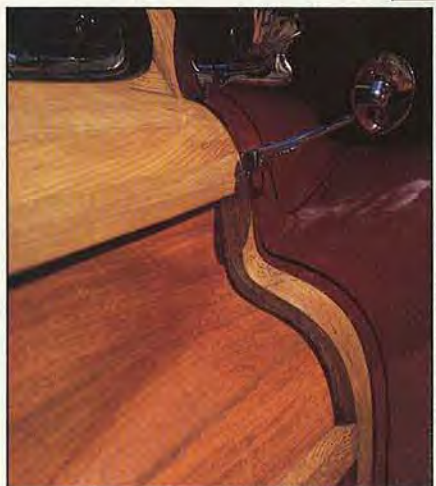
4 Remove the screws, and separate the seat assembly from the rocker assembly. Finish-sand both assemblies and apply the finish. (We applied three coats of spar varnish.) Later, fasten the two assemblies back together. ♣

THE GREAT

WOODIE

For a select group of craftsmen, restoring wood-

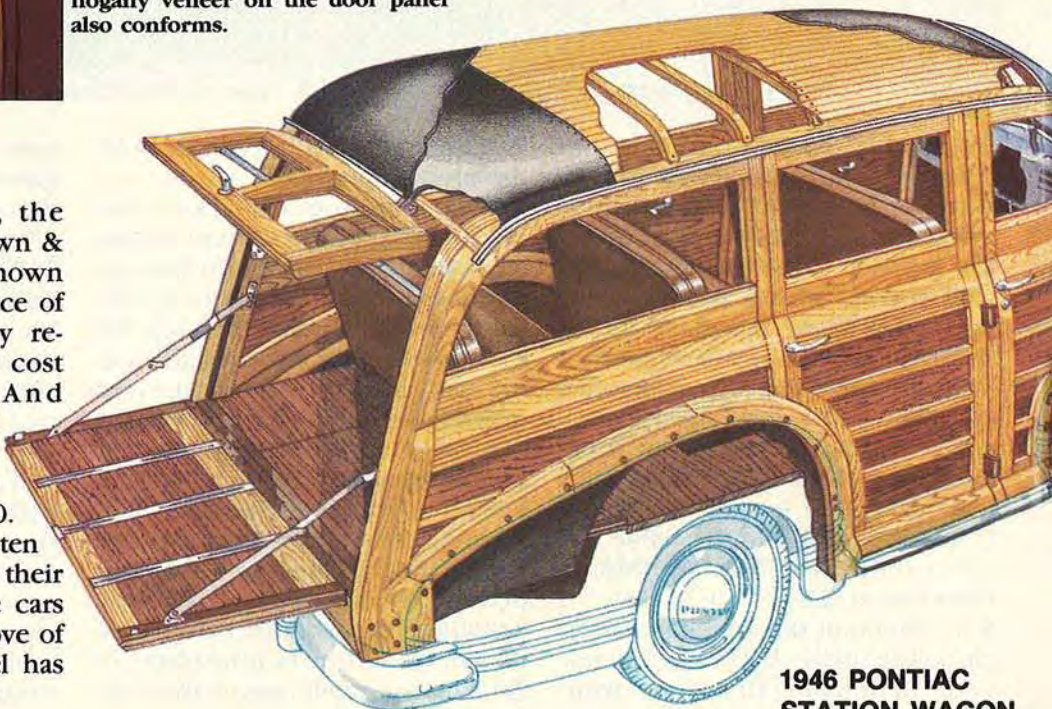
Until the fifties, America's automakers put great stock in woodies—especially ash, birch, maple, and mahogany. Today, it's a woodworking challenge—and an investment that can pay off quite handsomely—to restore these beauties.



▲ Owned by Arlan Banning of Des Moines, Iowa, this rare 1947 Chrysler Town & Country was completely restored. The ash and mahogany woodwork is by Ohioan Steve Glaser.

◀ Laminated strips of 1/8" ash bend to follow the curve of the Town & Country's passenger door. The mahogany veneer on the door panel also conforms.

When introduced, the 1947 Chrysler Town & Country sedan shown above right had a sticker price of \$3,000. Now, in fastidiously restored condition, it would cost you at least \$50,000. And eight years earlier, you could have purchased the Ford station wagon shown opposite page for under \$2,000. Now, you'd have to fork over ten times that. But it's not just their cash value that makes these cars collectible, there's also the love of craftsmanship that many feel has fallen by the roadside today.



1946 PONTIAC
STATION WAGON

REVIVAL

clad cars has become a labor of love and profit

A heritage of wood

Automobile bodies evolved from horse-drawn carriages and coaches. In fact, it wasn't until the mid-1930s that steel actually replaced the horseless carriage's ash, hickory, or laminated oak chassis and body framing. And, on what we now affectionately call *woodies*, the bodies remained for some time all wood, bolted to a chassis and cowl of steel (see illustration, *below left*).

Many of the early woodie bodies were built by coachbuilding shops or firms that specialized in woodworking. Buick and Pontiac for instance, had their white-ash bodies fabricated by Ypsilanti Furniture Company of Ionia, Michigan. And to meet their voracious appetite for good-quality wood, motor companies often bought vast timber tracts. For example, Ford owned thousands of

acres in Michigan's Upper Peninsula, as well as a major portion of the present Daniel Boone National Forest in eastern Kentucky.

Heyday of the wooden body

By 1941, every major automaker—except for the large luxury lines such as Cadillac—produced woodies of some type. So did lesser-knowns such as Nash, Studebaker, Packard, and Hudson. Chrysler introduced the stunning Town & Country woodie that year, too.

Each manufacturer had its own preference for wood species. Ford at first combined maple framing with plywood panels of sweetgum or birch, but eventually combined its maple frames with mahogany panels. You could even special-order an all bird's-eye maple woodie. Chrysler always preferred white ash frames and mahogany plywood panels, as did Chevy.

"Chrysler Town & Country bodies were nearly all laminated wood," says woodie restorer Mark Miller, of Penrose, Colorado. "And the pieces were heavy—I've counted as many as 14 laminations in one particular part. I try to make my laminations to match,

but never more than three plies in any given unit of thickness. You know," he adds, "each Town & Country body required about 300 board feet of 2"-thick ash."

Understandably, U.S. car production was interrupted by World War II. When it resumed in 1946, though, woodies came back—with vigor. Ford introduced the Sportsman, a deluxe woodie convertible, and also offered it as a Mercury. Others followed suit, expanding their woodie lines.

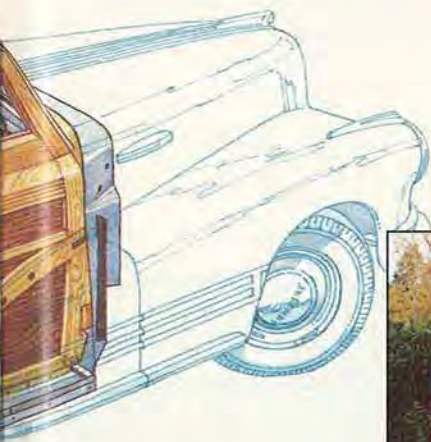
By late 1948, Ford began to lose money, and dropped all woodies except the station wagon from its line. In 1949, the company opted for steel rather than wood body shells, to which workers added the framed-wood panels.

Wood-over-metal construction soon dominated. The last holdout of all-wood body construction was Buick. In 1953, the company still offered three woodie station wagons. Soon, though, real wood was phased out, replaced by wood-grain decals applied to the steel, and the woodie went the way of the Model T. Yet interestingly in light of today's woodie following, beginning in the year of their introduction, all-steel station wagons far surpassed sales of the lovable but maintenance-demanding woodies, especially at Ford Motor Company.

Chassis-up woodworking

Although all manufacturers' total production figures for woodies aren't available, Ford Motor Company made nearly 40,000 Ford and Mercury woodies in 1949, the model's best year. But it's a fact that only a small percentage survived the ravages of time intact. Wood just couldn't take all the beating from the seasons or

Continued



► A restoration by Mark Miller of Penrose, Colorado, this 1939 Ford has maple framing and one-piece, figured birch plywood panels. Ford switched to mahogany panels in 1942.

WOODIE REVIVAL

the stress and pounding of daily use. That's why, today, woodies in tip-top shape are so rare and highly collectible.

"When these woodies were new, owners had to treat them like a wooden boat, by cleaning and revarnishing them every year," explains Mark Miller. "That's one reason they sold mostly to the more affluent, who could afford all that upkeep."

Naturally, the woodies that couldn't be properly maintained deteriorated. And today's survivors in any semblance of restorable condition usually need at least partial replacement of their wood, or a complete, build-from-scratch redo.

Mark, a cabinetmaker by trade, learned to combine his woodworking skills with auto restoration several years ago, and has some notable achievements. Mark believes that he made the right career move: "I can't think of anything better than the blend of woodworking and automobiles."

Along the way, Mark has learned the difference between building cabinets and woodie bodies. "Automotive woodworkers used finger joints to gain length and strength, because it was very costly to steam-bend the wood. A finger joint is probably stronger than the wood itself," says Mark. "Chrysler, for example, made curved pieces, such as on the trunk lid, of three separate parts finger-jointed together [see photo, *above right*]. Otherwise, the only other type of joint you run across is the lap joint."

