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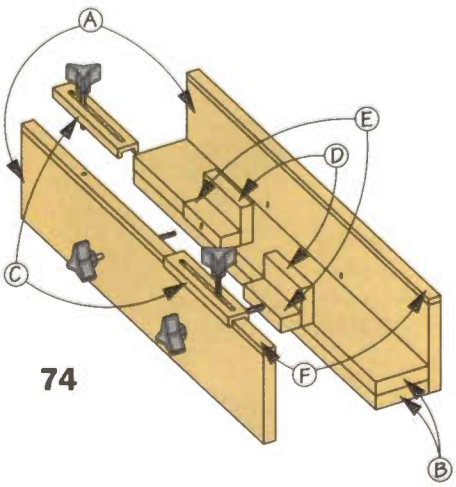

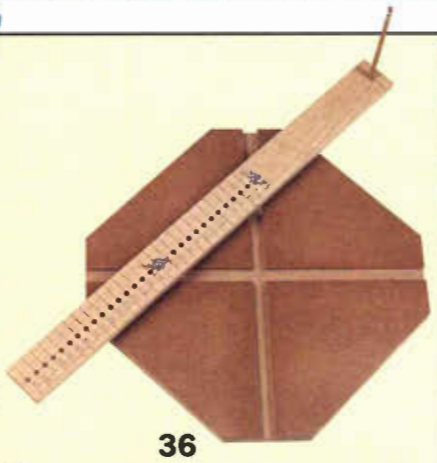

Project File

This special section, exclusive to Popular Woodworking, *features building basics for six projects.*

Columns

Cover photo: Hal Barkan/BKT Photography

Safety Note

Safety is your responsibility. Manufacturers place safety devices on their equipment for a reason. In many photos you see in *Popular Woodworking*, these have been removed to provide clarity. In some cases we'll use an awkward body position so you can better see what's being demonstrated. Don't copy us. Think about each procedure you're going to perform beforehand. Think ahead. Safety First!

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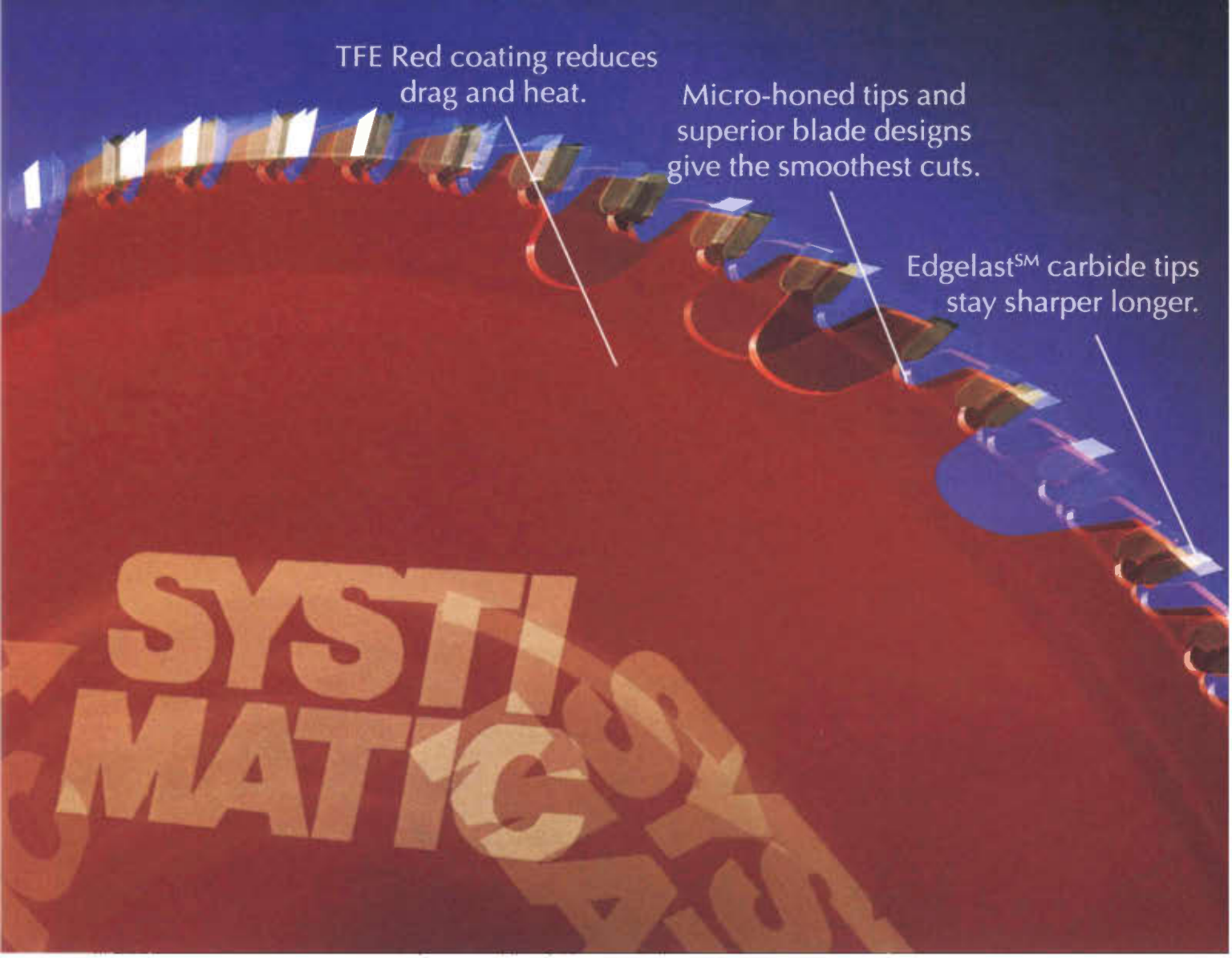

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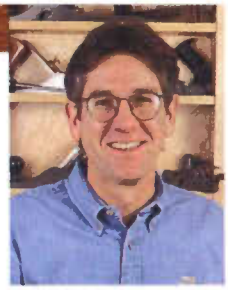
An End to GLUE-UP VOODOO



IF YOU'VE READ more than a few woodworking magazines or books, you might be confused about their conflicting advice on how to do any number of woodworking tasks. If you've been working wood a long time, you've probably sorted through all the conflicting advice and found what works for you. But Lord help you if you're new to woodworking and have a big appetite for learning the trade via the written word. For example, let's look at some of the wacky advice for one of the most fundamental aspects of what we do — gluing two pieces of wood together.

When edge gluing boards to make a wider slab, I've read that edges should be left rough so glue has more to stick to. I've also read the edges left by a jointer aren't smooth enough, so the edges should be hand planed. I've read that edges should be slightly cupped in the middle so that pressure is exerted at the ends of the joint, helping to prevent joint failure there.

Here are some other odd tips and techniques: Never glue boards together that are more than four inches wide because they will warp. Always alternate the direction of the annular rings to prevent warping. Edges should have biscuits, dowels or splines to strengthen them.

Here's some more: When gluing up slabs, you should only tighten the clamps until the glue squeezes out. The tighter the clamps, the stronger the joint. You should not attempt to wipe off glue squeeze-out, but rather wait until it has dried and scrape it off. Glued-up parts should be clamped overnight. Clamps should be alternated — one on top, one on bottom — to equalize clamp pressure and prevent bowing the panel.

OK, What *Do* You Do

Don't slice up your good looking lumber into narrow boards unless it's necessary. If wider stock is flat to begin with, use it as is. Joint the edges using a jointer after making sure the fence is 90 degrees to the table. Joint all edges straight. You can alternate the direction of the annular rings if the look of the grain doesn't matter, but I'd always opt for the best-looking side up. (An exception might be gluing up stock for doors. Because they need to be absolutely flat without reliance on other fasteners or joinery, it's best not to take chances. What you should do is plan for the best side up that also has alternating growth rings.)

Your edges made on the jointer are fine for gluing. Remember that if your edges are properly prepared and glued, the resulting joint is stronger than the wood itself. Therefore, using dowels, biscuits, splines, etc. are not necessary for strength, but they might be helpful with alignment during the gluing and clamping of large panels. Otherwise, don't waste your time.

Alternate your clamps over and under if your clamp faces are not square to the bar or pipe, or if the bar or pipe bends under clamping pressure. Tighten your clamps with as much pressure as can be exerted with one hand. Use a wet rag to remove excess glue before it dries. Follow the directions on the label for clamping time. Most white or yellow glues bond in less than one hour. Assemblies that aren't under stress can be unclamped in an hour. Glue joints strengthen over time, but only marginal increases are derived from being under clamp pressure for longer periods.

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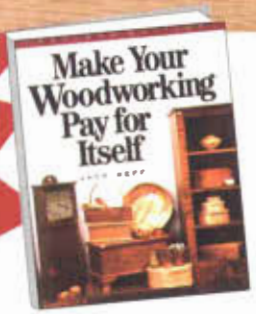

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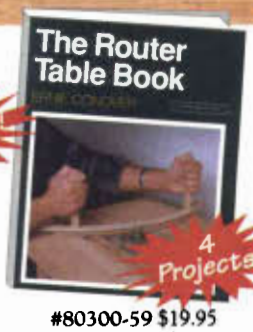

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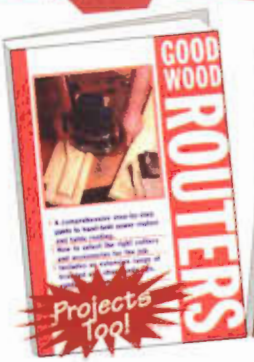

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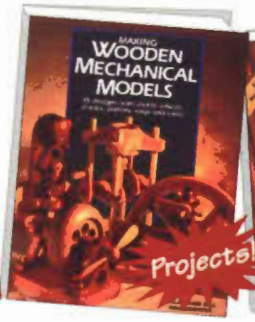

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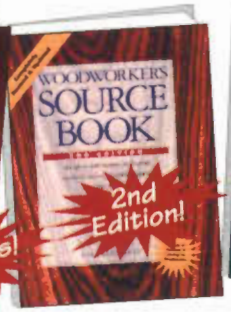

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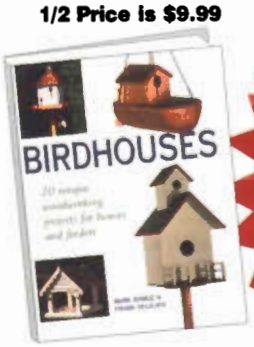

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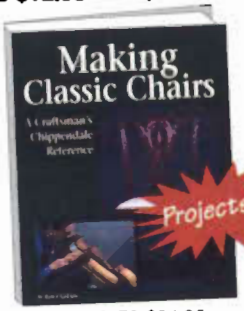

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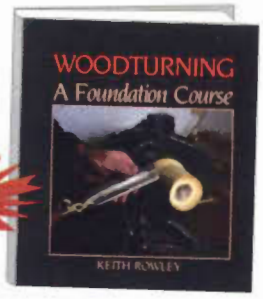

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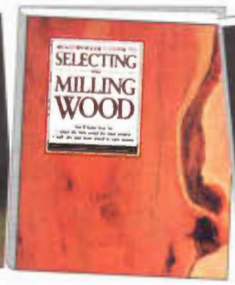

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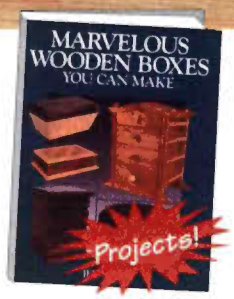

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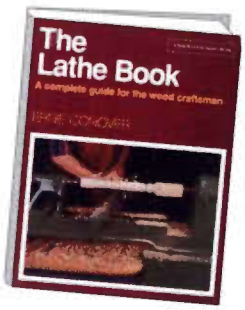

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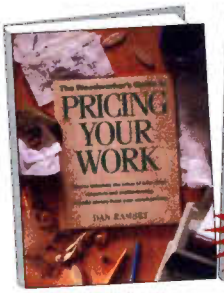

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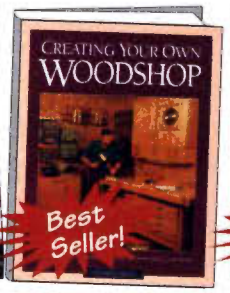

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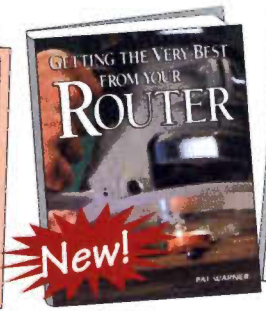

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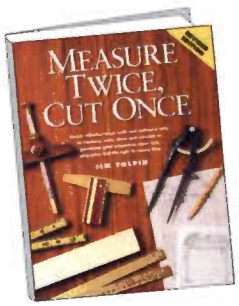

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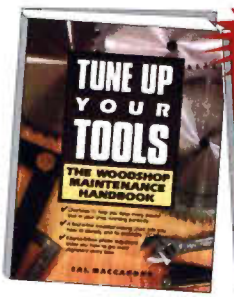

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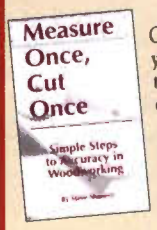

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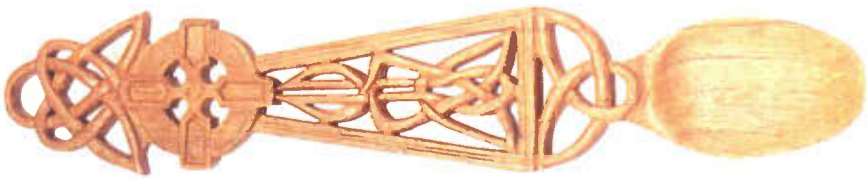
INFEED/OUTFEED

We welcome your comments about *PW* or anything related to woodworking. We'd also like to see color pictures of what you're building. Send your input to: Infeed/Outfeed, *Popular Woodworking*, 1507 Dana Ave., Cincinnati, OH 45207. Our e-mail address is: popwood@earthlink.net. Letters may be edited for publication. — *Steve Shanesy, editor*, PW



Feeling a Little Unloved

I enjoyed seeing the return of the PullOut™ Plans. The problem is that the pattern for "Love Spoon" (May 1997 #96) isn't the same length that's indicated in the text.

The reason I enjoy having the patterns is that I can have extra copies made. For the Love Spoon plans, I made eight copies. I then went home and prepared the wood using the text measurements and was ready to glue on the pattern when I realized my wood was 2½" short!

Jerry Lacey
Silver Spring, Maryland

Oops! You're right. The pattern for the Love Spoon in the PullOut Plans measures 12" instead of 9½". If you want to photocopy the plans to reduce them to the right size, set the copier to reduce to 80 percent. (The other PullOut Plans are the correct size.)

How About Some Pie-In-The-Sky Plans?

Was I the only one disappointed by your April 1st issue? I expected to find the complete plans for the self-cleaning shop. You know, the plans that have the switch on the wall next to the light switch. When you finish and leave the shop, you hit the switch and close the door on your way out. When you return, all the tools are put away, the dust is vacuumed and everything is neat and tidy. Did we get these plans? No. All we got is some stuff about using old garden hose and something about American Alleewood. Please, next April 1st, try to do better!

On the serious side, I got to thinking about Alleewood and remembered something that happened about 20 years ago when I had a printing company. I ordered 20 skids that were a non-standard size for a job I needed to send off to the customer's bindery. The truck was late arriving from the out-of-town skid maker. I had the semi at my dock waiting for the order to go out. When the skids arrived, half were made with walnut, half were made with the usual junk. It broke my heart to see these lovely boards being used as skids, but I did not have time to order more. We loaded the walnut skids and sent them out the door. Oh well.

