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See page 44

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This issue’s cover wood grain: beech

DECEMBER 1989 ISSUE NO. 32

WOOD PROFILE
CALIFORNIA LAUREL: CALL ME MYRTLE 37
Although considered a novelty wood by some, turners and other woodworkers prize California laurel—also known as myrtle—for its beauty.

SHOP-TESTED TECHNIQUES
TAMBOUR: BEAUTY AND PRACTICALITY ROLLED INTO ONE 38
Templates, routers, and simplified setups make tambour techniques easier than you’ve ever imagined. Join us for a shop session on how to showcase your woodworking talents.

NOW YOU CAN BUILD IT
TAMBOUR-TOPPED DESK 44
Once you’ve mastered tambour construction, try your hand at building our rolltop desk. You’ll find lots of usable space beneath the tambour curtain and inside the desk’s six drawers.

CRAFTSMAN CLOSE-UP
WITH MOTHER NATURE AS A PARTNER, JIM SHIRLEY CREATES IMAGES IN TIME 52
There’s a bit of the scavenger in Jim Shirley. He’s a master at gathering weathered wood and then assembling the pieces into intricate murals.

TOOL BUYMANSHIP
TABLESAWS—HOW TO BUY THE MOST IMPORTANT WOODWORKING MACHINE IN YOUR SHOP 56
You should have seen our testing area after we called in 16 tablesaws for this article. Now, you can join us as we pass along the information we gleaned while studying these essential woodworking machines.

WHAT YOU SHOULD KNOW ABOUT TOXIC WOOD 74
Perhaps you’ve left the shop with a stuffy nose or an unusual rash. If so, it’s time you found out more about some potential troublemakers.
OUR FEARLESS WOODWORKER GOES SHOPPING FOR BANDSAW BLADES
Bill Krier, our products/techniques editor, introduces a new feature to WOOD magazine that should help you when you buy woodworking supplies. On Bill's first shopping trip, he learned one heck of a lot.

HOLIDAY GIFT SAMPLER

CHIP OFF AN OLD CHIPPENDALE WALL MIRROR
Our annual gift section opens with a handsome mirror that sparkles with simplicity. We bet someone you know would proudly hang this beauty.

HARDWOOD BOOKENDS
Here's a project bound to please bookworms. Best of all, the bookends assemble quickly.

TABLETOP EASEL
Artwork and photographs have never looked better than when they're resting on this easel designed by Jim Boelling, our project builder.

ROLLING-PIN RECIPE-CARD HOLDER
The cooks on your gift list will appreciate this nifty holder while stirring together favorite recipes.

BARNSTORMING BIPLANE
Kids will love this sturdy toy reminiscent of the World War I Curtiss JN-4. It's another winner from our Design-A-Toy competition.

CARVE A HOLIDAY ANGEL
Ron Mackey shares a versatile pattern for a pin, ornament, or wall hanging.

SHORT-SUBJECT FEATURES
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Talking Back ......................................... 8 Tool Industry Insider ......................... 96
Tips from Your Shop ................................. 18 Finishing Touches ................................. 124
(And Ours) ............................................ 18
THE EDITOR'S ANGLE

WE'RE INVESTING IN THE NEXT GENERATION OF WOODWORKERS

You Can Help, Too

Over the past few years, there have been some fundamental changes in the way America's youth are being educated in woodworking. Today's curriculum centers around developing skills that allow for career opportunities later in life rather than on teaching woodworking as a pleasurable pastime.

There's also been a not-too-gradual shift away from woodworking and many of the other industrial arts toward computer education. While these changes may be necessary, we think that woodworking is much more than a career opportunity.

And fortunately, so does the 4-H Cooperative Extension System Council. Each year, more than 100,000 children from ages 9-19 participate in the 4-H Wood Science Program. In this program young people learn by doing. They work on projects they choose for themselves, submit their projects for exhibition and judging, and compete for awards at the county, state, and national levels. Each participant acquires personal skills, satisfaction, and pride in his or her accomplishment. We think all of these things are important—especially today.

And, that's why we have joined forces with the National 4-H Council and the fine WOOD magazine advertisers listed on page 105 to sponsor the 1990 Wood Science Awards Program. Our $31,000 contribution will help to underwrite the efforts of this fine program and hopefully instill a healthy interest in woodworking among this country's next generation of home-woodworking hobbyists.

How can you help? Just haul out your telephone directory and look up the number of your county extension office. Ask to talk with the person assigned to the 4-H, and that person will be more than happy to fill you in. You can be of help in one of two ways. You can either volunteer to work directly with a small group of 4-H children or serve as a county project leader in which capacity you would help organize a group of volunteer leaders. Either way, you'll be doing a good deed that will help preserve woodworking's rich heritage.

Larry Clayton

BOSCH

Woodworking

Bore Cleanly: Forstner Bit Kits.
For superbly clean, flat-bottom holes in wood, nothing surpasses these fine Forstner bits. Forged of chrome vanadium alloy steel, they slice through end grain and knots without deflecting. Bosch offers two kits in custom wooden boxes: 7 bits, \( \frac{1}{4}'' \) through \( 1'' \); 16 bits, \( \frac{3}{8}'' \) through \( 2\frac{1}{4}'' \).

New Jig Saw Minimizes Dust.
New Model 1581DVS features built-in collector for attachment to the Bosch Air Sweep™ Dust Extraction System. Vacuums away chips and dust from point of cutting; keeps a cleaner, safer working environment.

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Model 1273 and companion models have unique belt centering system. Rated super-duty for high production, the unit also has pinch point guards for safety and lever action for easier belt changes.
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**TALKING BACK**

We welcome comments, criticisms, suggestions, and even an occasional compliment. The volume of mail we receive makes it challenging to answer every letter, but we promise to do our best. Send your correspondence to: Letters Editor, Better Homes and Gardens® WOOD® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

**THE VIRTUES OF GARDEN SAWDUST**

You published a letter in the June 1989 issue from a reader requesting information regarding the use of sawdust as a garden additive. I would like to add to your response to say that fine sawdust and wood chips provide an excellent additive to the soil, especially in dry or hot climates.

The fine wood product added to the soil provides the same moisture-holding effect as peat. As the wood decays, it adds humus to the soil. You may add sawdust between rows as a mulch to retain moisture. However, in addition to the nitrogen fertilizer you recommended, you should add lime to the soil because of the high acid content of wood products. For plants or shrubs that require an acid soil, the wood product provides excellent acid-building agent.

For gardens, I recommend tilling the sawdust into the soil, which helps blend the soil and sawdust. As an added tip, till wood ashes into the soil as a valuable source of potash.

—John Wolfe, Oakland, Md.

**WHAT ABOUT THOSE ROUTER SPEED REDUCERS?**

I recently purchased a Makita ½” plunge router to use with rail-and-stile cutters, panel-raising bits, and other large router bits. The June 1989 issue of WOOD magazine featured a review of a speed reducer in the “Products That Perform” department. The article suggests that the MLC5 speed controller may be used with any AC/DC router, but does not indicate that a controller may damage a router if it runs at slow speeds.

Also, local router outlets claim that speed reduction on large bits isn’t necessary for safe operation. In fact, the local Freud dealer claims that large bits are designed to run at fixed speeds.

I’d like some help at sorting all this out.

—John Calver, London, Ontario

John, we first talked with Roy Thompson from Makita. "If the controller reduces speed by reducing voltage to the tool," Roy says, "then using it would be..."
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harmful to the machine. I would say that anything that drops voltage by more than 10 percent to a universal tool can damage it." Why? “According to Ohm’s law, if resistance in a tool remains constant (which it does, of course) then there must be an increase in amperage when voltage drops. An increase in amperage causes the tool to overheat (amps equal heat in a universal motor), which damages it.”

Roy likened this drop in voltage to that which occurs when you use an extension cord that’s too long or too thin. “The resistance of the cord starves the tool of voltage, which can damage it,” he adds.

Bill Goldman, a vice president at MLCS, responds that his firm’s speed reducer uses an electronic feedback loop that converts AC current to DC and then rapidly turns the router on and off. “It’s not a rheostat (a voltage reducer) like an ordinary dimmer switch—that would burn out a router. Our voltage control can be used with any router, or any tool with a universal motor for that matter.

“It will beat up some, but there’s no problem using it for 20 or 30 minutes at a time—most of our customers aren’t production workers who would use it for continuous periods longer than that.”

Bill says the MLCS control basically operates the same way as variable speed units incorporated in some routers. “It’s not quite like the Porter-Cable control,” he says, “but it’s similar to the control in the Elu and Ryobi routers, for example.”

John Nichols, Porter-Cable’s technical services manager, agrees that speed reducers “can be used in light applications, with a router that’s too big for the job, if the operator is careful. A voltage drop equals an increase in amps, and extra amps heat up the motor—all at a time when the fan is slowing down.”

“Porter-Cable’s model 518 variable speed router relies on a sophisticated switching system that turns the motor on and off very rapidly.”

As for safely operating hefty bits, Jim Boelling, our project builder, suggests reducing the router speed when running router bits 1 1/2” diameter or larger.

LOW-COST OPTION FOR OUTDOOR LIGHT CIRCUITRY

For woodworkers who know their way around cars, too, Tom Reigle of Carlyle, Illinois, suggests that automotive back-up lights work well for low-voltage applications. To build the outdoor lights featured in our June 1989 issue, Tom scrounged his sockets at a salvage yard and fastened the lights together with 3M Scotchlock connectors. He then wired his lights to a timer/transformer left over from a set of broken plastic outdoor lights. After completing his yard lights, two friends insisted that he build sets for them, too. “That’s one of the joys of woodworking,” Tom says.

Continued on page 12
Let’s face it. We all have some special home improvement projects that we’ve been thinking about for longer than we’d like to admit. But none of us like to take out a loan to pay the high cost of getting things done by a professional.

That’s why over a quarter of a million people have decided to do it themselves with the versatile Shopsmith® MARK V...and you can, too!

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WATCH WHERE YOU BLOW SAWDUST

Over the years, I've looked forward to the many helpful woodworking tips appearing in WOOD magazine. However, with every now and then I come across an item that causes me to wonder why some writers do things in the manner they describe.

One such procedure that I thought the editors at WOOD magazine should have picked up prior to publication was that described in the T. C. MacMichael wood-finishing feature in the April 1989 issue. In the step-by-step column, he mentions how he gets rid of sanding dust by blowing it off with compressed air.

As an industrial hygienist who has seen the sad consequence of prolonged inhalation of atmospheric wood dust by workers, I cringe when I read of an experienced professional practicing such a dumb habit. I am adamant in my conviction that there is only one satisfactory way to remove sanding dust from any source: vacuuming it and following up with a tack cloth.

I'm also convinced that the editors of WOOD magazine and similar magazines owe it as a service to carefully monitor submitted articles for practices that are physically dangerous or impose potential inhalation damage.

—Louis Faenza, Franklin, Mass.

Thanks for the input. As a policy, we do not force the use of safety equipment or safe procedures on the woodworkers we interview. However, our article should have included an editor's note suggesting a better solution to remove the dust safely.

MORE MOBILES!
MORE MOBILES!
I need your help. Could you please give me information on where to get more patterns of birds in flight like the parrot you published in the June 1989 issue?

—William East, Sulphur, La.

Wow! Those parrot patterns have been popular, Bill, and you're not the only reader to ask for plans for additional mobiles. Check out the catalog offered by Timbers Woodworking, Timbers Building, Carneal Bay, CA 95711. Their catalog shows 12 different mobiles. For phone orders, call 916/581-4141. Or, try Metsel Hardware Specialties, P.O. Box 70, Mound, MN 55364-0070. Call 612/471-8550 for their latest catalog with four designs.

Continued on page 15
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Just a few of the unique woodworking tools of the 3,500 others available from our most versatile tool, the 1990 Garrett Wade Catalog. The 212 page Catalog, regularly $4.00, is Free with any order from this ad. Or if you would just like the Catalog, send us $4.00 with your name and address. It’s the one woodworking source book you shouldn’t be without.

A / Our 202GF Gap Filling Glue Has Remarkable Properties
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B / Special Bandsaw “Cool Blocks” Prolong Blade Life And Increase Accuracy
Made of a special Graphite impregnated Phenolic Laminate, this set of 4 replaces your upper and lower side blade guides.
They run cooler than conventional steel guides and are more “slippery”. You can set them actually touching the blade, consequently giving more control and accuracy over the cut. They are sure to improve the performance of whatever bandsaw you use. 8 sizes are available to fit most bandsaws.

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33K09.05 “E” Old Sears (¼” Rd.) $11.95
33K09.06 “F” Jet 14” (fits most Delta-type copies) $11.95
33K09.07 “G” Gilliom (½” Rd.) $11.95
33K09.08 “H” Delta 16” $11.95

C / Garrett Wade Has Discovered Some Very Interesting Bandsaw Blades.

½” “Super Narrow” Blades
You may have never seen a blade like this 24 tpi, in a raker style, these give smooth cuts while making incredibly tight turns. We strongly recommend our “Cool Blocks” for these delicate blades, because they can be set closer to the blade without danger of overheating or destroying the teeth as normal metal guides can.

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33K12.01 ¾” Scroll $13.50
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33K13.01 ¾” Scroll $12.20
33K13.02 ¾” Cabinet $9.40
33K13.03 ¾” Cabinet $9.95
73¼” Blades (Inca 10 ⅛”)
310.160 ¾” Scroll $12.80
310.161 ¾” Cabinet $9.70
310.162 ¾” Cabinet $10.30
104¾” Blades (Delta w/Riser and Inca 20”)
710.101 ¼” Scroll $16.00
710.201 ¼” Cabinet $11.95
710.202 ¼” Cabinet $12.90

D / Saw Setting Gauge Can Be Read From Any Position
Most saw setting gauges have at least one or two main weaknesses. They either rest partially on the insert plate which is usually not the same height as the main table, or they are so thin that it is difficult to ensure that teeth are being gauged at the top of the arc. This Gauge is made from machined Aluminum a full ¾” thick and 9” long. With ¼” graduations on one end and ⅛” on the other, it will indicate any height from ⅛” to 2”. Most useful for Table Saws but also handy for Router depth setting. The markings are vertical on one face and horizontal on the other, so you can read them easily and accurately.

71K26.02 Saw Setting Gauge $16.95

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MORE INFORMATION 
TO BUILD SHAKER CHAIRS
Because of an oversight, we omitted a reference mark for drilling the front legs of the Shaker chair shown in the August 1989 issue of WOOD magazine. For a revision of the dowel clamp and drilling guide, write: Shaker Chair, WOOD Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

LOVE THAT ROSCOE
This is a super raccoon carving and instruction. Thanks for all the good information, and I hope you can continue to have good carving lessons and offer rough-outs.
—Glen W. Lewis, Coffeyville, Kan.

I enjoy your magazine very much. I have been a wood carver for 10 years, and I subscribe to about eight carving periodicals and have purchased about 50 books on wood carving. Desiree Hajny’s article in the June 1989 issue of WOOD magazine is one of the best I have ever seen.
—John Gardner, Leonia, NJ.

Thank you for this great opportunity to participate in wood carving. This is something I have always wanted to do.
—Harold Card, Monrovia, Calif.

I really enjoyed your article on Desiree Hajny, as I will be attending a seminar she is giving in Rochester.
—Don Merkel, Rochester, Minn.

We had a sneaky suspicion WOOD magazine readers would hit it off well with Desiree and her carvings. Since the article appeared, Desiree won first-place ribbons in two classes and in two large divisions at the 1989 International Wood Carvers Congress. ♣
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Build A-Toy

Last year, WOOD magazine readers sent more than 400 toys in response to our first-ever Design-A-Toy contest. This year, we changed the contest name to Build-A-Toy, altered the rules a bit, and set a goal to collect 2,500 toys. We still have a design contest—just like last year's hit competition. But, we've added a merchandise drawing for all the woodworkers who feel more comfortable building toys from plans and for those not winning prizes in the design contest. The more toys you send, the better your chances to win.

We encourage all woodworkers—whether you design your own toys or build from project plans—to enter WOOD magazine's 1990 Build-A-Toy competition. The U.S. Marine Corps Reserve, through their Toys for Tots program, will again distribute the toys to deserving children.

As an extra incentive, the first 1,500 entrants will receive a Vermont American Iso-Temp-Claw power screw-driving bit and a Starrett 3' pocket tape measure.

Thanks in advance for putting a sparkle in a child's eye!

PRIZES

<table>
<thead>
<tr>
<th>DIVISIONS</th>
<th>Student (K-12)</th>
<th>Home Hobbyist</th>
<th>Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand prize:</td>
<td>$1,500 in merchandise from Black &amp; Decker</td>
<td>Delta</td>
<td>Freud</td>
</tr>
<tr>
<td>First place:</td>
<td>$500 in merchandise from Total Shop</td>
<td>Jet</td>
<td>Bosch</td>
</tr>
<tr>
<td>First runner-up:</td>
<td>$250 in merchandise from Grizzly</td>
<td>Leichtung</td>
<td>Dremel</td>
</tr>
<tr>
<td>Second runner-up:</td>
<td>$100 in merchandise from American Tool Cos.</td>
<td>Industrial Abrasives</td>
<td>Santa Rosa Tools</td>
</tr>
</tbody>
</table>

Judges will award these special citations:

- Best professional finish: $1,000 in Minwax merchandise
- Best home-hobbyist finish: $1,000 in Deft merchandise
- Best use of router: $1,000 in Porter-Cable merchandise
- Best use of wood: Kity K-5 from Farris Machinery ($1,895 value)
- Best painted finish: $1,000 in Red Devil paints and stains
- Best truck: Makita Maxi-Shop ($600 value)
- Best car: $1,500 in merchandise from Foley-Belsaw
- Best pull toy: Shopsmith Power Station with bandsaw, jointer, strip sander, belt sander, disc sander, and casters ($1,650 value)

All design winners will receive a pocket hacksaw, valued at $7.75, from Olson Saw

Random Drawing:

- AEG $250 in merchandise
- Acme Electric (The Tool Crib) 1-hp Eru router ($250)
- American Machine and Tool carving set model AB62 ($55)
- Albert Constantine and Son $200 hardwood package
- DML five 10" carbide-tipped blades ($87 each)
- Fabulon Gel-Eze Stains thirty stain kits ($20 each)
- Fisher-Hill Products three Ripstrates ($75 each)
- Franklin International 10 Titebond glueing kits ($10 each)
- How-To Book Club five book club memberships ($100 each)
- Lobo five portable belt sanders ($99 each)
- MCIS 8-piece craftsman router bit set ($126)
- Meisel Hardware ten $25 gift certificates
- Milwaukee Electric 4" belt sander with bag ($348)
- Nova Tools branding iron ($26)
- Olson Saw two carbide-tipped saw blades ($80 each)
- Penn State Super 15 scroll saw ($130)
- RB Industries 14" scroll saw ($550)
- Rodale Books Build It Better Yourself woodworking books ($75)
- Skil plunger router model 183502 and accessories ($250)
- Thompson-Formby five $100 Formby gift sets
- Vaughn & Bushnell ten handyman utility packs ($29 each)
- Wilke Machinery Bridgewood model BW12P 12" planer ($599)
- Williams Tools Black & Decker cordless jigsaw 3140 ($250)
- The Woodworkers Store $50 gift certificate
- Woodworkers Supply of New Mexico Matchmaker jointer ($549)
- The Woodwork two $25 gift certificates
1990 RULES

1. Make projects no larger than 2x2x2'. The primary material should be wood, but may incorporate other materials.

2. Please follow Consumer Product Safety Commission guidelines. Nontoxic wood finishes only; no parts smaller than 1/4" square on toys for children under 3 years of age; no sharp corners or points; pull strings longer than 12" should not have beads or other attachments that could tangle and form a loop.

3. No purchase necessary. Complete an entry form, photocopy an entry form, or print Build-A-Toy at the top of a 3x5" card with your name, address, daytime phone number, and division. Mail with the toy to: Build-A-Toy, WOOD Magazine, 1912 Grand Ave., Des Moines, IA 50309.

4. Those not winning prizes and woodworkers who build toys from plans are eligible for a Random Drawing. For each toy received, your name will be entered once. Without a toy, you may enter the Random Drawing by completing the entry form described in Rule 3. Chances of winning depend on the total number of entries received. Meredith Corporation, whose decision is final, will supervise the Random Drawing.

5. Entries must be received by February 1, 1990. All entries must be postmarked; collect entries will be refused. Attach an entry label to each toy.

6. Entry constitutes permission to use winner's name and photograph for promotional purposes. Employees and family members of Meredith Corporation, their affiliates and subsidiaries are ineligible.

7. The first 1,500 entrants will receive a 3" Starrett pocket rule ($3 value) and Vermont American Iso-Temp-Claw power screw-driving bit ($5 value). Canadian entrants, as required by law, must answer the skill-testing question on the entry label. All federal, state, provincial, and local laws apply. Void where prohibited. Contest and Drawing void in Quebec.

8. Winners will be selected and notified by mail on or about April 15, 1990, and will receive the prize directly from the manufacturer/distributor. For a list of winners, send a separate, self-addressed stamped envelope to Build-A-Toy, P.O. Box 11454, Des Moines, IA 50336-1454.

9. Meredith Corporation will donate all entries to the U.S. Marine Corps Reserve Toys for Tots program. These additional rules apply only to the design contest:

10. Toys must be your original design. A different approach to an existing toy would qualify. Please do not enter toys with only subtle changes from published patterns.

11. A panel comprised of representatives from the U.S. Marine Corps Reserve, Meredith Corporation, and woodworking experts will judge the toys on originality, craftsmanship, originality, and durability. The panel's decision will be final.

12. Professional woodworkers include woodworking teachers and anyone earning income by selling wooden items.
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Do you have a great shop tip (or two) you'd like to share with other WOOD® magazine readers? For each published submission, you get:
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We try not to use shop tips that have run in other publications, so please send your tip to only one magazine. We cannot return shop tips. Mail your tips, address, and daytime phone number to:

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**PARAFFIN HELPS RIP FENCE GLIDE SMOOTHLY**

The metal parts of a ripping fence and the rail on which it rides can stick, making it difficult to position the fence exactly as you want.