Mark specializes in woodworking, but if the customer wants, he'll do complete, chassis-up restorations. And he believes the result of his woodworking will be a car that's better than the original because, for one thing, materials have improved.

"Ford's woodies were primarily maple, with some made of yellow



▲ Michigan woodworker Larry Speet searched three years for the wood parts for this 1951 Ford he restored.

► For trunk trim on the Town & Country, Chrysler woodworkers sawed curved sections of ash, and then end-joined them with finger joints.

▼ The strips accentuating the headliner, the solid door pillars, and the door window frames in the Town & Country's interior contribute to the 300 board feet of white ash each car required.



birch. Upright framing for their '49-'51 woodies was curved laminated ash with a top layer of maple. My restorations have parts that I cut, laminate, and bend in jigs. And I use slow-set epoxy, which is far superior to the original glues. When the woodwork is done, it's finished with Sutherland Well's polymerized tung-oil spar varnish that has an ultraviolet light blocker built-in."

In search of a woodie

In 1977, Larry Speet of Holland, Michigan, bought a 1951 Ford woodie. He thought he could have it on the road in less than a year. "It ended up being three years just searching for replacement parts," Larry recalls. "There never was new old stock [NOS: replacement parts supplied to dealers] after Ford's woodie facili-

ty in Michigan shut down. Ford just said, 'See a cabinetmaker.' "

Larry researched the Ford archives, where he found a complete set of wood body panel blueprints for 1949-51 Ford and Mercury station wagons. The problem was how to make them.

After more searching, Larry found some subcontractors with the right machines. "The machines were actually made to produce woodies," he says.

Once the parts for his woodie were constructed, Larry had the idea that maybe he could reproduce and sell parts and wood-car kits to other woodie restorers.

"It'll cost \$8,000 to \$12,000 to have someone fabricate the parts for a woodie and finish them," says Larry. "My kits are half that, and it only takes about 100 hours to install them."

A home restorer can order the entire kit or only the framing section or pieces needing replacement. But, the buyer still has to provide his own plywood paneling to fill the frames.

"What works is 1/8"-thick, marine-grade African mahogany—that's thinner than the original panel but it takes that compound bow," says Larry. "After all, when you think of the woodworking and money invested, who's going to drive a restored woodie on a day-to-day basis?" He smiles at his question, then glances through the window to his woodie parked at the curb. "Only someone who loves woodies."

References for woodie sources

Here are the addresses for sources mentioned in this article, as well as a few others you may want to check out.

- Classic Contours, Mark and Wendy Miller, P.O. 390, Penrose, CO 81240. (719/372-0337). *Mark Miller specializes in the reproduction, finishing, and installation of wood body parts for Chrysler Town & Country, Ford Sportsman convertibles, and station wagons.*

- Lasco Design, 259 Roosevelt Ave., Holland, MI 49424. (616/399-5077). *Description and price list for Larry Speet's wooden parts and kits for only 1949-1951 Ford and Mercury station wagons.*

- National Woodie Club, Inc., 211 W. Newell Ave., Rutherford, NJ 07070. *Annual \$20 membership (two years \$35), includes monthly Woodie Times magazine.*

- Hemmings Motor News, *monthly publication listing old cars/parts for sale, \$23.95 (US) to HMN Subscriptions, Box 100, Bennington, VT 05201.* ♣




Written by Peter J. Stephano Photographs: Chrysler, John Hetherington; '39 Ford, courtesy Mark Miller; '51 Ford, courtesy Larry Speet

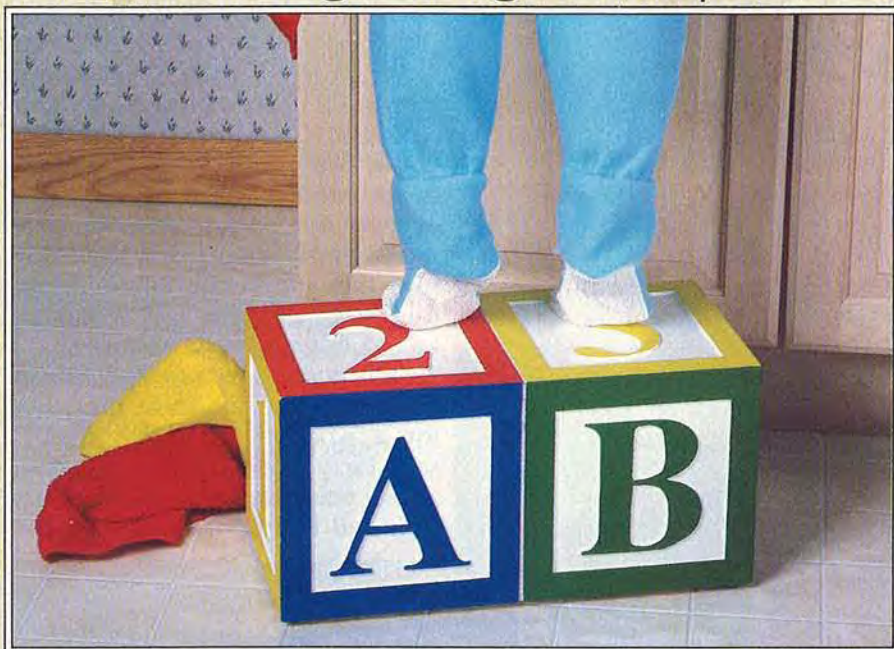
STANDING-TALL BLOCKS BOX

For kids living in a grown-up world



There comes a time in every child's life when being just a few inches taller would open up great new possibilities. Whether it's getting a drink of water or turning off the light, many kids wobble through this stage balancing on chairs or other precarious perches. Here's a better plan: let them stand tall on this sturdy box of blocks.

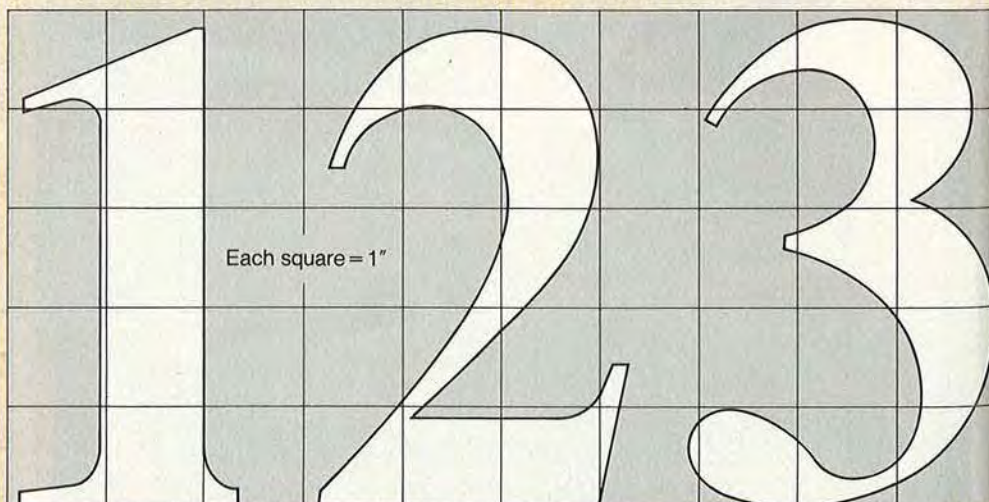
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Rip and crosscut the front and back (A), ends (B), and top and bottom (C) to the dimensions shown in the Bill of Materials. Cut the trim strips (D and E) and eight 5¼" squares for the numbers and letters from ½" plywood or tempered hardboard. Refer to the Exploded View drawing, *op-*

posite page, and then assemble the sides and ends with screws and woodworker's glue.

Place the front and back between the ends. Attach the top and bottom, and then sand the box smooth and the corners flush. Now, add the trim strips. Place a long strip (D) on one end face,



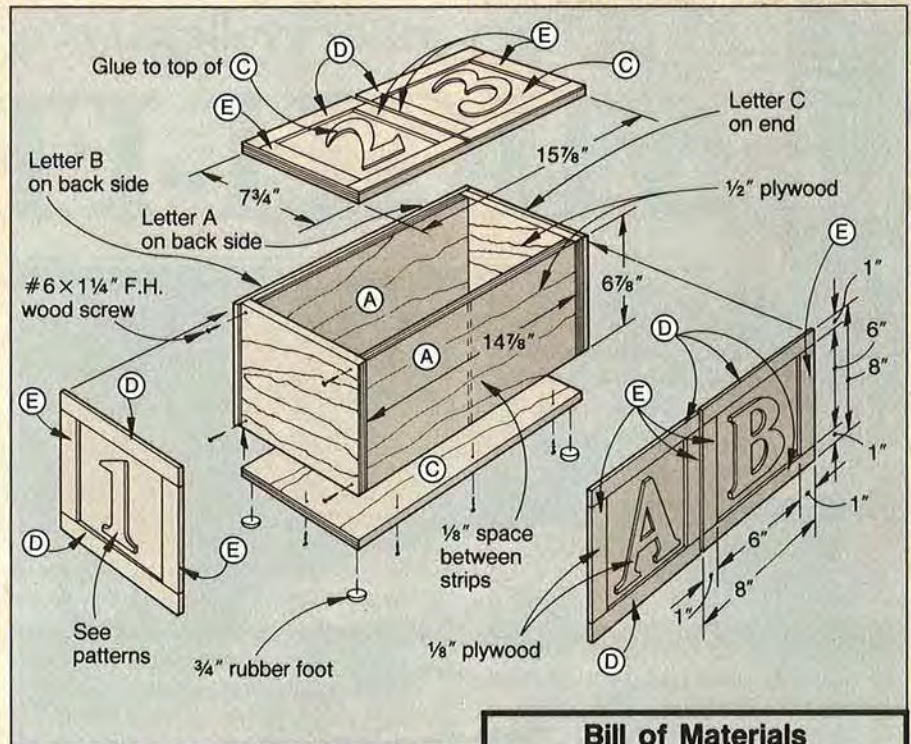
flush with the top edge of the box. Cut or sand the ends flush with the front and back of the box, and attach the strip with woodworker's glue and brads (we used $\frac{1}{2}$ " \times #18 brads).