Bob Childers
Pentwater, Michigan

*Bob, great story. For those readers who have an amazing story like this one, check out our new "Tales From the Wood" feature on page 22. You could win $150 worth of stuff from Lee Valley Tools. — **Chris Schwarz, managing editor***

A Fan of American Alleewood

It is delightful to read that someone at *Popular Woodworking* has a sense of humor! I am referring to the article on American Alleewood (May 1997 #96)! The first time I read the article, I thought it read just a bit goofy. So I read it again. It struck me that the descriptions were familiar. Then I read it for the third time, and the jigsaw started to fall into place. Glory be! Light bulbs began flashing, then I was laughing. I thought, "Hot damn, I have to read this again." Which I did, several times. Keep up the good work on an excellent woodworking magazine. I like the simplicity of a lot of the projects and the information on different tools. Like I said, keep it coming!

By the way, you list one of the wood's other common names as "Sloof Lirpa." What's that?

Bruce C. Frank
Toppenish, Washington

Here's a hint: The magazine hit the newsstands about April 1. So read "Sloof Lirpa" backwards.

Advice on Alleewood

I enjoyed the article on American Alleewood in the May issue. I have better luck with Asian Alleewood (*palletus asiatica*). My best source is a local computer store that imports its products from Southeast Asia and gives away the pallets. I now have a good supply of teak, mahogany, cherry and white oak in various sizes. Of course, a bit of denailing, planing and judicious cutting and gluing is required to bring out the intrinsic value, but the end results are well worth it. An inferior grade (*palletus dumpus*) is also available at our local "transfer station." Keep up the good work!

Harold McAleer
Lincoln, Massachusetts

Heavy-Duty Tractor

I recently finished a replica of an antique tractor (4' x 3'). I must say it is one project I am glad I completed. Lifting it around was almost as bad as wrestling a tiger.

John D. Reinhold
Desert Hot Springs, California

Circle #118 on Resource Directory Coupon

Where are the Master Craftsmen?

I think you have substituted quantity of projects for quality of projects in your magazine. What I see now are weekend projects.

Where are the "Master Craftsman" projects you used to have? Though I am not a master craftsman, I did make Ken Sadler's Contemporary Desk. It was a challenge but very satisfying.

Please give us at least one "Master Craftsman" project each quarter.

Richey A. Wallis
Mount Juliet, Tennessee

If you are asking whether Ken Sadler's projects will again appear in Popular Woodworking, *the answer is probably not. And I'll take exception to your comment about substituting quantity of projects for quality ones. I am confident we provide both quantity and quality projects that meet the needs of the vast majority of our readers. The mix of projects we present are selected using a host of criteria, including one or two projects each issue that will challenge the skills of our more advanced readers. May I cite the Greene & Greene Garden Bench (May '97), the Workbench and JFK's Humidor (July '97), or the Armoire and Briefcase (March '97). These projects and many more would keep the best hands busy and challenged.*

But let's ask the question. Just what constitutes a "master craftsman" project? I fear too many woodworkers mistakenly equate this term with the use of hand tools (perhaps to the near-exclusion of power tools) and the infusion of often unnecessary, fussy hand joinery in a project. I might also infer from your comment that a "master craftsman" project might also need to be time consuming, since you seem to dismiss any project that might be accomplished in a weekend or two. That's a ridiculous assumption. I'd simply say a master craftsman is one who applies expert technical skills to a trade or craft and produces work of enduring quality that is so judged by his peers. I hope you'll stay with us because I think we can keep you sufficiently challenged and occupied. If not, well there are other magazines that give you projects loaded with fussy, time-consuming joinery. You might even get one completed this year!

— Steve Shanesy, editor

Showing Off His Cabinet

I recently started subscribing to your magazine and find it very interesting. I built this oak jewelry cabinet for my wife for Christmas 1997, using my own plans. I used "Step Saver," a Deft Brand Product, in oak. At the present time I'm building the Roadrunner Whirligig (September 1990 #56).

Robert J. Schindel
Oostburg, Wisconsin

A Special Project for That 16" Wide Walnut

One of my true pleasures in life is woodworking. My father-in-law was a farmer, the type of person who never threw anything away. I would help out around the farm, and on several occasions he took me in his back tool room in one of the barns and showed me some 16" wide walnut boards that he had received from his father many years earlier. He told me he was saving the wood for "something special." Unfortunately, he never got the chance; he died last year at the age of 77.

After the decision was made to cremate his body, my mother-in-law asked me to make a box for his ashes and for hers, when she died. While at the funeral, it hit me how appropriate it would be to use that "special wood" he had saved his whole life.

After the service, I went and got that "special wood" and started on the box immediately, for a special man. I thought this was a neat and interesting story, and I wanted to share it.

Larry Podjan
Benton Harbor, Michigan

INFEED/OUTFEED

We Got Nailed

I was very disappointed in the lack of information provided in the article on pneumatic fastening tools in the March 1997 issue (#95). It might sound elemental to you, but what is the diameter of a 15 gauge nail? Or 18 gauge?

Ray Carsley
Costa Mesa, California

You're right, we shouldn't have assumed any knowledge concerning fastener gauges. We contacted Glen Steinbrunner, product engineer for Senco Fastening Systems, who explained that fastener manufacturers follow steel wire gauge standards that translate into decimals of an inch. While these standards exist, there are also allowable tolerances, which means that there can be tiny differences in decimal equivalent from manufacturer to manufacturer. This can cause some tools to perform better or worse depending on the fasteners used. Some decimal equivalents for a few standard gauges as used by Senco are listed below.

— David Thiel, tool review editor

Gauge	Decimal Equivalent
23	.025
18	.050
15	.069
14	.077
13	.092
12	.106
11	.120
9	.148
8	.162

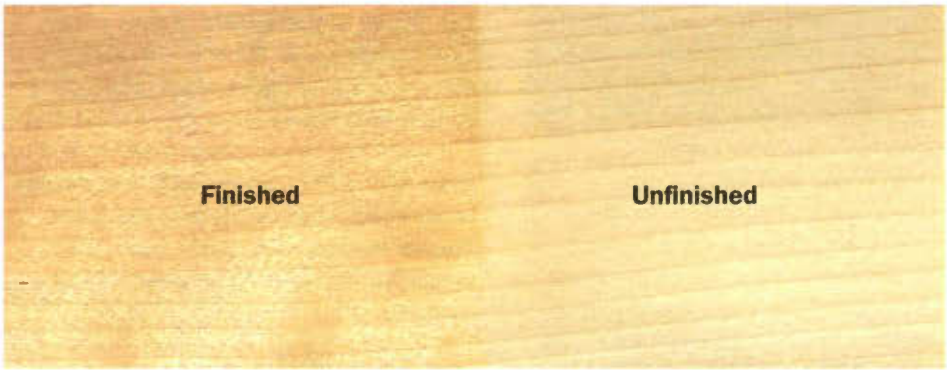
In Our Next Issue...

It's a blockbuster issue with more than 20 projects for the home and holidays.

- A **futon sofa bed** that's just right for your house.
- Hey, it's the '90s, so build our rockin' **Harley hog** — instead of a rocking horse —for the little one.
- Ice-box style **end tables.**
- A master **Ozark craftsman** shows you how to make his chair.
- Beautiful but easy **Christmas ornaments.**
- **Reindeer card rack.**
- Shaker hanging **corner cupboard.**
- A **chimney cabinet** from the "Little Shop That Could."

Red Alder

(Alnus rubra)



Other Common Names: Western Alder, Oregon Alder.

Growing Regions: Pacific coast of Canada and the United States.

Characteristics of Tree: A relatively small tree, reaching approximately 50 feet in height with a trunk diameter measuring 12" to 20".

Characteristics of Wood: The heartwood is pale yellow to reddish-brown. It is a soft, relatively low-strength wood with a straight-grained and even texture.

Workability: The wood works well with sharp-edged hand and machine tools. It tends to pick up the grain in planing, which can be avoided by reducing the cutting angle. It has good nailing and gluing properties.

Common Uses: Furniture, turning, carving, plywood corestock, utility plywood, toys, small laminated articles and veneer. In decorative veneer form, Red Alder loses its natural defects, such as knots, minor stains and streaks.

Availability: Common on the West Coast, less so east of the Rockies.

Wood Movement: It dries easily. Little movement occurs in service.

Finishing Characteristics: Takes paint well; blotches when stained.

Special Features: It's the most important hardwood in the Pacific Northwest.

Midwest Pricing: $2.50 per board foot. **PW**

Circle #109 on Resource Directory Coupon

The Freedom of Information Act

In November 1985, *Popular Woodworking* introduced a new column, "The Information Exchange." The column was designed as, "a place to exchange ideas, ask questions and discuss techniques." Readers were invited to write in and share clever procedures from their workshops — and they did, with their only compensation being improving the woodworking craft by educating others.

In 1989 that column became "Tricks of the Trade." The idea was the same, but readers were offered money or prizes for their ideas. While we don't begrudge anyone making a buck, we think this process has wandered from the original — and more altruistic — intention of the column.

We're getting back to that original idea where readers freely gave their hard-won knowledge. In addition we will be including our own selection of classic tricks from the *Popular Woodworking* shop, tips from past issues and ideas from a couple of special friends who know all the tricks.

We know you'll see an improvement in the ideas offered in this column as we revive the spirit of sharing ideas for education's sake.

— The Editors

The winner of this month's Tricks of the Trade contest won Ryobi's new Detail Biscuit Joiner, which uses miniature biscuits that fit where standard biscuits won't.

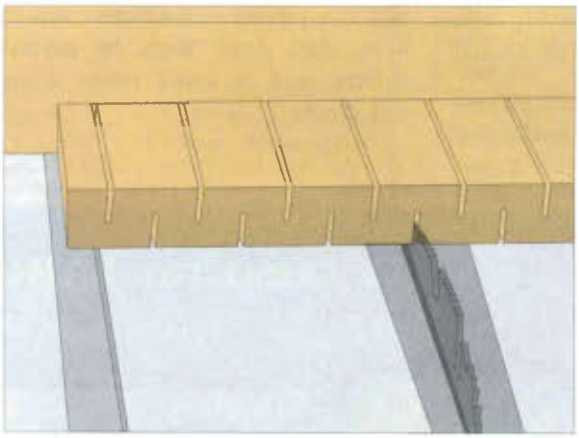
If you'd like to contribute tricks or tips to share with other readers, send your original, unpublished ideas to Tricks of the Trade, *Popular Woodworking*, 1507 Dana Ave., Cincinnati, OH 45207. If needed, please illustrate with a color photo or diagram.

WINNER

Dentistry on the Table Saw

If you've priced dentil moulding in any kind of select hardwood species, you've no doubt decided against that detail for your project. I found an alternative that gives me exactly the size dentil moulding I need for the cost of rough lumber.

First, determine the height moulding you need and purchase your lumber in that thickness — 1 3/4" molding from 8/4 lumber, 3/4" from 4/4, and so on.

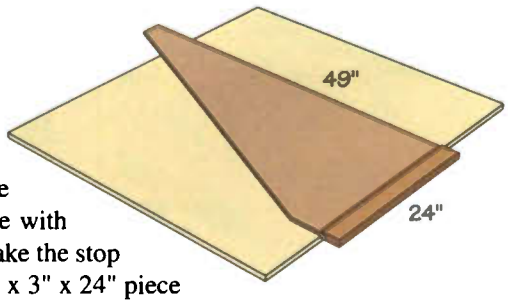


Surface the board, then set up an indexing jig on your table saw, such as one used for finger joints. Set your jig to make repeat kerf cuts at 2" intervals. Kerf cut one side of the board at a depth of 3/4", then flip the board over. Adjust your starting point to cut between the other saw cuts and proceed to kerf the other side.

The rest is simply ripping the board at whatever thickness is appropriate to make strips of dentil moulding in anything from pine to mahogany.

Matt McGraw
Columbus, Ohio

Square Sheet Goods



Counting on the squareness of a framing square while laying out a cabinet can be an exercise in futility. And if you have a *square* engineer's square, it might be only 18" long.

You can make your own accurate and adequately sized layout square from a piece of 1/4" thick hardwood plywood. Simply cut a right triangle with one edge 49" long, and the adjoining right-angle edge at 24" long. Next make the stop by cutting a 1/4" x 3/4" deep groove down the center of the 1" edge of a 1" x 3" x 24" piece of solid wood.

Drill four clearance holes through one leg of the groove, 1/2" in from the grooved edge. Then slip the 1/4" plywood blade into the groove and put a flathead screw through the hole nearest the right angle corner, through the blade and into the opposite side of the stop.

Next square up the blade to the stop by drawing a line using the square on a flat piece of plywood. Flip the square over and check your line. By moving the loose edge of the blade in and out of the stop you can achieve a square angle, then fasten the other screws in place.

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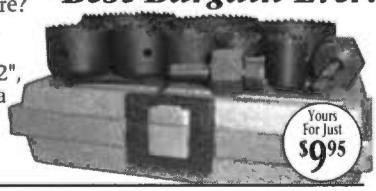

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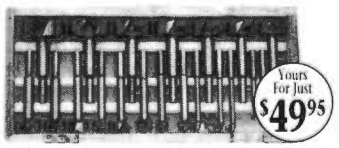

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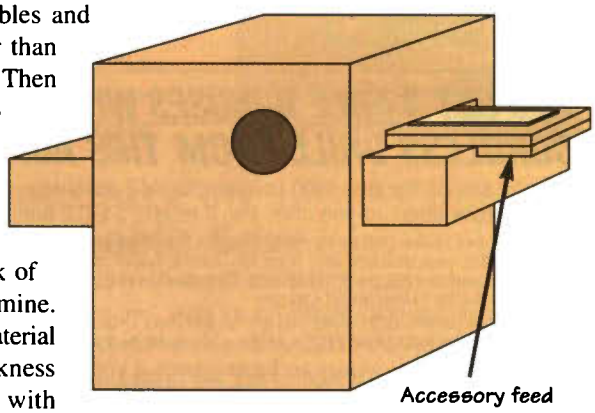
Planer Adjusts to 1/8"

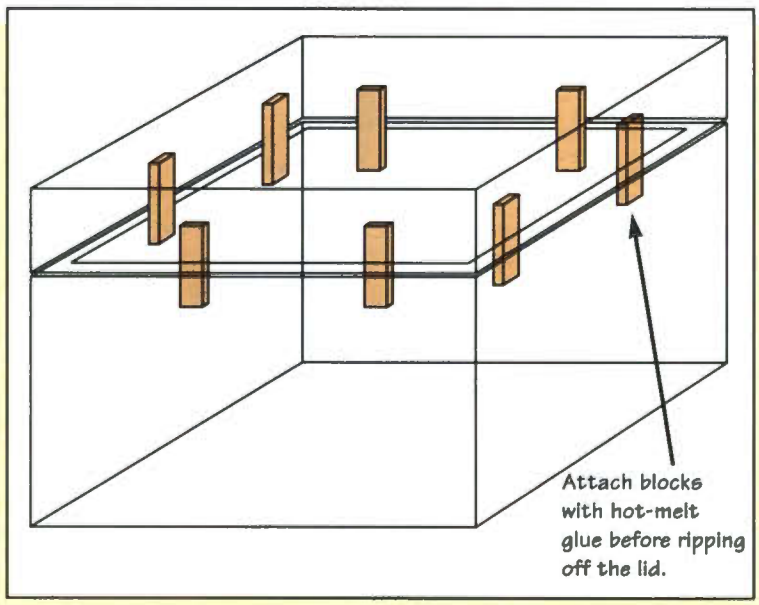
Most planers are designed to thickness material to about 1/4", and then the blades start getting too close to the planer bed for comfort. But by adding a simple jig to your planer you can run material down to about 1/8" thick.

Cut a piece of melamine-coated MDF to the width of the feed tables and about four inches longer than the bed of your planer. Then attach a 1" x 2" cleat to the bottom of the board to serve as a stop against the infeed table edge.

With the jig in place, the knives only run a risk of cutting into the melamine. Choose carefully the material you run to this thickness because some woods with knots and erratic grain patterns can shatter when planed too thin.



Accessory feed table made of melamine-coated MDF.



Non-Binding Box Lid

Lots of woodworkers who enjoy box making prefer to build the box and lid in one piece and then cut the lid off on the table saw after the glue has cured. This offers a good grain match and eliminates any alignment problems.

Unfortunately, when the box is separated from the lid there can be difficulties with the blade binding on the last cut. Wedges can be placed in the saw kerf, but this is often awkward and possibly dangerous.