**TIP:** Rub a paraffin bar along the rail as shown above to apply a thin coat of wax, which allows the fence to glide smoothly along the rail. You can purchase paraffin at most grocery stores.

—from the WOOD magazine shop

**A BENCH HOLD-DOWN ANYONE CAN AFFORD**

European-made woodworking benches typically include metal bench dogs and other devices for securing workpieces in place for sanding, carving, and other operations. There's no question they're desirable, but their cost puts such niceties out of reach for many of us.

**TIP:** Tailor-make hold-downs for your bench by calling one or more of your 3/4" pipe clamps into double duty. At suitable intervals (we spaced ours 1' apart in two rows 1' apart along the front of a bench), bore 1/4" holes through the surface of your bench. Then, screw pipe flanges in place underneath as shown at right. Thread a length of pipe into the flange, add the clamp, and you have an inexpensive hold-down. To accommodate a variety of stock thicknesses, buy varying lengths of pipe.

—Tom Koening, Easton, Mo.

**BBs HIT BULLSEYE FOR DOWEL-HOLE PLACEMENT**

Precisely locating dowel holes in matching pieces that have unusual shapes will help you produce a properly fitted project. Here's a method that's quicker and just as accurate as the method using small nails described in the quilt rack project featured in the February 1987 issue of WOOD magazine.

**TIP:** First, mark the centerpoints of the dowels with an awl. Then, tap BBs slightly into each awl mark. Place the corresponding curved top piece precisely on top of the first one and tap with a rubber mallet. When you separate the two wood pieces, the BBs will make dowel centermarks that match exactly.

—Bernard Paumier, Baltimore, Ohio

continued on page 22
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TIPS FROM YOUR SHOP (AND OURS)
Continued from page 18
END THE SEARCH FOR GLUE-BOTTLE CAPS
All too often, the original cap that's supposed to seal a glue bottle vanishes from your workshop. Before you know it, your bottle spout plugs up with dried glue.

TIP: Electrical connectors (wire nuts), normally used to fasten and insulate electrical wires, also make excellent caps for glue bottles. Their large size and loud colors make them easy to find and keep on the bottle.
—Fred A. Race, Euclid, Ohio

USE A COMB TO HAMMER YOUR NAILS—AND NOT YOUR FINGERS
Anytime you drive small brads and tiny nails, you run the risk of hitting the wrong nail—your fingernail. Ouch!

TIP: An everyday pocket comb does a nice job of holding those little fasteners, especially nonferrous nails and brads that ignore the grip of magnetic holders.
—Frank A. Erdt, Gumm Spring, Va.
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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 22

HANDSCREWS MAKE THE BEST OF 'EDGY' WORK SITUATIONS

Although a woodworking vise will hold small pieces of stock on edge, some unwieldy jobs such as planing an edge or drilling holes into the face of an edge while a vise. The vise cannot provide the kind of support you need—especially for long boards.

TIP: Use a pair of large hand-screws to hold each end of a workpiece in place on top of your bench as shown below. Start by securing one clamp to the bench. Then, follow these two steps for tightening the clamp holding the workpiece: First, adjust the screw nearest the stock to the thickness of the board. Second, with the clamp jaws parallel, tighten the other screw to secure the board.

—from the WOOD magazine shop

POUR AN INSIDE FINISH

Sometimes, it's impossible to use paintbrushes to apply finishes to the inside of small hollow objects such as vases.

TIP: Often, it's easier and more effective to pour finish into the hollow article, turn and tilt to coat all surfaces adequately, and then pour out the finishing material. Be sure to invert the piece long enough to drain completely.

—from the WOOD magazine shop

Continued on page 27
Adding to the tradition

It always pays to be well-connected. In this case it pays a hundred bucks.

The new Delta Plate Joiner. Bolt one of these babies to your bench between now and the New Year and Delta will send you a check for 100 bucks. That'll buy a lot of biscuits for all the great connections you'll be making. Because once you've worked with our new stationary Plate Joiner you'll never want to be without it.

This one puts an end to the dowel-joint struggle. And it takes biscuit joining a giant step beyond anything you can imagine with a portable joiner.

A foot pedal controls blade movement, so both hands are free to control your work. You can handle edge, face, bevel edge, bevel end and miter joining, as well as Tee-molding with all three standard biscuit sizes.

The table raises and lowers to handle large workpieces. And it's slotted to accommodate an adjustable stock-stop for edge or miter joining. An auxiliary table swings into place for bevel joining.

If you're ready to make some great new connections, call toll free for the name of your participating Delta Distributor. Delta International Machinery Corp., 800/438-2486 (in PA 800/438-2487).

Offer good only from participating distributors in continental U.S., Alaska and Hawaii from Sept. 1 thru Dec. 31, 1989.

Building On Tradition

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Cut intricate wood patterns easily with this versatile machine. Many extras, including:
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FEATURES:
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SPECIFICATIONS:
- Construction: Cast Iron
- Throat depth: 15"
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- Machine weight: 43 lbs
- Motor: Heavy duty totally enclosed fan cooled 110-120V, UL listed, ball bearing induction motor
- Blades: uses 5" standard & pinend
- Stroke length: 3/4"
- Cut Speed: 1650/min
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This machine will pay for itself time and again by planing your own lumber. At 65 lbs, you can carry this Planer to a job site or mount it permanently in your workshop like any stationary machine. You'll spend hundreds of dollars less for this 12-1/2" power feed Planer than for a traditional stationary model of a similar capacity - with comparable results.

SPECIFICATIONS:
- Knives: 2ea, 12-1/2" wide, HSS
- Motor: 16 Amp, 115V, 8000 RPM
- Auto Feed rate: 26.2 FPM
- Cutting speed: 16000 Cuts/min
- Thickness of stock: 3/16" to 6"  
- Size: 15-1/2"H X 22"W X 21" Bed
- Max depth of cut: 1/8"

Add $15 UPS Freight

Free with Purchase of Saw:
- 12 Blade Assortment .............. $ 3.50 value
- Extra Std. Blade Holder set........ 8.50 value
- E-Z Set blade change system... 15.00 value
- Neptune 1-1/2" plastic Lettering guide set & patterns..... 25.00 value

FREE... $52.00 VALUE

Planer & Accessories Price List
Super 125 Planer - complete and assembled
#P1A........... $349.95 ($15 UPS)

Extra Set of 2 Knives - High speed steel, 12-1/2"
#PKN............. $25.00/set (+)

Dust chute - for vacuum takeoff of wood chips
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Planer stand - Heavy duty, 27-1/2" high
#PST.............. $39.00 ($6 UPS)

Ball Bearing Rollers - (Minimum purchase 2 rollers )
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TIPS FROM YOUR SHOP
(AND OURS)

Continued from page 24

HOW TO IMPROVE YOUR WORK SUPPORT

Surely one of the handiest helpers in a shop is the adjustable work support. But, they do have their faults. Light ones, for example, tip easily. And, you often have to try two or three times before you get the height adjustment correct.

TIP: Stabilize those lightweight work supports by adding ballast in a 2-gallon ice cream container or small paint bucket filled with concrete. Lowering the center shaft into a short length of PVC pipe set in the middle keeps the weight in place on its plywood platform (see drawing below). To quickly adjust the height for specific tools, score lines on the center shaft and, if you like, make masking-tape labels to remind you what the lines mean.
—John Rojeski, Denham Springs, La.

MORE TIPS FROM OUR WOODWORKING PROS

You’ll find other handy shop tips in this issue of WOOD magazine.

- Add non-skid feet to your projects by filling counterbores with a bit of flexible silicone. See our bookends project on page 85.
- See our easel project on page 88 for a way to make wooden hinges.
- We’ve devised an easy-to-make drill guide that helps you drill several holes at the same angle. Take a flight over to our biplane project on page 90.

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A SWELL DEAL
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Like glue, it locks up the joint tightly. Unlike glue, Chair-Loc leaves the joint slightly flexible. The red-tinted clear liquid expands wood fibers, then deposits a solid substance in the fibers to retain the swollen shape. It works in 15 to 30 minutes. Remember to use Chair-Loc only on relatively well-fitting joints. For really loose dowels, or those with missing material, an epoxy is still your best bet for a gap-filling, rock-solid repair.

—Tested by Steve Oswalt

Chair-Loc, available nationwide in many hardware, home-center, and woodworking stores, and woodworking catalogs at less than $3 for a 2-oz. bottle and less than $4 for a 3-oz. container.

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<thead>
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<th>JET Model</th>
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<th>JET Model</th>
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<td>JTS-10 Table Saw</td>
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<td>JJ-6 Jointer</td>
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<td>JBS-14MW Bandsaw</td>
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<td>JWS-18 Shaper</td>
<td>$417.00</td>
<td>DC-610 Dust Collector</td>
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Building On Tradition

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Here's a course on furniture refinishing—complete with instant replay—that you can watch and review at your leisure. The video, produced by another Better Homes and Gardens® division, runs 57 minutes and covers every step from stripping of the old finish to applying a new one. You'll also see tips on removing scratches, burns, dents, water spots, and other blemishes. Since you need to know the type of finish you're dealing with before you get started, this tape even shows some simple tests for identifying old finishes. Best of all, the recommended procedures make use of materials you probably have in the home and shop—not a lot of expensive tools and concoctions. When you finish working, the tape shows you how to safely dispose of hazardous chemicals.

Although I've refinished a variety of antiques, I gained a lot of new information and confidence from the tape that I could use in my next project. I especially appreciate the handy book of "dos and don'ts" included with every tape.

—Tested by Bill Krier

Refinishing Furniture video, no. 23510. $22.95 ppd., from Better Homes and Gardens®, Locust at 17th, Dept. 23F, Box 374, Des Moines, IA 50336. For credit card orders, call 800-678-2672. ♦

WOOD MAGAZINE DECEMBER 1989
# Quality Carbide-Tipped Router Bits and Shaper Cutters!

## Double-Fluted

<table>
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<tr>
<th>Straight</th>
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## Cove Bits

<table>
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## Cove Bits (1/2" Shank)

<table>
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<tr>
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<tbody>
<tr>
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<td>1&quot; Straight</td>
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## Corner Round

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<tbody>
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<td>1/2&quot; Radius</td>
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## Bead

<table>
<thead>
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<td>$32.95</td>
</tr>
<tr>
<td>C2066</td>
<td>$35.95</td>
</tr>
</tbody>
</table>

## Complete 6-Piece Cabinet Sets

CARBIDE-TIPPED WITH 3MM-THICK CARBIDE - 3/4" BORE WITH 1/2" BUSHINGS

Make all the doors you've always wanted with these stile & rail sets. These sets are really made right! They come complete to cut profiles shown. Any serious cabinetmaker has a set of these.

- 3/4" Bore with 1/2" Bushing For 13/16" to 1-3/4" Material
- 3/4" Bore with 1/2" Bushing For 1" to 1-5/8" Material
- 3/4" Bore with 1/2" Bushing For 1-1/8" to 1-5/8" Material

## Dovetail

<table>
<thead>
<tr>
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<th>PART NO.</th>
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## Finger Nail

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## Great Fluting Bit!

<table>
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<td>3/4&quot;</td>
<td>C1209</td>
<td>3/4</td>
<td>$20</td>
</tr>
</tbody>
</table>

## The Great Panel Cutters

Our panel cutters are designed with a 1" x 1" blade for faster, smoother cutting and longer life. Available in 5 profiles and two diameter sizes. For 1/2" to 3/4" spindle shapers, use our 4-5/8" diameter cutters, and for 1" to 1-1/4" spindle shapers, use our 5-1/2" diameter cutters. Top quality product.

**only** $69.95

## Quality Carbide-Tipped Panel Cutters

- 3/4" Bore Carbide-Tipped Panel Cutters
- 4-5/8" Cutting Circle - 1/2" Bushing Provided
  - 5" Face Cut Part No C2062
  - 15" Face Cut Part No C2066

## Beading

<table>
<thead>
<tr>
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<th>PART NO.</th>
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## Beading (1/2" Shank)

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<td>C1172</td>
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</tbody>
</table>

---

**CALL TOLL FREE: 1-800-235-0272**

Send for our expanded 1989 catalog. It's FREE!
Another Way to Look at Routers

The router has become a workhorse in the wood working shop. When mounted under a router table like the Freud FRT2000, the router can take the place of a more expensive spindle shaper.

Freud's new FT2000, 3-1/4 HP Plunge Router with 1/2 inch collet has been engineered with your needs for a versatile and safe tool in mind. The mighty 3-1/4 HP motor is the most powerful you can buy!!

**FOUR major features separate the FT2000 from other routers and make it a pleasure to use!**

The **Long Collet**, 1-3/8 inch, has 6 constricting slots. This feature allows for a longer, more even grip of the bit shank. This decreases run out found on routers with shorter, single slotted collets and increases operating safety.

The **Micro-Adjustment Depth Control** makes accurate vertical settings quick and easy. No more twisting of the router body or "hit & miss" plunging with inaccurate measurements and difficult locking devices. An effortless turn of the knob does the trick! This makes table mounted adjustments a snap!

With the **Sliding Shaft Lock** found on the Freud FT2000, bit changing is simple, safe and easy. Only the one wrench provided is needed. No more busted or bruised knuckles and hands!! This is best appreciated when changing a bit with your router mounted under a table.

**Safety** was an important factor when the on-off switch and the plunge lock were designed! They would need to be released at the same time in the case of an emergency. Both are designed with a downward stroke to disengage each feature.

The **on-off switch** is located on the side of the router. A simple flick of the left thumb while holding the handle turns the machine on-off. The **plunge lock** is located by the right handle. It can be conveniently operated by the fingers of the right hand.

A 1/4 inch collet reducer and collet wrench are standard with this powerful machine. Optional accessories include micro-adjustment parallel fence and a set of template guides.

The FT2000–3-1/4 HP Plunge Router List: $299.90 Call today for the name of your local Freud distributor!

**Input** 15 Amps 120 Volts AC
**Horsepower** 3-1/4
**No Load RPM** 22,000
**Collet Capacity** 1/4", 3/8", 1/2"
**Max. Plunge Depth** 2-3/4"
**Base Diameter** 6-5/8"
Drive along southwest Oregon's coast, and you'll see signs shouting myrtle novelties. In the Coos Bay-Coquille area, a thriving cottage industry has sprung up to produce these wood items. Why tout this wood? For more than 170 years, the California laurel, commonly called myrtle, has been novel.

"The foliage, when bruised, gives out a most powerful, camphor-like scent...I have been obliged to remove from under its shade, the odor being so strong as to occasion violent sneezing," wrote English botanical explorer David Douglas in 1826.

With myrtle causing such a reaction, Oregon shipbuilders of the mid-1800s must have been a noisy lot. They called on the wood extensively for parts that required strength as well as smooth-wearing qualities. Today, turners and other woodworkers prize myrtle for its beauty.

**Wood identification**
The California laurel (Umbellularia californica), and its distant cousin sassafras, represent the only North American species of an entirely tropical genus.

As home range, myrtle settles between the mountains and the Pacific Ocean, from southern Oregon down through California. Myrtle, an evergreen, doesn't mind high, dry, wind-swept environs, but in them, rarely grows larger than bush-size. To attain its finest development, myrtle demands the rich, moist valley soil. There, the tree, swathed in its thick, reddish-brown bark, can attain a 90' height and a 5' diameter.

Marked by green, glossy leaves from 2½” to 4½” long, myrtle trees bear small yellow-green flowers in the spring. Inedible, round, purple berries appear later.

Myrtle has a tan sapwood and close-grained heartwood of a pleasing light-brown color. And, even the plainest boards have some favorable figure, as myrtle develops attractive mottle, bird's-eye, and swirling burls.

**Working properties**
In hardness, strength, and weight, myrtle compares favorably with oak. Turners favor myrtle because of its tighter grain and ease of sanding.

The same attributes woodturners praise, however, pose difficulties for craftsmen relying only on hand tools. To work myrtle, even power tools should have carbide blades. When planing or routing figured myrtle, expect some tear-out.

You can glue myrtle with all types of adhesives, and screws hold tightly in the wood. And, you won't need sanding sealers or fillers on myrtle's grain, except in figured areas where grain switches. The wood takes stain and all finishes without problems.

**Uses in woodworking**
Turners prefer highly figured stock, especially burls for bowls, but also make candlesticks, decanters, and other items of myrtle.

Cabinetmakers seek veneers of figured myrtle for custom case goods and furniture pieces.

**Cost and availability**
Where it grows, myrtle will cost from $1.50 to $3.00 per board foot for plain stock. Burls and figured stock command higher prices. Along Oregon's beaches, you can pick up myrtle driftwood for free, or buy it from coastal roadside businesses.

Expect to pay about $2 per square foot for figured burl veneer. You won't find myrtle plywood available anywhere, and lumber only occasionally in other parts of the nation.

Illustration: Steve Schindler
Photographs: Hopkins Associates
First used in France during the 17th century, tambour gained acclaim in the U.S. when the rolltop desk skyrocketed in popularity during the late 1800s. Nowadays, you can add a fashionable and functional accent to your projects with this time-honored alternative to hinged doors.

**PLAN NOW FOR SMOOTH ROLLING LATER**

Like the section-view tambour winding around this page, all tambour curtains ride in narrow tracks and consist of slats of wood held together with a canvas backing. To help you build a similar curtain into your next project, we developed this simple planning procedure.

With your cabinet dimensions in hand, determine the sizes of the tambour slats and the tracks by using the chart and drawing below. Note that larger cabinet openings (spans) require thicker and wider tambour slats for rigidity and appearance.

Now, refer to the examples shown above right and select the shape of the slats. Keep these considerations in mind for tambours that will prove both attractive and practical:
- **Rectangular slats** add a contemporary touch.
- **Chamfered slats** fit traditional or contemporary designs.
- For a nostalgic, traditional appearance, try the rounded-over or half-round shapes.
- Projects with an inside turn such as the one shown at right require a half-round or beveled shape to allow the tambour to make this turn. Remember that inside turns, such as on a rolltop desk, must be gradual. Otherwise, the tambour will not negotiate the turn.

Next, cut a piece of 3/4" particleboard to the inside dimensions of your project's end panels for use later as a

---

**Tambour Slat and Track Size Chart**

<table>
<thead>
<tr>
<th>Span</th>
<th>Slat Thickness</th>
<th>Slat Width</th>
<th>Tongue Width</th>
<th>Track Width</th>
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<tbody>
<tr>
<td>6-18&quot;</td>
<td>3/16&quot;</td>
<td>3/4&quot;</td>
<td>1/6&quot;</td>
<td>1/8&quot;</td>
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<tr>
<td>18-36&quot;</td>
<td>3/16&quot;</td>
<td>1/2&quot;</td>
<td>3/16&quot;</td>
<td>1/8&quot;</td>
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<tr>
<td>36-60&quot;</td>
<td>3/16&quot;</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>1/8&quot;</td>
</tr>
</tbody>
</table>

*Span, or length of slat = (inside width of cabinet) + (2 x track depth) – 1/16"*
BEAUTY AND PRACTICALITY ROLLED INTO ONE

To guide you through nearly any tambour project, we'll show you how to plan, build, and install a vertical curtain such as the one in the countertop appliance garage shown at right. If you would like to build this project, or one like it without a bottom so appliances can slide into it, see our free-plan offer on page 43.

To build a horizontal curtain, follow the same procedures described here, but remember that the tracks for the tambour will be in the top and bottom panels of the cabinet, not the ends.

We used the appliance garage shown above as an example of typical tambour construction.

routing template. On one side of the particleboard, lay out the path of the tambour track by following the guidelines in the drawing below left and this procedure:

First, mark the track setbacks for the front, top, and rear. When determining the front setback, remember that your lift bar should be at least as thick as the slats and set at least ½" back from the front edge or the cabinet side. Then, draw the tambour track parallel to the front, top, and rear, and mark the exit track radius. Using the chart below, determine the minimum radius for the outside turns at the top of the panels and connect the corners with a compass.

Next, determine the template offset that corresponds to the guide bushing and straight bit you’ll

<table>
<thead>
<tr>
<th>MINIMUM TRACK OUTSIDE TURN RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tambour Width</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>½&quot;</td>
</tr>
<tr>
<td>¾&quot;</td>
</tr>
<tr>
<td>1&quot;</td>
</tr>
</tbody>
</table>

chuck into your router. For an idea of how the template offset works, see the next page. For example, a ½" guide bushing and a ¾" straight bit will result in a ¾" template offset. Now, draw the offset just inside and parallel to the track already marked on the particleboard.

Continued
If you would like to add a \( \frac{1}{4} \)" plywood false back to hide the tambour, see the illustration on the previous page for the position of a holding groove. Lay out this groove directly on the end panels.

**PUT THE CABINET PANELS ON TRACK**

To shape the template, bandsaw along the outside of the offset line, being careful not to saw inside the mark. Then, sand to the offset line for a smooth template edge. This template will help you rout tracks on both end panels. Here’s how.

First, clamp the template to one of the panels and rout the track as shown on this page and in the illustration below. Be sure to move the router in a counter-clockwise direction for a smooth and crisp cut. Then, flip over the template and repeat this operation for the other end panel. Remove the template and use a straightedge to rout a groove for the false back if necessary. Finally, assemble the cabinet (including the false back).

*Note: You must assemble the cabinet squarely or the tambour will not slide smoothly.*

**LET'S BUILD THE TAMBOUR CURTAIN**

For a tambour that’s a pleasing, consistent color to the eye, cut all the slats from a single board. You’ll want to buy a long board and cut it into several lengths just slightly longer than your slats.

To determine how much material you’ll need, first decide how many slats will be required for a curtain that reaches from the bottom of the closure to just past the first turn in the track. Since none of us are perfect (and neither is lumber), it’s a good idea to cut four or five extra slats in case some warp or you make a small goof when machining them. Now, add together the thickness of one slat, the saw kerf of your ripping blade, and \( \frac{1}{2} \)" for a jointer cut, then multiply that figure times the number of slats. That number tells you the total width of lumber you will cut, but keep these things in mind:

- For safety, you can’t rip or joint strips from the full width of every board, so start with stock 2" wider than the amount of wood you’ll saw from it. This will leave 2" of scrap stock as you machine the last slat from that board.