Place another long strip along the bottom. Then, complete the square frame on the end by fitting short trim strips (E) vertically between the horizontal pieces. Keep the edges flush at the front and back of the box.

Attach strips to the other end, then to the front and back, and lastly to the top. Leave a $\frac{1}{8}$ " space where shown on the top, front, and back to create the look of two separate blocks.

Enlarge the letter and numeral patterns below with gridded paper or an enlarging photocopier. Enlarge at 129 percent, again at 129 percent, and then at 121 percent. Separate the patterns, and then affix one to each of six of the squares with spray adhesive.

Because you need a total of eight figures, stack-cut two copies of the "A" and "B." To do this, adhere one of the remaining squares to the back of the piece with the "A" pattern and the other to the piece with the "B" pattern using double-faced tape. Drill blade start holes where indicated on the "A" and "B" patterns. Then, cut out the letters and numerals, starting with the inside cuts. (We drilled $\frac{3}{4}$ " blade start holes and used a



Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
A Side	$\frac{1}{2}$ "	$6\frac{7}{8}$ "	$14\frac{7}{8}$ "	P	2
B End	$\frac{1}{2}$ "	$6\frac{7}{8}$ "	$7\frac{3}{4}$ "	P	2
C Top and bottom	$\frac{1}{2}$ "	$7\frac{3}{4}$ "	$15\frac{7}{8}$ "	P	2
D *Long trim	$\frac{1}{8}$ "	1"	$8\frac{1}{4}$ "	P	16
E *Short trim	$\frac{1}{8}$ "	1"	$6\frac{1}{4}$ "	P	16

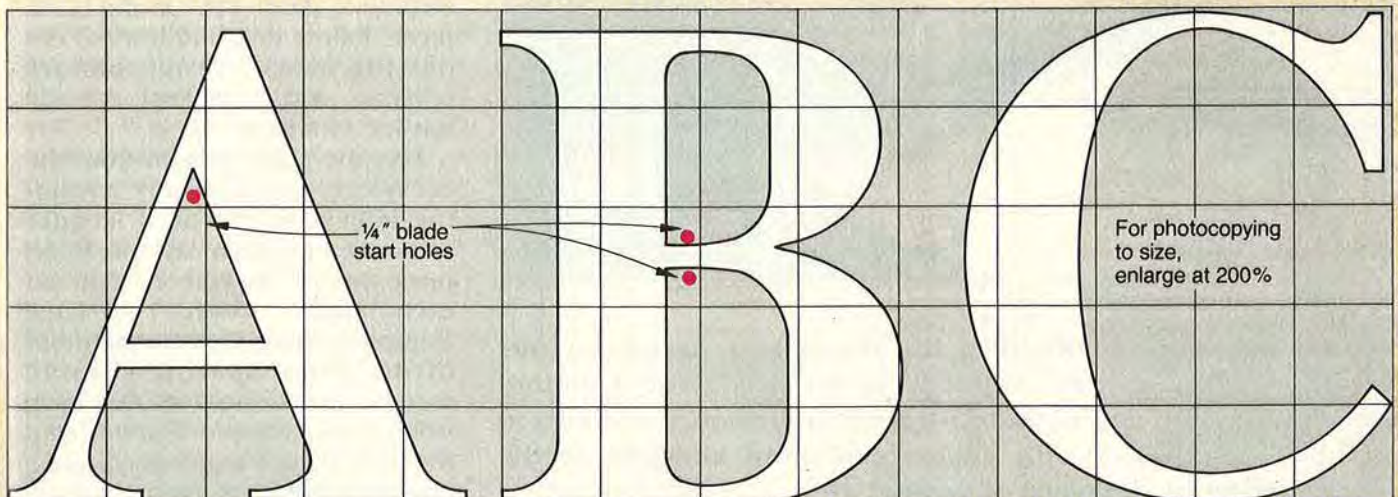
*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: P-plywood

.110 \times .022" blade with 15 teeth per inch.) Center a letter or numeral in each square, and attach with glue and brads.

Fill the brad holes and trim-strip joints as necessary. Sand, rounding over the corners slightly, and apply white latex primer.

Paint the step stool with white latex enamel, and accent the raised faces with brightly colored enamels. Apply two coats of clear acrylic after the paint dries. Attach $\frac{3}{4}$ " rubber bumpers to the bottom to prevent skidding. ♣



Project Design: Harlequin Crafts Illustrations: Jamie Downing; Mike Henry Photograph: John Hetherington



Let your scrollsaw soar!

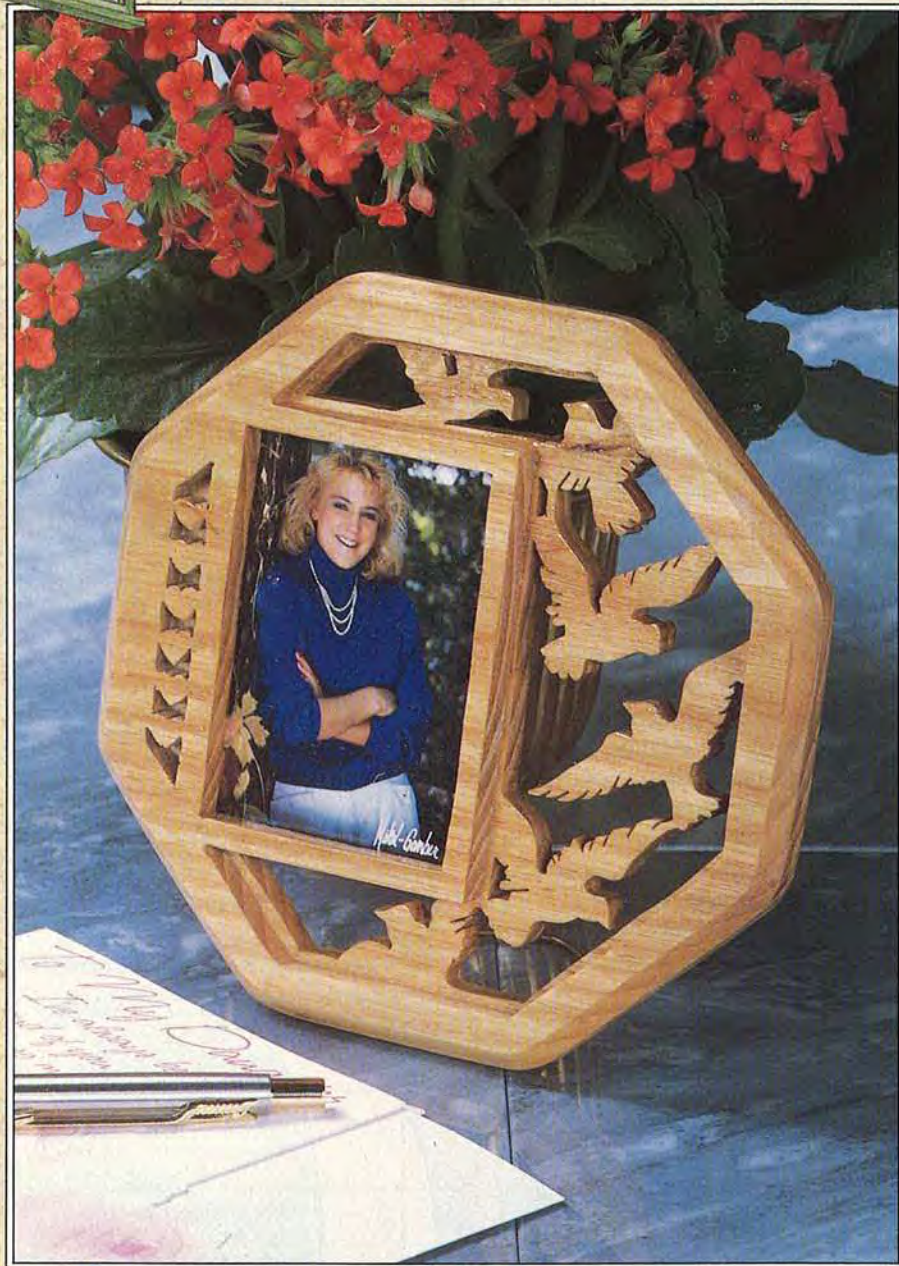
HIGH-FLYING

Start with two 6" squares of 1/4"-thick stock to make this frame. Plane or resaw thicker stock. The small inside cuts call for a fine, plain-end scrollsaw blade. (We used a #5 blade, .037x.015" with 14 teeth per inch.)