A better idea is to use dabs of hot melt glue to attach blocks to the inside surface of the box over the location of the lid joint during assembly. When the box is cut apart, set the saw blade to cut about 1/16" deeper than the thickness of the box side. The box itself will be parted, but the blocks will hold the kerf open. The blocks can then be knocked off and the surface sanded.

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With long life tungsten carbide tips and the most used routing shapes, this is the set all serious woodworkers need. Ground to ultra close tolerances for the best finish available. Includes individually organized storage case.

- 1/4" shanks

Includes: 1-1/4" rabbeting♦, 1-3/8" cove♦, 1-1/16" roman ogee♦, 1-1/4" rounding over♦, 1/2" flush trimming♦, 1-3/16" 45° chamfer♦, 1/2" dovetail, 3/4" straight,1/2" straight, 3/8" V-groove, 1/4" combination panel, 1/4" straight, 1/2" mortising, 1/4" self-piloting flush trim, 3/16" self-piloting 7° bevel trim, ♦ Includes pilot bearing **$39.99**
ITEM 31164-9VRA

Pittsburgh — 1/2 PRICE! — LIFETIME WARRANTY

2 PC. 3/4" HEAVY DUTY PIPE CLAMP SET

Constructed from heat-treated cast iron, these durable clamps keep your work rock steady. Just screw the handle side onto a 3/4" threaded pipe and slide the spring loaded end on. You're ready to go! Pipe not included.

- Handle screw operating range: 2-1/8"
- 1-1/2" throat depth
- Weight: 2-7/16 lbs.

~~$6.99~~ **$3.49**
ITEM 31255-8VRA

CHICAGO Electric Power Tools

14.4 VOLT 3/8" CORDLESS DRILL KIT WITH KEYLESS CHUCK

High voltage, heavy duty battery gives long run times between charges. T-Handle design makes this drill easy to use.

- 6 torque settings: 13-100 in. lbs.
- Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic extension bit, charger, battery, keyless *Jacobs*® chuck, and carrying case
- Variable speed, reversible; 0 to 600 RPM

ITEM 34793-9VRA ~~$69.99~~ **$54.99**

14.4V BATTERY **$29.99**
ITEM 34794-0VRA

DRILL MASTER

HOLE SAW SET

Cut smooth, clean, accurate holes through wood, drywall, or even plaster up to 1" thick! Ideal for plumbers and electricians.

11 PC. HOLE SAW SET

Includes 8 tool steel cups sized 3/4", 7/8", 1", 1-1/4", 1-1/2", 1-3/4", 2", and 2-1/2", plus 1/4" and 3/8" mandrels, a 1/4" bit, a hex wrench, and a blow mold case.

ITEM 01263-1VRA ~~$14.99~~ **$7.99**

10 PC. LARGE HOLE SAW KIT

Includes cutting cup sizes 2-1/2", 3", 3-1/2", 4", and 5", plus 3/8" mandrell, drive plate, hex wrench, and blow mold case.

ITEM 36222-2VRA ~~$12.99~~ **$8.99**

CENTRAL MACHINERY

5 SPEED BENCH DRILL PRESS — SAVE UP TO $20

1/2" chuck capacity, 5 speeds, and a 1/3 HP motor turning 1720 RPM. The maximum distance from the spindle to the 6-1/4" square table is 8-1/4".

Five speeds: 620, 1100, 1720, 2340 & 3100 RPM; 2" stroke, 8-1/4" swing; Column diameter: 1-13/16"; Table dimensions: 6-1/2" x 6-5/8"; tilts 45° left and right; Base dimensions: 7-3/16" x 5-5/8"; 22-1/2" high; Shipping wt.: 49 lbs. **$48.99**
ITEM 05901-0VRA

DRILL PRESS W/ JACOBS® KEYLESS CHUCK **$49.99**
ITEM 34231-6VRA

DELTA®
Delta 22-540

LIMITED QUANTITIES

12" PORTABLE PLANER

- Motor: 15 amp, 120V
- Capacities: 12" width, 6" thick, 3/16" depth of cut • 26.2 FPM feed rate
- Table size with extensions: 12-1/8" x 26"
- 8000 RPM, 16,000 CPM
- Long lasting high speed steel, reversible, double edged knives
- Includes removable table extensions, and fold away depth adjustment for easy transport
- 27-1/4" x 20-1/2" x 15" overall dimensions
- 68 lbs. tool weight
- Factory reconditioned, factory perfect

ITEM 06177-1VRA **$299.99**

PLANER BLADES **$29.99**
ITEM 33075-3VRA

SAVE UP TO 33% FROM OUR BUYERS GUIDE

CONTROLLED PRESSURE, NON-MARRING HARDWOOD CLAMPS

These hand screws will clamp without scratching or marring your workpiece. Hardwood jaws distribute pressure evenly, and can easily be adjusted for non-parallel surfaces and odd shapes.

JAW LENGTH	JAW CAPACITY	ITEM	PRICE
8"	4-3/4"	04852 -3VRA	$3.99
10"	6"	04853 -4VRA	$4.99
12"	8-1/2"	04854 -5VRA	$5.99

CENTRAL MACHINERY

DRILL 1/4", 3/8", AND 1/2" SQUARE HOLES

MORTISING MACHINE

Make a square hole in the fraction of the time it takes by hand! Fence with hold down clamp keep workpieces from lifting off the table. Large capacity – up to 5" maximum height. Includes fence, workpiece clamp, and 1/4", 3/8", and 1/2" mortising chisels and bits.

- 1/2 HP, 110V, 2.3 amps • 5" throat
- 5" maximum workpiece height
- Accepts .745" chisel shanks
- 3580 spindle speed • 13-3/8" x 6" table
- 10-7/8" x 7-3/4" base • 60 lbs. ship. wt.

~~$199.99~~ **$169.99**
ITEM 35570-1VRA

LIMITED QUANTITIES

ELEKTRA
Elektro HD110

2 HP, 1200 PSI, 1.6 GPM PRESSURE WASHER

Starts when you pull the trigger, stops when you let go. This exclusive "Power-On-Demand" system dramatically increases the lifespan of your pump. Includes safety lock off trigger, fan to pinpoint spray nozzle, detergent cup, 19 ft. high pressure hose, and quick connection bayonet wand. Hooks to your garden water hose with no special adapters. For performance and value, this is an incredible deal.

- Built in pressure relief safety valve
- 120V, 13 amps

$99.99
ITEM 50956-1VRA

PRESSURE WASHER TURBO NOZZLE **$9.99**
ITEM 35935-0VRA

PORTER-CABLE® Porter Cable 9444

LIMITED QUANTITIES

PROFILE SANDER KIT

New design includes attachments for any sanding job! Even projects that could only be done by hand are accomplished with this unit. 1.8 amps @ 120V; 6000 SPM.
Includes dust pick-up pad (for hook & loop paper), dust wand, regular and offset sanding profile mounting attachments, six each of convex and concave radius profiles, five degree angle profiles, and an assortment of sandpaper all packed in a blowmold case
Factory reconditioned, factory perfect

~~$89.99~~ **$79.99**
ITEM 51660-3VRA

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Box 6010, Camarillo, CA 93011

Circle #156 on Resource Directory Coupon

NEW PRODUCTS

Popular Woodworking **wants to provide readers with accurate, useful information on the newest woodworking tools and products, so we test most of the products presented here in the *Popular Woodworking* workshop. We've considered cost, design and benefit, and added our comments about the tested items to help you make decisions about future purchases.**

"We let a novice woodworker apply this stain for the first time using a dark Olympic shade on red oak. With very little advice from us, the results were as attractive as promised. This is a very forgiving stain." — PW

Olympic® Furniture Finishing Products

Contact: PPG Industries (800) 421-8661

Retail Price: Stain: $5 per quart

Available at home center stores.

Features:

- Olympic's Oil Based Interior Wood Stain is engineered to help provide even color absorption for consistent finishes without blotches, streaks or lap marks
- Available in 14 shades in half-pints, quarts and gallon sizes
- Also included in Olympic's Wood Finishing system are: oil based and water based polyurethanes in gloss, semi-gloss and satin; a pre-treatment Wood Conditioner; Furniture Refinisher; Antique Oil Finish, wood fillers and color blending pencils

For more information, circle #150 on the Resource Directory Coupon.

"An upgraded battery has significantly improved this low-cost tool's performance since we originally tested it. This new model performs as well as some other 14.4-V cordless drills that cost nearly twice as much." — PW

Great Tools Direct 14.4-V Cordless Drill

Contact: Great Tools Direct 1-800-925-2005

Retail Price: $59.95

Available by mail order.

Features:

- Motor delivers 180 in. lbs. of torque
- 6 clutch settings operate in speed range from 0-900 rpm
- Jacobs keyless chuck
- Includes carrying case, one battery with 3-hour charger and set of drill bits and hex drivers

For more information, circle #151 on the Resource Directory Coupon.

Grizzly Contractor's Table Saws

Contact: Grizzly Imports (800) 541-5537

Retail Price: G1022ZF - $599, G1022ZFX - $699

Available through Grizzly catalog.

Features:

- Both models include the Shop Fox rip fence, cast iron miter gauge, dust chute, power twist belts and a front-mounted switch
- The G1022ZF offers a 1½hp motor, while the G1022ZFX offers a 2hp motor, both made in the USA
- Table size with extension wings: 27⅛" x 40½"
- Cutting capacity at 90° is 3"; at 45° is 2⅛"

For more information, circle #152 on the Resource Directory Coupon.

"This knife is an excellent addition to any carver's toolbox. Once again, Veritas provides value, quality and versatility." — PW

Veritas® Carver's Knife

Contact: Lee Valley (800) 871-8158
Retail Price: $12.95
Available through Lee Valley catalog.

Features:
- The oval-shaped aluminum handle offers a comfortable grip, while the solid brass collet firmly holds standard disposable scalpel blades
- Each knife comes with a dozen razor-sharp high-carbon blades (available in spear, curved or classic shapes) that can be honed for repeated use
- While offered as a carver's knife, this tool proves to be an affordable and versatile shop knife as well

For more information, circle #153 on the Resource Directory Coupon.

"This benchtop behemoth planes with virtually no snipe, thanks to the new cutterhead height-locking feature. The new blade-indexing system makes set-up a snap." — PW

Delta 12½" Portable Planer

Contact: Delta International (800) 438-2486
Retail Price: $450 for model 22-560
Available through Delta machinery distributors.

Features:

- Cutterhead lock stabilizes the cutterhead and provides improved snipe control and smoother performance
- Cutterhead travels on four large columns for smooth accurate movement
- Quick-change knife system with tools reduces down-time
- 15 amp. motor handles material 12½" wide and 6" thick with a maximum ⅛" depth of cut
- Includes a dust exhaust system, English/metric depth-of-cut scale and a top-mounted stock roller to ease stock handling

For more information, circle #154 on the Resource Directory Coupon.

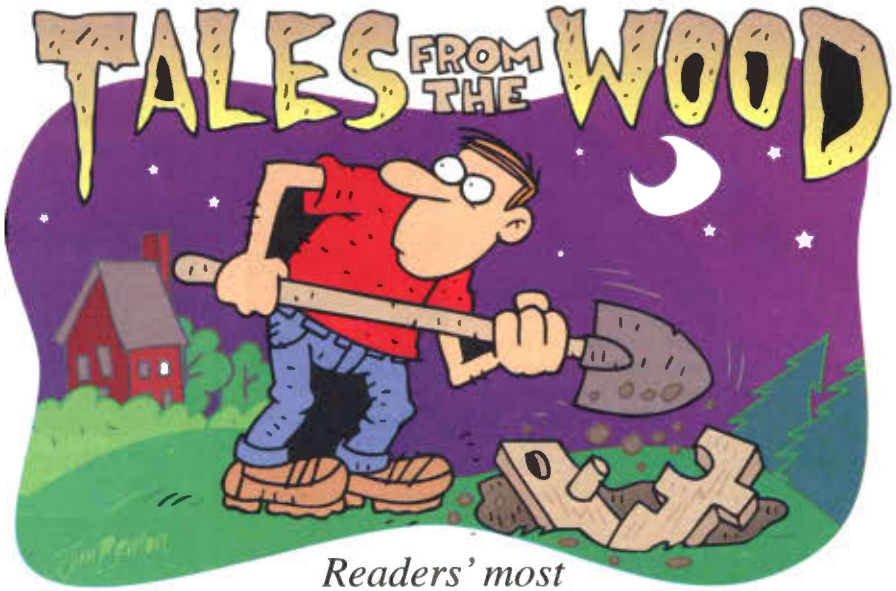
"Craftsman's entry into the 18-volt market performs as well as DeWalt's 18-volt drill, according to our test, and is about the same price." — PW

Craftsman 18-Volt Cordless Drill/Driver

Contact: Sears (800)377-7414
Retail Price: $240
Available at Sears stores.

Features:
- Comes with two 1-hour charge batteries and case
- Two speed options: low speed rpm 0-400; high speed rpm 0-1400
- 24-position keyless adjustable torque clutch
- Adjustable 360 degree auxiliary handle rotates to any position
- "T" handle design for maximum balance and control
- Built-in bubble level for accurate horizontal drilling and screw driving

For more information, circle #155 on the Resource Directory Coupon.



Readers' most amazing stories from their workshops.

'Sir, I'd Like to Buy One of Your Half-Moon Tables'

Editor's Note: To kick off our new "Tales From the Wood" contest, we've let author Andy Schultz share his most embarrassing woodworking moment.

Crazy things can happen to you when you're a woodworker. And sometimes it can be a little embarrassing. Like the time I accidentally mooned a woman in Berea, Ky.

I was on assignment for *Fine Woodworking* magazine, helping master woodworker Kelley Mehler with a book/video project.

We were working on a project when Kelley decided to get us some coffee. I stayed to set up the next photo shot and besides, I was dusty. I foxtailed off the table saw and tried some possible camera angles. That's when I decided to tuck my shirt back in. Kelley's shop had been closed all week, and I was all alone in the shop so I figured I was safe. I unbuckled my belt and unbuttoned my trousers, all the time looking at the table saw. I remembered that I needed to dust myself off so I just let my pants drop around my ankles and began to bang the dust off my shirt, all the while looking at the setup. Then I noticed the glare from the table top that would be problematic for shooting the photo, so I bent over to get a better angle.

A feminine voice from behind startled me. "Is it something I said, or did I just come at an awkward time?"

I dove for those trousers and then stumbled over backwards, a pratfall so sudden, so complete and stunning, the woman backed out of the shop, saying, "I'll come back at another time." I just sat there a moment or two, trousers draped around my ankles and not a shred of dignity in my pockets.

I assume she never returned to Kelley's shop, otherwise the stories would have gotten back to me by now. I never told Kelley and for all I know, some woman still thinks Kelley Mehler has a big butt and that they work wood in their underwear in Kentucky.

Andy Schultz
Lincoln, Nebraska

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FREE $45 IN SHARPENING COUPONS

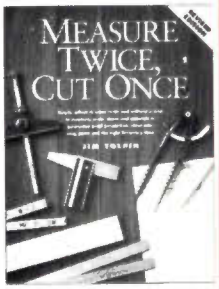
GOOD ON ALL FORREST OR *OTHER MAKES* OF CARBIDE BLADES OR DADO SETS. Coupons expire 12/31/98.

Must mention *Popular Woodworking®* magazine for discounts & coupons with purchase.

EXCLUSIVE! FREE OFFER

$23 Value!

117 Pages Full color photos and illustrations. Simple effective ways to measure, scale, draw, and calculate to guarantee good proportions, clean cuts, snug joints, and right fit every time!



Put this to work in *your* shop!

OR 300 Great Shop Tips or Forrest Logo cap FREE with any saw or Dado listed & purchased from this ad. You must mention you saw this offer in Popular Woodworking® Magazine, when ordering. Offer Expires September 30, 1997. One book per order.