- Choose a board that’s as thick as your slats are wide. Otherwise, be prepared to plane the board to the correct thickness.

To cut the slats, remember these words: joint, rout, sand, and rip. The sequence works like this:
Cut the board into lengths that are 1" or 2" longer than the tambour (including tongues). Joint \( \frac{1}{2}" \) from one edge of the board, and rout the slat shape onto that edge as shown at right. (See the desk project on page 50 for a technique for making beveled strips). Now, sand the shaped surface with 150-grit paper.

Set your tablesaw fence for the thickness of the slats, and with the shaped edge against the fence, rip the board as we're doing below right, using the pushblock below. Number each slat on the sawn side so you can situate them in the tambour in the same order they came out of the board. Repeat this sequence for each slat, always jointing the sawn edge of the board to re-establish a straight and smooth edge for the next slat. To help you attach a lift bar later, rip two more slats with no routed shape.

**PUSHBLOCK**

For ripping tambour strips

\[ \frac{3}{4} \times 3 \times 6" \]

(glue only to base)

Saw kerf

Equal to thickness of tambours

\[ \frac{3}{4} \times 3 \times 8" \]

To turn that loose pile of sticks into an orderly tambour, first use a framing square to set two cleats at a 90° angle for the gluing jig shown on the next page. After screwing down the cleats, place all the tambour slats (in numbered order),

**Continued**
shaped side down onto the jig, and place the two unshaped slats at the bottom. With the slats pressed firmly together, screw the other two cleats in place.

With a piece of pre-washed 10-oz. canvas, cut the material so it covers the slats from top to bottom and centers 1" from both ends (we bought our canvas at a fabric store).

If your finished tambour will be a dark color, treat the canvas with dark brown dye (the type available at grocery and variety stores). Doing so will help prevent the canvas backing from showing between the slats. Make sure the dye dries completely before proceeding.

Then, spread an even layer of white woodworker's glue over the slats and lay the canvas in place. Glue should not squeeze between the slats if you have no large gaps between them. After smoothing out the canvas with a rolling pin, add the waxed paper, particleboard or plywood panel, and weight. Allow the glue to dry for one hour. The tambour will have a slight case of rigor mortis, so break the glue between the slats by running the tambour over a tabletop as we’re doing top right. Trim both ends of the tambour as shown at right.

Now, chuck a straight bit into your router table and set the fence for the tongue length of the tambour. Elevate the bit just ½" above the router table and run the cloth-side of the tongue over the bit. This helps even out any irregularities in the thickness of the slats. For this operation, use the pushstick at right to hold down the tambour. Next, flip over the curtain, raise the router bit to cut the tongue to the correct thickness, and use the same pushstick to rout the rabbet (see photo at top left of next page).

**PUSHSTICK**

For cutting rabbet in slats

Short length of tambour strip glued to underside of pushstick

 Equal to overall height of assembled tambours
Hold down the tambour firmly when routing the rabbet.

Making Your Own Recessed Lifts

Step 1: Cut an opening through the liftbar

Step 2: Round over edges of opening

Making the Liftbar and Closure Strip

Chamfer back edge of closure strip.
Attach liftbar with pan head screws. Drill pilot hole through joint in bottom two strips.

Final Curtain Call: Install the Tambour

It's the moment of truth—time to test the tambour for fit. The curtain should slide with just a slight amount of side-to-side play. Ours initially felt tight and jerky, so we lubricated the tongues with some paraffin—beeswax also works. Presto! A smooth-rolling tambour.

When you're satisfied with the fit, add a lift bar by using one of the two methods shown at left. Or, mount the lift bar to the tambour with two knob-type pulls like those shown in the project on page 44. To attach the lift bar and an optional closure strip, see the illustration below left. The closure strip hides the turn in the tambour.

Finally, you have several means to stop the tambour from sliding too far back into the cabinet. A solid lift bar coming in contact with a closure strip will do the trick. Or, set one screw into each track at a point where the back end of the tambour will contact the exposed heads of the screws when the lift bar reaches the top of the closure.

To finish the curtain, remove it from the cabinet and attach it with double-faced tape to a scrapwood disc as shown at far left. This arrangement allows the stain and finish to reach between the slats.

Attach the curtain to a disc with double-faced tape. This helps you apply stain and other finishes between the slats.

Written by Bill Krier with James R. Downing Photographs: Hopkins Associates Illustrations: James R. Downing

Free Plan Offer
For a free plan of the appliance garage on page 39 (and one just like it without a bottom), send a self-addressed, stamped, No. 10 business envelope to:
Terrific Tambour
WOOD® Magazine
PO Box 11454
Des Moines, IA 50336-1454

Foreign readers, please include an international reply coupon.
Offer expires April 15, 1990.
I answer dozens of letters a month from readers requesting plans for a rolltop desk. Unfortunately, most plans call for desks too massive for most homes and too complex for most busy woodworkers. With that in mind, Jim Downing, our design editor, headed toward the drafting table. Jim’s version, with its handsome tapered legs, box-jointed drawers, and smooth-sliding tambour curtain, won’t overpower a room, yet still has a comfortable 24.5 x 44” writing surface. If you need a writing desk without the fancy top, just build the base unit shown on page 47.

Note: Unless you’ve had previous experience making tambour, we recommend that you read the shop-tested tambour-techniques article starting on page 38 for in-depth information on cutting pieces and forming the tambour curtain.

START FAST BY MAKING THE LEGS

1. For the front legs (A) and rear legs (B), cut four pieces of ½”-thick stock and eight pieces of ¾”-thick material to 2½ x 29½”. (We used ash; you might also consider oak, walnut, or cherry.)

2. With the edges and ends flush, glue and clamp a piece of the ½” stock between two pieces of ¾” stock for each front leg (A) where shown on the drawing below.

3. For the rear legs (B), cut the tambour-curtain notch in each of the two remaining ½”-thick pieces—see the drawing below for dimensions. Glue and clamp the pieces to form a pair of rear legs. Remove glue from each notch.

4. Scrape the excess glue from one edge of each leg, and joint the scraped edge. Using your tablesaw,
rip the opposite edge of each leg for a 2" finished width.
5 Mark the centerpoints and drill 3/8" holes to the depths listed on the drawing at the bottom of the page. (With the leg ends flush, we used a square to ensure the centerpoints aligned from leg to leg.)
6 Using the drawing below for reference, mark the cutlines on all four surfaces of one leg.

MARKING THE TAPER CUTFINES

7 Following the drawing below right, taper-cut each leg. See the Buying Guide at the end of the article for a taper-jig source. Or, see our taper-jig plans in the August 1987 issue of WOOD® magazine.

NOW, CUT THE APRONS, RAILS, AND STRETCHERS
1 Cut the side aprons (C) to size. Using dowel centers, transfer the dowel-hole centerpoints from the legs to both aprons; the aprons sit back 3/8" from the face of the legs where shown on the Corner Detail on page 47.
2 Drill 3/4" holes 1/4" deep for the dowel pins where marked.
3 Rip and crosscut the rear aprons (D) to size (we edge-joined two 4"-wide pieces to form each 8"-wide apron). Transfer the locations and drill three dowel holes in each end of each apron.
4 Cut the two lower side rails (E) and single stretcher (F) to size plus 1" in length.
5 Dry-clamp a side apron (C) between a front and rear leg. Lay the assembly on a flat surface. Hold the lower side rail (E) under the assembly, centered under the dowel holes. Mark the cutlines, and miter-cut the rail to length (the angled cut measures 1 1/2°). Repeat for the other side rail. Then, repeat with the rear legs and aprons to mark and cut the stretcher (F) to length.

Find center, and drill a 3/8" dowel hole 1 1/4" deep into the ends of each rail and the stretcher.

NEXT, MOVE ON TO THE DRAWER SUPPORT PARTS
1 Cut the front panel rail (G) to size. Cut the side panel rails (H) and rear panel rail (I) to size plus 2" in length; you'll miter-cut these to exact length later.
2 Cut a 1/2" rabble 1/4" deep along one edge the length of each piece.

ASSEMBLY BEGINS WITH THE BASE FRAMEWORK
1 Glue and clamp a side apron (C) and rail (E) between a front and rear leg. Using the remaining legs, apron, and rail, repeat the process. 
2 Glue and clamp the front rail (G), rear aprons (D), and stretcher (F) between the leg assemblies (A, B, C, E). Check for square.
3 Measure the distance, and cut both side panel rails (H) to length, miter-cutting the back end of each and notching the front end of each (see the Corner Detail accompanying the Basic Desk Assembly Continued.

STEP 1. Adjust angle of taper jig so marked cutline is parallel to outside edge of taper jig.

STEP 2. Position fence so the blade lines up with marked cutline. Cut two adjacent sides of all four legs.

STEP 3. Adjust the angle of the taper jig so the remaining cutline on the leg runs parallel to the outside edge of the taper jig.

STEP 4. Position the fence so the blade lines up with the remaining cutline. Cut the other two adjacent sides on each leg.

CUTTING THE TAPERS
**WRITING DESK**

Drawing for reference). Measure and cut the rear-panel rail (I) to length, miter-cutting both ends.

4. Keeping the top surfaces of the rabbets flush and the pieces level, glue and clamp the side panel rails (H) against the side aprons (C) and rear panel rail (I) against the inner rear apron (D).

5. Measure the rabbeted opening, and cut the panel insert (J) to size from ¾” plywood. Glue and clamp the insert in place.

6. From the edge of ¾” stock, rip the four drawer guides (K) to size. Set them aside for now; you’ll add them later.

**MOVE RIGHT ON TO THE WRITING SURFACE**

*Note: If you prefer a solid-wood desk top, edge-join ¾” stock to form a panel measuring 26 X 45". Trim it to 24½ X 44” after removing the clamps.*

1. Cut the side rails (L) and front rail (M) to length plus 1”. Cut the rear rail (N) to size.

2. Cut two pieces of ¾” plywood to the size listed in the Bill of Materials plus 1” in length and width for the insert (O). (If you can find it, ½” plywood will save you the trouble of laminating two ¾”-thick pieces.) Using contact cement, glue the pieces together with the edges and ends flush. Measure the thickness of the laminated panels; ours measured 7/16” instead of the ½” we expected.

3. Rout a rabbet to the same depth as the thickness of the plywood insert (O) along the inside edge of each rail (L, M, N). (In our case, the rabbet depth was 7/8.”) To ensure that the rear rail will be flush with the other three frame members, rout rabbets the same depth as you just cut across the two bottom ends of the rear rail.

4. Cut the front rail to length, miter-cutting both ends. Cut the side rails to length, miter-cutting the front end of each.

5. Glue and clamp the rails together, checking for square. The back edge of N should be flush with the

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**Bill of Materials**

<table>
<thead>
<tr>
<th>Parts</th>
<th>Finished Size*</th>
<th>Matl. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESK BASE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A, front legs</td>
<td>2&quot; 2&quot; 2½&quot; LA</td>
<td>2</td>
</tr>
<tr>
<td>B, rear legs</td>
<td>2&quot; 2&quot; 2½&quot; LA</td>
<td>2</td>
</tr>
<tr>
<td>C, side aprons</td>
<td>¾&quot; 5&quot; 20&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>D, rear aprons</td>
<td>¾&quot; 8&quot; 39&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>E, lower rails</td>
<td>¾&quot; 1&quot; 20½&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>F, stretcher</td>
<td>¾&quot; 1&quot; 30½&quot;</td>
<td>A 1</td>
</tr>
<tr>
<td>G, front panel</td>
<td>¾&quot; 2½&quot; 39&quot;</td>
<td>A 1</td>
</tr>
<tr>
<td>H, side panel</td>
<td>¾&quot; 1½&quot; 20&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>I, rear panel</td>
<td>¾&quot; 1½&quot; 41½&quot;</td>
<td>A 1</td>
</tr>
<tr>
<td>J, insert</td>
<td>¾&quot; 3½&quot; 18½&quot;</td>
<td>AP 1</td>
</tr>
<tr>
<td>K, drawer guides</td>
<td>¾&quot; 1½&quot; 21½&quot;</td>
<td>A 4</td>
</tr>
<tr>
<td><strong>WRITING SURFACE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L, side rails</td>
<td>¾&quot; 2½&quot; 24½&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>M, front rail</td>
<td>¾&quot; 2½&quot; 44&quot;</td>
<td>A 1</td>
</tr>
<tr>
<td>N, rear rail</td>
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<tr>
<td>O, insert</td>
<td>¾&quot; 40½&quot; 20½&quot;</td>
<td>AP 2</td>
</tr>
<tr>
<td>P, cleats</td>
<td>¾&quot; ½&quot; 20&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td><strong>UPPER UNIT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V, end panels</td>
<td>¾&quot; 11½&quot; 24&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>W, false back</td>
<td>¾&quot; 6½&quot; 41½&quot;</td>
<td>A 1</td>
</tr>
<tr>
<td>Z, slides</td>
<td>¾&quot; 3½&quot; 5&quot;</td>
<td>A 8</td>
</tr>
</tbody>
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**TAMBOUR**

<table>
<thead>
<tr>
<th>Parts</th>
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<th>Matl. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA lift bar</td>
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<td>A 1</td>
</tr>
<tr>
<td>BB slats</td>
<td>¾&quot; ¾&quot; 42&quot;</td>
<td>A 26</td>
</tr>
<tr>
<td>CC retainer</td>
<td>¾&quot; ¾&quot; 41½&quot;</td>
<td>A 1</td>
</tr>
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</table>

**TOP DRAWERS**

<table>
<thead>
<tr>
<th>Parts</th>
<th>Finished Size*</th>
<th>Matl. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD fronts/backs</td>
<td>½&quot; 3½&quot; 10½&quot;</td>
<td>A 8</td>
</tr>
<tr>
<td>EE sides</td>
<td>½&quot; 3½&quot; 5½&quot;</td>
<td>A 8</td>
</tr>
<tr>
<td>FF bottoms</td>
<td>¾&quot; 5½&quot; 9½&quot;</td>
<td>AP 4</td>
</tr>
<tr>
<td>GG slides</td>
<td>¾&quot; ½&quot; 5&quot;</td>
<td>A 4</td>
</tr>
</tbody>
</table>

**LOWER DRAWERS**

<table>
<thead>
<tr>
<th>Parts</th>
<th>Finished Size*</th>
<th>Matl. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q, fronts</td>
<td>¾&quot; 4½&quot; 19½&quot;</td>
<td>A 2</td>
</tr>
<tr>
<td>R, sides</td>
<td>¾&quot; 4½&quot; 21½&quot;</td>
<td>A 4</td>
</tr>
<tr>
<td>S, backs</td>
<td>½&quot; 3½&quot; 16½&quot;</td>
<td>A 4</td>
</tr>
<tr>
<td>T, bottoms</td>
<td>¾&quot; 18½&quot; 17½&quot;</td>
<td>AP 2</td>
</tr>
<tr>
<td>U, slides</td>
<td>¾&quot; ½&quot; 21½&quot;</td>
<td>A 2</td>
</tr>
</tbody>
</table>

*Initially cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

**Material Key:** LA-laminated ash, A-ash, AP-ash plywood

**Supplies:** ¾” dowel pins 1½” long, ¼” x 1½” flathead wood screws, #6 x ⅝” flathead wood screws, #8 x ¼” flathead wood screws, contact cement, 20½ x 40” 10 oz. canvas, stain, finish.
1/4 x 48 x 96" Ash Plywood

1/4 x 9 1/4 x 96" Ash
*Rip 1/4"-wide guides from edge of stock.

1/4 x 7 1/4 x 96" Ash
*Rip 1/4"-wide slats, retainers, and slides from edges of stock.

1/4 x 7 1/4 x 96" Ash
*Rip 1/4"-wide pieces from edge of stock.

BASIC DESK ASSEMBLY
VIEW FROM BACK SIDE

*Depth of rabbets may vary with actual thickness of plywood

Rout edge with an edge-rounding bit (Sears bit 9-HT25586)

Fasten cleats P to L and then to C

CORNER DETAIL
Notch H around C where rabbets meet

1/4" round-overs on inside edge of both D's after assembly

3/8" holes 3/16" deep

3/8" dowel pins 1 1/2" long

1 1/2" bevels on end of stretcher F and rail E to match taper of legs

WOOD MAGAZINE  DECEMBER 1989
back end of each rail (L). Measure the rabbeted opening, and cut the oversized insert (O) to fit the opening. Glue and clamp the insert in place. If you plan to add the tambour unit, cut a 1 1/4" notch 42 1/4" long in the back of the writing surface where shown on the Upper Unit Assembly Drawing.

6 With an edge-rounding bit (we used a Sears no. 9HT25586), rout along the outside edge of front and side rails (see the Cleat Detail accompanying the Basic Desk Assembly Drawing for reference).

7 Cut the cleats (P) to size. Drill and countersink the mounting holes in each cleat.

8 With the back ends of the side rails (L) flush with the back face of the rear legs, and the writing surface assembly centered from side to side, clamp the assembly to the desk base. Position the cleats (P) and mark their location on the bottom of the writing surface assembly. Remove the assembly from the desk base, and glue and screw the cleats where marked to the bottom of the writing surface.

**HERE’S HOW TO BUILD THE LOWER DRAWERS**

1 Cut the fronts (Q), sides (R), backs (S), and bottoms (T) to the sizes listed in the Bill of Materials for the lower drawers. Next, cut a 1/4" groove 1/4" deep, 3/8" from the bottom edge into the drawer sides and drawer fronts. (See the drawing at right for reference.)

2 Cut a 1/2" dado 1/4" deep, 4" from the back end of each drawer side.

3 Lightly mark diagonals on the front face of each drawer front to find center. Drill a 3/8" hole in each drawer front for the knob.

4 For extra stability, fit your miter gauge with an auxiliary fence. Mark the box-joint locations and cut the joints in the drawer fronts and sides. (We used the box-joint jig featured in the February 1989 issue of WOOD magazine.)

5 Dry-clamp the pieces to check the fit. Glue and clamp the drawer together, checking for square. Do not glue the bottom (T) in the 1/4" groove; instead, secure it to the back (S) with 3/4" brads. (We placed masking tape on the inside of each drawer, next to the box joints to catch the excess glue.)

6 Cut 1/4" filler blocks (see the drawing below), and fill the exposed grooves in each drawer end.

**NOW, FIT THE LOWER DRAWERS IN THE OPENING**

1 Cut the drawer slides (U) to size. Center, glue, and clamp the drawer slides to the bottom of each drawer. Check that the slides are square with the drawer fronts (Q).

2 As shown in the photo at right, position and center the drawers in the opening. (We used nickels as spacers to create equal gaps between the drawers and legs.)

3 Position the drawer guides (K) next to the drawer slides (U), using playing cards to form a gap. Once properly located, drill pilot holes and screw the back end of each guide in position. Screw the front end of each guide to the front rail (G). Slide the drawers back and forth to check the fit of the drawers in the opening; adjust the position of the guides, if necessary.

4 Rout a 3/8" round-over along the top inside edge of the tambour opening—each apron (D) and the top inside edge of the notch in each rear leg.

5 Position the writing surface, and fasten the assembly to the aprons (C) with the cleats.

**LET’S BEGIN BUILDING THE TAMBOUR UNIT**

1 Edge-join three boards together to form each end panel blank (V). See Center and secure the drawers in the opening. Position the drawer guides and screw them in place.
the End Panel Drawing for finished size. (For each end panel, we cut two pieces 3 3/4" wide by 25" long, and one 3 3/4" wide by 9" long. After edge-joining the boards, we crosscut both ends of each panel for a 24" finished length.)

2 Cut or rout a 3/8" rabbet 1/4" deep along the back inside edge of each end panel.

3 Using the End Panel Drawing for reference, mark the outline, and cut one of the end panels to shape. Sand the cut edges smooth. Using this panel as a template, mark the outline onto the second end-panel blank, and cut and sand it to shape.

4 Viewing the same drawing for reference, mark the layout, and cut the routing template to shape from 3/4" particleboard.

5 Clamp the template to the inside face of one end panel where shown on the End Panel Drawing. Secure a 3/8" straight bit and a 3/8" bushing to your router. Follow the edge of the template with the bushing to rout a 3/8" groove 3/8" deep in the inside face of the panel to form the tambour track. Repeat on the inside face of the other end panel.

NOW FOR THE UPPER UNIT

1 Cut the false back (W) to size, bevel-ripping the top edge at 45°.

2 Cut the drawer shelf (X), guides (Y), and top (Z) to size.

Continued
WRITING DESK

3 With the same edge-rounding bit used earlier, rout along the front and side edges of the top (Z).

4 Mark the four hole centerpoints on the inside face of one end panel, where dimensioned on the End Panel Drawing. Drill 3/8" holes 3/8" deep where marked. Then, stick 3/8" dowel centers in the holes. Position the top and bottom edges of both end panels flush, check that the rabbets align along the back edge, and squeeze together the panels. This will transfer the hole centerpoints to the inside surface of the other end panel. Drill the holes in the second panel where indented.

5 Using dowel centers, mark the location, and drill a pair of holes in each end of the drawer shelf (X) and false back (W).

6 Drill 3/8" holes 1 1/2" deep in the bottom and top edges of each end panel where located on the Upper Unit Assembly Drawing. Glue and clamp the back and drawer shelf between the end panels.

7 Insert 3/8" dowel centers in the holes in the top edge of the end panels. Center the top (Z) from side to side on the upper unit. With the back edge of the top flush with the back edges of the end panels, squeeze the parts together to transfer the dowel hole centerpoints to the bottom surface of the top. Drill 5/8" holes 3/8" deep where marked.

LOTS OF STRIPS FORM THE TAMBOUR CURTAIN

1 Cut the lift bar (AA) to size, cutting a 15° bevel along the front where shown in the Side View Detail above right.

2 Cut two 3/4" boards to 7 1/2" wide by 42" long. Rip 26 tambour slats (BB), each 3/8" thick from the edge of the boards. (You have enough stock to cut several extras.)