Make two photocopies of the full-sized pattern on the *opposite page*. Attach one to each piece of stock with spray adhesive or rubber cement. Place the patterns on the stock (we used ash) so that the grain runs crosswise on each piece. This way, the thinnest section of the frame—the picture surround on the frontpiece—won't be as likely to break off when you saw it. Drill 1/16" blade start holes and the holes for the stand where shown on the pattern.

Cut out the hearts on the frontpiece first, and then the larger openings, following the broken pattern line. Don't make the rectangular frame around the picture opening too narrow—it must overlap the inside edges of the backpiece cutout to form a lip. Cut slightly on the waste side of the pattern line. Do not cut the outside to shape yet. On the backpiece, follow the solid lines to cut out the birds and the picture opening. Again, do not cut the outside to shape.

Peel the paper pattern from the backpiece. Clean off any remaining adhesive (we used lacquer thinner), and then lay the frontpiece on the backpiece. Make an even margin between the large frontpiece opening and the cutout birds. Then, sparingly apply woodworker's glue to the back side of the frontpiece and clamp the two pieces together, double-checking the positioning.



Symbolizing peace and love, the doves and hearts on our scrollsawed frame make it just right for displaying a youngster's photo. But, don't you think it would be a nice addition to a child's room, too, with a photo of mom and dad or the grandparents in the place of honor?

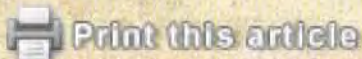
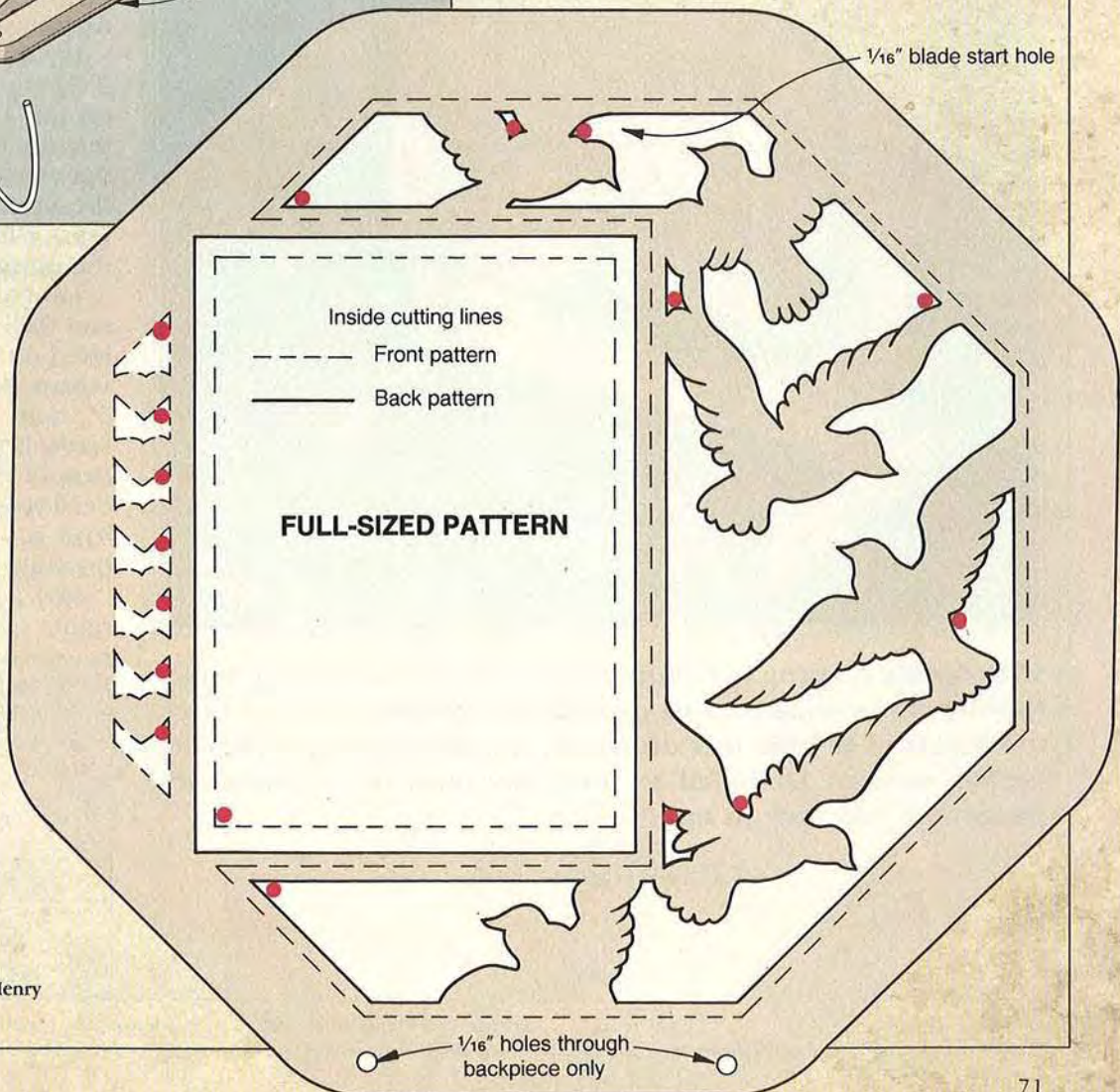
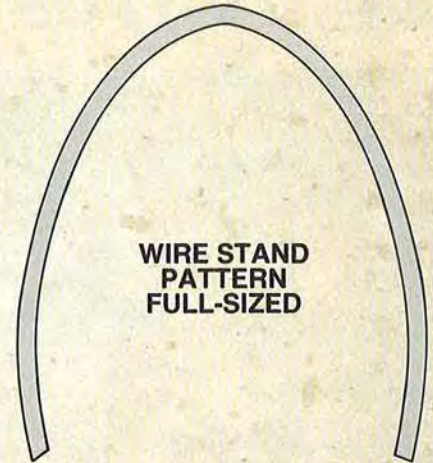
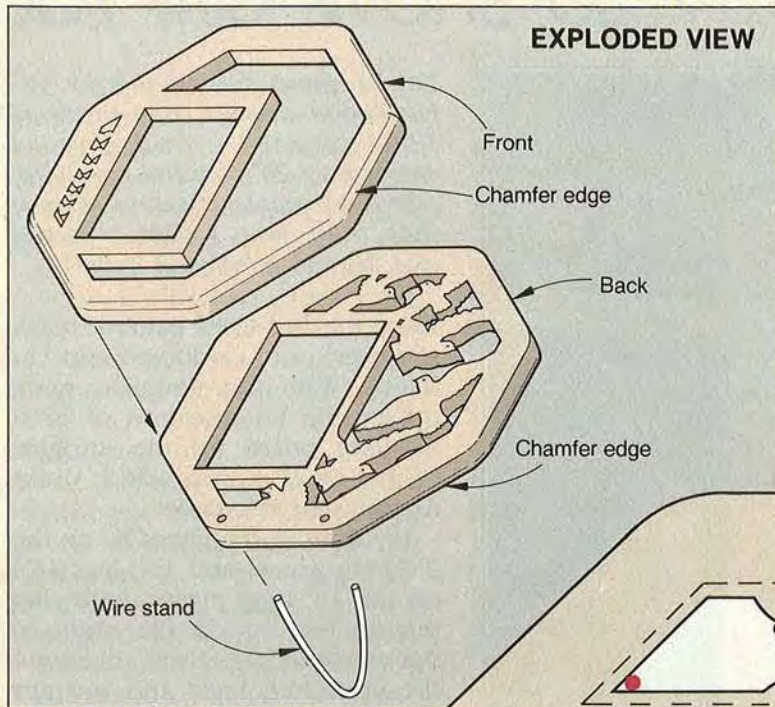


PHOTO FRAME



After the glue has dried, saw around the outside pattern line. Remove the pattern from the frame, clean off the adhesive, and sand. Chamfer the front and back edges with a piloted chamfering bit in a table-mounted router.

Now, attach the stand where shown (we made ours from coat-hanger wire). Apply a clear spray-on finish from several angles to cover all surfaces. Insert the photograph, holding it in place with tight-fitting cardboard or a few drops of hot-melt glue. 🌲

Project Design: Harlequin Crafts
 Illustrations: Jamie Downing; Mike Henry
 Photograph: John Hetherington



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With spring turning to summer, you may be wondering where to store those winter quilts or colorful blankets. They're often too beautiful to hide in a drawer. Our quilt stand provides the perfect answer. Designed to hold one quilt or a couple, it's handsome and easy to build.

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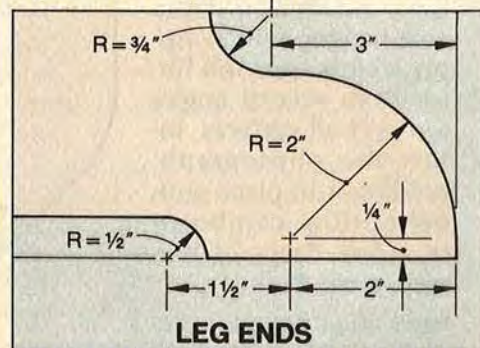
You'll need two 1½"×4"×36" hardwood boards, two more at 1½"×3"×18", and one at 1½"×4½"×24" to build the stand. (We used maple.) Make the quilt rods from two 1×28½" dowels and four 2" hardwood balls.