ORDER NOW—SUPPLIES ARE LIMITED

BUY 1 BLADE OR DADO AT **10% OFF** SALE PRICE, OR BUY 2ND BLADE AT **20% OFF** (EQUAL OR LESSER VALUE)
15% OFF DADO AS SECOND CHOICE.

WOODWORKER II— 6" – 7 1/4" – 14"

With this one ALL PURPOSE blade you can RIP & CROSSCUT 1"-2" ROCKHARDS and SOFTWOODS resulting in a **SMOOTH AS SANDED** surface. PLY-VENEERS of OAK and BIRCH will crosscut with NO BOTTOM SPLINTER at moderate feed rates.

- DOUBLE HARD and 40% STRONGER C-4 CARBIDE
- Ends blade changing
- Ends scratchy saw cuts
- Ends second-step finishing
- Ends cutting 1/16" oversize to allow for RESURFACING
- **BUY AND SHARPEN 1 BLADE INSTEAD OF 3**

5/8" holes, boring thru 1-1/4" add $7.50. Larger at Time Basis —Shipping $4.50

WOODWORKER II	LIST	SALE	10%	20%
14"X40TX1"	$215	$149	$134	$119
14"X30TX1"	$195	$139	$125	$111
12"X40TX1"	$183	$129	$116	$103
12"X30TX1"	$162	$119	$107	$ 95
10"X40TX1/8" or 3/32"	$156	$119	$107	$ 95
30T 1/8" or 3/32"	$135	$ 99	$ 89	$ 79
9"X40T	$146	$109	$ 98	$ 67
30T	$125	$ 99	$ 89	$ 79
*8-1/4"X40TX 3/32"	$136	$ 99	$ 89	$ 79
8"X40T 3/32"	$136	$ 99	$ 89	$ 79
30T	$115	$ 89	$ 80	$ 71
7-1/4"X30T 3/32"	$112	$ 69	$ 62	$ 55
**6"x40T 3/32"	$136	$ 69	$ 80	$ 71

*NEW for Sears & Makita Table Saws **New For Saw Boss

CHOPMASTER FOR SLIDING COMPOUNDS & MITER SAWS

New specs, 5° Neg. Pts. & flat, runs out less than .002 for perfect, tight, smooth, splinter-free miter joints. **TAKE EXTRA 10% – 20% OFF COMBO SALE!**

NEW SIZES AVAILABLE	LIST	SALE
Delta Sidekick 6-1/2"x40Tx5/8"	$149	$ 89
Sears 8-1/4" & Delta 8-1/4"x60Tx5/8"	$170	$ 99
Hitachi 8-1/2"x60Tx5/8"	$179	$109
DeWalt 8-1/2" & Ryobi 8-1/2"x60Tx5/8"	$179	$109
Delta 9"x80Tx5/8"	$204	$119
Ryobi–Makita & all 10"x80Tx5/8"	$207	$129
DeWalt, Makita, B&D, Hitachi 12"x80Tx1"	$229	$139
Ryobi–Makita 14"x100Tx1"	$266	$179
Hitachi 15"x100Tx1"	$277	$189

For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I. Use small stiffener where possible.

THE ONE BLADE THAT LEAVES A SMOOTH-AS-SANDED SURFACE!

SAVE ANOTHER **$45 to $90** AFTER USING SHARPENING COUPONS

WOODWORKER I – CROSSCUT — 7 1/4" – 14" For TABLE and RADIAL SAW – 10% to 20%

	LIST	SALE
14"x60Tx1"	$224	$159
12"x60Tx1" or 5/8" 1/8"K	$198	$139
10"x60Tx5/8" 3/32"K	$162	$129
8-1/4"X60T	$150	$109
8"X60T	$150	$109
7-1/4"X60T	$150	$109

OTHER SIZES AVAILABLE – 7 1/4" – 14"

DURALINE HI-A/T FOR TABLE & RADIAL SAWS

5/8" HOLES. Boring up to 1-1/4" $7.50 extra. Larger holes—time basis. Shipping $4.50

PORTABLE & PANEL SAWS Take 10%-20% more off these prices

Faster feed rates & absolute splinter control. Stops splintering on OAK/BIRCH PLY VENEERS & MELAMINE

SIZES AVAILABLE	LIST	SALE
7-1/4" × 60T × 3/32" K	$149	$129
8" × 80T × 1/8" & 3/32" K	$202	$169
220mm × 80T × 1/8" & 30mm	---	$159
9" × 80T × 1/8" & 3/32" K	$207	$179
10" × 80T × 1/8" & 3/32" K	$207	$159
12" × 80T × 1-1/8" K	$212	$181

SIZES AVAILABLE	LIST	SALE
300mm × 100T × 1/8" × 30mm	---	$189
12" × 100T × 1-1/8" K	$253	$215
14" × 80T × 1"	$232	$197
14" × 80T × 1"	$266	$226
16" × 80T × 1"	$262	$223
16" × 100T × 1"	$294	$243

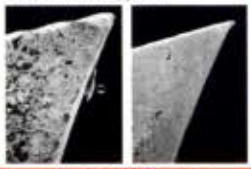
Above 1" bore standard.

SPECIAL COMBO SALE EXTRA 10%-20% OFF

CARBIDE IS THE HARDEST OF THE C-4 GRADES AND 40% STRONGER, NOT WEAKER!

FOR 50% TO 300% LONGER LIFE.

Standard C-2 Carbide (below, left) and FORREST **still sharp** Oxidation and Corrosion Resistant Sub-Micron C-4 Carbide (below, right). Each shown after cutting 3,500 feet of MDF. Similar results obtained cutting particle board, melamine, and plywood.



STILL SHARP AFTER 3,500 FEET OF CUTTING!

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FLASH NEWS!!

OUR $79 - $89 30T & 40T OUTPERFORMED (E-EXCELLENT) 23 other 40T & 50T premium blades both foreign & domestic on Ply, Melamine, MDF and Oak/Rip!

Fine Woodworking Magazine test Oct. 96 page 43

After installing your blade and 5 in. stiffener the vibration in my saw went down another 20%. I ran several pieces of hardwood through the saw, both crosscut and ripping, and was amazed at the smoothness. It was like cutting butter, maybe smoother. I have never had a saw blade that cut this smooth.

Rick Price

NEW DELUXE DADO-KING!

AS LOW AS $184 NET AFTER USING SHARPENING COUPONS

C-4 Carbide Tips — 4 on each chipper with special negative face hooks. Shims & 3/32" Chipper. Cuts 1/8" to 29/32" wide!!

	LIST	SALE	10%	15%
6" D. 5/8" Bore **NEW**	$299	$269	$242	$229
8" D. 5/8" Bore	$321	$289	$260	$245
10" D. 5/8" & 1" Bore	$389	$349	$314	$297
12" D. 1" Bore	$499	$449	$404	$382

(Bore up to 1-1/4" Add $25 — Plus $5.50 S&H)

BLADE DAMPENERS-STIFFENERS

FOR BETTER CUTS on all brands of blades, use our large 1/8" DAMPENERS-STIFFENERS against one side.

4"	$21
5"	$24
6"	$25

7" AND LARGER AVAILABLE

REDUCES NOISE 50%–75%

WE RECOMMEND OUR FACTORY SHARPENING as some local sharpening creates problems with **MICRO-CHIPPED EDGES** reducing blade life & cutting quality.
2-4 DAYS ON THESE AND ALL MAKES OF FLAT FACE & CONCAVE CARBIDE TIP SAWS. Ship via UPS. Typical 10x40T $17.00, 60T $19.00. Add return UPS $5.00, $1.00 each additional blade.

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Some Famous Last Words: 'Sure It'll Fit'

A few years ago I built a cherry hutch for my dining room. My basement workshop is in a room separated from the finished section, and because I was building the 6-foot-long by 6-foot-high hutch in one piece I knew the size would be a tight fit to get upstairs. So I carefully measured the doorway openings and the stairway width to make sure it would work.

After about a dozen weekends the sideboard was finished and my brother-in-law came over to help me move it to the dining room. We got all the way to the turn in the stairwell before we ran out of room. It seems the doorways and stairs were *wide* enough, but I didn't think about the *turn* in the stairway. So after a lot of staring and swearing like a longshoreman and banging on walls I realized it wasn't going to happen.

After all the time I'd put into building the piece I couldn't bring myself to cut it down. And while it now adds an elegant touch to my dingy basement, it wasn't what my wife had in mind. So I made the second hutch in two pieces, and it went up without a hitch. Live and learn.

Don Fredricks
Minneapolis, Minnesota

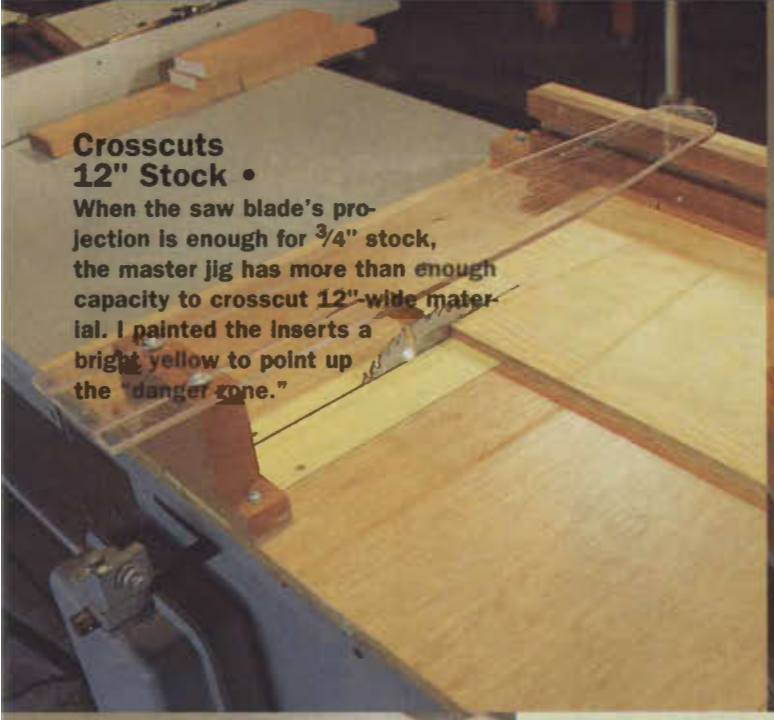
How to Enter

Turn your favorite tale from the woodshop into a $150 gift certificate from Lee Valley Tools in *Popular Woodworking*'s "Tales From the Wood" contest. We're looking for your funniest, most embarrasing or incredible moment. And if we can learn something from your story — even better.

Each issue, our editors choose the best tale and print it here. Runners-up receive a Veritas Sliding Square (shown above) from Lee Valley Tools, which carries an extensive line of quality woodworking tools. One final rule: Please, no stories about people getting hurt. That's not funny.

To make things easier, you don't even have to write your story down. Just call the "*Popular Woodworking* Hotline" anytime at **(513) 531-2690 ext. 587**, and leave your tale and daytime phone number. Or, e-mail your story to **popwood@earthlink.net** or mail it to:

Tales From the Wood
Popular Woodworking
1507 Dana Ave. • Cincinnati, Ohio 45207



Crosscuts 12" Stock • When the saw blade's projection is enough for 3/4" stock, the master jig has more than enough capacity to crosscut 12"-wide material. I painted the inserts a bright yellow to point up the "danger zone."

JIGS & FIXTURES ISSUE

Taper-cutting Jig • Special jigs can be made for particular taper-cutting chores. Note that a hold-down is used so hands don't have to be near the cutting area.

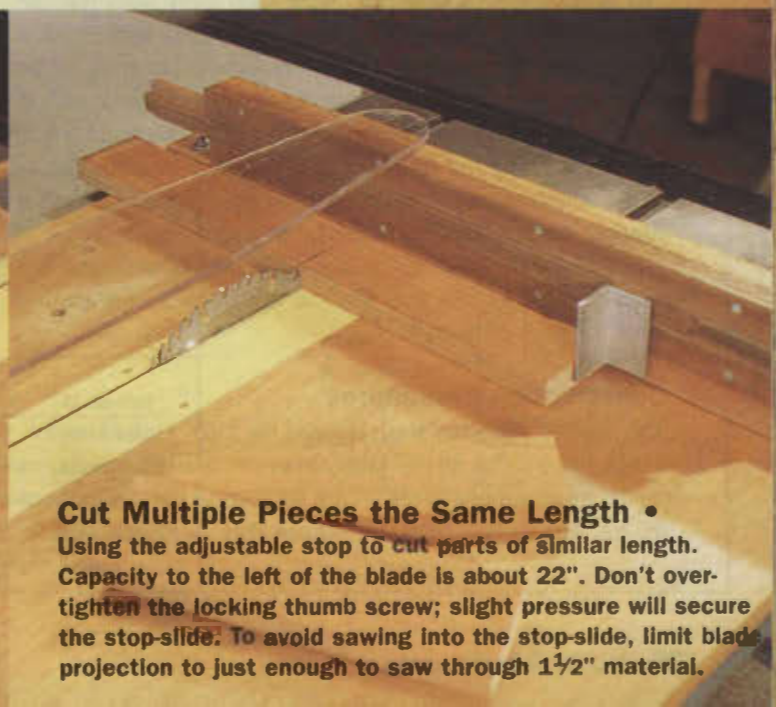
R.J. DeCristoforo's

Master TABLE SAW Jig

Notching Jig • Typical notching jig in use. Note that the hold-down for the table's miter jigs come in handy for this application. Secure the hold-down with a rh wood screw.

V-shaped Guide Cuts Accurate Miters • Check the position of the guides in relation to the blade with a combination square or a draftsman's template before tightening the lock bolts.

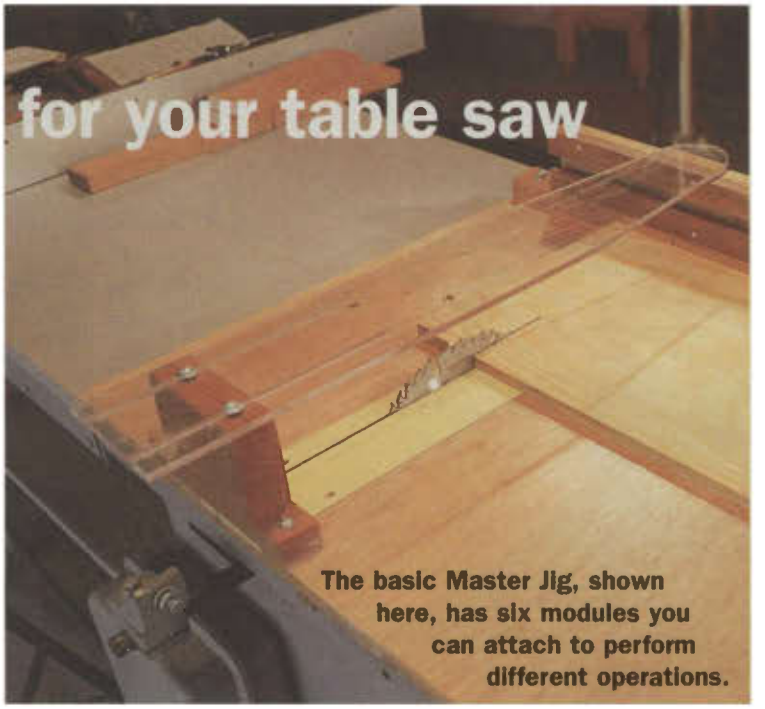
Tenoning Jig • When you install the tenoning jig, have the blade at its highest projection and bring the face of the jig flush against the blade. Do this before tightening the guide bar bolts to be sure the jig's face and the saw blade are parallel.



Cut Multiple Pieces the Same Length • Using the adjustable stop to cut parts of similar length. Capacity to the left of the blade is about 22". Don't overtighten the locking thumb screw; slight pressure will secure the stop-slide. To avoid sawing into the stop-slide, limit blade projection to just enough to saw through 1½" material.

JIGS & FIXTURES ISSUE **MASTER JIG**

A Swiss Army jig for your table saw



The basic Master Jig, shown here, has six modules you can attach to perform different operations.