3 Form the routing jig as shown in the three-step drawing at right.

4 Using the routing and jig setup shown, rout a bevel along both edges of 22 of the tambour slats. (As shown on the Side View Detail at right, the four slats nearest the lift bar don’t require a bevel.)

5 Using the tambour technique article starting on page 38 and the Tambour Assembly Drawing, center and adhere the 26 slats to a piece of 20 1/4 X 40" canvas; don’t attach the lift bar or retainer strip just yet.

6 Rout a 1/4" rabbet 1/4" deep across the ends of the tambour curtain. Now, cut 1/4" rabbets 1/4" deep across the ends of the lift bar (AA).

7 Align the lift-bar rabbets with the rest of the rabbets in the tambour curtain, and adhere the lift bar to the canvas.

8 To hold the canvas firmly to the lift bar, cut the retainer strip (CC).
ADD THE FOUR UPPER DRAWERS
1 Cut the drawer fronts and backs (DD), sides (EE), bottoms (FF), and slides (GG) to the sizes listed in the Bill of Materials.

2 Cut a ¼" groove ¼" deep, ⅛" from the bottom edge into the drawer front, back, and sides where shown on the drawing below. (We cut ours using a dado blade.) Mark the location, and cut a ⅛" notch 2½" wide, centered along the bottom side of each drawer back where shown in the drawing.

3 Mark diagonals on the front face of each drawer front to find center. Drill a ½" hole in each drawer front for the knobs.

4 Mark the box-joint locations, and cut the joints in the drawer parts.

5 Dry-clamp the pieces to check the fit. Glue and clamp each drawer; check for square. Glue and clamp a slide (GG), centered on the bottom of each drawer.

6 Cut filler blocks and plug the exposed groove holes in the ends of each drawer.

7 Center the four drawers in the opening on the drawer shelf. Working from the back side, locate and fasten the drawer guides to the drawer shelf.

SAND, SEAL, AND DELIVER
1 Insert the tambour curtain into the tambour track in the upper unit. Put dowel centers in the holes in the bottom edge of the end panels (V). With the back edges of the end panels flush with the back edge of the side rails (L), clamp the upper unit to the writing surface to transfer the dowel hole centerpoints to the side rails.

2 Working from the back side, slide the tambour curtain in the tambour slot in the upper unit, and check the operation of the curtain in the tambour notch in the rear legs. Adjust the location of the upper unit if necessary, and remove the tambour curtain.

3 As shown in the photo at left, rout a ¼" rabbet ¼" deep along the inside edge of the top (Z) and rear apron (D) to house the back (HH). Square the rounded corners with a chisel. Measure the rabbeted opening, and cut the back (HH) to size.

4 Remove the upper unit from the base, and drill the dowel holes in each side rail (L) where indented.

5 Finish-sand all the parts. Glue and dowel the upper unit to the writing surface. Stain and finish as desired. Working from the back side, slide the tambour curtain into the tambour slot in the upper unit.

6 Using the the Back-Panel Detail accompanying the Upper-Unit Assembly Drawing on page 49 for reference, drill the holes, and screw the back (HH) into the rabbet. Attach the knobs (see the Buying Guide for our source).

BUYING GUIDE
- **Knobs.** Porcelain knobs with accented brass center and pedestal. Six, 1"-diam. knobs, catalog no. 175PK1, $1.80 each. Two, 1½"-diam. knobs, catalog no. 175PK2, $1.95 each. Add $3.30 for shipping. Constantine's, 2050 Eastchester Road, Bronx, NY 10461.
- **Taper jig.** Reverses for right- or left-hand use. Heavy-duty, professional-quality jig, catalog no. VA377, $17.45. Constantine's, address and shipping charge above.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Mike Henry
Jim Shirley knows wood. As a youngster on his parents' farm, he worked it as a hobby. Later, he became a building contractor. But, Jim, now 64 and retired from the building trade, was always more interested in old wood than new. "Seeing old architecture destroyed just made me heartsick," Jim recalls, "and I wanted, somehow, to find a way to preserve the old scenes and the grand old buildings."

He began his preservation efforts by salvaging the past. Jim rescued interesting pieces of wood and hung them on the walls of his home. Although his collection grew steadily, he knew that his wood display should be made meaningful.

Then, inspiration hit. Jim created a rustic landscape—the first of many scenes—to come from some of his favorite pieces of old, salvaged wood.

From that first creation 20 years ago sprang hundreds of compositions. And, interest in his work has grown to the point where his three sons—Lex, 33, Gil, 31, and Todd, 26, shown above with Jim—work full-time to keep up with demand. In his Rexburg, Idaho, shop, we listened to Jim unfold the story behind his wooden masterworks.

You might cross paths with Jim Shirley if you happen to vacation in Wyoming's Grand Teton National Park and the neighboring national forests in southern Idaho. He wanders there, guiding his pickup slowly along the snaking roads, his eyes scanning the glens and gullics for appealing pieces of wood. There's also the chance you could catch him prying an old weathered board from a teetering outbuilding on a friend's ranch closer to Rexburg. Stick around—he'll be happy to tell you the wood's destiny as he nails a new board in its place.

Give Jim some encouragement. Let him tell you in his soft-spoken way how he creates spectacularly detailed scenes in unfinished wood—the older the better. Follow him home. See for yourself how his work—part onlay and part low-relief—vividly portrays the depth and shadowed contrast of rugged western mountains, cattleman's landscape, timeworn ranch barns, and elegant Victorian homes.

Bits and pieces of wood—all selected for color and texture—join one another as the landscapes and buildings. From tiny, toothpick-sized fragments, he produces ac-
WITH MOTHER NATURE AS THEIR PARTNER, JIM SHIRLEY AND HIS SONS CREATE MASTERWORKS THAT WHISPER 'REMEMBER WHEN'

cents—wagon wheels, pumps, telegraph poles, windmills, mailboxes, and lampposts.

Jim smiles when he's asked how long it takes to complete one of his compositions that command anywhere from $5,000 to $15,000. Noting that he considers Mother Nature, who creates his raw material, an artistic partner, he says, "Many years, because she is so slow. She takes her own sweet time, but, in the end, anywhere you look, you'll see no hues like hers." He'll add though, that actual construction takes from two to four solid months.

NEW LIFE FOR WOOD FROM THE PAST
When Jim talks about wood, he lowers his voice, seemingly out of reverence and respect. "Wood is such a fascinating, expressive, and adaptable material. Its grain and fiber tell about its struggle to grow and survive." Shifting to a more comfortable stance, he comments, "Wood is a history book—laid open—in use all around us."

Jim can speak of history because, in his woodworking, he touches it. Each shade of color, each texture in every one of the Shirleys' pieces came from carefully selected wood.

Jim's sure hands double-check the fit of a tiny piece in the master plan drawn on the backing board.

Continued
IMAGES IN TIME

Maybe it once belonged to an aging fence. Or, it was a clapboard on a sagging shack. Perhaps a machinery building yielded a hand-hewn plank. A barn roof shed a shingle. The wood portrays the past because it belongs to the past.

In place, the chosen pieces of wood glow with almost iridescent colors. Tones of rust, cinnamon, umber, gray-blue, mahogany, rich yellow, and olive green reflect light in an uncanny way. And, the Shirleys do nothing to enhance them. They refuse artificial, manipulated colors and finishes—no paints, stains, oils or varnishes.

Many of their pictures represent several hundred years of natural processing, the colors created as the seasons came and went. "They're the resulting mix of sunshine and moonlight, wind and rain, sand and snow," Jim explains.

SELECTING FROM A NATURAL PALETTE

With the familiarity that comes from years of association, Jim and his sons know which wood works for what. They value bleached Douglas fir, for instance, for the straight, smooth look it lends to some backgrounds. Ponderosa pine takes detail, so it may end up as gingerbread on a turn-of-the-century porch. Hard-to-find planking from cottonwood or quaking aspen gives them the delicate silver-gray of a moon-glow sky. Vivid colors usually come from wood that contained a large amount of sap, such as a tree's root ball or a knot.

Gnarled burls from any tree give the Shirleys the graceful, convoluted texture of distant hills or ocean waves. Wood damaged while growing sometimes develops an unusual profile as nature heals the defect, and it fits in perfectly as a fence post or craggy peak.

To suggest sagebrush, tumbleweed, or a rocky outcropping, they leave in place the still-living lichens found clumped together on decrepit roof shingles. Sometimes, they plug in small branches for trees and shrubs. Even weather-beaten pieces of stunted sagebrush from the Idaho high country find their way into the western scenes.

Searching for such a palette of color often parallels the proverbial needle-in-a-haystack. On a woodgathering trip to Arizona, for example, Jim sought out a particular sawmill that specialized in ponderosa pine. He knew that the wood, after years of exposure, produced knots in the yellow shades he needs to make a natural-looking sun in his wooden skies. Jim watched the sawyers for 16 hours while more than 15,000 boards slipped past his eyes. "I ended up selecting only 89 of the boards to haul home," he recalls. "Then, the rains of fall do the staining, and the freezing nights of a high altitude winter do the mellowing."

NEW JERSEY VICTORIANS COME HOME TO IDAHO

Over the last few years, Jim's fascination with Victorian architecture has led him down a research path thousands of miles long. His travels

Featuring a seldom-seen view of the Teton Mountains from the west, "Dear John" depicts in wood the loneliness of a cowboy. Lichen that suggests groundcover still clings to the wood Jim chose for part of the western landscape.
have taken him to cities, villages, and ranches around the nation. In Cape May, New Jersey, Jim found 600 Victorian homes. "The whole town is a historic district," he exclaims in his quiet way.

Jim pays accurate attention to historic architectural detail. Yet, he exercises artistic license, too, moving buildings from their original location into scenes he assembles in his mind. In time, though, these mental pictures must be put to paper. Then, he selects from trays of 35mm slides taken of buildings that have caught his attention. The slides help maintain authenticity and proportion as he designs and details the composition.

With this technique, the craftsmen often end up with quite a cosmopolitan setting. A church may have originated in Oregon, a home in San Francisco, an elaborate Victorian porch in faraway New Jersey. The background might include the peaks of the nearby Tetons. But the Shireys homogenize them in their wooden creation.

**THREE-DIMENSIONAL HOUSE CONSTRUCTION**

Jim and his sons' years of working together as building contractors come into play in the start-up of a scene. Working under the doctrine, "You can't change the wood or you ruin it," they study the design of each building to be included in the new masterwork.

Every building constructed requires a backing board of 1/4" plywood, cut slightly smaller than the completed structure will appear. This ensures that no "new" wood will show on the edges of the final assembly.

For the wood required in a building, the Shireys search the stockpile, selecting suitably colored and grained boards and scrap pieces for every detail. Then, they rip the old 3/4" and 1" stock to the needed widths. Resawing reduces the boards to thicknesses from 1/4" to 1/8".

With a scrollsaw, Jim or one of his sons cuts the larger of the tiny boards to shape. Often, smaller details and pieces demand additional carving or dimensioning with an X-acto knife. Some final sanding on the back side reduces thickness of a piece or controls the edges for a precise fit.

During the construction, the workers handle most pieces—some no wider than a pencil lead—12 to 24 times before placement. In one picture, a 6"-tall lamppost took 20 pieces of wood chosen from seven colors on the original weathered plank. The Shireys refuse to imitate or enhance natural surface colors with paint. Instead, they use black india ink, not considered a color without altering the wood's hue or obstructing grain.

Finally, the components for each building come together, glued in place with contact cement layer upon layer (usually starting with the roof area as the initial layer) on the plywood template. Jim stresses that, "This

With a belt sander, Todd takes a little bit more wood off the edge of a nearly completed barn so that it fits.

is not inlay work. It's a built-up process I call 'relief overlay.'"

The completed buildings or major elements fit into notches cut into the foreground of the land in the final composition. Glue holds them in place. All of these tiny layers of wood and the plywood backings add up—a 44 x 32" picture can weigh as much as 50 pounds!

Jim and his sons refuse to spray the completed work with protective coating, partly because of their respect for the wood's natural qualities that require no enhancing, and partly for a very practical reason. "A finish only makes the dust collect," Jim notes. "We leave the wood natural so that you can occasionally—and easily—blow away the dust to once again expose the details we wanted and put there."

For information on the Shireys' wooden masterpieces, and a descriptive list of limited lithographs of their best work (small and large sizes, from $200 to $400), write: Paintings In Wood, 325 Harvard, Rexburg, Idaho 83440. ✪

Written by Layne Dearden.  Photographs: Borg Anderson, Gil Shirley, DiAnn Wright
THREE ESSENTIALS FOR ANY TABLESAW

Before you can set a tablesaw to the task of helping you accurately machine project pieces, its three basic parts—table, blade, and inner mechanisms (undercarriage)—must each do the following:

The table must form a perfectly flat plane—something you can check with a straightedge. Although we didn't find this problem with any of the models we tested, we've talked with plenty of readers who have come across warped tables. Our advice: ask for a new one of the following three categories. The Inca has a tilting table, whereas all North American- and Taiwanese-made saws have mechanisms for tilting the blade arbor. The Kity, although similar to the cabinetmaker's style saws because of its removable table, has lighter components in the undercarriage. Both saws produce accurate cuts.

THREE TYPES OF SAWS: WHICH ONE'S FOR YOU?

Of the saws we tested, only two—the Swiss-made Inca 250 (see box page 71) and the French-made Kity 100618—didn't fit into Direct-drive ($280–$500)

As shown in the illustration at right of the Sears model 29805 direct-drive tablesaw, the blade arbor and motor arbor are one, meaning that any motor vibration transmits directly to the blade. Lightweight elevation and tilt mechanisms, along with the two small brackets that hold the entire mechanism to the tabletop, further contribute to blade movement.

The Delta model 34-740 and Makita model 2711 direct-drive saws have slightly beefier mechanisms, but cost $150–$200 more than the Sears machines. The Sears and Delta tablesaws have open drip-proof motors, while Makita includes a universal motor with speed-reduction gearing.

Because of their light weight and potential for blade movement, we believe these saws are better suited to construction carpentry than precision woodworking.
Hi, my name is Paul Meisel. I'm a plan designer. My goal is to create the best possible project plans and make them available to you. This 8-page sampler shows just a few of the many plans we have available.

You'll find all of these projects very "do-able". I personally built every one of the projects shown using only a small table saw, a band saw, a scroll saw, and a drill press. For the yard ornaments I used only a sabre saw.

Except for the birdhouses, each project shown will take just a couple of hours to complete; and notice how easy these projects are to paint! I invite you to order some of these plans—I'm sure you'll love them! I'll be watching for your order.

P.S. Check out my free plan offer on the attached order blank.

WOODWORKERS ENJOY THE ELECTRONIC AGE

Everyone loves projects which can be made in under two hours using just a scrap of 3/4" pine. And these projects are especially alluring because they're so cute! Push the nose and you hear a musical tune!

The secret lies in a fairly recent breakthrough in technology. A miniature electronic music box is used as the source of sound. With a simple push of the finger, this music box plays a tune. The teddy bear plays "Teddy Bear Picnic", the dinosaur plays, of course, "Let Me Call You Sweetheart", the reindeer plays "Rudolph the Red Nosed Reindeer", the clown plays "Send in the Clowns", and the rabbit plays "Here Comes Peter Cottontail".

You will find these projects quite easy to make. All patterns are drawn FULL SIZE and you don't have to be an artist to paint them. Plastic eyes which are included in the hardware kit make the face detail very easy. And don't worry about where to get the paint. The paint colors I used are listed underneath the plan. Order a two oz. bottle of each color for only $1.99 per bottle.

You will also want to pick up a Hardware Parts Kit for each project you make. These kits have the music box (battery included), eyes, nose, or ribbon bows where required, as well as the fasteners, a push peg, and a sawtooth hanger. Projects require some 3/4" pine which is not included in the hardware kit. Order the plan, hardware kit, and paint today.

WOODWORKERS SPECIALTIES

MUSICAL ANIMALS PLANS

Suggested paints available in 2 oz. bottles @ $1.99/EA

#W328 Musical Teddy Bear Plan ........................................ $2.75/EA
#72435 Burnt Sienna, #72433 Wicker, #72300 Painted Desert, and #72470 Pure Red

#W327 Musical Dinosaur Plan ........................................ $2.75/EA
#72474 True Green

#W287 Musical Rudolph Plan ........................................... $2.75/EA
#72434 Mustard Seed, #72429 Antique White, or dark stain as shown

#W330 Musical Clown Plan ........................................... $2.75/EA
#72477 Real Black, #72476 Real White, #72471 Pure Yellow, #72470 Pure Red, #72408 Sweet Chocolate, and #72474 True Green

#W320 Musical Rabbit Plan ........................................... $2.75/EA
#72476 Real White and #72300 Painted Desert

Musical Animal Hardware Parts Kits

#8495 Musical Teddy Bear Kit .......................................... $4.19/EA
#8494 Musical Dinosaur Kit .......................................... $3.19/EA
#7306 Musical Rudolph Kit .......................................... $4.79/EA
#8525 Musical Clown Kit .......................................... $3.19/EA
#8590 Musical Rabbit Kit .......................................... $3.79/EA

ORDER TOLL FREE 1-800-441-9870 Ext. W12

CREDIT CARDS WELCOME
WHAT'S A DOOR HARP?
Mounted on the inside of your door, a door harp welcomes your guests with a beautiful random musical tune each time the door is opened.

DOOR HARPS----MUSIC TO YOUR EARS
Door Harps have a sound chamber much like a guitar only much more simplified. Music wire is stretched between tuning pins and wood balls are suspended on strings. Any movement causes the wood balls to dance on the music wire resulting in a very pleasant sound.

Check out the photo of our cute animal door harps on the opposite page. All the animal shapes have been extremely popular with both kids and adults. I built a raccoon for my aunt’s lake cabin and suddenly all her neighbors wanted one too!

Even if you’ve never built a "string instrument" before, you should be pleasantly surprised at how easy door harps are to build. Follow the 8 steps illustrated below:

1. The sound chamber is simply a piece of 3/4" pine sandwiched between 2 pieces of 1/8" plywood. Our kits include the necessary plywood because not all lumber yards carry it. You will, of course, find 3/4" stock readily available so it is not included in the kit. (This helps keep the cost down.)
2. After cutting the sound chamber in the 3/4" stock, glue on the two pieces of thin plywood, and after the glue dries cut the body to the final shape.
3. Edges can be sanded by hand or you can use a drill press with a sanding drum attachment.
4. Holes for the tuning pins are drilled with a 3/16" bit.
5. Paint the parts. Door harps are not difficult to paint—we even suggest which paint colors to get (order from opposite page).
6. Screw tuning pins into the holes, thread music wire through pin and tighten.
7. To attach clapper balls, drill a 1/16" hole in the ball, place end of string in hole and secure with a toothpick dipped in glue. Break off the excess toothpick. Align the balls so that each one hits a different string.
8. Eyes, feet and other accessories are glued in place at this time.

Of course these steps are explained in greater detail in our project plans available at right.

By the way, I think you will find that our plans are the best available anywhere! All professionally drawn. You get FULL SIZE drawings which are easy to transfer directly to your stock. Each plan includes detailed step-by-step instructions. Our hardware kits contain the hard-to-get parts including the special high resonance plywood, tuning pins, music wire, clapper balls, as well as parts unique to each project such as animal eyes. Kits do NOT include the plan, paint, string, or miscellaneous 3/4" stock. Make one of these cheerful door harps for your home. Order the plan, the hardware kit, and one of each paint color specified.
## Door Harp Plans & Hardware Kits

### DOOR HARP PLANS
All project plans are drawn FULL SIZE on large blueprint sheets. Recommended paint colors are listed below each plan. Order these paints for $1.99/EA 2 oz. bottle. Order Hardware Parts Kits below right.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Description</th>
<th>Color Options</th>
<th>Price</th>
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<tbody>
<tr>
<td>#W263</td>
<td>Raccoon Door Harp Plan</td>
<td>#72435 Burnt Sienna, #72433 Wicker, #72447 Soft Black</td>
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<td>#W264</td>
<td>Panda Door Harp Plan</td>
<td>#72447 Soft Black, #72428 Off White, #72449 JoSonja Red</td>
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<td>Owl Door Harp Plan</td>
<td>#72435 Burnt Sienna, #72433 Wicker</td>
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<td>#W266</td>
<td>Frog Door Harp Plan</td>
<td>#72410 Mellow Yellow, #7257 Holiday Green, #72447 Soft Black</td>
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<td>#W267</td>
<td>Hog Door Harp Plan</td>
<td>#7252 Flesh, #72409 Pink Blossom, #72447 Soft Black</td>
<td>$3.99/EA</td>
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<tr>
<td>#W310</td>
<td>Hen Door Harp Plan</td>
<td>#72561 Soft White, #72453 Wicker, #72432 Sunbaked Yellow, and #72449 JoSonja Red</td>
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<td>#W316</td>
<td>Barn “Kicker” Door Harp Plan</td>
<td>#72412 Blue, #72476 White, #72447 Black, #72447 Green, and #72424 Red</td>
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<td>#W373</td>
<td>Small Bessy Door Harp Plan</td>
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<td>Goose Door Harp Plan</td>
<td>#150 Soft White, spray $3.29/EA, #72318 Dijon Gold, #72449 JoSonja Red</td>
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### DOOR HARPS HARDWARE PARTS KITS
See description on opposite page. 

<table>
<thead>
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<th>Kit</th>
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<td>Iced Tea, and #72477 Real Black</td>
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<td>Federalist Eagle Door Harp Plan</td>
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<td>#W312</td>
<td>Big Apple Door Harp Plan</td>
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<tr>
<td>#72577</td>
<td>Hol Green, #72449 JoSonja Red, #72476 Real White, and #72422 Black</td>
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Any five or more Door Harp Plans: $3.50/EA

### Hardware Parts Kits

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<tr>
<td>#8252</td>
<td>Big Apple Door Harp Hdw. Kit</td>
<td>$6.95/EA</td>
</tr>
</tbody>
</table>
ANOTHER AMERICAN LOVE AFFAIR

Wood yard ornaments. You’ve seen them around for decades but it seems like no one paid much attention to them until recently. Now, in front yards and back yards across America people are displaying cows, pigs, and even the rear views of people bending over! Why the sudden interest? It’s the latest American fad!