Trace the full-sized pattern, *opposite page*, onto cardboard and cut it out. With this template, mark the profile on one end of each 36"-long board for the uprights (A). See the Exploded View drawing for reference.

Lay out the stretcher (B) on the 24"-long piece, and the legs (C) on the 18"-long pieces, following the dimensions on the radiused drawings *below*. Now, bandsaw the stretcher, legs, and upright tops. With your tablesaw, crosscut the uprights to 33".

Tilt your drill-press table to 30°, and drill ½" holes ½" deep centered on the edges of the uprights where shown. With the table at 0°, bore ¾" holes ⅝" deep at the screw-hole locations on the outer face of the uprights and the underside of the legs. Then, with a ⅜" bit, drill the screw holes through the uprights and legs.

Now, clamp each leg to its upright. Chuck the ⅜" bit into a



QUILT STAND

best work

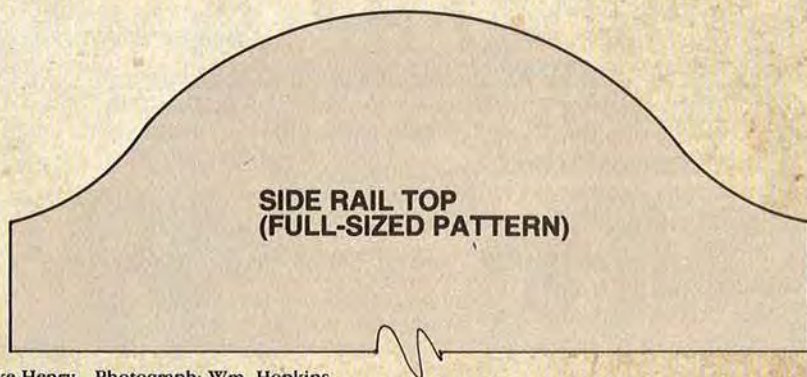
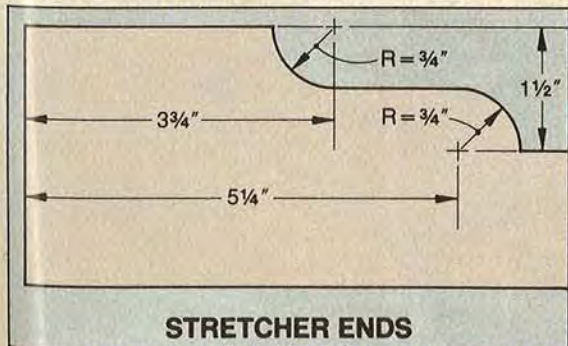
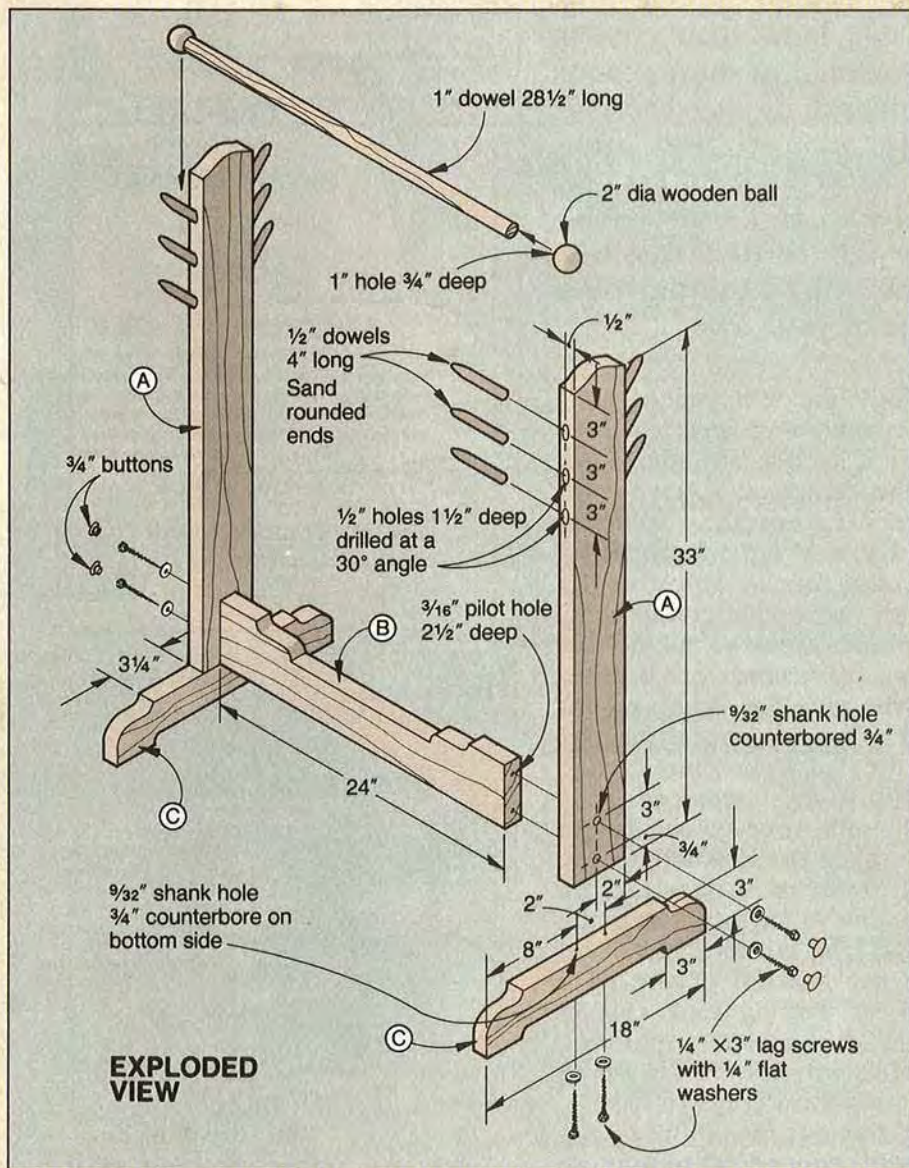
hand drill to mark a center on the upright at each hole. Clamp the stretcher to the uprights, and mark as above. Drill a $\frac{3}{16}$ " hole at each mark, $1\frac{1}{2}$ " into the uprights and $2\frac{1}{2}$ " into the stretcher.

Assemble the legs, uprights, and stretcher with woodworker's glue and $\frac{1}{4} \times 3$ " lag screws with washers. Cover the screw heads in the uprights with wooden buttons.

Cut 12 4" lengths of $\frac{1}{2}$ " dowel. Chuck each into the drill press about 1" deep, and then round over the end using 80-grit sandpaper on a sanding block. Finish-sand with 120-grit. Glue the dowels, rounded ends out, into the angled holes on the uprights.

Cut two 1" dowels to $28\frac{1}{2}$ " for the quilt rods. To glue a 2"-diameter wooden ball to each end of each rod, bore a 1" hole $\frac{3}{4}$ " deep into each ball. To do so, clamp a piece of scrapwood $2 \times 4 \times 6$ " to the drill-press table, and bore a $1\frac{1}{2}$ " hole 1" deep into it. Without moving the block, change to a 1" bit. Place the wooden ball into the hole, and grip with a hand-screw clamp to bore the hole.

Sand, and apply a clear finish. (We sprayed on clear lacquer, rubbing with 00 steel wool between coats.)



On needles and pins looking for a project?

TURN SCRAP INTO PINCUSHIONS

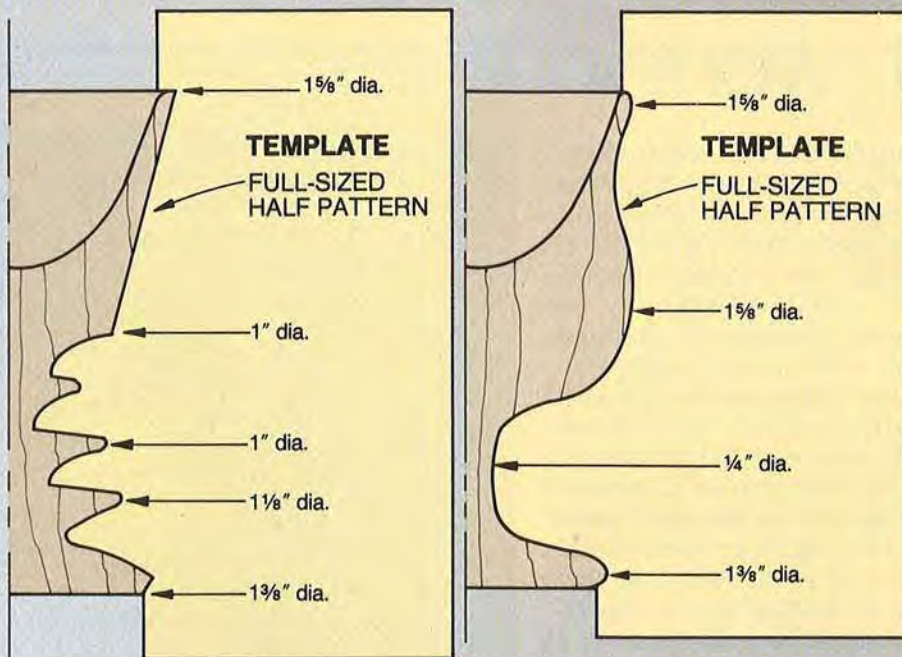
Whether new to woodturning or an old lathe hand, you'll get a kick out of these practical pincushions that you can turn in a hurry from little scraps of wood. We'll get you started with easy instructions and a pair of patterns, but we'll bet you'll soon try some designs of your own.