THE MASTER JIG remains one of the most popular shop-made accessories for a table saw. It's a do-anything project that has add-on "modules" that enhance convenience, accuracy, production output and safety — on both routine and not-so-routine cuts.

Popular Woodworking last presented the "Master Jig" in the January 1994 issue. And since that time, the jig (which is on my saw more than it is off), has been modified to the point where it seemed wise to rebuild it from scratch.

The "new" jig has the practical aspects of the original, with several improvements, including:

•Easier-to-produce table inserts for use with a saw blade or dado tool.

•A more professional fence with a built-in adjustable stop.

•A redesigned, more flexible tenoning attachment that includes a swiveling guide so, for example, forming spline grooves in miter cuts is not limited to those of 45 degrees.

•A tapering jig.

•And thoughts on how to add "notching jigs" for producing odd-shaped components or making cuts that might not be safe using conventional means.

The principle advantage of the project is that it is essentially a sliding table. All the components are secured to the main table so that regardless of the operation — crosscutting, mitering, dadoing, tapering, forming tenons or grooves in miters for splines or feathers — the work and the jig move together. This eliminates the friction normally present when work contacts the saw's table directly, and it minimizes the amount of hand pressure you must apply to the work to secure it while sawing.

When making miter cuts, special guides on the Master Jig eliminate "creep" — the accuracy-spoiling bugaboo that is always present when doing such work with just the miter gauge. When doing tenoning operations with either a saw blade or dadoing tool, the work is held securely in the jig's tenoning accessory. This improves accuracy and is much safer than hand-holding narrow stock on edge while moving it along the rip fence. Even simple crosscutting is easier and more accurate because the jig's fence gives more support surface than the face of a miter gauge.

Overall, the Master Jig is a collection of essential but usually separate jigs that has the advantages of a sliding table for each of them.

Construction Procedures

The Master Jig in my shop is sized for a 10" Delta Unisaw, which has a 27" x 28 1/4" table. Many 9" and 10" machines — the most popular sizes — are similar, so the dimensions in the drawings may be applicable without drastic changes. Anyway, check for necessary conversions before cutting material.

The thickness of the jig's table reduces the maximum projection of the saw blade, but because a 10" blade will project 3" or more from the table, the reduction is not critical. An 8" or 9" blade can be used with the jig for many woodworking jobs. For dadoing, it's necessary to use an 8" unit to allow the blades to extend above the slot.

Accurate construction is important, although some tolerances are built in. For example, the fastening holes in the attachments are 3/8" in diameter, even though they are secured with 5/16" bolts that thread into the threaded inserts installed in the table. This allows for minor alignment adjustments when putting the attachments in place. If necessary, because of human error, the 3/8" holes can be enlarged an additional 1/16".

In General

Careful attention to all details of construction is essential for the Master Jig to perform efficiently. The project is a lifetime shop accessory and will be on your table saw, as mine is, more times than it is stored. So taking adequate time and previewing each construction step before performing it makes sense.

Sand components before and after assembly. Apply two (or more) coats of sanding sealer to all surfaces and edges, sanding between coats and after the final one. An occasional application of paste wax rubbed to a polish to the saw's table and the underside of the sliding table is a good idea. **PW**

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1. The Table Itself

Cut the table and the top left and right parts to size and join them with contact cement. I decided on this assembly because it makes it easy to put in the removable inserts. The original one-piece table required some precise router work for installation of the inserts.

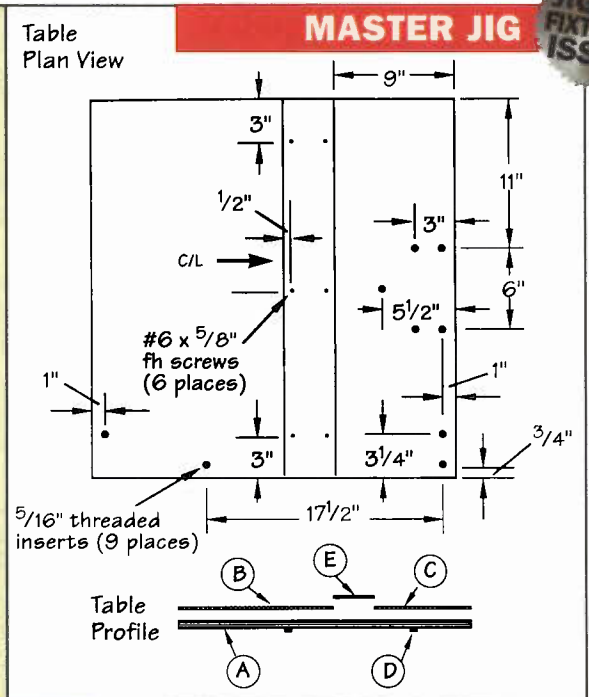
Carefully lay out the location of all the threaded inserts that must be installed in the table. Spot their locations with a center punch and drill 1/16" pilot holes. Enlarge the holes to 1/2" diameter drilling from the top surface and using a backup block on the underside. The holes are close enough to the edges of the table so the drilling can be done on a drill press to ensure squareness. Install the threaded inserts through the bottom of the table until they are almost flush with the table's top surface.

Shape the hardwood guide bars on the bottom of the jig to suit the miter gauge slots in your saw. The bars should slide smoothly in the slots without wobble. Place the bars in position on the saw's top and then place the jig's table on top so its left side and front edge are aligned with the same edges on the table saw's top. Use slim brads at each end and at a center point to tack-nail through the jig's table to keep the bars in correct position. Drill clearance and pilot holes and countersink for the screws. If you don't do this, the screws might spread the bars so they will fit too tightly in the table slots. Then attach the bars permanently with three #6 x 7/8" fh screws through the underside of each bar.

Next, cut several inserts to the size indicated in the Schedule of Materials and mark the location of the attachment screws on one of them. Clamp the inserts together as a pad and, with the marked one serving as a template, drill through them for the six #6 x 5/8" fh screws. Install one insert, countersinking carefully, so the screws will be flush with the table's surface. Now you can form the initial saw kerf.

Use a good saw blade, preferably a high-quality carbide-tipped combination blade that will always be used with the jig. With the machine shut down, lower the blade so it is below the table's surface and then use a clamp or two to secure the sliding table in correct position. Turn on the machine and slowly raise the blade until it cuts through the insert. Remove the clamps and advance the table to extend the kerf length to about 12". An exact kerf-length is not critical at this point.

Repeat the procedure with a second insert to form a dado slot through both the sliding table and the insert. (You can do this later when you need to work with a dadoing tool.)



Schedule of Materials: Jig Table

Part	No.	Item	Dimensions T W L	Material
A	1	Table	1/2" x 27" x 28 1/4"	Plywood
B	1	Top left	1/4" x 15 1/2" x 27"	Plywood
C	1	Top right	1/4" x 9" x 27"	Plywood
D	2	Guide bars	3/8" x 3/4" x 27"	Hardwood
E	2	Inserts	1/4" x 3 3/4" x 27"	Plywood

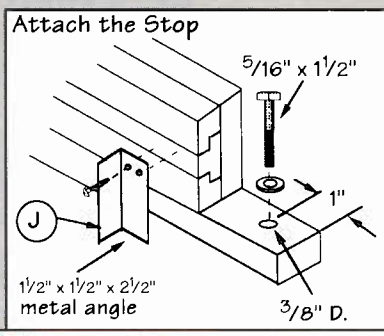
2. Assemble the Fence

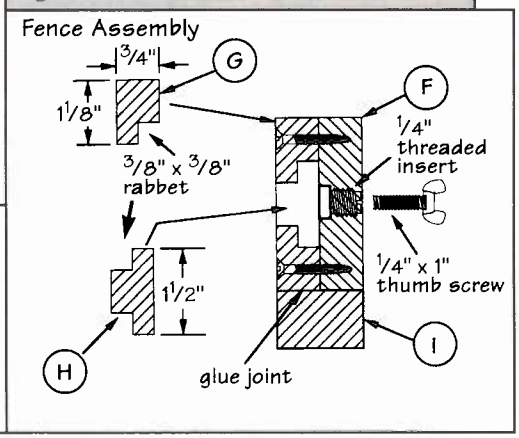
First cut the back (F) to exact size and then install the 1/4" threaded insert for the thumb screw that locks the stop slide-bar (H). Locate the threaded insert so it is about 3" to the left of the kerf in the table.

The rabbet cuts in the retainers (G) and the slide-bar can be formed by using a dado or by making two passes with a saw blade.

Attach the top retainer to the back with four #6 x 1 1/4" fh screws and then, using the slide-bar for positioning, add the bottom retainer in the same way. If necessary, sand the slide-bar so it will move easily. Cut the base (I) to size, and after drilling the 3/8" holes at each end, add it to the fence by gluing and clamping.

The final step is to attach the stop (J), which is a steel or aluminum angle, to the end of the slide-bar. Use thin washers between the angle and the bar so the stop won't rub against the retainer.





Schedule of Materials: Master Jig Fence

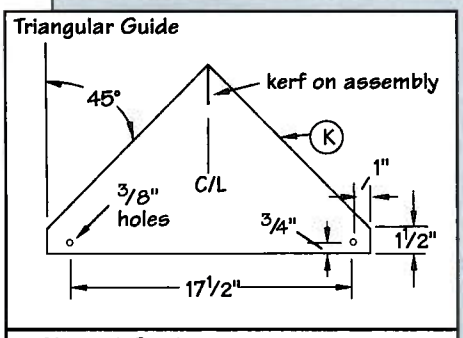
No.	Part	Item	Dimensions T W L	Material
1	F	Back	3/4" x 3" x 23 1/4"	Hardwood
2	G	Retainer	3/4" x 1 1/8" x 23 1/4"	Hardwood
1	H	Slide bar	3/4" x 1 1/2" x 23 1/4"	Hardwood
1	I	Base	1" x 1 1/2" x 28 1/4"	Hardwood
1	J	Stop	1 1/2" x 1 1/2" x 2 1/2"	Metal

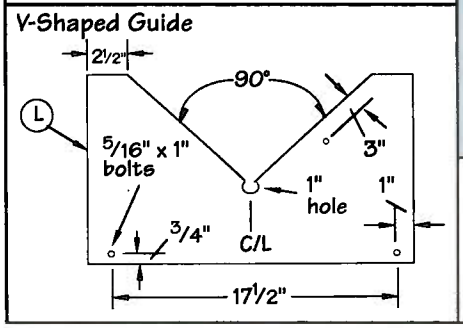
3. Miter Guides

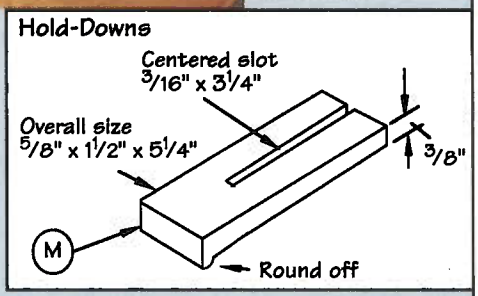
The triangular guide (K) is used when miter cuts are made consecutively on a piece of stock that is long enough to supply the parts you need. Use the v-shaped guide (L) when the frame components have been precut to length. Mark the 45-degree angles on each guide with a combination square or a draftsman's template. It's a good idea to saw almost to the lines and then finish by sanding. In each case, for the sake of accuracy, bolt the stock in place on the sliding table and use a straight edge placed flush against the side of the saw blade to mark a centerline for the angles.

The hold-downs (M) are simple, but they work when secured to the guides with screws (**see photo**). A good way to form the slot for the screw is to drill a 3/16" hole where the slot ends and then clean out the waste with a scroll saw, band saw or even a hand saw.

Use the triangular miter guide when making consecutive miter cuts along a single length of stock. As usual, check the guide-to-blade relationship before sawing.







Schedule of Materials: Master Jig Miter Guides

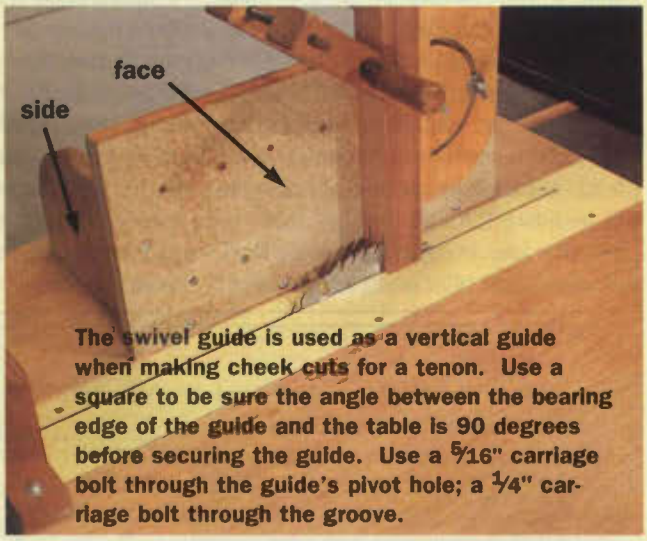
No.	Part	Item	Dimensions T W L	Material
1	K	Tri-guide	1/2" x 11 1/2" x 20"	Plywood
1	L	V-guide	1/2" x 11 1/2" x 20"	Plywood
2	M	Hold downs	5/8" x 1 1/2" x 5 1/4"	Hardwood

4. The Tenoning Jig

Cut the face (N) of the accessory to size and then carefully lay out the locations of all the holes. The top line of holes (either 5/16" or 1/4") are through holes that are needed for the swivel guide. The remaining four holes are bored for the 3/16" threaded inserts that are used when working with the tenoning jig's miter guides.

After all the holes are drilled and the threaded inserts are installed, rabbet the bottom edge of the face 3/8" deep by 3/4" wide to accept the 3/4" base.

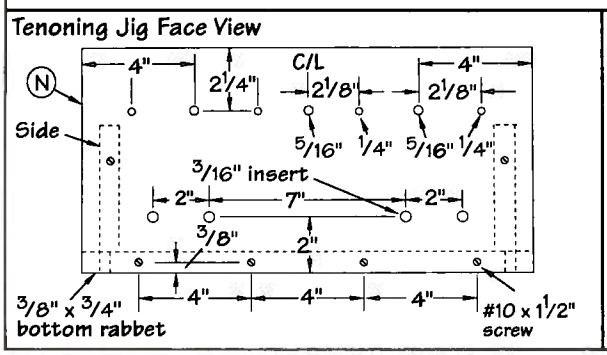
Cut the base (O) to size and then lay out the centerlines for the slots that must be formed. Bore end-holes and then clean away the waste by making saw cuts. The center, 5/16" slot allows the jig to be moved in relation to the saw blade. A 5/16" x 1 1/4" bolt secures the setting.

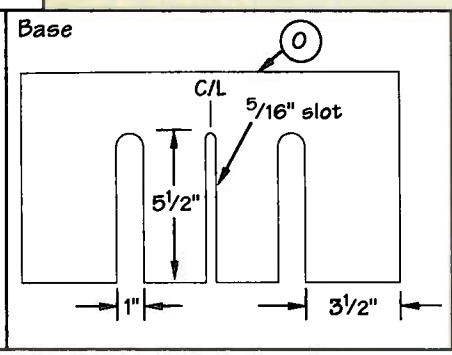


The swivel guide is used as a vertical guide when making cheek cuts for a tenon. Use a square to be sure the angle between the bearing edge of the guide and the table is 90 degrees before securing the guide. Use a 5/16" carriage bolt through the guide's pivot hole; a 1/4" carriage bolt through the groove.