Personalize your lawn by making your own yard ornaments. Most designs are available in two sizes to fit your lawn or garden.

You’ll start by transferring the blueprint design to a sheet of plywood. Use either carbon paper or our special pattern transfer kit (which is even faster and easier than carbon paper). The pattern transfer kit contains a tool with a perforated wheel. You simply roll the tool around the lines on your pattern sheet and the wheel punches a small hole in the pattern about every 1/16 inch. Finish by dusting with the powdered chalk provided in the kit. The image will be clearly marked on your plywood and your plan can be used over and over again.

All of our yard ornaments are easy to cut from standard exterior plywood. A sabre saw is all that’s needed. After sawing, round over the edges of the plywood with a file, sandpaper or even a router with a 1/8” radius round-over bit.

Either latex or enamel paints may be used to paint the plywood. The patterns are designed to be easy to paint. You’ll be getting complete painting instructions with your plan.

Order the plans, the transfer kit, and special mounting stakes directly from this insert.

YARD ORNAMENT PLANS

#W335 Large Coyote Plan 40” high .................. $7.99/EA
#W336 Small Coyote Plan 20” high .................. $3.99/EA
#W235 Yard Cows Plan 40” high .................. $11.99/EA
#W407 Large Mushroom Mamma Plan 40” high .... $7.99/EA
#W408 Small Mushroom Mamma Plan 20” high .... $3.99/EA
#W405 Large Gloria Peterbuilt Plan 40” high .... $7.99/EA
#W406 Small Gloria Peterbuilt Plan 20” high .... $3.99/EA
#W347 Large Backview Cows Plan 40” high .... $7.99/EA
#W348 Small Backview Cows Plan 20” high .... $3.99/EA
DECORATE YOUR YARD

C. Bloomin' Beulah Plan
#W396 Bloomin' Beulah Plan - 20" high $3.99/EA
#W397 Bloomin' Beulah Plan - 40" high $7.99/EA

D. Mad Max Plan
#W398 Mad Max Plan - 20" high $3.99/EA
#W399 Mad Max Plan - 40" high $7.99/EA

E. Bakin' Billy Plan
#W400 Bakin' Billy Plan - 20" high $3.99/EA
#W401 Bakin' Billy Plan - 40" high $7.99/EA

F. Scarecrow Sam Plan
#W402 Scarecrow Sam Plan - 26" high $3.99/EA
#W403 Scarecrow Sam Plan - 52" high $7.99/EA

#7347 Carbon Paper - large 17"×22" size $ .40/Sheet $2.95/10 Sheets

COPY CAT PATTERN TRANSFER KIT

This is the slickest, fastest, easiest and least messy way to transfer project plans to your stock! Kit contains a tool with a perforated wheel and a special pouch with powdered chalk. You simply follow the lines on your pattern and the special tool punches small holes in the pattern about every 1/16". Finish by dusting with the special powdered chalk. Once perforated, your pattern can be used over and over. Eliminates the need for carbon paper.

#8665 Copy Cat Transfer Kit $17.95/EA

MOUNTING KITS

We've mounted quite a number of small and large yard ornaments across America. We found that simple 2"×2" stakes work best for the larger yard ornaments; but for the small yard ornaments, the only way to go is to use fiberglass rods. Super tough white fiberglass rods will flex just a little, but won't break, rot, rust, chip or peel. Rods are 36" long.

Mounting Kit for Small Yard Ornaments
Includes 2 rods, 4 zinc plated clamps, and 8 mounting screws—enough for one small yard ornament.
#8675 Mounting Kit for Small Yard Ornaments 1-9 $4.29/KIT 10 or more $3.99/KIT
A TASTE OF COUNTRY (WITHOUT THE SMELL)

Five years ago you probably wouldn't have thought cows would be the rage; but you might be interested to know that these cow plans are now among our most popular plans.

More than just another "pretty face", cows represent one of those rare fads that seem to be able to happen only in America. Everyone seems to be falling in love with cows!

You'll find them a snap to make in your shop. All plans use only common sizes of lumber or plywood. And you'll find that each cow project does something useful. Well, all except for maybe "Long Tails Bessy"—but she's so silly it's enough to just let her stand around looking cute. The other Bessies either fly, serve as a door stop, a planter, a door bell, a mug rack, a music box, or a tissue box holder.

All this and a pretty face too! An easy-to-make face that you don't have to be an artist to paint. You start by painting the entire project white, then paint some black spots wherever you feel like, and finally paint a pink nose. The plastic eyes and nostrils eliminate the need for any detailed painting. You simply drill a 1/4" hole and press the eyes and nostrils in place. It's so easy!

In addition to the plans, you can order the special hardware kits below. Order #72476 Real White, #72477 Real Black and #72409 Pink Blossom paints for all cow projects. (2 oz. bottle $1.99/ea.). Get moo-ving—order plans and supplies NOW!

Big Bessy Hardware Kit
This Hardware Kit is used for all the Big Bessy projects and eliminates the need for painting difficult facial features. It includes 2 plastic eyes, 2 plastic nostrils, 1 cow bell, and 4 udder pegs. The wood and paint are not included.

#8617 Big Bessy Hardware Kit ........................................... $2.79/EA
10 or more .......................................................... $2.49/EA

CORN COB PIPE
#8671 Corn Cob Pipe 3½" ........................................... $1.19/EA
6" STRAW HAT
#8670 6" Straw Hat ................................................... $1.19/EA
12 or more ........................................................... $0.99/EA

Musical Bessy Hardware Kit
You get the plastic eyes, nostrils, cow bell, music box, hinge, turnbuttons, sawtooth hanger, and miscellaneous fasteners. Plan, wood, and paint are not included in the kit.

#8622 Musical Bessy Hardware Kit .................................. $3.95/EA
10 or more .......................................................... $3.55/EA

Flying Bessy Hardware
Enough hardware to build 3 Flying Bessy projects. You get a roll of nylon string, 22 split shot sinkers, 3 wood dowels, 3 jump rings, and 6 jiggie eyes. Wood, paint and plans are NOT included in this parts kit.

#8618 Pull String Flyer Hdw. Kit ....................................... $2.99/EA

SMALL BESSY HARDWARE KIT
This hardware kit is used for all the Small Bessy projects. You get 2 eyes, 2 nostrils, and 1 cow bell. Plans, wood and paint not included in the kit.

#8621 Small Bessy Hardware Kit ....................................... $1.39/EA
10 or more .......................................................... $1.29/EA

GROCERY LIST PROJECT PLAN

Low on Chicken Noodle Soup? If you're like most of us, you'll forget to pick some up if you don't make a list! This helpful grocery list holder will provide a convenient place to write it down.

A practical project you can make for use in your home or to give as a gift. You'll get complete instructions and FULL SIZE blueprints for every project shown below. The grocery list pads (available separately below) come in an economical pad of 500 sheets. Simply tear off about 50 sheets for each project. Quick enough so even really busy people can make them (one or two hours should be enough—pick a night when TV is lousy). Grocery list pads and brass plated carriage bolts are available below. (Also, order Small Bessy Hardware Kit above, and for pig order eyes below.)

#W500 Grocery List Project Plan ....................................... $3.99/EA

GROCERY LIST PADS (500 Sheets/Pad)
#14P Buff Country Grocery List Pads .................................. $7.99/EA
#7430 Peach Country Grocery List Pads ................................ $7.99/EA
#8228 White Country Grocery List Pads ................................ $7.99/EA

BRASS PLATED CARRIAGE BOLTS
Decorative brass wing nuts and bolts are the best way to hold grocery list pad in place. Order one set for each grocery list project.

#CB Carriage Bolts .................................................... $0.52/SET of 2
$4.56/10 SETS of 2
$20.50/50 SETS of 2

BRASS EAGLES
#878 Brass Eagle 2-1/8" wing span ................................ $2.75/10

PIG EYES
#88010 10mm 3/8" Jiggie Eyes ....................................... $1.70/144

WOOD MAGAZINE DECEMBER 1989
A. Long Tall Bessy Plan
Everyone who sees this long tall lady falls in love. She stands 40" tall and is made from a length of 2 x 4" and some 3/4" stock. Big Bessy Hardware Kit, straw hat and optional corn cob pipe available on opposite page.
#W243 Long Tall Bessy Plan $3.99/EA

B. Flying Bessy Plan
This flying cow is a one-of-a-kind specimen. Balanced just right so when you pull the string she continues to flap her wings several times in a row, graceful motion. Can be cut from 1/4" plywood. Nylon string, sail, sail stems, key rings and eyes available on opposite page.
#W3862 Pull String Cow Plan $3.99/EA

C. Planter Box Bessy Plan
It’s a planter or a magazine rack! This Bessy stands 25" tall. The body is made from 1/2" plywood. Some 3/4" stock is required for the head. Order Big Bessy Hardware Kit on opposite page.
#W2435 Planter Box Bessy Plan $6.99/EA

D. Door Stop Bessy Plan
This Bessy stands 20" tall and makes a great door stop. Very easy to make from 3/4" pine. Order Small Bessy Hardware Kit on opposite page.
#W409 Door Stop Bessy Plan $3.99/EA

E. Door Ringer/Mug Rack Bessy Plan
Door Ringer Bessy mounts on your front door. Tie a cord to Bessy's genuine cow bell and your guests can announce their arrival. Mug Rack Bessy mounts in your kitchen. Order Big Bessy Hardware Kit from opposite page.
#W244 Door Ringer and Mug Rack Bessy Plan $3.99/EA

F. Musical Bessy Plan
Pull this Holstein's head and you set off an electronic music box which plays "Old MacDonald." Very easy to make from 3/4" stock and 1/8" plywood. Musical Bessy Hardware Kit available on opposite page.
#W410 Musical Bessy Plan $2.75/EA

G. Tissue Box Bessy Plan
This small Bessy holds a box of tissues. A snap to make from 3/8" plywood. Finished project stands 12-1/2" tall. Order Small Bessy Hardware Kit on opposite page.
#W2411 Tissue Box Bessy Plan $3.99/EA
BUILD A BETTER BIRDHOUSE AND THE BIRDS WILL BEAT A PATH TO YOUR DOOR.

So beautiful, so breathtaking—after you finish making your first house, you’re sure to get many compliments.

Birds may not care much about a classy-looking house, but they do need a place to build a nest and raise their young. As humans continue to cut down more trees and pave more parking lots, birds need help. This summer I had a Robin’s nest over each of my porch lights, a Barn Swallow nest over my back door, and to top it all off, a Sparrow built her nest inside my canoe! Now you can help the birds in your neighborhood by giving them a proper place to call home.

I think you’ll agree that our birdhouses look sensational! Part of the secret is in the decorative windows and doors. The doors don’t open and the windows aren’t designed to let light in, but they do add a perfect finishing touch. And they’re easy to install—you simply nail them in place. Some houses (see B, C and D) even have clapboard siding. One bundle of siding covers over 5 sq. ft.—more than enough to cover any of the birdhouses shown which use siding. Miniature shingles also help to lend that realistic look. Either asphalt shingles or hand split cedar shakes are available. One package of the hex design asphalt shingles covers 3 square feet of roof. Asphalt shingles are quite easy to staple or nail in place. One package will cover any house shown. Or you might prefer our real hand split cedar shakes which can be glued in place with hot melt or other waterproof glue. A package of 1000 cedar shakes covers approximately 4 square feet of roof.

You can search the entire country, but I don’t think you’ll find better birdhouse plans. You’ll be getting large easy-to-follow, professionally drawn blueprint sheets. Everything is drawn FULL SIZE. Plans even include a chart showing various hole diameters needed to attract the species of bird you want.

Order today—you’ll want to get them built and up in time for spring nesting. Order the plans, windows, doors, siding and shingles now so you can begin making your masterpiece.

---

PLANS FOR BIRDHOUSES AND A BIRDFEEDER

| A | #W333 Colonial Martin House (8 unit) Plan | $8.99/EA |
| B | #W332 Wing-Chester Cathedral Plan | $8.99/EA |
| C | #W329 Wren Row-House Plan | $8.99/EA |
| D | #W331 Sleepy Hollow Schoolhouse Plan | $8.99/EA |
| E | #W334 Tylerville Tudor Apartments Plan | $8.99/EA |

BIRDFEEDER PLAN

| F | #W369 Red Eye Feed & Seed Plan | $8.99/EA |

SAVE

Mix or match 3 or more plans above | $6.99/EA |

BIRDHOUSE HARDWARE PARTS

WINDOWS & DOORS

| #607 Birdhouse Window 1-1/2”x3-1/2” | $1.29/EA |
| 1-9 | $1.09/EA |
| 10-49 | $0.99/EA |

| #606 Birdhouse Door 2”x4-1/2” | $1.99/EA |
| 1-5 | $1.69/EA |
| 6-19 | $1.49/EA |
| 20 or more | $1.25/100 |

CEDAR SHAKES

#7688 Cedar Shakes Pkg. of 200 | $3.95/PKG |
#7687 Cedar Shakes Pkg. of 1000 | $15.95/PKG |

ASPHALT BIRDHOUSE SHINGLES

#6873 Black Asphalt Shingles (3 sq. ft.) | $11.95/Roll |

CLAPBOARD SIDING

#6984 24 linear feet (5.2 sq. ft.) Clapboard Siding | $12.39/BUNDLE |
#6985 42 linear feet (10.4 sq. ft.) Clapboard Siding | $22.26/BUNDLE |
For this report we took a top-to-bottom look at 16 machines in the $280–$1,850 price range—so much equipment that the WOOD magazine testing area overflowed with machinery. We concentrated our efforts on 10" tablesaws—the heart of the home woodworking market.

**Contractor's style**  
($345–$980)
A few years after Delta introduced its contractor's saw in 1970, Taiwanese manufacturers began busily churning out copies of this successful model. Nowadays, companies as varied as Sears, Grizzly, and Powermatic sell similar machines.

The illustration at right of the Delta contractor's saw reveals heavier motor, blade, tilt, and elevation supports, than those found on direct-drive machines. The motor hangs out the rear of the saw for easy removal, making the machine suitable for on-the-go and home workshop use. A belt softens the vibration of the motor and absorbs some sawing stress.

**Cabinetmaker's style**  
($850–$1,850)
Weighing in at around 450 pounds, these heavyweight contenders have massive cast-iron tilt and elevation controls as typified by the inner workings of the Jet CTAS-10-1 shown at right. All that weight translates to stout positioning of the blade at any height or angle, excellent vibration absorption, and longer machine life.

Unlike the other two types of saws, the machine's cabinet (rather than its tabletop) supports the undercarriage assembly, allowing you to easily remove the table for transport. To align the miter-gauge slot parallel with the blade, you simply loosen four corner bolts and adjust the table accordingly.

Remember that most of these saws require 220 voltage—a consideration if you don't already have this service in place. However, Delta's 1 1/2 hp version of the Unisaw operates on either 110 or 220 volts.

*Continued*
TABLESAWS
LOOK FOR WELL-MACHINED PARTS INSIDE AND OUT
Just as you would check the alignment of a car's hood, doors, and fenders before buying, you likewise should check the fit and finish of a tablesaw. For starters, the tabletop should be milled smooth and its underside shouldn't have casting sand hidden beneath the paint. We found some casting sand under all the tabletops we inspected, but the General 350-1 had the least sand of any of the saws. Signs such as poor fit, finish, and inferior castings often indicate poor workmanship throughout the saw.

To check the machine's inner mechanisms for fit, set the blade for a 20°-30° bevel cut, then take hold of the arbor and motor assembly and shake it. If this assembly moves, you can bet the tilt or elevation gears have some play in them. This condition can result in poor-quality cuts because of blade movement. Also, any movement in the gears will prevent you from obtaining consistently accurate cutting angles and blade depths.

Slop in other undercarriage parts could cause this kind of movement, too. For example, we detected a gap between the motor bracket and yoke of the Jet CTAS-10-1 as shown above right. The spring washer placed there didn't come close to filling the gap. On the other hand, a look at the same mechanism on a similar Delta Unisaw revealed tight-fitting parts (also in photo above). Additionally, the Unisaw had an extra washer to snugly fill the gap.

You can quickly solve the problem we found on the Jet saw. And, since Taiwanese-made machines often cost hundreds of dollars less than North American-made tablesaws, such adjustments might pay off if you're mechanically inclined. For example, WOOD magazine's tool consultant, George Granseth, discovered the same gap on his Grizzly G1023. He quickly fixed it by placing two thin, U-shaped aluminum shims in the gap. Thousands of board feet later, George's saw still runs like a champ.

MOTORS: THE MUSCLE IN THESE MACHINES
The last thing you want while ripping a board is to have the blade slow down or stall altogether. That's why we recommend a motor of at least 1 1/2 horsepower. You'll also be better off with a totally enclosed, fan-cooled motor that prevents dust from being drawn into the motor.

If you use a tablesaw so much that you will some day wear out its motor, take a look at the saw's motor-mounting system. You'll want a saw with universal mounting brackets that will accept most replacement motors—not just the
A SAW WITH A DIFFERENT SLANT ON THINGS

Before the advent of tilting arbor tablesaws during the late 1930s, most saws consisted of a fixed blade around which a table tilted for bevel cuts. Today, the Swiss-made Inca model 250 continues the tilting-table tradition in a precision-made, compact saw that fits the needs of craftsmen who work with smaller pieces of solid stock.

We found the machine to be accurate and we appreciate the unobtrusive manners of its swing-arm blade guard. Unlike a splitter-guard, the swing-arm variety doesn’t block your line of sight and moves out of your way with ease.

However, we found bevel-ripping large sheet goods a cumbersome task. And, the machine isn’t cheap: Outfitted with a motor, stand, horizontal borer, and other options as shown at left, the Inca sells for more than $1,800.

TABLE TALK: MORE POINTS TO CONSIDER

**Dust control:** It’s no easy matter to place a dust collection system on a tablesaw because of its tilting/elevating arbor. Nevertheless, two manufacturers have succeeded in this regard: both the Kity 100618 and the Powermatic 65 have dust shrouds. By surrounding the blade, these shrouds funnel sawdust and chips into a dust-collection port.

**Extension tables:** Although cast-iron extensions weigh more, you’ll appreciate their sturdiness over the flex found in formed-steel extensions. Among cast-iron wings, the good looks of solid extensions goes more than skin deep: They can’t hurt your fingertips as the grate-type can (see photo below).

When adjusting the fence for various ripping widths, you can pinch your fingers in grate-type extensions. Ouch, that hurts!

Continued
### Rippin' Good Specs for 10" Tablesaws

<table>
<thead>
<tr>
<th>MANUFACTURER/IMPORTER</th>
<th>MODEL</th>
<th>STYLE</th>
<th>BLADE AT 90°</th>
<th>BLADE AT 45°</th>
<th>CUTTING DEPTH (INCHES)</th>
<th>FENCE</th>
<th>MATERIAL</th>
<th>TABLE</th>
<th>SHARP HINGES</th>
<th>MATERIAL-TYPE</th>
<th>SIZE (INCHES)</th>
<th>SIZE WITH Extensions (INCHES)</th>
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1. (TT) Tilting Table; (CAB) Cabinetmaker's style; (CON) Contractor's style; (DIR) Direct-driven; (+) See page 56 for information on Kitto.
2. (L) Left-tilt blade; (R) Right-tilt blade.
3. (A) Angle iron; (EA) Extruded aluminum; (FS) Formed steel; (S) Steel; (TS) Tubular steel.
4. (AA) Anodized aluminum; (C) Cast iron; (FS) Formed steel; Extension types: (G) Gable; (S) Solid.
6. (TEFC) Totally enclosed, fan-cooled; (ODP) Open, drip-proof; (L) Universal.
7. (C) Canada; (F) France; (J) Japan; (S) Switzerland; (T) Taiwan; (US) United States.
8. (N/A) Not available.
9. Selling price is an estimate based on catalogs and dealer inquiries at time article was produced.

### Manufacturers Listing:
- **American Machine & Tool Co. (AMT)**
  - 215/948-0400
  - **Delta International Machinery Corp.**
  - Outside P.O.: 800-438-5486
  - Pa. residents: 800-438-2487
  - Foley-Belsaw
  - Outside Mo.: 800-468-4449
  - Mo. residents: 800-832-8789
  - General Mfg. Co. Ltd.
  - 619/472-1111
  - We ordered our tablesaw from Sisco Supply in South Burlington, Vt.
  - 802/563-9036
  - Foley Imports
  - East of Mississippi River: 717/326-3006
  - West of Mississippi River: 206/647-8601
  - Inca
  - (Available from Garrett Wade)
  - 212/808-1155
  - Jet Equipment & Tools
  - Outside Wash.: 800-426-9402
  - Wash. residents: 206/572-5000
  - Lobo Power Tools
  - 818/350-1096
  - Makita USA Inc.
  - 714/522-6066
  - Powermatic
  - Outside Tenn.: 800-248-0144
  - Tenn. residents: 615/473-5551
  - Sears, Roebuck & Co.
  - Contact your nearest store.
Farris Machinery, the sole U.S. importer of French-made Kity equipment, sells the Kity sliding table for $495. The slightly becier Robland unit, available through Laguna Tools, sells for $695. Our advice: Before making a purchase, ask the importer about the adaptability of their sliding table to your tablesaw (see the manufacturers listing on the opposite page for toll-free phone numbers).

Fences: Only three of the tableaws we tested—the Powermatic 66 and 63, and the Foley-Belsaw 490—have fences that set quickly and accurately. Powermatic ships a Biesmeyer aftermarket rip fence and extension table with each model 66 tableaw. The Biesmeyer fence gives you 50° of ripping capacity. The Powermatic 63 has a smaller, lighter version of a Vega rip fence. Foley-Belsaw designed its own fence (see photo at right) that’s lighter-duty than a Biesmeyer or Vega, but works just as accurately.