Photocopy the template of your choice, *right*, and transfer it to card stock, such as an index card. Mark the center on a scrapwood auxiliary faceplate, and then screw it to a 3" lathe faceplate.

Glue the turning stock to the center of the auxiliary plate with woodworker's glue or, for a faster start-up, cyanoacrylate adhesive. When the glue has dried, mount the faceplate on the lathe and bring the tailstock with a cone center up to the workpiece.

Now, with your gouge, round your turning stock down to the largest diameter shown for the pattern you've chosen. True the top edge (the tailstock end) and define the bottom of the base with a $\frac{1}{8}$ " parting tool. Cut in about $\frac{1}{2}$ " at the bottom, pointing the tool slightly toward the top of the turning for a concave base.

Turn the outside, forming the coves with either a $\frac{1}{4}$ " roundnose or a gouge. Sand with 100-, 150-, 220-, and 400-grit paper. Next, slide the tailstock back and bring the tool rest around to the end of the turning. Hollow out the top of the cup with your gouge, forming a rounded recess about $\frac{3}{4}$ -1" deep. You won't need to sand inside since it will be covered. For ease of handling, apply a clear finish with the turning still attached to the faceplate. Part from the



Tools and supplies

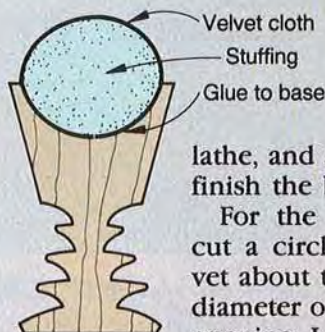
Here's what we used:

Stock: Miscellaneous scraps of turning stock, about 3x3x6".

Lathe speeds

Roughing: 600-900 rpm; Finishing and sanding: 1,200-1,500 rpm.

Lathe tools: 3" faceplate with scrapwood auxiliary faceplate, tailstock cone center, $\frac{3}{8}$ " gouge, $\frac{1}{4}$ " roundnose, $\frac{1}{8}$ " parting tool.




lathe, and sand and finish the bottom.

For the cushion, cut a circle of velvet about twice the diameter of the cup opening. Lay it face down, and then place a ball of polyester fill or 0000 steel wool on the center of the cloth. Gather the edge, and stitch it closed. Glue the cushion into place with cyanoacrylate adhesive. ♣

Project Design: S. Gary Roberts
Illustrations: Kim Downing; Mike Henry
Photograph: Wm. Hopkins



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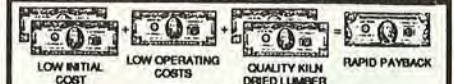
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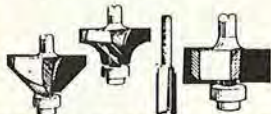


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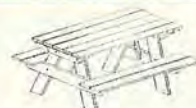


□ Porter Cable #9852 12 volt 3/8" variable speed reversing drill. Advanced magnequench magnet technology delivers 20% more power than previous drill motors. Adjustable clutch with 5 settings of from 10 to 45 in. lbs. Sixth setting provides full 230 in. lbs. of torque. 3/8" professional quality chuck. Two-speed gearing. Complete with case. List price \$210.00, yours for \$149.00 from **TOOLS ON SALE™**, 216 West 7th Street, St. Paul, MN 55102. Call Toll Free 800-328-0457.

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□ Variable Speed Scroll Saw from Penn State Industries. A variable speed scroll saw is a necessity for cutting metals, plastics and hardwoods where slow speeds are necessary. Penn State's new US-15 saw features infinity variable speeds from 400-1,800 cpm with full power at all speeds. Only \$169.95 (add \$10 UPS shipping) from **PENN STATE INDUSTRIES**, 2850 Comly Rd., Philadelphia, PA 19154. Credit card orders taken by phone: 1-800-288-7297.



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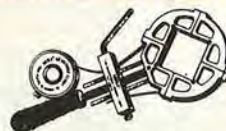
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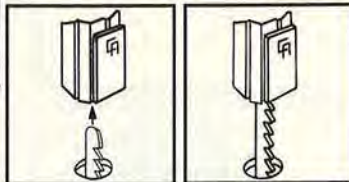
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DELPHI STAINED GLASS—80-page color catalog of stained glass and related supplies. Beveled glass, hard-to-

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Model	List	Sale
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23-680 6" Bench Grinder 1/4 HP	86	75
23-880 8" Bench Grinder 1/2 HP	151	115
11-950 8" Drill Press	199	145
28-160 10" Hobby Band Saw	210	145
31-050 1/2" Belt sander 2.0 amp	104	74
31-460 4" Belt/Disc Sander	198	145
31-340 NEW 1" Belt/8" Disc Sander	268	188
31-080 NEW 1" Belt/5" Disc Sander	134	94

NEW TOOLS BY DELTA

40-560 16" 2 speed Scroll Saw	266	184
11-990 12" Bench Drill Press	276	209
11-090 32" Radial Bench Drill Press	399	309
43-355 3/4" Shaper 1 1/2 HP	964	695
43-505 1/2" Bench Router/Shaper	399	275
22-540 12" Bench Top Planer	595	398
36-220 10" Compound Miter Saw	350	235
28-180 Bench Band Saw	232	167
40-640 NEW 20" Bench Scroll Saw	466	325
23-675 NEW 6" Grnd/3x24 Belt Sndr	141	105
14-600 Hollow Chisel Mortiser	668	465
46-700 12" Wood Lathe	548	419

DELTA STATIONARY

34-761 10" Unisaw 1/2 HP	1715	1295
33-990 10" Radial Arm	818	585
37-280 6" Motorized Jointer	488	389
50-179 3/4 HP 2 stage Dust Collector	483	335
50-181 2 HP Dust Collector	885	610
70-200 NEW 20" Floor Drill Press	1049	775
37-154 DJ15 6" Jointer w/3/4 HP Motor	1420	1079
33-055 8-1/4" Sawbuck Comp w/plgs	865	579
34-330 NEW 8-1/4" Table Saw	1343	943
34-670 10" Motorized Table Saw	511	329
36-100 Station Plate Jointer	645	285
36-400 8-1/4" Compound Miter Saw	224	165
34-915 30" Unifence	385	239
34-897 50" Delta Unifence	525	279
36-755 NEW 10" Tilt Arbor Saw	1264	879
34-445 34-444 Saw with 30" unifence	1200	815

HTC Mobile Bases for above Machines

HRD-10 fits Delta 34-444 table saw	88.50
HRD-10Xfits Delta 34-445 table saw w/inco	132.00
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MILWAUKEE TOOLS

6527 NEW Sawzall with case	299	164
6528 above Sawzall w/wired cord	295	164
6125 NEW 5" Random Orbit Sander	200	119
6126 NEW 6" Random Orbit Sander	205	125
0099-1 12V cdss Drill Kit complete	304	165
0342-1 above Drill w/keyless chuck	309	169
0235-1 9.6V cordless Drill w/case	284	158
0294-1 3/8" Drill 4.5 amp magnum	203	115
0234-1 1/2" Drill 4.5A mag 0-850 rpm	223	119
0244-1 1/2" Drill 4.5A mag 0-600 rpm	223	122
0222-1 3/8" Drill 3.5 amp 0-1000 rpm	189	105
0228-1 3/8" Drill 3.5 amp 0-1000 rpm	183	102
0375-1 3/8" close quarter Drill	223	129
0379-1 1/2" close quarter Drill	254	145
6539-1 cdss Screwdriver 190 rpm	127	75
6546-1 cdss Screwdriver 200 & 400 rpm	139	79
3102-1 Plumbers right angle Drill Kit	360	194
5399 1/2" D-handle Hammer Drill Kit	319	185
1676-1 HD Hole Hwlg with case	459	247
6511 2 speed SawZall with case	429	234
6750-1 Drywall Gun 0-4000 5 amp	244	135
6507 Original SawZall with case	249	135
6170 1 1/4" Chop Saw 15 amp	489	279
6174 Original Sander 1/2 sheet	214	116
6177 Variable Temp. Heat Gun	122	75
5397-1 3/8" var. spd Hammer Drill Kit 244	138	139
5311-1 1/2" var. spd Hammer Drill Kit 335	189	138
3107-1 1/2" var. spd angle Drill Kit	370	194
6754-1 Drywall Gun 0-4000 5.4 amp	192	119
3300-1 1/2" var. speed rt angle Drill	329	179
5680 Router 2 HP - 12 amp	355	205
6215 16" Chain Saw	309	174
0235-1 1/2" Drill w/kyls chuck mag	223	125
6145 4-1/2" Grinder 10,000 rpm	162	98
6142 6145 with case & accessories	199	129
6749-1 Drywall Gun 0-2500 5.4 amp	224	119
5535 Eagle 1-1/2" Rot. Hammer w/case	910	499
6365 7-1/4" Circular Saw 13 amp	214	120
6367 above Saw - double insulated	209	122
6366 6365 w/inco & carbide blade	224	125
6368 6365 w/inco, carb. blade & case	244	134
6377 7-1/4" Worm Drive Saw	324	175