Schedule of Materials: Master Jig Tenoning Jig

No.	Part	Item	Dimensions T W L	Material
1	N	Face	3/4" x 8" x 16 1/2"	Hardwood
1	O	Base	3/4" x 7 3/4" x 14"	Hardwood
2	P	Sides	3/4" x 5 1/4" x 7"	Hardwood
2	Q	Guide bars	3/4" x 1" x 5"	Hardwood





To make the sides (P), start with a piece that is more than 14" long and then, after forming the 3/8" deep x 3/4" wide rabbet along one edge, saw the part to get two pieces. It's good to remember that these are left- and

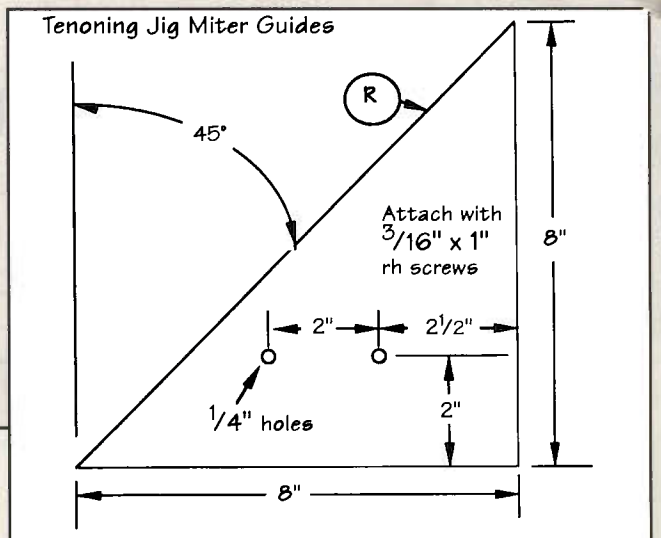
5. Tenoning Jig Attachments

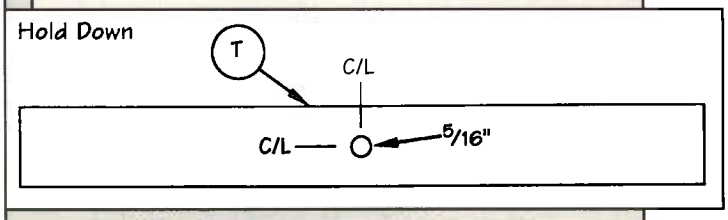
The miter guides (R) used with the tenoning jig are triangular pieces with 8" sides. Although they are secured to the jig's face with 3/16" screws, the attachment holes are 1/4". This allows some room for adjustment when the guides are set up **(see photo below right)**.

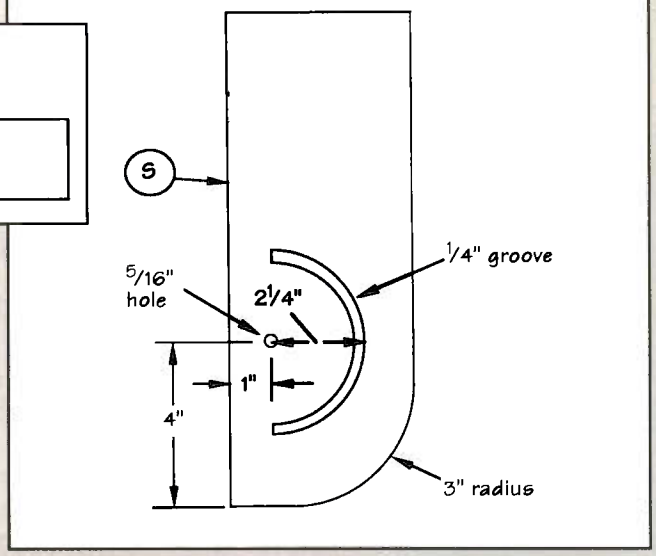
Cut the swivel guide (S) to size and then form the 1/4" semicircular groove **(photo below left)**. You can do this by drilling end-holes and removing the waste on a scroll saw or even with a coping saw. But, if possible, a compass arm jig forms the groove easily with a router. If you work this way, make repeat passes, projecting the bit an extra 1/8" or so for each one.

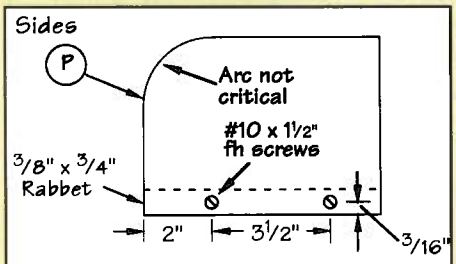
Schedule of Materials: Master Jig Table

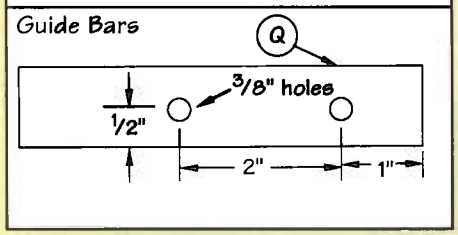
No.	Part	Item	Dimensions T W L	Material
2	R	Miter guides	1/4" x 8" x 8"	Plywood
1	S	Swivel guide	3/4" x 4 1/4" x 12"	Hardwood
1	T	Hold-down	3/4" x 1 1/2" x 13"	Hardwood









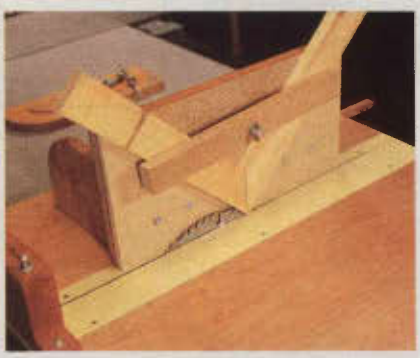


right-hand parts when you round off one of the top corners.

Next try a dry assembly of the three components (base, sides and face) to be sure the angle between the face and the base is 90 degrees. When you're certain of the alignment, assemble the parts with glue and #10 x 1 1/2" fh screws.

The guide bars for the tenoning jig (Q) are straightforward, but be sure their width is exactly 1".

The advantage of the swivel guide is that it can be set to accomodate angles other than 45 degrees. It can be positioned using any of the top holes in the jig, and it also can be inverted. Note that a scrap piece of wood is used under the free end of the hold-down.



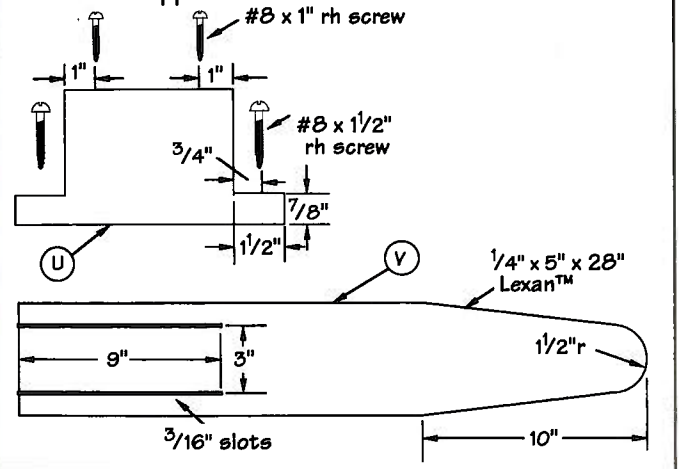
Both guides are used when forming grooves for feathers that will be used to reinforce the miter joint. Always place the same surface of each part against the face of the jig. Thus the grooves will mesh, even though they might not be exactly centered.

6. Don't Forget the Guard

I used Lexan™ for the guard but any clear, rigid plastic will do. The guard spans across the table for cross-cutting and dadoing, but the slots allow other positions that are more suitable when, for example, using the table's miter guides. Form the slots, as we have suggested for others, by drilling end holes and then sawing away the waste.

Install the support so it and the kerf in the table will have a common centerline.

Though I removed the guard for many of these photos for clarity, it's an essential part of the Master Jig.



Schedule of Materials: Master Jig Guard

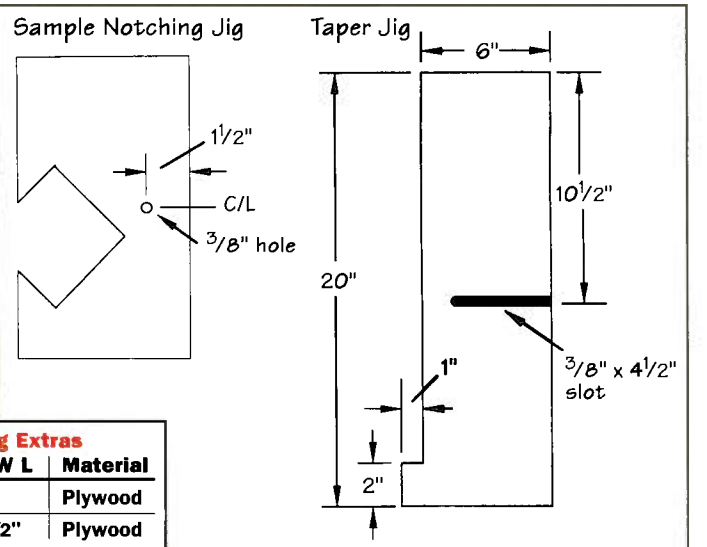
No.	Part	Item	Dimensions T W L	Material
1	U	Support	1½" x 4" x 8"	Hardwood
1	V	Guard	¼" x 5" x 28"	Lexan™

7. A Few Extras

Notching jigs must be custom-designed for particular applications. The cutout in the jig can fit the part that is needed or the section that must be removed from the component.

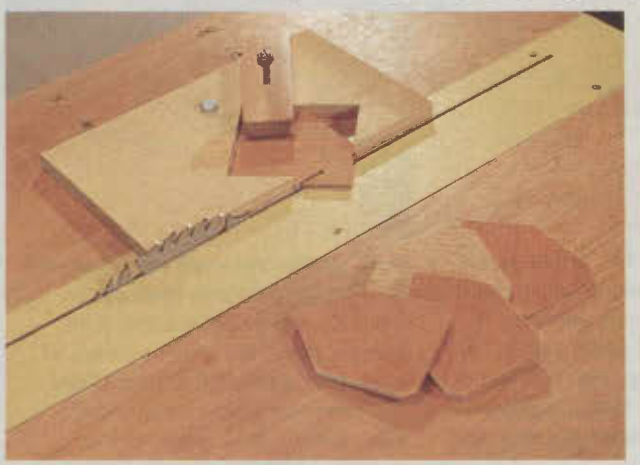
The taper jig, as designed, is pretty flexible and is useful for many taper-cutting chores. Actually, it's feasible to make special ones when you need to produce many parts of similar shape.

Notching jigs and the taper jig are locked in place using the same threaded insert that's installed to secure the tenoning jig.

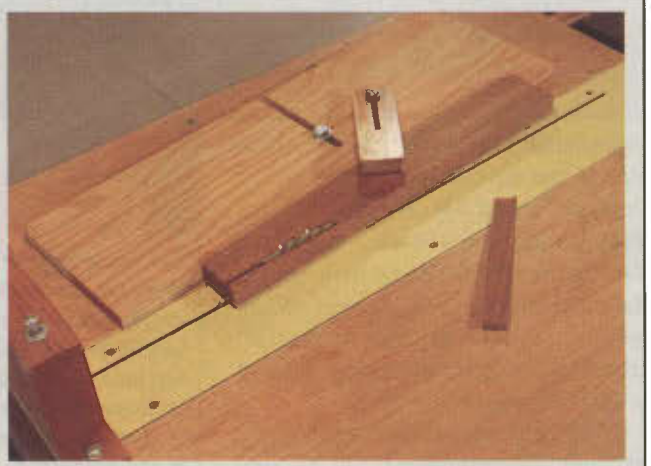


Schedule of Materials: Master Jig Extras

No.	Item	Dimensions T W L	Material
1	Taper jig	½" x 7" x 20"	Plywood
1	Notching jig	½" x 6" x 10½"	Plywood



Typical notching jig in use. Note that the hold-down for the table's miter jigs comes in handy for this application. Secure the hold-down with a rh wood screw.



Using the tapering jig. Special jigs can be made for particular taper-cutting chores. Note the hold-down that keeps hands away from the cutting area.

JIGS & FIXTURES ISSUE

ROUTER TABLE FENCE

The strength of a train; the precision of a watchmaker.

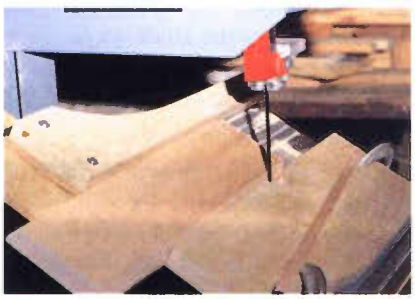
A WELL-DESIGNED and constructed router table deserves a fence equal to its capabilities. This fence is strong enough to stand up to a powerful router turning a large bit. It also can be adjusted in 1/64" increments using its built-in ruler.

The business end of this rig sports a 14" long by 2" high fence that attaches to a guide bar. This bar moves back and forth through a V-shaped channel, the angled pieces of which are called "ways." The ways attach to a solid base bolted to the router table.

The fence adjusts by sliding the guide bar through the ways (which hold the guide bar in the same way a sliding dovetail works) and can then be locked in place with a single bolt. The guide bar's wide range of adjustment allows for easy set-up when routing grooves or dadoes in panels. An etched piece of plexiglass screwed across the guide bar serves as a precise hairline cursor over a built-in ruler.

My first precision router fence was made from relatively soft poplar, and the ways became loose after a few months of use. The new fence is birch, a dense and strong hardwood I should have used in the first place, though most hardwoods will do.

Cut all the parts to size according to the Schedule of Materials — except for the fixed way, the guide bar clamp and the two guide ways. These are cut from a single piece of stock because cutting the way's angles on the ends of these is easier on one piece. So, for these four pieces, cut a single piece of hardwood at least 8" long by 4" wide. Longer is even better.



1 CUT THE ANGLE • Tilt the bandsaw table to 30 degrees and set the rip fence on the left side of the blade to leave a flat 3/16" wide on the bottom side of the guide bar. Clamp a second fence on the right side of the blade to confine the guide bar. The guide bar should barely slide through without binding. Make the 30 degree cut on both sides of the guide bar.

2 CUT THE WAYS • Leaving the saw's angle set, clamp the long way piece to the miter gauge and cut the way angle on both ends. You want to just trim both ends.

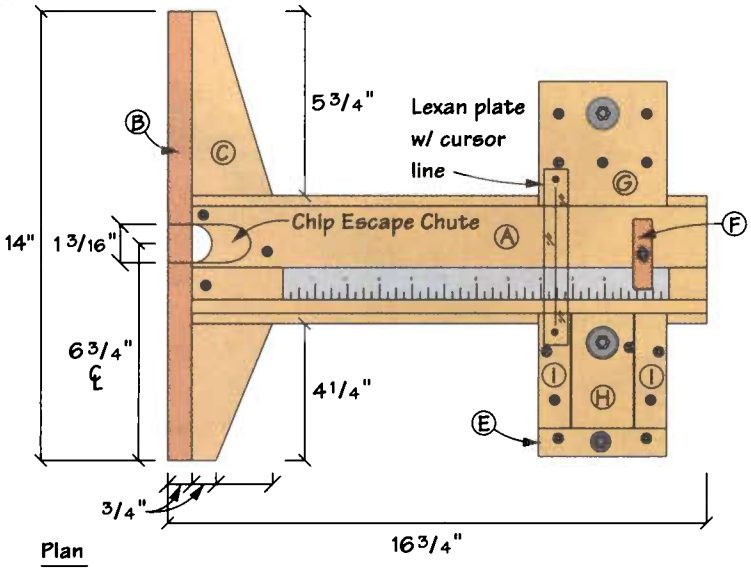
STEP 1 An Angle on the Guide Bar • The ways' angles must match the angles on the guide bar exactly. The simplest way to accomplish this is to make the angle cuts on opposite sides of a saw blade without changing the blade's angle. I used a band saw to cut the complementary angles because the narrow blade wastes less wood. Start by cutting the angle on the guide bar.

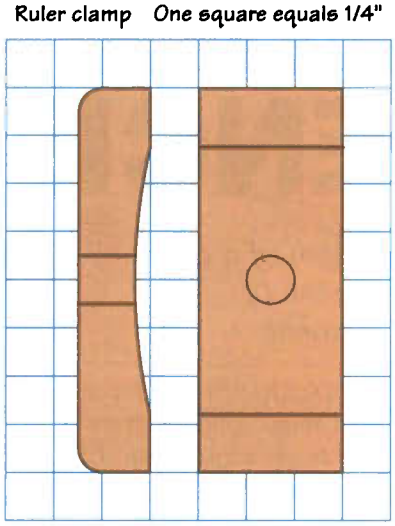
STEP 2 Show Me the Ways • The fixed way, clamp and guide ways are cut from the single 4" x 8" piece cut earlier, again using the band saw as shown in the photo. Clean up the saw marks in the guide ways and the angles on the guide bar with a smoothing plane. The angled surfaces should be flat and true. Do not change the angle while cleaning up; the accuracy of the completed fence depends on the angled surfaces.