Blade position at 45° and 90°: If you prefer using an aftermarket rip fence, you’ll want a tableaw whose ripping capacity doesn’t change as the blade tilts. For example, we found that the Powermatic 66, General 350-1, and Delta 34763 have identical rip widths at 45° and 90°. This precision means you can trust the fence’s measurement reading at any angle. For all the other saws, you have to set the fence for accurate 90° cuts and measure the blade-to-fence distance for bevel cuts.

WE COULD SEE THESE SAWs IN OUR SHOP
Under $700: Selling for about $650, the Powermatic model 65 shown below packs extra features into a dependable Taiwanese-made machine. Several importers sell a similar saw at a lower price, including AMT, Grizzly, and Jet, but only Powermatic includes a dust-collection shroud and a precision Vega rip fence as standard equipment.

Over $700: Among the cabinetmaker’s saws, the Delta 34-763, General 350-1, and Powermatic 66 performed extremely well and would please most any woodworker. The Grizzly G1023 and Jet CTAS-10-1 were just a hair less precise, and a little rougher in fit and finish, but if you can overlook these small faults, the lower price tags may be for you.

All in all, we give the General 350-1, below, top grades for its accuracy, finish, and solid construction. We went over this saw with a magnifying glass and couldn’t find a flaw worth mentioning. ♦

For less than $700, the Powermatic model 63 has several big-saw features including dust shroud and Vega rip fence.

Written by Bill Krier Technical consultant: George Granseth

Illustrations: Kim Downing; Jim Stevenson Photographs: Jim Kascoutes
During the Middle Ages, English archers frequently developed a rash from their yew longbows. Some musicians of the 1930s broke out after playing woodwind instruments—called recorders—crafted of cocobolo. But, don’t panic. According to a WOOD® magazine reader and poison expert, your chance of a toxic reaction to one or more domestic wood species is as infrequent as 1 in 100. And, to reduce those odds even more, he points to guilty wood, tells you what to expect, and advises you how to avoid problems.

Robert W. Woodcock, a poison information specialist at Philadelphia’s Delaware Valley Regional Poison Control Center, handles dozens of emergencies daily. Enough have stemmed from wood that he decided to do some research. Robert, a hobby woodworker who builds musical instruments, then contacted us to share his discoveries. "The average woodworker will never see some of the most toxic species," Robert advises. "But, those who work exotic woods, or collect their own, always run the risk." Here, then, unfolds the history of toxic wood that Robert uncovered, with some lessons in prevention.

TOXIC WOOD THROUGH THE AGES
For centuries, it’s been fairly common knowledge that some woods, and things made from them, could hinder your health. As far back as 60 A.D., for instance, the Roman historian and naturalist Pliny the Elder described a case where four soldiers actually died after drinking wine from hip flasks made of yew.

Of lesser gravity was the experience of a few German sawyers in the early 1700s. It seems they developed chronic irritation of the nose and eyes, as well as headaches, from sawing bald cypress.

Historic reports such as these—combined with current medical knowledge concerning allergies and irritants—add up to incriminating evidence for several species.

WHAT ARE YOUR CHANCES OF A REACTION TO WOOD?
Statistics say that only two to five percent of all people develop an allergic sensitivity to one or more compounds found in wood. But, if you handle a lot of potentially toxic species, and work with them long enough, you increase your chances of an allergic reaction. And, with sufficient exposure (that varies individually),

Yew has a history of death and illness. In the first century A.D., a group of Roman soldiers died after drinking wine from flasks made of the wood.
such as western red cedar and rosewood, can be especially bothersome. Jim Boelling, WOOD magazine’s project builder, recalls an uncomfortable instance of working rosewood: “The shop was hot, and the rosewood immediately made my nose stuffy and my eyes water—like being exposed to tear gas in Navy boot camp.”

However, other woods can make you even more uncomfortable, with a rash that doctors classify as either irritant dermatitis or allergic dermatitis. Woods called primary irritants cause the first type. And, primary irritants provoke reactions in anyone, if you handle them long enough. The rash usually has a uniformly red, swollen area that may erupt in blisters. Typically, it first shows up on the webs of skin between your fingers, where perspiration deposits the toxin from the wood dust and it contacts the skin. Satinwood and snakewood are two woods proven to be primary irritants (for others, see chart).

For you to get an allergic-type rash, you first must be allergy-prone to one or more of the chemicals found in certain woods called sensitizers. And, it may take repeated contact for your body to develop a great enough allergy for it to react—the so-called “latency period” of as little as five days and up to 6–8 months. Because individuals have different immune systems and content of the sensitizing compounds varies in each piece of wood, it’s hard to say how much contact will spur a reaction. But, if you eventually do react, the rash will look like poison ivy—red with small, individual, itchy bumps. The rosewoods, particularly, can produce allergic reactions.

**STOCK THAT TAKES YOUR BREATH AWAY**

Following an earthquake in 1923, the Japanese rebuilt the small village of Beisugi with western red cedar. Not long after, nearly 40 percent of the villagers developed severe respiratory symptoms while in their homes—symptoms that cleared up when villagers went outdoors. Allergists now call the affliction “Beisugi asthma.”

As with species that irritate the skin, wood that can cause respiratory problems falls into the two categories of primary irritants and sensitizers. With respiratory problems, though, primary irritants pose less of a threat. That’s mainly due to your body’s efficiency in preventing wood dust from entering the lungs in significant quantities, or eliminating it by coughing once it does enter. In fact, medical research has yet to pinpoint any species as a primary irritant causing respiratory reactions.

Although you may escape primary irritants, you have a far better chance of developing an allergic reaction to one or more of the many woods that act as respiratory sensitizers. These include western red cedar of Beisugi fame, redwood, rosewood, mahogany, ebony, myrtle, birch, and others.

If even a small amount of dust from one of these sensitizers enters the lungs of an allergic individual, the air passage becomes irritated and swells, a condition frequently indistinguishable from asthma. The symptoms can also include anything from a mild cough and heaviness in the chest that resembles a minor cold, to severe wheezing and the inability to breathe. Symptoms of this condition go away when you’re not exposed to the wood, but return when you come back to the shop to work.

Molds frequently trigger reactions, too. One that actually grows in wood happens to be extremely potent: cryptostroma corticale. This mold lives happily between the bark and sapwood of many hardwood trees, especially favoring maple and birch. It’s responsible for the marbleized spalting that woodturners prize, and for “maple bark stripper’s disease,” a condition with all the symptoms of severe respiratory allergy. Among hobby woodworkers, at least one death has been reported, that of a New Orleans’ man in 1987.

There are two more molds that sometimes cause serious allergic reactions. Aspergillus niger and alternaria, though, prefer moist, dark places, such as a sawdust pile in a basement corner.

**PASS THE PEPTO, PLEASE, THE SPECIES DIDN’T AGREE**

Many woods, among them birch, black locust, and padauk, contain compounds that, when ingested in sufficient quantities (including inhalation), prove capable of producing any one of several systemic reactions: nausea, vomiting,
Back in the early 1700s, German sawyers cutting bald cypress developed chronic headaches as well as eye and nose irritation.

Woodworkers, the greatest concentration of the toxins is in the leaves, berries, and bark. That leads us to wood dust, and cancer. Among woodworkers, the chances of developing nasal and sinus cancer run about five to 10,000—40 times greater than non-woodworkers.

NEVER SAY NO TO A DUST MASK

Although researchers haven’t identified the cancer-causing compound—primarily because a disease has a latency period of from 30–50 years—some evidence points to dust from wood with tannin content. Such species include chestnut, oak, redwood, western red cedar, and hemlock.

If you have worked wood for more than 25 years, any recurrent nasal discharge, bleeding, or sinus infection could signal this condition. Report it to a physician.

Editor’s note: Frankly, I was never too concerned regarding toxic wood. Heck, I’ve made it through four decades without even catching poison ivy! But, about two weeks before I sat down to write this footnote, my arms carried an ugly rash. As far as my physician and I could determine, it came from cocobolo. One day I was preparing some cocobolo boards for “Wood Profile” photos. Later, the rash showed up. Nothing else in my routine had been out of the ordinary—except for the cocobolo. I guess I’m extremely sensitive. The rash gradually disappeared, along with any longing I might have had to one day work that beautiful wood.

—Peter J. Stephano, Features editor

TIPS TO TACKLE TOXICITY

Despite the evidence, most woodworkers have never experienced serious reactions to wood. So, don’t let possible toxicity scare you. Instead, know the properties of the woods you want to work. Refer to the chart, right, to find potential troublemakers.

“If you take to the woods to harvest your stock,” says poison expert Robert Woodcock, “keep the following points in mind to avoid or limit your exposure.”

• Harvest only in fall or winter. Trees cut when the sap is up have higher toxicity.

• Claim the heartwood. With most toxic species, the leaves and stems contain the most toxin, followed by the bark, the sapwood, then the heartwood.

• Season toxic wood. Wood worked green causes more skin reactions because the sawdust clings.

Woodcock also insists on adequate shop ventilation. “It keeps the work space cool and your perspiration down, decreasing the dust’s contact time with your skin.” In addition, a well-ventilated shop discourages the growth of mold spores. And, consider installing a dust collection system. Even then, you should always wear a tight-fitting, government-approved (NIOSH) dust mask if you plan to raise large amounts of wood dust.

“Don’t neglect cleanliness,” Woodcock continues. “It’s a good idea to frequently wash, or even shower, when working a possibly toxic wood. Creases and skin pores, as well as dirty hair, trap fine dust particles, inviting reaction. For extra protection, apply a barrier cream, such as DuPont’s Protek.”

Finally, he urges, “Whenever you develop a persistent set of symptoms, especially when you can connect them with exposure to a wood [remember, symptoms may be delayed 12 hours], contact a physician, allergist, dermatologist,
or specialist in industrial medicine. And, be sure to mention that you're a woodworker.

"Of course, potentially toxic woods should never be used for functional bowls, goblets, trays or any other object likely to hold food," notes the specialist. "Even using the wood for jewelry has caused problems."

For answers to problems regarding toxic wood reactions, call one of the regional poison control centers (PCC) below (space prevents a complete national listing).

**New York City PCC**
212/340-4494

**Delaware Valley Regional PCC**
215/386-2100

**Georgia PCC**
Atlanta, Ga.
404/589-4400

**Regional Poison Control System**
Cincinnati, Ohio
513/558-5111

**Mid-Plains Poison Center**
Omaha, Neb.
402/390-5400

**Texas State Poison Center**
Galveston, Texas
409/765-9728

**Arizona Poison Control System**
Tucson, Ariz.
602/626-6016

**Rocky Mtn. Poison & Drug Ctr.**
Denver, Colo.
303/629-1123

**UCDMC Davis Regional PCC**
Sacramento, Calif.
916/453-3692

**Oregon Poison Center**
Portland, Ore.
503/279-8968 🏡

### WOOD WITH A RECORD

<table>
<thead>
<tr>
<th>WOOD SPECIES</th>
<th>TOXIC CLASS</th>
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By Peter J. Stephano with Robert W. Woodcock, RN, BSN, CEN. Illustrations: Jim Stevenson Photograph: Bob Laramie
If you’re like me—amazed by the array of tools and accessories on today’s market, or new at buying things for your shop—you’ve turned to the right page. Effective with this issue, I’ll provide you with the information you and I need to go shopping with the confidence of a pro for this or that woodworking tool, material, or accessory. Take for example, bandsaw blades—maybe you’ve heard the terms skip-tooth, hook-tooth, three-tooth, 16-tooth—what’s it all about anyway? Stay tuned as we get to the bottom of this matter.

Bill Kein
Product/Techniques Editor

YOUR TWO OPTIONS IN BLADE MATERIALS

Like carbide-tipped circular saw blades, bi-metal bandsaw blades (those with carbon-steel teeth backed by a spring-type steel) offer you longer life than carbon-steel blades, but at a higher price. Bob Candiano of American Saw & Mfg. Co. told me, “Bi-metal blades cost two to three times as much as carbon-steel blades, but you’ll get twice your money back in smoothness of cut and blade life.” On the other hand, Chuck Olson of the Olson Saw Co. says, “I can buy three carbon steel blades for the price of one bi-metal blade, so I can keep a greater selection of carbon-steel blades on hand.”

Who’s right? Since I’m the kind of woodworker who’s constantly changing blades and rarely giving one of them a great amount of wear, I’m going to stick with carbon-steel blades. On the other hand, if you stay with one blade for nearly all your work, then buy that blade in bi-metal. Here are a few other things I found out that also will affect which type you buy:

- Because bi-metal blades flex less, you should use them only if you own a two-wheel bandsaw with 14”-diameter or larger wheels. Otherwise, over-flexing will cause tiny cracks in the blade that can lead to poor performance and breakage.
- If you prefer the lower price of carbon-steel blades, make sure you buy the flex-back type for a two-wheel bandsaw with 12” diameter and smaller wheels. Otherwise, buy a hard-back carbon-steel blade.
- If you own a three-wheel bandsaw, you should buy only flexible-back carbon-steel blades. The reason: The tighter radius of their wheels can promote fatigue cracks in stiffer blades.

MEASURE UP THE BLADE BEFORE PLUNKING DOWN YOUR MONEY

As I quickly learned, you can’t order a bandsaw blade until you know the correct blade length. My local distributor passed along this simple method: First, grab some string and a felt-tipped pen. Then, wind the string around the wheels, following the blade path. Mark the string at an overlap point as shown at right, remove the string from the bandsaw, and measure the distance between the two marked points (record this figure inside the bandsaw cabinet). While you have the saw opened, make note of the wheel diameter (this information will come in handy later).
BUY A WIDTH THAT FITS THE JOB

You'll find bandsaw blades from ¼ to ¾" wide. As shown below, narrower blades turn a tighter radius than wider blades. "For accuracy, smoothness, and blade life, use the widest blade possible," says Barry Langlieb of Chandler Bandsaw.

![Blade Width Diagram]

WHAT TO KNOW ABOUT TOOTH PATTERNS

As shown below, the standard-tooth pattern has a less aggressive cutting angle than the hook-tooth pattern. You'll find the standard pattern in 6- to 16-tooth (per inch) blades intended for thin materials. The hook pattern, found in 2- to 6-tooth blades, cuts faster, especially in thicker materials.

Skip-tooth pattern blades (every other tooth missing) have 3 to 6 teeth per inch. These blades claim the same advantages as the hook-tooth variety, and have gained a reputation as good resawing blades. Nevertheless, Candiano doesn't see any use for them, even though his company manufactures this pattern. "There's no advantage to a skip-tooth blade. You get a smoother, more aggressive cut with a hook-tooth blade."

![Blade Tooth Patterns Diagram]

REMEMBER TO SINK THE RIGHT NUMBER OF TEETH INTO YOUR WORK

For woodworking purposes, bandsaw blades generally range from three to 16 teeth per inch. "You don't want less than three teeth, or more than 18 teeth, in the material at one time," Candiano told me.

For example, use a 3-tooth blade when cutting 2"-thick material, an 8-toother for ¾" stock, and a 16-tooth blade for ¼" material. All of these examples leave four to six teeth in the material at one time. Sure signs your blade has too many teeth for the material: blade binding and a wavy cut because the gullets (the spaces between the teeth) load up with sawdust.

A lot of woodworkers just don't like changing blades for different tasks. If that describes you, buy a ¼"-wide, 6- to 10-tooth blade. Just feed the stock slowly when cutting materials more than 2" thick. Also, increase the blade tension by one blade size for thick stock (set the tension at ¾" for a ¼" blade).

HANDY SOURCES FOR MORE INFORMATION

American Saw & Mfg. Co., Technical Services Department, P.O. Box 504, East Longmeadow, MA 01028. Call 413/525-3961.


Olson Saw Co., Bethel, CN 06801. Call 203/792-8622. ♦

Illustrations: Jim Stevenson
Photographs: Jim Kascoutas
In this year’s holiday gift section, special loved ones. In addition to the child, bookworm, art collector,

CHIP OFF AN OLD WALL

In the 18th century, only the wealthy could afford to import mirrors (or looking glasses as they were called) from England. To accent these mirrors’ beauty, colonial craftsmen built frames similar to the one shown here. The frame I’ve designed for you is a simplified version of a Chippendale-period (1750-1779) frame. I like the way this wall mirror complements today’s traditional decors.

Print this article

FRAME ASSEMBLY
(VIEW FROM BACK SIDE)

3½" rabbbets
⅛" deep

Back side
of frame
we offer you six attractive woodworking projects for those
the oak wall mirror shown here, we've included gift suggestions for
cook, and tree trimmer on your gift list.

CHIPPENDALE
MIRROR

FORMING THE FRAME
1 Cut the mirror frame stiles (A), bottom rail (B), and top rail (C) to the sizes listed below. (We edge-joined narrower stock to make the wide top and bottom rails.)
2 Cut or rout a ¾" rabbet ¼" deep along the back inside edge of all four frame members. Now, machine the same-sized rabbets along both ends of the top and bottom rails where shown. (We test-cut scrap stock first to ensure the surfaces would be flush when the rabbed pieces were held together.)
3 Glue and clamp the frame members together, checking for square.
4 Using the drawing at right for reference, lay out the angled top edges. Use the full-sized half pattern on the following page to mark the top center of the top rail (C).

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<thead>
<tr>
<th>Part</th>
<th>Finished Size</th>
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<td>B bottom</td>
<td>¾&quot; x 8½&quot; x 14½&quot;</td>
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<td>C top</td>
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<td>H back</td>
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Material key: O-oak, LO-laminated oak, P-plywood
Supplies: four #8 x 1½" flathead wood screws, four #8 x 1¼" flathead wood screws, two #10 x 2" flathead wood screws, ¼" mirror, hotmelt adhesive, stain, finish.
Mark a centerline across the bottom rail (B). You'll use this line in the next step to locate the template.

To enlarge the grid pattern for the bottom rail, cut a piece of heavy paper to 3 x 11”, and draw a 1” grid on the paper. Using the Bottom Rail Half Pattern Grid for reference, lay out the bottom-rail outline on the marked grid. To do this, mark the points where the pattern outline crosses each grid line. Finally, draw lines to connect the points. Cut the paper pattern to shape, align the inside edge with the marked centerline, and mark the shape of the frame bottom (you'll have to do this twice to mark both ends).

Bandsaw the frame top (pediment) and bottom to shape, and sand the cut edges to remove the saw marks. (We used a finish sander to remove the marks along the flat surfaces, and a drum sander to sand the curves.)

Drill a 3/8” hole in each stile (A) where located on the Exploded-View Drawing. You'll use these holes later when attaching the mirror frame to the wall.

Center a coat hook over each mounting hole just drilled in the previous step. (See the Buying Guide for our source of hooks.) The coat hooks hide the mounting screws after the mirror has been hung. Using the holes in the coat hook as guides, drill four pilot holes in each stile. Do not attach the coat hooks; you'll fasten them after hanging the completed frame on the wall.

Tape the shelf, centered over the holes just drilled, to the front of the mirror frame. Working from the back of the frame, and using the holes as guides, drill pilot holes into the back of the shelf. Screw the shelf in place. Now, center the shelf support under the shelf, and drill a pilot hole into it. Remove the shelf from the mirror frame.

THE PEDIMENT TOPS AND FINIAL COME NEXT

Cut the pediment tops (F) to size. Next, rout a 3/4” Roman ogee along the bottom face of the front and side edges.

Drill and counterbore two mounting holes in each pediment top where shown on the Exploded-View Drawing and to the sizes shown on the Screw Hole Detail.

With a portable hand drill, carefully drill a 3/8” hole 1/2” deep centered in the top of the top rail (C) for the finial.

Mount a 1 1/2” turning square 8” long between centers on the lathe for the finial (G). If you don't have stock this size, laminate two pieces of 3/4”-thick stock.

Transfer the full-sized finial template to posterboard. Cut the template to shape. Using the template as a guide, turn the finial to shape as shown in the photo above right. (We used a small gouge and skew to shape the oak finial.)
Being careful not to change the shape of the finial, sand it smooth with the lathe running at about 1,250 rpm. Using a parting tool, part it from the lathe. Sand the top ball-shaped portion of the finial smooth.

6 Belt-sand the back of the finial. When mounted in the hole in the top rail, the back of the finial should be flush with the back of the mirror frame.

7 Glue the turned finial in place. Glue and screw the pediment tops in position. Cut plugs and fill the counterbores in the top surface of the pediment tops. Sand the plugs flush. Finish-sand all the parts.

8 Glue and screw the shelf and shelf support in place. Immediately wipe off any excess glue with a damp rag.

ADD THE FINISH, MIRROR, BACK, AND THEN HANG

1 Stain the assembly, and apply at least two coats of clear finish.

2 Take the oak frame to a glass shop and have a mirror cut to the size of the opening less ½" in length and width to allow for contraction of the frame. Our rabbed opening measures 14×24", we cut our mirror and hardboard back to 13¾×23¾".

3 Cut the back (H) to size from plywood or hardboard, and secure it in place with hotmelt adhesive as shown in the photo below left. The hotmelt holds the back and mirror firmly in place, yet allows the frame to expand and contract.

4 Hang the frame on the wall. Attach the coat hooks to the frame.

BUYING GUIDE

- Coat hooks. Two brass and porcelain coat hooks, catalog no. 64000. 59.50 ppd. (12.50 Canadian). Armor Products, Box 445, East Northport, NY 11731, or call 516/462-6228 to order.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Hopkins Associates
Jim Kascoutas
Illustrations: Kim Downing; Bill Zaun
A GREAT WAY TO SUPPORT YOUR LOCAL LIBRARY

CUT THE BOOKS TO SIZE AND FORM THE DAOES

1 Rip and crosscut the eight books (A, B, C, D) to the sizes listed in the Bill of Materials. (We used different thicknesses of mahogany to make the books; see the Buying Guide for our source.)

2 Raise a ¾" dado blade ¾" above the saw-table surface. Attach an auxiliary wood fence to your miter gauge. Set a stop 1" from the inside edge of the dado blade, and cut dados on both surfaces and one edge of the A books. Repeat on the opposite end of book A as shown in the photo above right.