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LUT2M010	Gen Pur. A.T.B.10" 40	67	39	39
LUB2M010	Cut-off 10"	60	90	49
LUB4M011	Comb 10"	50	76	40
LUB5M010	Super Cut-off 10"	80	112	58
LM72M010	Ripping 10"	24	66	38
LUT3M010	Cut off 10"	60	82	45
LUB7M010	Thin Kerf 10"	24	70	39
LUB8M010	Thin Kerf 10"	60	86	45
LUB9M010	Ultimate 10"	80	125	69
TK206	10" Framing	24	38	25
TK303	7-1/4" Finishing	40	37	22
TK306	10" Finishing	40	46	27
TK906	10" Combo	50	52	29
SD306	6" Dado - Carbide	215	119	69
SD308	6" Dado - Carbide	229	119	69
F0	1-3/4" x 5/8" Biscuit 1000 Qty	32	29	
F10	2-1/8" x 3/4" Biscuit 1000 Qty	32	34	
F20	2-3/4" x 1" Biscuit 1000 Qty	34	34	
FA	Assorted Biscuits 1000 Qty	34	29	
FB100	16 piece Forstner Bit Set	331	165	
94-100	5 pc. Router Bit Door System	319	159	
JS100	Biscuit Jointer with case	334	159	
FT2000	3-1/4 HP Plunge Router	350	179	
FT2000E3	1-1/4 HP v/spd Plunge Router	410	209	

MAKITA TOOLS

Model	List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	124 74
6071DW	above Drill w/removable batt.	194 109
5090DW	2-3/8" Saw Kit 9.6 volt	250 139
6010DW	3/8" cordless Drill Kit 7.2V	173 97
6015DW	3/8" cordless Drill Kit 7.2V	96 59
DA300DW	3/8" Angle Drill 7.2 volt	241 136
4390DW	9.6 cordless Recip Saw Kit	234 129
6012HDW	2 spd Drill w/clutch-comp.	236 125
6092DW	var. spd Drill Kit complete	257 127
6093DW	v/spd Drill w/clutch-comp.	261 133
6093DWL	6093DW Drill Kit w/Flash Lid	299 169
6095DWE	6095DW Drill Kit w/2 batteries	270 139
632007-4	9.6 volt Battery	47 30
632007-4	7.2 volt Battery	39 28

5007NBA	7-1/4" Saw w/electric brake	243 129
5008NBA	8-1/4" Saw w/electric brake	301 163
804510	1/4 sheet Pad Sander	93 55
9900B	3" x 21" Belt Sander w/bag	283 149
9924DB	3" x 24" Belt Sander w/bag	299 159
9045N	12 sheet Fin. Sander w/bag	246 129
4301VB	Orb. var. spd Jig Saw 3.5A	262 142
JR3000VB	var. speed Recip Saw w/cse.	239 129
LI2010	10" Miter Saw 3.5 amp	571 299
9820-2	Blade Sharpener	394 195
1900WB	3-3/4" Planer with case	221 116
1911B	4-3/8" Planer 7.5 amp	255 139
1100	3-1/4" Planer with case	434 227
9207SPC	7" Sander/Polisher	294 154
36051B	1-3/8 HP Router	261 139
34510	1/4 sheet Pad Sander w/bag	91 57
DA3000VB	3/8" Angle Drill	285 152
HP2010VB	3/4" var. spd Hmr Drill w/cse	304 167
2708W	8-1/4" Table Saw	519 269
2711	10" Table Saw with brake	668 489
1805B	6-1/8" Planer Kit with case	731 369
5005BA	5-1/2" Circular Saw	238 135
6404	3/8" Drill Rev. 0-2100 rpm 2 A105	58
6151LVR	3/8" Drill Rev. 0-1050 rpm	152 83
6820V	0-4000 rpm Drywall Gun 5.2 A160	90
6013BR	1/2" Drill Rev. 6 amp	263 139
5402A	1 1/2" Circular Saw 12 amp	675 345
3612BR	3 HP Plunge Router	347 165
9401	4" x 24" Belt Sander w/bag	343 175
4302C	var. speed Orbital Jig Saw	283 159
5077B	7-1/4" Hypoid Saw	260 142
LS1440	14" Miter Saw	759 435
LS1030	NEW 10" Miter Saw	428 225
5007NB	7-1/4" Circular Saw 13 amp	214 114
3612B	3 HP Plunge Router sq base	347 165
2012	12" Portable Planer	913 475
LS1011	10" Slide Compound Saw	859 445

DELTA TOOLS

34-444 Table Saw Complete w/1-1/2 H.P. motor & stand	615.00
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28-283 14" Band Saw w/inco stand and 50-274 mobile base
729.00

22-662 13" Planer with 2 HP motor, stand, and 32-011 EMS system
1169.00

17-900 16-1/2" Floor Drill Press
385.00

40-601 18" Scroll Saw w/stand and blades
749.00

BOSTITCH AIR NAILERS

HN05-1	Slick Nailer Super Sale	389
HN05-1	Utility Coil Nailer	845 409
N12B-1	Coil Roofing Nailer	845 418
NG6FN-2	Finishing Nailer	625 345
T31	Brad Nailer	270 152
CWC100	1 HP Pancake Compressor	445 295

SKIL SIZZLERS

3810	10" Miter Saw	263 205
3810K	3810 w/60 tooth Carbide Blade	229 77
5825	7-1/4" Worm Drive Saw	230 144
2735-04	12 volt cordless Drill Kit	210 135
2735-04X	2735-04 w/keyless chuck	235 137
1605-02	NEW Biscuit Jointer w/cse.	200 119
7584	NEW 5" Rndm Orbit Sander	160 104

PANASONIC CORDLESS

EY6205BC	New variable speed 12 volt Drill w/15 minute charger & case.	390 179
EY6200B	NEW 2 speed 12 volt Drill D-handle with 15 minute charger	350 178
EY6281BC	New variable speed 9.6 volt Drill w/15 minute charger w/case.	350 165
EY571B	var. speed 9.6 volt Drill Kit	329 128
EY571BC	EY571B with case	275 145
EY6207BCNEW	12 volt 1/2" Drill w/keyless chuck var. spd w/15 min. charger & case	421 218

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LEIGH INSTRUCTIONAL VIDEO SALE 29.00		
MMTA	24" Mort. & Tenon attachment	299 175

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DT10	3/8" 7.2 volt cordless Drill	138 78
C7BD	7-1/4" Circular Saw with brake	230 127
M12V	NEW 3 HP var. speed Router	447 225
TR12	Plunge Router 3 HP	354 169
F1000A-12	Planer/8" Jointer	2635 1519
CI0FA	10" Deluxe Miter Saw	538 269
CI2FA	NEW 12" Miter Saw	632 295
C8FB	8-1/2" Slide Compound Saw	899 445
FREUD LU91M08S	1-1/2" Carb bid 48 l.	68 43
CI5FB	15" Miter Saw	745 375
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Model #	Dia.	Teeth	List	Sale
73-716	6-1/2	18	13.70	7.55
73-717	7-1/4	18	13.90	7.99
73-737	7-1/4	24	17.20	9.29
73-757	7-1/4	40	31.30	16.89
73-759	8-1/4	40	44.65	24.39
73-719	8-1/4	22	19.65	11.95
73-715	5-1/2	16	13.70	7.99
73-740	10	32	32.98	17.95
73-770	10	60	67.02	33.95
73-711	10	50	65.08	33.95

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401	Porta Nailer complete	265 189
501	Face Nailer complete	265 189

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BAUER LADDERS

34044	4' Fiberglass 300 lb rating	155 60
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34046	6' Fiberglass 300 lb rating	190 80

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6093DW Makita cdls var. spd Drill Kit w/clutch & brake. Includes extra battery & holster	313 167
9852K Porter Cable New 9852 Drill Kit Includes: extra Porter Cable battery	188
9853K Porter Cable New 9853 Drill Kit Includes: extra Porter Cable battery	188
7334K Porter Cable 5" Random Orbit Sander with case & 1 roll 100X & 150X discs	253 152
7395K Porter Cable 5" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	273 162
7336K Porter Cable 6" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	278 169
555K Porter Cable Plate Biscuit Jointer with case & 1000 assorted biscuits	339 192
JS100K Freud Plate Biscuit Jointer with case & 1000 assorted biscuits	351 186
1581VSK Bosch Top Handle Jig Saw with case & 30 Bosch blades	305 192
1582VSK Bosch CLIC Barrel Grip Jig Saw with case & 30 Bosch blades	305 192

BIESMEYER FENCES

B-50	50' Commer. Saw Fence	329 295
T-SQUARE 52 52"	Homeshop Fence	249 235
T-SQUARE 40 40"	Homeshop Fence	242 209