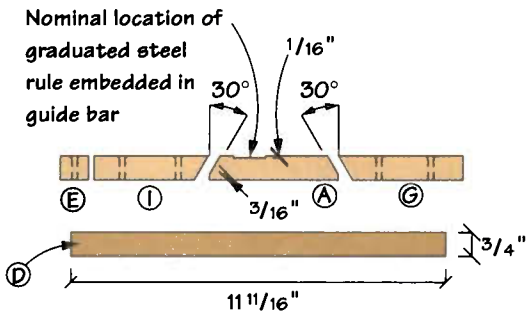
STEP 3 Cutting the Ways to Size • Start with the fixed way, marking and cutting the length. Next, attach the fixed way after running a shallow saw

ROUTER FENCE

Diagrams







Schedule of Materials: Router Fence

No.	Lett.	Item	Dimensions T W L	Material
1	A	Guide bar	3/4" x 4" x 16"	Birch
1	B	Fence bar	3/4" x 2" x 14"	Birch
1	C	Fence stabilizer	3/4" x 2 1/2" x 14"	Birch
1	D	Base plate	3/4" x 4" x 11 11/16"	Birch
1	E	Clamp back stop	3/4" x 7/8" x 4"	Birch
1	F	Ruler toe clamp	3/8" x 3/4" x 2"	Birch
1	G	Fixed way	3/4" x 4" x 3 29/32"	Birch
1	H	Guide bar clamp	3/4" x 2" x 3 5/8"	Birch
2	I	Guide ways	3/4" x 1" x 3 9/16"	Birch

kerf across the bottom of the block just behind the angle to limit the spread of glue. Glue and screw the fixed way to the base plate, cleaning off any squeezed-out glue. Now clamp the guide bar against the fixed way. Then take the block of wood left over from cutting the fixed way and push the angled end against the guide bar. Mark the length of the base plate on this block. Also mark a second line 13/16" in from the mark you just made to define the clamp back stop piece. Crosscut the block to the proper length, then crosscut the stop piece off the block. Next rip 1"-wide strips from either side of the remaining block to make the guide ways (see diagram). Trim 1/16" from the non-angled ends of the two guide ways.

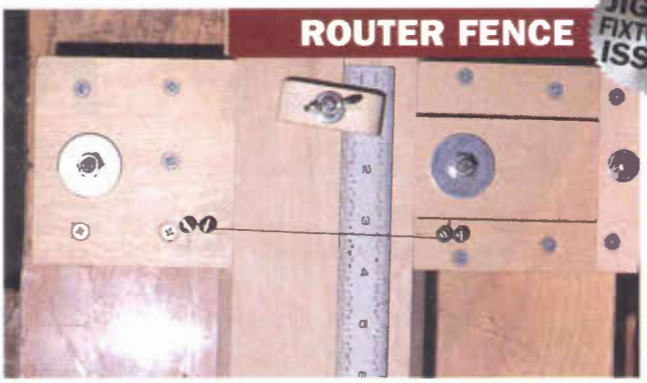
3 CUT WAY LENGTH • Place the guide bar 3 9/16" from one end of the base plate at a true right angle to the base. Hold one angled surface of the way block against the guide bar and mark to length and cut.

4 FIT GUIDE BAR • With the ways clamped in place, the angled end of the clamp will project above the top of the guide bar when you drop it into its pocket between the guide ways.

STEP 4 Snug as a Bug in a Way • To attach the adjusting way section, clamp the two guide ways to the base plate and against the guide bar. Then clamp the back stop to the base plate, making sure it touches the straight ends of the guide ways.

Check the fit of the guide bar before you glue the guide ways down. If the guide bar fits a little tight, you might shave a little more stock off the angles on the guide bar, but if the fit is sloppy, make adjustments before proceeding. When it fits, clamp the guide ways and stop block in position and bore the screw clearance holes just deep enough to spot the hole locations on the base plate. Remove the guide ways and stop block, then drill the screw pilot holes in the base plate. Glue and screw the pieces to the base.

5 FIT THE RULER • The ruler should slide freely without binding. Rout the groove 1/64" deeper than the ruler's thickness, and a hair wider than the ruler.



6 ATTACH TOE CLAMP • To hold the toe clamp in place, drill a hole for a 1/4" carriage bolt through the guide bar as shown, then counterbore a shallow recess for the bolt head in the underside of the guide bar. A washer and wing nut secure the clamp in place on the top side.

7 CUT THE CHUTE • Cut the chip chute opening in the fence large enough to clear the largest bit you expect to use and angle the back of the chute away from the bit at a 50 degree angle to encourage a smooth flow of chips. I cleared the waste with a 1" auger bit, then cleaned it with round rasps and sandpaper.

8 PRECISION FENCE • The finished fence can be adjusted by loosening and tightening just one bolt. Once you zero the ruler to a particular router bit, you can set the fence to any dimension by stepping off the desired distance on the ruler.

STEP 5 The Golden Rule • While the glue is drying, rout the groove for the ruler in the guide bar. I've found the most precise ruler for this fence is a machinist's ruler, which is milled to be accurate to .005" in a 12" span, and can be purchased for $15.

STEP 6 An Adjustable Ruler • The ruler is held in place (but left adjustable) with the ruler toe clamp (see diagram). Depending on how you use the fence, you might find that a couple of extra locations elsewhere on the ruler for the toe clamp would be helpful.

For the hairline guide, etch the back side of a piece of 1/8" x 7/8" x 6 1/2" long piece of plexiglass down the center of the width with a utility knife. Use a permanent marker to apply black coloring into the etched line, then wipe the surface with paint thinner to remove the excess marker. Another option for the hairline guide (shown in the photo), is to wrap a thin copper wire in a figure-eight pattern around four screws. The wire should be straight across the ruler for greatest accuracy.

STEP 7 Add the Stabilizer • The stabilizer is attached to the back bottom edge of the fence in a 1/16" deep rabbet. The rabbet should be made as high as the stabilizer is thick. Glue is sufficient to hold the face to the stabilizer, but you can reinforce this joint with screws if you want.

Next, glue the guide bar to the fence assembly but don't use any screws yet. You don't want to put a metal screw where a router bit can strike it. Use plenty of glue and clamp the assembly until the glue has set.

Chips need someplace to go when you're cutting rabbets with the fence set right over the router bit. This calls for an escape chute as shown in the photo and on the diagrams. After the chute is cut, you can put in a couple of the screws to reinforce the guide bar-to-fence joint.

STEP 8 The Key to the Fence • Slip the clamp into the pocket made by the two guide ways and drill a 9/32" hole through the clamp and go deep enough to just barely spot the hole location on the base plate.

Then drill a 1/4" hole through the base plate for the 2" carriage bolt and counterbore a shallow recess for the head. Install the carriage bolt.

Assemble the completed fence and place it on your router table with the guide bar fully extended. Line up the leading edge of the fence with the centerline of your router's spindle, then clamp the base plate to the table.

Bore 1/4" holes through the base plate assembly and the top of your router table, run the bolts through those holes, and put your new fence to the test. **PW**

Horst Meister *is a toolmaker from Riverside, Calif. He has been working wood for more than 31 years.*

Rocking Recliner

The comforts of a La-Z-Boy™ in your own back yard.

For about $35 in materials, you and your favorite beverage can kick back in this rocking recliner.

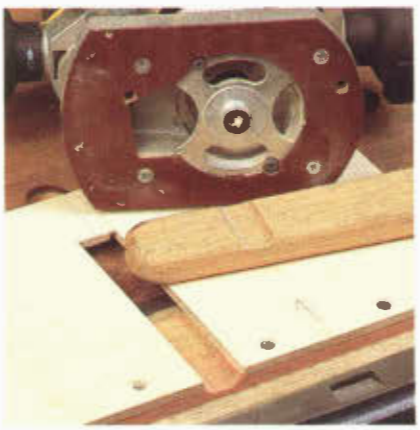
I chose white oak for the chairs because of its outdoor durability, strength, attractiveness and price. I knew I wanted a natural finish on the piece; and though teak, mahogany or redwood would have been as attractive, they also would have cost a lot more. For this particular chair, I purchased ¾" white oak, surfaced on two sides.

STEP 1 Shape the Wood • Start by crosscutting the pieces to rough length on the radial arm saw. Next joint one edge square on each piece, then rip to the widths indicated in the Schedule of Materials.

Next, rough shape the arm supports, armrests and exterior edges of the cup holder on the bandsaw by following the descriptions in the diagram. (You'll have to cut out the interior of the cup holder with a jigsaw.) Sand the radiused corners on all pieces.

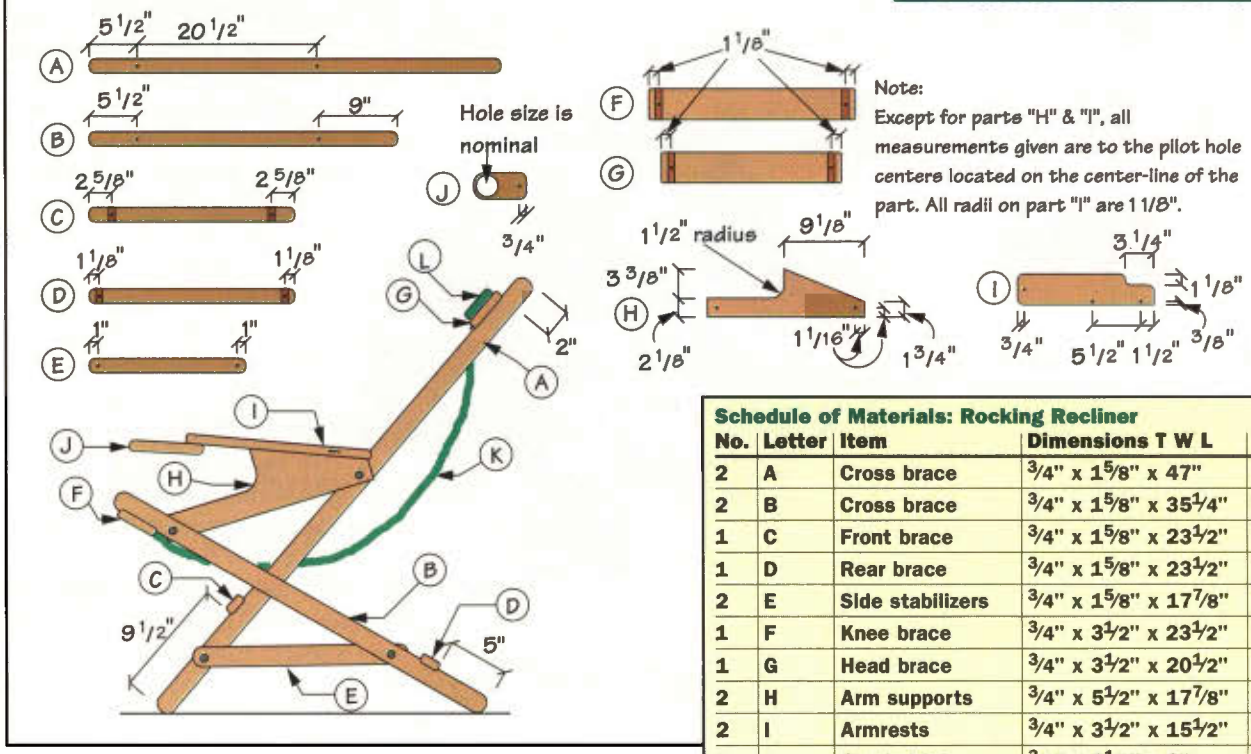
1 SHAPE • After the pieces have been cut to width and length, a 13/16" radius is sanded on the ends of all the 1⅝" pieces using a disc sander. The rounded ends soften the look of the piece and provide a more stable footing for the chair. Mark one piece as a template, sand the radius and then use that piece to mark the other pieces.

2 SOFTEN • A ¼" roundover bit with a bearing guide is next used on almost all the edges to soften the appearance of the entire chair. The only edges that do not receive the roundover are at the joint where the armrests meet the arm supports.



3 ROUT TRENCHES • A jigsawn template guide is used with a router and a ¼" cove bit on the surfaces of the head and knee supports, as well as the front and rear braces. The flat-bottomed trenches will lock the cross braces in place with a shallow version of a saddle joint. Locations for the trenches are shown in the diagrams.

Diagram



Note:
Except for parts "H" & "I", all measurements given are to the pilot hole centers located on the center-line of the part. All radii on part "I" are 1 1/8".

Schedule of Materials: Rocking Recliner

No.	Letter	Item	Dimensions T W L	Material
2	A	Cross brace	3/4" x 1 5/8" x 47"	WO
2	B	Cross brace	3/4" x 1 5/8" x 35 1/4"	WO
1	C	Front brace	3/4" x 1 5/8" x 23 1/2"	WO
1	D	Rear brace	3/4" x 1 5/8" x 23 1/2"	WO
2	E	Side stabilizers	3/4" x 1 5/8" x 17 7/8"	WO
1	F	Knee brace	3/4" x 3 1/2" x 23 1/2"	WO
1	G	Head brace	3/4" x 3 1/2" x 20 1/2"	WO
2	H	Arm supports	3/4" x 5 1/2" x 17 7/8"	WO
2	I	Armrests	3/4" x 3 1/2" x 15 1/2"	WO
1	J	Cup holder	3/4" x 3 1/2" x 6"	WO
1	K	Seat sling cloth	18 1/2" x 55"	C
1	L	Pillow cloth	18 1/2" x 18"	C
1		Foam pillow	2" x 6" x 16"	Foam

(Material Key: WO-white oak; C-canvas; SS-stainless steel)

STEP 2 Soften the Edges • To make the chairs more bare-leg friendly, round over the edges using a router table setup. Whenever running all four sides of any piece with a router, first run the end grain so that any tearout will be removed by the following long grain router pass.

STEP 3 Make a Trench • Once all the pieces are shaped, trenches are cut in four of the pieces to stabilize the completed joints. The photo shows the simple jig and router setup for this.

The last step before assembly is a few minutes sanding. It's up to you how much effort goes into this step, but remember this is furniture for the deck, not the museum.

4 ASSEMBLY • If the pilot holes are not pre-drilled for these fasteners, the torque of the drill will snap off the screw heads in the white oak. The clearance holes for the carriage bolts provide for easier movement of the chair.

STEP 4 Assembly • First put together the two side frames, leaving the armrests off for now as they'll just get in the way. As you assemble the frames, each 1/4" x 1 3/4" carriage bolt should be tapped with a hammer so the squared shoulder of the bolt head seats into the wood. This will keep the bolt from turning when the stop nut is attached.

With the sides assembled, clamp one side in a vise, then mark and attach the front and rear braces with 1 1/2" deck screws in the locations shown on the diagram. Repeat the process with the second side and bolt everything into place.

Mark and attach the head and knee braces same as the front and rear braces, using the 1 1/4" x 2 1/2" bolts rather than the 1 3/4". Then attach the armrests flush to the inside and rear edges of the arm supports using two deck screws per arm.

The last step is to decide on which armrest you want to attach your swing out drink holder. Measure the diameter of your favorite cup that you'll use with your chair before making this cut with a jigsaw. The holder is simply attached with a 1 3/4" lag screw and tightened enough to allow movement.