3 Using the dimensions on the Exploded-View Drawing, reset the stop and cut ¼" dados ¼" deep in books B and D. Lower the blade, reset the stop, and cut ¼" dados ¼" deep in the ½"-thick books C.

CUT AND INSTALL THE BLIND LINES

1 Cut a piece of ¾" padauk or cardinal wood to 4 x 32" for the blind lines (E thru K). (We cut a piece of ¾" stock to 4 x 32" and then resawed it in half on the table saw.) Next, we planed and sanded one section until its thickness equaled the width of the dados in the books. The extra width of the 4"-wide piece makes it easier and safer when ripping the thin strips to width in the next step.

2 Rip seven ¾"-wide strips from the ¾" stock. (After cutting the first strip on the bandsaw, we checked the fit of the strip in a dado. Then, we adjusted the fence so the strips protruded about ½".)

3 Cut the short edge strips (E, F, G) to length plus ¼". (We used a miter box and backsaw; we feel the pieces are too short to safely cut with power tools.)

4 Center and glue the short strips in place in the dados. Hold the pieces in place with masking tape.

5 Cut the blind lines (H, I, J, K) to length plus ¼". Glue and tape the pieces in place. Sand the strips flush. Due to the shallow dados, books C require more sanding.
Here's How to Shape the Spine

1. Follow the drawing above to rout the spine edge in each book. Sand the routed edge to the shape shown on the Spine Detail.
2. With the back edges and bottoms flush, glue and clamp together four books for each bookend.

Add the Base and Then the Finish

1. Cut two pieces of 3/4"-thick walnut to 7" wide by 6" long for the bookend bases (L). Mark the angled corner on each base (we used a combination square) as dimensioned on the drawing above right. Cut the angled corner.
2. Rout a 3/4" chamfer on each walnut base where shown on the drawing above right.
3. On the bottom of each base, mark the locations, and then drill three mounting holes. With the back and inside edges flush, clamp the laminated books to the bases. Using the holes in the bases as guides, drill 7/8" pilot holes 3/4" deep into the bottom of the books.
4. To make your own nonskid feet, bore four 3/4" holes 1/8" deep in the corners of each base. Put a puddle of silicone sealant in each hole as shown in the photo above (the silicone should protrude about 1/8" above each hole). Tape four 3/4" flat washers to the bottom of each base to act as spacers. To flatten the protruding silicone, set each base on a piece of glass or waxed paper until the silicone hardens. Then, fasten the books to the top of each base. Sand smooth and add the finish.

Buying Guide

- Hardwood lumber kit. South American mahogany: 1/2×3/8×16", 3/4×4 1/2×1 1/2", 1×1 1/2×5×3 1/2". 1/4×4×33" cardinal wood. 3/4×7×13" walnut. $27.99 ppd. Steve Wall Lumber Co., Route 1, Box 287, Mayodan, NC 27027. Or, call 800-633-4062 to order.

Project Design: James R. Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun
ART TAKES A STAND

TABLETOP

We'll bet you never see an easel as attractive as this in any gift shop. Jim Boelling, our project builder, built the original easel to display pictures of his children. For an investment of less than $10 and a few hours in the shop, you can support your own photos, needlework, or artwork.

Bill of Materials

<table>
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<th>Part</th>
<th>Finished Size*</th>
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<tr>
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<td>¾” x ¾” x 12¾”</td>
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<tr>
<td>B* rear leg</td>
<td>¾” x ¾” x 10½”</td>
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<tr>
<td>C* spreader</td>
<td>¾” x ¾” x 3½”</td>
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<tr>
<td>D* hinge</td>
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<td>F spacers</td>
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<tr>
<td>G* canvas holder</td>
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</tr>
<tr>
<td>H* canvas rest</td>
<td>¾” x ¾” x 6”</td>
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</tbody>
</table>

*Initially cut * parts oversized. Trim them to finished size according to the how-to instructions.

Material key: W-walnut

Supplies: spray adhesive, three #6 x ¾” roundhead brass wood screws with ¼” brass flat washers, ¾” dowel, wet/dry sandpaper, double-faced tape, finish.

CUTTING THE FRONT LEGS

STEP 1

Fence

¾” x ¾” x 15” strip for (A) (Face grain up)

JIG

12½”

STEP 2

LEFT LEG

Saw blade tilted 20° right of vertical

Beveled end of (A) down.

Clamp a stop block on auxiliary fence.

STEP 3

RIGHT LEG

Reposition stop block

Beveled end of (A) down.

Miter gauge set 25° right of center

Auxiliary fence

Miter gauge set 25° left of center

WOOD MAGAZINE  DECEMBER 1989
CUT THE LEGS AND SPREADER TO SIZE

1. From 3/4"-thick walnut, cut two strips 3/4" wide by 15" long for the front legs (A), one strip 3/4"x11" for the rear leg (B), and a fourth strip 3/4"x8" for the spreader (C). The pieces are cut slightly long for safety in machining.

2. Build a jig from 3/4" stock (we used plywood) to the shape shown at right. Follow Step 1 on the drawing titled Cutting the Front Legs to angle-cut the top end of both legs. Tilt the saw blade, angle the miter gauge, and cut the compound angle on the bottom of both front legs as shown in Steps 2 and 3.

3. Cut the rear leg (B) to 10¼" long, cutting a 10° bevel across the bottom end. Cut the spreader (C) to length (35½"), cutting each end at a 25° angle (see the Dowel Hole Detail below for reference).

NOW, CUT THE HINGE AND JOIN THE FRONT LEGS

1. Cut a piece of ¾" walnut to 2×12". Then, resaw a ¼"-thick piece 2" wide from the ¾" stock. (We cut the stock extra-wide and long for safety in resawing.)

2. Using carbon paper or a photocopy and spray adhesive, transfer the full-sized Hinge Pattern outline at right to the ¼" stock. With a bandsaw or scrollsaw, cut the hinge (D) to shape. Sand smooth.

3. Glue and tape the hinge between the front legs. (As shown in the photo on page 88, we clamped a board in our woodworker's vise. After positioning the bottom ends of the front legs against the board, we placed small handscrew clamps on the board to hold the legs in position as we glued and taped the hinge between the leg tops. The six

Continued
TABLETOP EASEL

washers shown in the photo below were used to hold the top end of the legs off the table, allowing the hinge to protrude.)

With the front legs propped up on six flat washers, glue the hinge piece between the legs.

4 Glue and tape the spreader (C) between the front legs. After the glue dries, mark a pair of centerpoints on the bottom of the spreader ⅜" from the joint line where shown on the Dowel Hole Detail on the previous page.

5 To strengthen the joint between the spreader and front legs, secure the front-leg frame in a woodworker's vise. Drill a pair of ⅜" holes through the spreader and into the front legs where shown on the centerpoint and drill a ¾" hole through the top end of the rear leg.

6 Cut two ¾" dowels 1½" long. Put a dab of glue in each hole, and tap the dowels into position. Trim the excess dowel flush with the bottom edge of the spreader.

7 Find center and drill a ¾/32" hole ¾" deep in the front surface of the spreader (see the Exploded-View Drawing for reference).

THE HINGED REAR LEG PROVIDES STABILITY

1 To cut the hinge kerf in the rear leg, start by marking a line across the rear leg (B) 1" from the top end. Next, raise a ⅛"-wide tablesaw blade ½" above the saw table. Position the fence to center the blade on the top end of the rear leg. Start the saw, and push the rear leg into the blade until the blade reaches the marked line where shown in the drawing below. Carefully back away the rear leg from the blade, and turn off the saw.

2 Mark the curve on the kerfed end of the rear leg, and cut the top end of the rear leg to shape. Using the drawing below for reference, mark the centerpost and drill a ¾" hole through the top end of the rear leg.

3 Sand or rout a ⅛" round-over on all edges of the front-leg frame (A, C) and rear leg (B).

THE CENTER POST ASSEMBLY COMES NEXT

1 Cut the center posts (E) and spacers (F) to size from ¾" stock (we planed a thicker piece to size).

2 Now, with the ends and surfaces flush, glue and clamp the spacers between the center posts where shown on the Exploded-View Drawing.

3 Transfer the decorative pattern below to both ends of the center post assembly. Cut the ends to shape (we used a scroll saw).

4 Sand or rout ⅛" round-overs along outside edges (not the ends) of the center-post assembly.

ADD THE CANVAS REST AND CANVAS HOLDER

1 Cut a piece of ¾"-thick walnut to ¾ × 12" for the canvas holder (G) and the canvas rest (H).

2 Cut or rout a ½" rabbet ⅛" deep the length of the strip.

Continued on page 99
ROLLING-PIN RECIPE-CARD HOLDER

Typically, recipe cards receive plenty of abuse while being used for meal preparation. And over time, spills and splatters take their toll. Keep your recipe cards up and out of harm's way with this novel stocking stuffer.

TURN THE BARREL, AND CUT THE KERF

1 Cut a 5½” length from a 2” maple turning square for the barrel (A). If you don’t have stock this thick, laminate thinner pieces to size. Draw diagonals on each end to find center. Punch a small indentation at each marked centerpoint, and mount the stock between centers on your lathe. Turn the barrel to a 1¾” diameter, and use a parting tool to square the ends.

2 With the barrel still mounted between centers, sand it smooth.

3 As shown in the photo at right, secure the barrel in a handscrew clamp. Center the bit (we used a brad-point) over the indented centerpoint, and drill a ½” hole ½” deep. Repeat on the opposite end.

4 Clamp the barrel in a woodworker's vise, and use a backsaw to cut a ⅛” kerf ¾” deep to hold the recipe card later. Finish-sand the barrel.

SHAPE THE HANDLES WITH A DRUM SANDER

1 Cut two 3¾”-long pieces from ½”-diameter walnut dowel for the rolling-pin handles (B).

2 Chuck the top 1” of one dowel section into your drill press. Fit your portable drill with a 2” drum sander. With the drill press running at about 750 rpm, sand a concave shape to each handle as shown in the photo below and on the full-sized handle pattern. Hand-sand the very end of the handle to shape.

ADD THE BASES AND FINISH

1 Transfer the base pattern shown below to ½” walnut stock. Cut two bases (C) to shape. Sand smooth.

2 Glue a handle in each end of the barrel. Glue and clamp the bases to the barrel where shown in the Exploded-View Drawing.

3 Remove any excess glue and sand smooth. Apply a clear finish (we used lacquer).

Project Design: James R. Downing.
Photographs: Bill Hopkins
Illustrations: Kim Downing, Bill Zaun
Note: You'll need 1/4”-thick stock for this project. You can either resaw or plane thicker stock to size.

THE FUSELAGE GETS THINGS OFF THE GROUND
1 Cut two pieces of 3/8”-thick stock (we used cherry) to 2 1/4” wide by 11” long for the fuselage blank (A). Glue and clamp together the pieces face to face with the edges and ends flush. Later, remove the clamps, scrape off the excess glue, and trim the block to 2” wide by 10” long.
2 With a photocopy and spray adhesive, transfer the full-sized fuselage side- and top-view patterns, hole centerpoints, dado and kerf locations, and notch locations to the fuselage blank. (You could also transfer the marks to the blank with carbon paper.)
3 To make a guide for drilling the exhaust ports, cut a piece of scrap 2 x 4 to 1 x 1 1/8” long. Make a mark and miter-cut 2 1/2” from one end where shown on Step 1 of the drawing at left. Now, mark diagonals on the square-cut end of the short piece, hold the piece in a handscrew clamp, and use the drill press and a brad-point bit to drill a 3/16” hole centered through it as shown in Step 2 of the drawing.
4 Glue the short piece to the end of the long piece to form the drill guide shown in the photo below.

Here's another award-winning project from our first Design-A-Toy contest. Steve Bruni, an avid Iowa woodworker, modeled his toy plane after the Curtiss JN-4, a sturdy World War I trainer and observation biplane. (You may remember the Jenny from barnstorming shows or as the now-famous plane flying upside down on 100 incorrectly printed airmail stamps.) The toy design proved so popular that Steve and a woodworking buddy, Charles Cullor, made nearly 40 Jennies last Christmas as gifts for deserving children.
5 Using a combination square, mark a line on the outside face of the drill guide, aligned with the centerpoint of the 3/16" hole drilled through the 2 1/2"-long piece.

6 With the outside surface of the guide flush with the top surface of the fuselage blank, align the mark on the side of the drill guide with the marks on the top view, and drill the angled 3/16" holes 3/8" deep as shown in the photo on the opposite page. Repeat to drill the holes on other side of the fuselage.

7 Mark the centerpoint, and drill a 3/16" hole 1/2" deep in the front of the fuselage for the propeller pin (see the Fuselage Patterns Drawing).
Use a push block when cutting the ¾" dadoes in the tail section.

for reference). Switch to a ¼" bit, and drill a pair of holes ¾" deep into the top surface of the fuselage blank for the wing supports.

8 Bore a 1" hole through the fuselage for the pilot.

9 Fasten an auxiliary fence to your miter gauge. Using your miter gauge for support, cut ¼" kers ½" deep in the top and sides of the fuselage. (To keep the kers ¼" from the front of the fuselage, we attached a handscrew clamp to the miter-gauge fence to act as a stop.) Raise your blade 1" above the saw table and cut the kerf across the bottom edge. See the Fuselage Patterns Drawing for reference.

10 Mount a ¼" dado blade to your tablesaw and raise the blade to 1" above the table surface. With the fuselage blank standing on end, use a push block to cut the rudder and elevator notches in the tail as shown in the photo at left.

11 Cut a 2"-wide dado ¾" deep across the bottom edge of the fuselage for the bottom wing.

12 With the fuselage on its side, bandsaw the side view to shape. Tape the waste pieces to the fuselage, and cut the top-view pattern to shape. Sand the fuselage smooth.

13 Cut eight ¼" dowels ½" long, and glue one into each exhaust hole. Sand the ends parallel to the side of the fuselage as shown on the Section View Detail accompanying the Exploded-View Drawing.

NOW, CUT AND SHAPE THE REMAINING PARTS

1 Transfer the full-sized patterns and hole centerpoints for the bottom and top wings (B, C), struts (D), elevator (E), rudder (F), propeller (G), landing-gear pieces (H), landing-gear support (I), and headrest (J) to ¾" stock. (We used ¾" cherry for all but the struts; for contrast, we used ¾" maple for those.) Cut the parts to shape. Also, cut a ¾" dowel 2½" long for the landing-gear axle.

2 Drill the holes where marked, and sand the parts smooth.

Continued on page 100
CARVE A HOLIDAY ANGEL

Celebrate the yuletide season with this festive and versatile pattern from the Heartland’s Ron Mackey

At Ron Mackey’s home in Lincoln, Nebraska, every workday has a holiday theme. Ron carves Christmas items in the summer heat, switches to Easter in winter’s cold, and fits other holidays in between.

Ron began carving full-time in 1985. Inspired by his wife Leeta’s Christmas ornament collection, his career took off. He now sells his work in 14 states and his designs to the likes of Hallmark Cards.

Although many of Ron’s pieces reflect a folk-art carving style, his real love lies in classical European carving. “The angel is a perfect example,” Ron says. “It’s all knife and gouge work. No finishing with sandpaper allowed!” And, true to old-world craftsmanship, he carves all surfaces, including backs and edges, “So they feel good.”

Choose the size of your angel, then start carving

By enlarging the tree-ornament angel pattern shown about three times, you’ll have the makings of a dandy wall plaque or door hanging. Or, reduce it about 40 percent for a lapel-pin-sized carving.

To make an ornament, start with a 5 3/4" x 3 3/4" x 1/4" piece of basswood. Transfer the pattern to the wood, and cut out the rough with a bandsaw. Next comes the hardest part, according to Ron.

“Drill the hole between the neck, hand, and shoulder with a Forstner bit or a brad-point, the size depending on the angel you’re making (pin, 3/16"; ornament, 5/16"; plaque, 1/2" overlapping holes). Use a gouge or knife to reshape the round hole,” Ron advises.

Next, cut down the surface of the angel’s back wing. “The more you lower it, the more shadow effect you’ll get,” says the carver. Ron shaved this angel’s wing by one-third the wood thickness—about 1/4". Then, redraw the feather lines.

With a knife, make the stop cuts that outline the feathers on both wings. Next, shape them with a flat chisel gouge and a small no. 5 or 7 shallow U-gouge.

Using a no. 5 gouge, carve the depths of the gown drapery with long flowing cuts. “You’re actually carving shadows,” says Ron.

After you complete the wings and gown, turn to the hair and carve it as you did the wings. To shape the face, start at the chin with a U-gouge and cut a chamfer in one continuous motion up to the forehead. Then, make a gouge for the eye socket. With a knife or V-tool, cut a notch for the eye. “If you chip the trumpet,” Ron notes, “give her a smaller horn.”

Antiquing a heavenly finish

For a clear finish, Ron applies a cabinetmaker’s wax over a light stain or oil. To paint the angel, lay down a coat of white acrylic. Add a wash of light blue and other colors for hair, horn, and face. Then, spray on lacquer. Antique it by sanding or scraping raised portions and edges. Finally, put on a coat of dark, liquid Watco satin finish wax and wipe it off while still wet.

One in a collection of regional patterns from the nation’s top carvers

FULL-SIZED PATTERN

→ DIRECTION OF GRAIN ←

Other carving block sizes: plaque, 16 1/2" x 12" x 1 1/4"; pin, 2 1/4" x 1 3/4" x 1/4"
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Imagine a disc-shaped motor that's about ½" thick and 3" in diameter. Now, imagine that motor powering along without making noise, and you have a pretty good idea of a prototype motor that has been developed by AEG in Frankfurt, Germany. While turning at about 100 rpm, the motor generates a lot of torque — we couldn't slow it down by firmly grasping the shaft. With more than 7,600 people involved in research and development in everything from superconductors to environmental protection, it wasn't surprising to see AEG on the forefront of this technology.

The apparatus, called a piezoelectric motor, uses resonant vibrations induced by piezo ceramics rather than the magnetic field created by the windings of universal motors. Currently, all portable power tools use universal motors.

A prototype version of AEG's piezo-electric motor produces plenty of torque and no perceptible noise.

HITACHI BUILDS POWER TOOLS IN GEORGIA

Thanks to the strength of the yen, more and more Japanese manufacturers have seen fit to produce their wares in the U.S. From cars to power tools, Japanese manufacturing facilities have sprouted up around the U.S. during the 1980s. Now, Hitachi plans to assemble power tools in Norcross, Georgia, joining fellow Japanese tool makers Makita and Ryobi who already have U.S. plants. Makita recently doubled the size of its Georgia facility. Ryobi assembles power tools in Chandler, Arizona.

"Manufacturing some of our tools in the U.S. will allow us to deliver those products faster to dealers," a company official told us. "In the past, we had to wait three to four months between the time of order and time of delivery." At present, Hitachi plans to make only demolition and rotary hammers in its Norcross plant.
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The Vintage Car Club of America series spans automotive history from 1912 to 1957, including distinguished models such as the 1931 Rolls Royce Phantom, 1957 Chevy, 1929 Ford Model A and 1955 Corvette. The complete series of Vintage Car kits are not sold in hobby stores or stores and are available exclusively by mail order.

Complete satisfaction guaranteed. Send for your Mercedes-Benz kit today for only $19.95 and receive a two blade stainless steel pocket knife absolutely free. If you are not completely satisfied, keep the finishing materials, map case and pocket knife, simply return the car kit for a full refund. Keep the Mercedes-Benz and you will become a certified member of the Vintage Car Club of America and have the opportunity to purchase, if you wish, additional quality Car Kits on a monthly basis. However, you are not obligated to buy any additional kits — ever!

To receive this special offer, a $30.00 value for only $19.95, the coupon today.

Mail to: Vintage Car Club of America, Division of Craftsmen, Inc., OW-83, 147 Lake Street, Delaware, Ohio 43015

Please send me the Mercedes-Benz and enroll me in the Vintage Car Club of America. I understand I will receive a second Vintage Car kit approximately one month after receipt of the first. Should I not be completely satisfied, I may refuse delivery of the second shipment by writing "Cancel me" on the shipping label. When I keep the second shipment, I will be a regular member and receive a different Vintage Car kit each month for $19.95 plus $3.45 for shipping and handling. Of course, I may refuse any shipment within 30 days of receipt and I am not obligated to receive any minimum number of car kits.

FREE BONUS!

Mail to: Vintage Car Club of America, Division of Craftsmen, Inc., OW-83, 147 Lake Street, Delaware, Ohio 43015

Please send me the MasterCard and enroll me in the Vintage Car Club of America. I understand I will receive a second Vintage Car kit approximately one month after receipt of the first. Should I not be completely satisfied, I may refuse delivery of the second shipment by writing "Cancel me" on the shipping label. When I keep the second shipment, I will be a regular member and receive a different Vintage Car kit each month for $19.95 plus $3.45 for shipping and handling. Of course, I may refuse any shipment within 30 days of receipt and I am not obligated to receive any minimum number of car kits.

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FREE BONUS!
3 Transfer the full-sized Canvas Rest and Holder Patterns, hole centerpoints, and dado locations shown on page 88 to the strip. Cut the 1½" dadoes ½" deep where marked on the back side (the side adjacent the ½" rabbet). Drill ¾" holes ½" deep from the back side (same side as the dadoes), and cut the ends of the pieces to shape.

4 Sand or rout ½" round-overs along the edges of the canvas holder and rest where shown on the Exploded-View Drawing.

5 Cut two pieces of wet/dry sandpaper to the sizes shown on the Exploded-View Drawing. Using double-faced tape or glue, adhere the pieces to the rabbits in the canvas holder and rest where shown on the drawing. The sandpaper helps prevent the artwork from sliding around in the rabbit.

**FINAL ASSEMBLY**

1 Mask the sandpaper adhered to the canvas rest and holder, and apply the finish to all the parts, rubbing lightly with 0000 steel wool between coats. (We applied an aerosol lacquer, Deft Clear Wood Finish.) After the finish dries, remove the masking tape.