WEDGE SMART LEVEL

SP-PR2	2 FT Level w/sensor	120 88
SP-PR4	4 FT Level w/sensor	150 105
SP-PR6	7 FT Level w/sensor	180 139
SERIES200	NEW 2FT Level with sensor	54.95

Msx636 FEIN Electric Oscillating Triangle Sander Kit
Sale 279
LPN672 PONY Air Palm Nailer w/glove Sale 94.99

JORGENSEN ADJUSTABLE HANDSCREWS

Item #	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	19.00	11.95	62.95
#1	10"	6"	21.76	12.99	71.49
#2	12"	8-1/2"	24.95	14.95	81.89
#3	14"	10"	31.61	18.95	104.95
#4	16"	12"	42.30	24.95	143.95

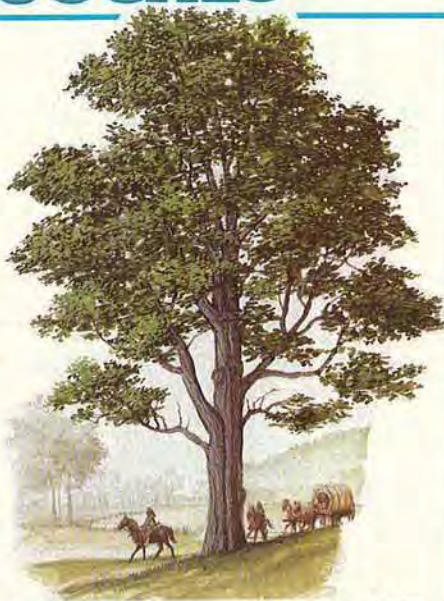
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OUR CHESTNUT CHALLENGE

At the turn of the century, one of every four hardwood trees east of the Mississippi was an American chestnut (*Castanea dentata*). So abundant was this species that homes featured it in framing, flooring, and furniture. But, all that was about to change. By mid-century a chestnut blight that had begun in 1904 had claimed all but a few trees.

Even today, research has yet to turn up a biological solution to forestall the deadly fungus that kills chestnut seedlings before they reach sapling size. And experimentation in breeding disease-resistant chestnut varieties has proven to be a slow process. Yet the fight to save this historic, endangered species goes on, pri-



marily through private-sector help from people like you. To find out what you can do, write: *The American Chestnut Foundation, P.O. Box 4044, Bennington, VT 05201, or phone 1-800/424-5580.*

CALIFORNIA'S ONLY FULL-SERVICE REDWOOD

Ukiah isn't California's redwood capital (that's unclaimed), but it is home to "The World's Largest Redwood Service Station." Jerry Martyn, owner of the tree . . . er, station . . . shown *below*, admits the sign might be a little misleading. But he's quick to point out, "it's the only one we know of, so it has to be the largest."

According to Jerry, the seed for this unique service station was planted in 1936, after a large red-

wood was felled on a ridge near Lower Springs Road. A crew cut an 18'-long section of the 17½'-diameter trunk into three pieces, hollowed them out, and then hauled them to their present site where they became the service station's office. "Before the freeway was built in 1950, U.S. 101 went by here, and everyone who owned a service station was trying to outdo each other," he explains. "My father-in-law put that sign up in 1947, and it's been a landmark ever since."

The redwood service station was operational until last year, when full service finally became impractical. "Now, it's just a tourist attraction," states Jerry.

Out of service: Ukiah, California's landmark, redwood gas station



Illustrations: Jim Stevenson Photograph: Dave Peck

WHEN TREE FLAGS FLUTTERED!

How important were trees to the colonists of the New World? Plenty! In fact, these hearty souls respected this resource so much that they pictured them on their first flags of independence. As just one example, American soldiers flew a flag emblazoned with an evergreen at Bunker Hill.

The venerable evergreen also decorated the Continental flag, the banner of Washington's Cruisers, the Vermont flag, and the ensign of the Massachusetts navy. The makers of the Liberty Tree flag took exception, though, and selected a leafy hardwood.

Continental Flag

Bunker Hill Flag



ENVIRONMENTALLY SAFE PEANUTS

Mail-order customers of The Woodworker's Store in Rogers, Minnesota, never have to dump their throwaway, synthetic packaging in the trash. They just toss it in the sink.

For months, the woodworking-supplies retailer has been shipping orders packed with water-soluble "peanuts." Just turn on the tap and they disappear!

Store president Ann Jackson says the new-fangled peanuts' corn-wheat-gum composition means they're earth-friendly and won't contaminate ground water. But because they weigh a tiny bit more than the nonbiodegradable polystyrene variety, shipping costs have gone up slightly. Ann doesn't mind. "That's a small price for a healthier environment." 🌱

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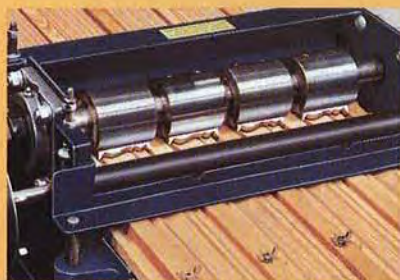
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Here's What Woodmaster Owners Say:

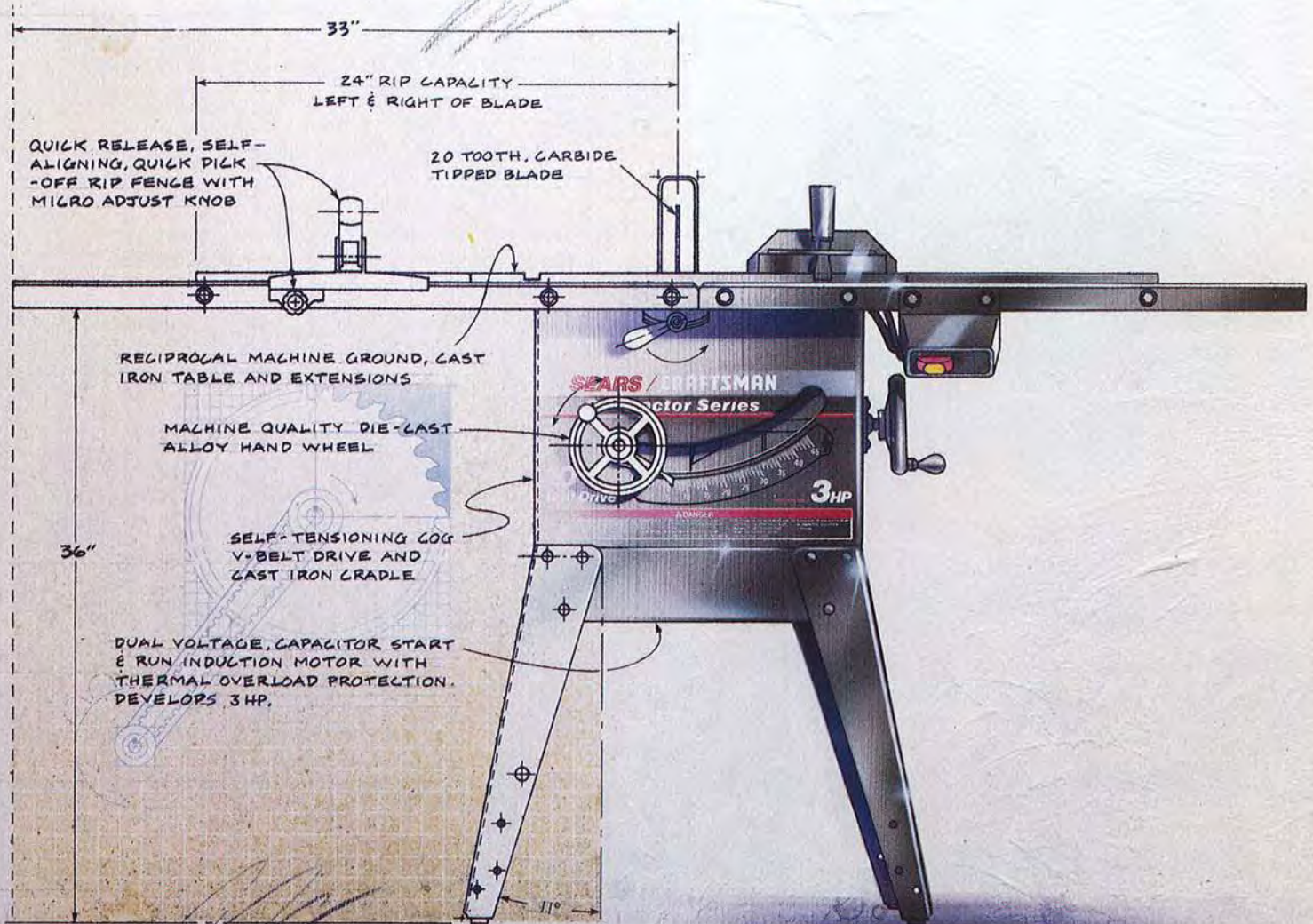
Shop Test Results—“It does an excellent job of planing, on a par with more expensive machines, and even better than some commercial models.”

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Best Value—“After checking them all, Woodmaster was obviously the best deal for the money. Also, I would like to acknowledge the polite and prompt service.”

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