2 Fasten the canvas rest and holder to the center post assembly with #6 x ¾" brass wood screws and brass washers. Use the same-sized screw to fasten the center post assembly to the spreader.

3 Tape the rear leg (B) in position against the hinge (D). Using the previously drilled ¾" hole in the top of the rear leg as a guide, drill a ¾" hole through the hinge. Cut a ¾" dowel to ¾" in length. Stain the ends of the dowel to match the walnut (walnut dowels are not commonly available in ¾" diameter). With the holes aligned, insert the ¾" dowel through the holes to act as a hinge pin. 🔹

Project Design: Jim Boelling
Photographs: Jim Kaszoua, Bob Calmer
Illustrations: Kim Downing, Bill Zaun
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BARNSTORMING BIPLANE

Continued from page 93

THE LANDING GEAR MAKES FOR SMOOTH TAKEOFFS

1 With a brad-point bit in your drill press, drill a 3/16” hole 3/8” deep centered in both ends of the axle.

2 Glue and tape the axle and support (I) between the landing-gear parts (H).

3 Later, drill a pair of 3/8” holes 5/8” deep through the landing gear and into the support. Cut two 5/8” dowels 5/8” long and glue in the holes.

4 With 3/16” x 3/4” toy axles, secure 1 1/4”-diameter toy wheels to the landing gear. Be careful to keep the wheels spinning freely.

5 With 3/8” dowels, glue and clamp the landing-gear assembly to the underside of the bottom wing (B). If the 3/8” dowels protrude above the top surface of the bottom wing, sand them flush.

THE WINGS AND PROPELLER COME NEXT

1 Glue and clamp the bottom wing into the dado in the fuselage.

2 Cut four 3/8” dowels 5/8” long. Use two of the dowels to glue and dowel the struts (D) to the bottom wing. Check for square.

3 Cut two 3/4” dowels to 1 1/4" long. Using these two 3/4” dowels and the 3/8” dowels cut in the previous step, glue and dowel the top wing (C) to the struts and fuselage.

4 Mount the propeller to the plane with a 3/16” x 3/4” toy axle. To keep the propeller spinning freely, don’t push the axle in too far.

ASSEMBLE THE PLANE AND TAXI FOR TAKEOFF

1 Glue the headrest (J) in place. Glue the elevator (E) and rudder (F) into the tail-section notches.

2 Drill a 3/16” hole 3/8” deep through the elevator. Glue a 3/16” x 3/4” axle in the hole to act as the tail skid.

3 Finish-sand the airplane and apply the finish. (We brushed on two coats of polyurethane.)

Produced by Marlen Kemmet Project Design: Steven Bruni Photographs: Hopkins Assoc.; Jim Kasccoutras Illustrations: Kim Downing; Bill Zaun
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Cove Bits

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45° Chamfer Bits

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<td>1-1/2&quot;</td>
<td>$15.50</td>
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<tr>
<td>2&quot; x 1/2&quot; Heart</td>
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WALNUT WOODWORKING—Catalog loaded with the best tools and accessories you can buy. On our catalog you will find a complete selection of Japanese tools for the woodcarver, carpenter, and cabinet maker. Send for catalog plus supplements for next two years. WOODLINE-THE JAPAN TOOL & SUPPLY. $1.00. Circle No. 98.

STAINS/Finishes

ARTICLE LINEANES—Color chart features 28 art linean colors and 8 woodcarver's colors. Price list and ordering instructions included. HIGHLAND HARDWARE. $1.00. Circle No. 232.

EASY WOOD FINISHING—Learn how to finish wood easily and beautifully with Woodline, a complete line of finishing products. Product line includes: HANDY WATCO, CARPENTER, and cabinet maker. Send for catalog plus supplements for next two years. WOODLINE-THE JAPAN TOOL & SUPPLY. $1.00. Circle No. 99.

WATCO-DENIS SALES INC. Free. Circle No. 279.

STAINED GLASS

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 122

WOODS MAGAZINE DECEMBER 1989
LUMBER
QUALITY EXOTIC LUMBER/TURNING WOODS—We offer a comprehensive selection of fine quality exotic woods: Ebony, Kingwood, Tulipwood, Snakewood, African Blackwood, Cocobolo, Indian Rosewood, Madagascar African, Mopane, Spalted Maple, Padauk, etc. Unique and unusual turning woods and bulk lots are also available. Send for catalog. BEREKA HARDWOODS. $1.00. Circle No. 510.

WOODWORKERS HELP CELEBRATE 85TH ANNIVERSARY OF SERVICE—Send for our new 148-page Craftsman 1896 Catalog listing 32 varieties of choice hardwoods, 1/4 in. to 4 in. thick, 1/2 in. thick, hardwoods, white oak, hardwoods, oak, maple, mahogany, walnut, and oak, along with 128 items for your projects. CRAFTSMAN WOOD SERVICE CO. $1.00. Circle No. 520.

DO-IT-YOURSELF LUMBER DRYING—This 24-page brochure, "Kith Creek Lumber and Operation Manual," is designed for the individual wishing to dry his own lumber with expert advice on the investment of money, labor, and space. Included are principles of drying, drying, selection of which dry is best for you, and kiln drying plans. Additional sets of sawn lumber, planed lumber, and red oak, and a total of eight large sawdust bottles. New methods and ideas for efficient and economical drying. US $1.00. Circle No. 920.

THE LUMBERMAN'S ALMANAC—In this issue you will find tens of thousands of dollars worth of lumber, building materials, and supplies. A must for any lumberyard or building supply business. $3.00. Circle No. 620.

VIDEOS
SANDING PROBLEM—One of America's leading manufacturers of abrasives belts, sheets, discs, and other abrasive specialties will help you solve your sanding problem. Our brochure provides all the information you need to know about grits, abrasives, and more. $0.50. Circle No. 815.

IF YOU ARE A DEMANDING HOBBYIST—or professional and want to make a quality project, you owe it to yourself to invest in quality tools. Laguna Tools has a wide selection of high-quality woodworking tools and accessories at affordable prices. $15.00. Circle No. 460.

FINE WOODWORKING VIDEOS—Send for your 50-minute video tape sampling of the world's top-quality woodworking videos. See woodworking techniques, planning, cutting, turning, furniture, repair, workmanship and other related subjects. $4.00. Circle No. 670.

GENERAL WOODWORKING CATALOGS
ADVANCED WOODWORKING—Specialty products catalog for the exclusive distributors of Hegner & Felder woodworking machinery. Includes complete selection of woodworking materials, including scroll saw blades, accessories, and improvements for almost any scroll saw. Also Hegner precision scroll saws, Holzma precision scroll saws, Felder systems & more. $2.00. Circle No. 801.

EVERYTHING WOOD WORKING—Wide selection of woodworking supplies, including dyes, glues and tools. Send for catalog. HENRY'S WOODWORKING. $1.00. Circle No. 810.

CONSTANTINES' CATALOG FOR WOODWORKERS—116 pages packed with over 4,000 products for fine woodworking. Included are 250 woods and sizes of domestic and imported hardwoods, 250 exotic woods, 150 of exotic veneers, 10 quality woodworking tools, 10 specialty hardware accessories, and 10 woodworking accessories. $2.00. Circle No. 820.

MATERIALS CATALOG—Back-ordered for 1986-87: 212-page material catalog. Full list of fine hardwoods, woods, veneers, and other finishing materials. $4.00. Circle No. 885.

WOODWORKING MACHINERY CATALOG—Planners, jointers, saws, shapers, drill press, lathes and other woodworking machinery, full line of woodworking machinery. $4.00. Circle No. 885.

TOOL CATALOG—"Innovation" sets Lechelnig apart from the rest! You'll find tools and accessories for the serious woodworker, do-it-yourselfer and hobbyist, of every SKU number. $2.00. Circle No. 885.

LEICHTWEIGHT WORKING CATALOG—R.A. Ness & Co., and their Lightweight Work Catalog, features a total of eight lightweight catalogs. Thousands of industrial quality items—machinery, storage, workbenches, portable tools, and supplies—are featured at super-prime rates. The price is refundable with purchase. R.A. NESS & CO., the Workshops Emporium, $4.00. Circle No. 885.

TOOLS ON SALE—A division of Seven Corners Ace Hardware, offers a comprehensive catalog covering 500 pages of the most competitive prices in the industry. If you're looking for savings and fast delivery on over 200 items, request our catalog. This catalog offers one of the largest selections of tools and supplies, and is available at a discount from any of the most respected manufacturers in the industry. Milwaukee, Makita, Porter-Cable, Black & Decker, DeWalt, and others. $2.00. Circle No. 885.

TOOL CATALOG HAS A TOOL OR ACCESSORY FOR EVERYTHING—you'll find everything you need in this catalog. The most complete mail order catalog. It features a comprehensive selection of stationary & portable power tools, hand tools, work storage, accessories, books, and shop equipment. Priced to save you money in all categories. $3.00. Circle No. 885.

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THE WOODWORKERS STORE—The 35th Anniversary Catalog of The Woodworkers Store features domestic and exotic hardwoods, veneers, woods, specialty hardware, kitchen accessories, tools, books, and plans. Many exclusive items and hard to find specialities. Orders shipped in 24-48 hours. Satisfaction guaranteed. $2.00. Circle No. 885.

WOODWORKING SUPPLIES—Offers high-quality tools and supplies for skilled, amateur, and professional woodworkers. Our complete catalog contains tools, hand tools, plans, router bits, shaper cutters, wood specialties, and more. For your two year subscription send to WOODWORKERS SUPPLY OF NEW YORK, $2.00. Circle No. 885.

KITS
OAK FURNITURE AND ACCESSORY KIT CATALOG—Features a full range of oak furniture kits and accessories, including oak and maple furniture, oak and maple cabinets, oak and maple tables, oak and maple chairs, oak and maple benches, oak and maple bookcases, and oak and maple storage cabinets. The complete catalog is available for $3.00. Circle No. 1050.

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QUALITY CLOCK KITS AND PLANS—Hands-only, woodworkers, cabinet makers, and others will find our selection of quality clock kits and plans available at factory direct prices. $2.00. Circle No. 1090.

MUSIC MAKER'S KEEP BOOK—A 32-page resource catalog for building and learning to play handmade musical instruments. The source for over 1,000 plans for building instruments, including the volcano, the lap steel, the balalaika, the banjo, the mandolin, and many more. $2.00. Circle No. 1090.

BITES, BLADES, CUTTING TOOLS
BANDSAW BLADES FOR ALL TYPES OF BANDSAW—Whether you have a large commercial saw, a small home saw, or a circular saw, we have the right blade for you. Send for catalog. BUCKEYE SAW CO. $1.00. Circle No. 1367.

CARBIDE TIPPED ROUTER BITS AND CHOP SAW BLADES—32-page catalog covering all types of carbide-tipped router bits and chop saw blades. $1.00. Circle No. 1367.

WEDGE INNOVATIONS’ SmarLevel—Digital electronic carpenters level measures angles with up to 10 decimals of a degree accuracy. Automatically calculates percent of slope and pitch for you. Send for our new catalog that has been recalibrated into perfect balance with the push of a button. Helps you achieve exact measurements and professional quality with the minimum effort. WEDGE INNOVATIONS. $1.00. Circle No. 1299.

CUTTING TOOLS MADE TO PERFORM—A set of three cutting tools designed to fit any tool, from a simple hand tool to a complex machine. Send for our free catalog and see how our woodcutting tools can improve your work. $2.00. Circle No. 1299.

WOODWORKING TOOLS—Frieder provides the finest in hand tools, carving tools, and hand-held power tools. From drills and sanders to saw blades and routers. Send for catalog. FREUD, $1.00. Circle No. 1221.

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 122.
ROUTER ACCESSORIES CATALOG—Is your router still in the box? Get quality parts to make the router a complete workshop. Make panel doors, dovetail drawers, box joints, pictures frames, and much more. Make your router more versatile today with these quality accessories that fit all routers. OAK PARK ENTERPRISES LTD. $1.00. Circle No. 1360.

SAW BLADE VALUES—Olson Saw’s unique "furniture band" is specifically designed to provide fast, smooth cuts in all types of wood. Included in Olson’s line are band saw blades, which are a huge list of thin, large and abrasive cutting blades. Send new for illustrative catalog, comes with $3 coupon good on first order. SKY-CRAFT TOOLS INC. $1.00. Circle No. 1372.

HARDWARE/WOOD PARTS

OUR READY TO ASSEMBLE KITS—for Queen Anne chairs and occasional tables make it easy for you to make your own wood! We also stock individual Queen Anne legs for every project. Complete information in our brochure. ADAMS WOOD PRODUCTS, 509, Circle No. 1491.


HARDWARE CATALOG—A unique 64-page catalog of the very finest in classic, traditional solid brass cabinet hardware. All of British or North American manufacture. Double keyhole handles, escutcheons, and other accessories. Also available in specialty hinges, box hardware, brass screws, casters, latches, catches, locks, and more. GARRARD WADE CO. $2.00. Circle No. 1497.

BRASS FURNITURE HARDWARE—This 36-page catalog shows over 500 items of authentic reproduction hardware from the 1700's on into this century. This fine quality furniture is a must for the craftsman working on a new project, or for the refinisher who needs replacement hardware. HORTON BRASS, $3.00. Circle No. 1430.

SQUARE DRIVE SCREWS—Thousands of house owners use this type of hardware. The square drive recesses virtually eliminate work-demanding driver bits. The deep threads result in exceptional holding power, and they are heated for strength. Sizes range from 1/4" to 1-1/8", with stainless steel, solid brass plated, and zinc plated available. Quantity discounts. Send for literature. McFEELY HARDWARES, $1.00. Circle No. 1460.

WOOD TOY PATTERNS—Patterns for all ages including children’s patterns and toy patterns. McFeely Hardware has many new patterns to choose from including parts and wheels. Send for our 32-page catalog. WORKWOODS, $1.50. Circle No. 1460.

QUALITY AMERICAN-MADE WOOD TURNINGS— such as shaker pegs, spindles, toy wheels, toy parts, craft items, and dowel rods in birch, oak, walnut, and cherry. Send for complete 32-page catalog. WORKWOODS, $1.50. Circle No. 1460.

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AMITY, NATION'S #1 QUALITY FURNITURE RESTORATION CO. SINCE 1971—New product catalog featuring complete restoration systems, Hydrocut non-flammable world based on the final and finishes, Permaflex repair products, strippers, synthetic, and sunscreens. Amity 1-2-3 wipe-on finishes and much more. Regional workshops in your area. AMITY. $1.00. Circle No. 1650.

WOOD CARVING MACHINES AND ACCESSORIES—For the professional woodcarver, this 48-page catalog includes hundreds of antique restoration parts, brass reproduction hardware, oils and finishes, and more. Enlarged edition is available for $1.50. Circle No. 1650.

WOOD FINISHES—Finish your projects with the best. All finishes are carefully selected and tested to ensure quality. Write for catalog. MARVIN LINDSAY INDUSTRIES. $1.00. Circle No. 1659.

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CARVING SUPPLIES


WOODCARVING TOOLS—Whittlers and carvers. War- ren Tool Co. offers a catalog for you to whittle and carve. Contains tools for beginners, plus an extensive list of woodcarving tools. WARREN TOOL CO., INC. $1.00. Circle No. E185.

WOOD CARVERS SUPPLY INC.—Complete 64-page color catalog featuring over 3000 carving tools, books & kits. Supplies from 1927, finest in wood carving tools. WOODCARVERS SUPPLY INC., 600. Circle No. 1215.

WOOD CARVERS SUPPLY INC.—Complete 64-page color catalog featuring over 3000 carving tools, books & kits. Supplies from 1927, finest in wood carving tools. WOODCARVERS SUPPLY INC., 600. Circle No. 1215.

CLAMPS

CLAMPS—Ever wish you had more hand screw wood clamps? We have them! Our 30-page catalog features over 600 clamps, including all sizes of hand and bench clamps, as well as a wide variety of specialty clamps. Send for our fully illustrated catalog. CLAMP, INC. $3.00. Circle No. 1225.

CLOCKS

BUILD HEIRLOOM CLOCKS—Now create beautiful heirloom quality clocks right in your own home. Choose from a complete line of clock kits, great for beginners, to challenging wall clocks. 32-page catalog also offers a selection of music boxes, music movements, traditional barometers, and a huge variety of parts movements and dials for custom clock building. Satisfaction guaranteed. THE AMERICAN CLOCK CO. $3.00. Circle No. 1270.

KLOKCHIT’S FREE 76-PAGE COLOR CATALOG—A comprehensive catalog that features all types of wood clock, kit for all skill levels, a huge selection of parts and movements, and a wide variety of parts movements and dials for custom clock building. Satisfaction guaranteed. KLOKCHIT, INC. Circle No. 2055.

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W O O D M A G A Z I N E DECEMBER 1980
FILL 'ER UP
Oh no! You're almost out of diesel fuel and there's not a service station in sight. "Never fear," you say, as you pull over and fill 'er up at the nearest copaiba tree.
That can be a real situation in Brazil's Amazon, where the copaiba tree grows. Melvin Calvin, a professor of chemistry at the University of California at Berkeley, can attest to the fuel value of copaiba oil. In his studies of the tropical forests, Calvin learned that harvesters drill a hole into the copaiba, plug it, and then, usually twice a year, drain oil from the hole at a rate that can reach 25 liters (about six and one-half gallons) in 24 hours.
Usually, it's sold as a base for perfumes. However, Calvin reports that, in the forest, he has seen the oil used for diesel fuel, right from the tree. A full tank sure adds up to a long, long wait, but the price is right.

INVESTING IN GROWTH
Vern and Lula Johnson paid $4,200 for their 40-acre Washington-state farm in 1944, and that included a home and outbuildings. Recently, Lula, now a widow, sold off the Douglas fir timber from just six acres for 38 cents a board foot, or a total of $252,000!
The Weyerhaeuser Company opened its wallet wide for the high-quality, 85-year-old trees expected to yield more than 650,000 board feet of lumber. More than 40 years of selective logging and thinning, and patience, paid big dividends.

COUNT ON CARVERS
WOW! The tremendous response to the "Calling All Carvers" item on this page in the January 1988 issue resulted in a list of carving clubs that at press time numbers more than 300. Now, if you want to join a carving club, but don't know where to turn, we can help. Send a self-addressed, stamped envelope to WOODMATES, WOOD® Magazine, P.O. Box 11454, Des Moines, IA 50361-1454. We'll match you up.

WELL-AGED MACHINES
Walt Vinoski claims he picked up his 24-inch, 1953 model Yates American planer for $2,200 and has since turned down $10,000 for it. But it wasn't for investment that this 29-year-old buys old machines like the planer. "They just keep running," he says.
About 200 other woodworkers share his view. That's about how many people belong to the Antique Woodworking Power Tool Association (AWPTA). Contact the AWPTA by writing to Walt Vinoski at P.O. Box 1027, Connellsville, PA 15425. It costs $10 to receive six newsletters a year.

ON-THE-JOB CLASSES
Every couple of months or so, WOOD staff members break from routine to try their hand at a new skill during a scheduled in-house seminar.
Visiting craftsmen have included woodturners, carvers, and experts on different tools. Last spring, staffers were treated to an impromptu seminar by English stickmaker Theo Fossel.
Theo makes all sorts of walking sticks, and he's so convinced of their revival that he knows no bounds in talking them up. After our hands-on experience, we see why. By Jove, sticks are great!
For an afternoon, several of the staff carved away at handles. Theo shared the secrets of stick-bending, handle-fitting, and adding a ferrule. Watch for our February 1990 issue for an at-length visit with Theo.
Theo has written a book, Walking & Working Sticks ($13 ppd.), that introduces the materials and techniques. To order, send a check or money order to Theo Fossel, Dept. W, P.O. Box 5775, Shreveport, LA 71135.

Photographs: Bill Krier, Peter Stephano  Illustration: Jim Stevenson
As "the" producer of top end industrial woodworking machines since 1921, Powermatic now focuses their engineering expertise and resources for the craftsman, contractor and home hobbyist.

Responding to your expressed needs, the Artisan's Line of woodworking machinery was developed. Leading the industry in quality, features, and exceptional value. Available now for little or no more than you'd pay for run-of-the-mill machinery.

- **10" Artisan's Saw** — setting the standard for accuracy, ruggedness and portability with industrial quality Vega fence, built-in dust shroud, T-slot miter gauge and more
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- **Shaper** — with ¾" solid and ½" interchangeable spindle cartridges, exclusive fence with integral dust shroud, and spindle reversing switch

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Freud provides the best performance among comparable carbide blades!!

A new mixture of carbide has been engineered at Freud that stays sharper longer and produces a cleaner finish on laminates, melamines, softwood, and hardwood.

Another finding showed sharper blades required less power (amperage) to make a cut. The Freud HOOK Carbide blade used less power and therefore out performed the competition by staying sharper longer.

Your local Freud distributor has a complete copy of the Pittsburg State University report and will be glad to show you their findings. See for yourself how The NEW HOOK CARBIDE BLADE from Freud has been proven to be the best blade for your cutting needs!!

Call us today for the name of your local Freud distributor.

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product, but that a copy of another's original design will most often have little chance of being as good.

We feel that it also is important to point out that while the section of your article on "Contractor's Style" saws correctly states that the other saws in this category are basically copies of Delta's 34-440, it fails to mention in the "Cabinetmaker's Style" section that the Jet, Grizzly, and Lobo are all Taiwan copies of Delta's Unisaw.

Delta has engineered and manufactured tablesaws for over 50 years. This includes heavy-production saws in Brazil, Unisaws and contractor's saws in Tupelo, Mississippi, and homeshop saws in Taiwan. Our Brazil and Taiwan inspectors and engineers use the same rigid quality-control standards that apply to our U.S. facility.

—Louis C. Brickner, vice president of engineering and product development

Easel folds better with a skinny leg

While building a bunch of the tabletop easels featured in the December 1989 issue, we discovered that a Bill of Materials dimension for the rear leg (B) doesn't match the full-sized drawing on page 88. The rear leg should be 5/8" thick, as correctly shown in the drawing. For an easier fitting of the rear leg, cut the hinge (D) to the shape shown above.