The Seat and Pillow

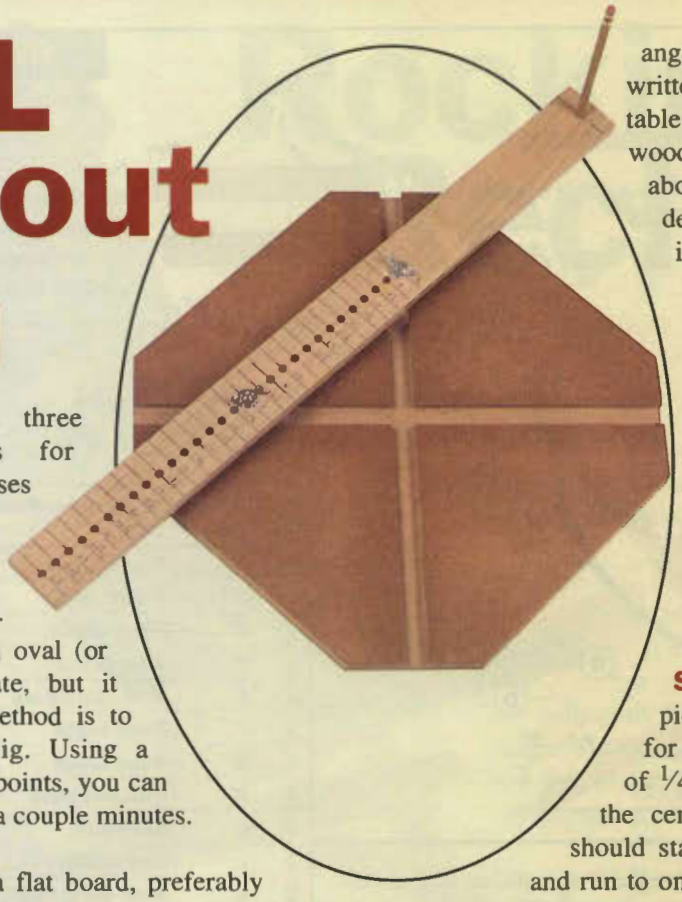
Any canvas or awning material will work for the seat and pillow. For the seat, cut the material to the size shown and sew a 1/2" double-fold hem on all four edges. Then fold the top and bottom hem over 5" and sew the pocket across, leaving a 4 1/2" space for the chair's braces to slip through. The pillow is folded inside out, then edge-sewn on three sides. The pocket is then turned right side out and the foam placed inside. The fourth edge can then be doubled folded and sewn shut, or you could add a zipper. Simple strings tie the pillow to the chair.

Finish

We disassembled the chairs for finishing and used a clear spar urethane for weather protection. As you reassemble the chair, adjust the screw tightness at the moveable joints to get the chair feeling just right. **PW**

—David Thiel, PW staff

OVAL Layout JIG



There are at least three accepted methods for drawing an oval. One uses two nails and a string, which is quick but sloppy. The second uses a square and involves laying out the points of an oval (or ellipse). This is accurate, but it takes time. The best method is to make a cross-shaped jig. Using a trammel with two pivot points, you can easily lay out an oval in a couple minutes.

STEP ONE: Start with a flat board, preferably plywood or particle board (I used scrap medium density fiberboard). Cut the corners off the square board to make an octagon; this will allow the pencil to draw the oval. Lay out a cross on the center of the board.

STEP TWO: With a router, cut a sliding dovetail channel about halfway into the thickness of the board and right down the center lines of the cross. It's OK to use a plain groove, but dovetail slots will hold the trammel parts better.

STEP THREE: Use a compass square to figure out the angle of the dovetail (sometimes it is written on the shank of the bit). Set the table saw for that angle. Rip a piece of wood that is wider than the slot and about 3/4" thick. Rotate the wood 180 degrees and rip it down until it fits into the dovetail slot. This will yield enough wood for plenty of trammel sliders. Cut two 2" sliders from this strip.

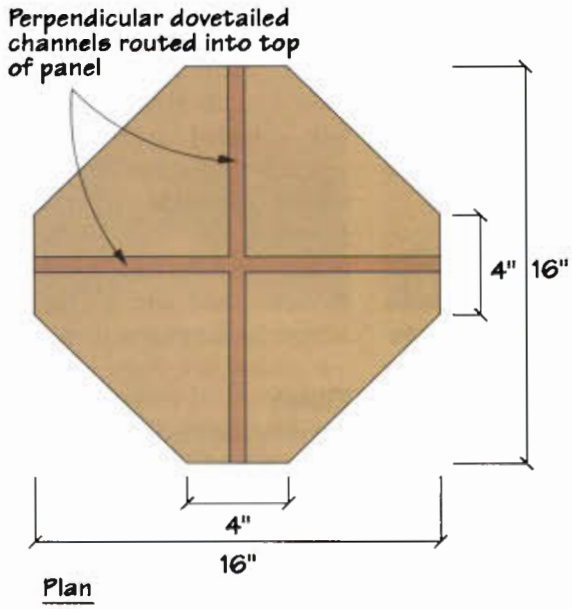
STEP FOUR: Clamp the trammel sliders in a hand screw and drill and counterbore for the 1/4" x 1 1/2" hex cap screw that will go through the bottom of the sliders and stick up through the trammel. With the screws in the sliders, insert them into the slots on the board.

STEP FIVE: The trammel is a piece of 1/2" maple with a 9/32" hole for a pencil. Lay out and drill a series of 1/4" holes that are 1/2" apart down the center of the trammel. The holes should start near the center of the length and run to one end. Mark these distances next to the holes.

STEP SIX: Add rubber feet on the bottom of the jig to keep it from moving while in use. To use the jig, lay out a center cross on the object on which you want to draw an oval. Position the jig on the center of the cross. Figure out half the width and length of the oval. These are the distances that you will put the screws through on the trammel. Insert a pencil into the trammel and rotate. The result is a perfectly formed oval.

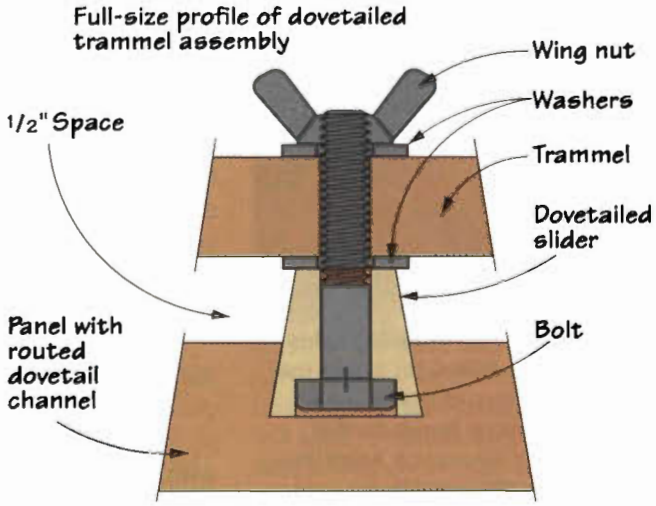
—Jim Stuard, PW staff

Diagrams



Schedule of Materials: Oval Jig

No.	Item	Dimensions T W L	Material
1	Base	3/4" x 16" x 16"	MDF
1	Trammel	1/2" x 2" x 24"	Maple
2	Trammel sliders	3/4" x 3/4"x 2 1/2"	Maple



Glastonbury Chair

Photocopy these letters to carve your own name or sayings into your Glastonbury Chair. For an authentic look, try making your name have a Latin sound. For example, if your name is Don Jacobs, try making it "Donous Jacobus".

ABCD
EFGH
IJKL
MNOP
QRST
UVWX
YZ

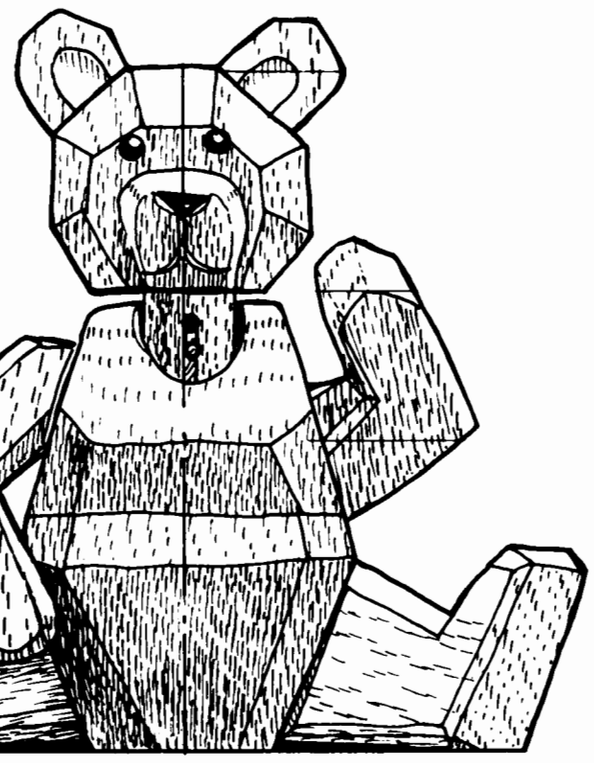
PullOut™ Plans #98

Popular Woodworking

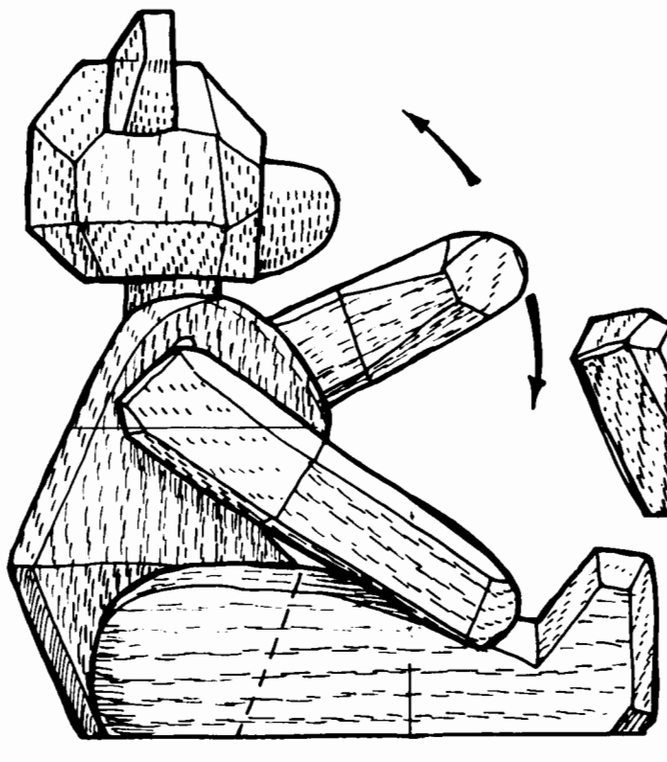
Carefully open staples to remove plans, then bend them closed again.

INSIDE

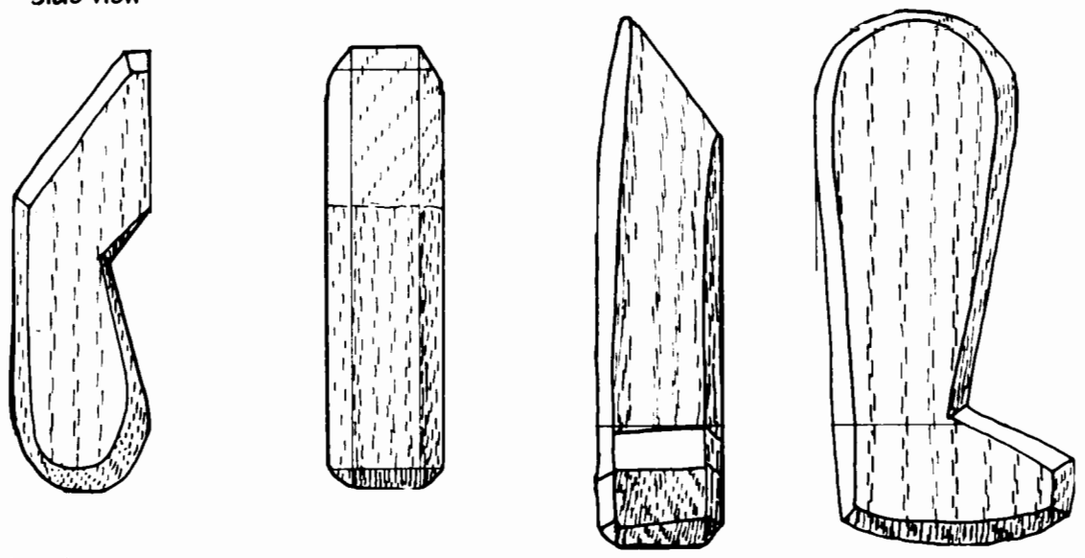
Mechanical Bear Bank



Mechanical Bear Bank — front view



Mechanical Bear Bank — side view

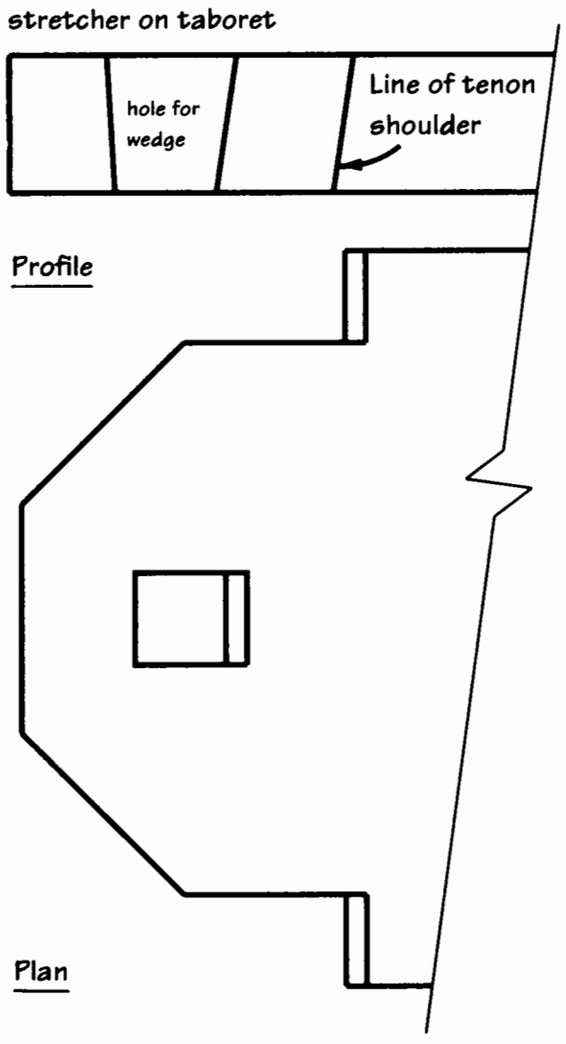


bear's arm

bear's leg

Arts and Crafts Taboret

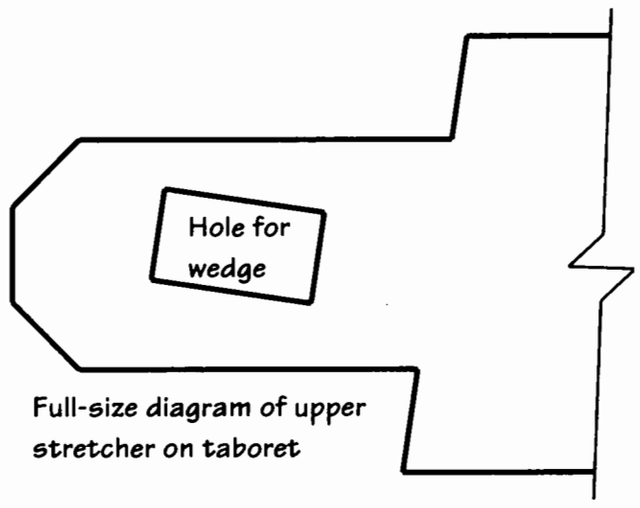
Full-size diagram of lower stretcher on taboret



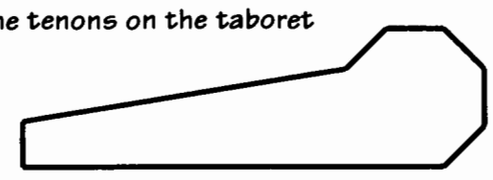
Profile

Plan

Full-size diagram of upper stretcher on taboret



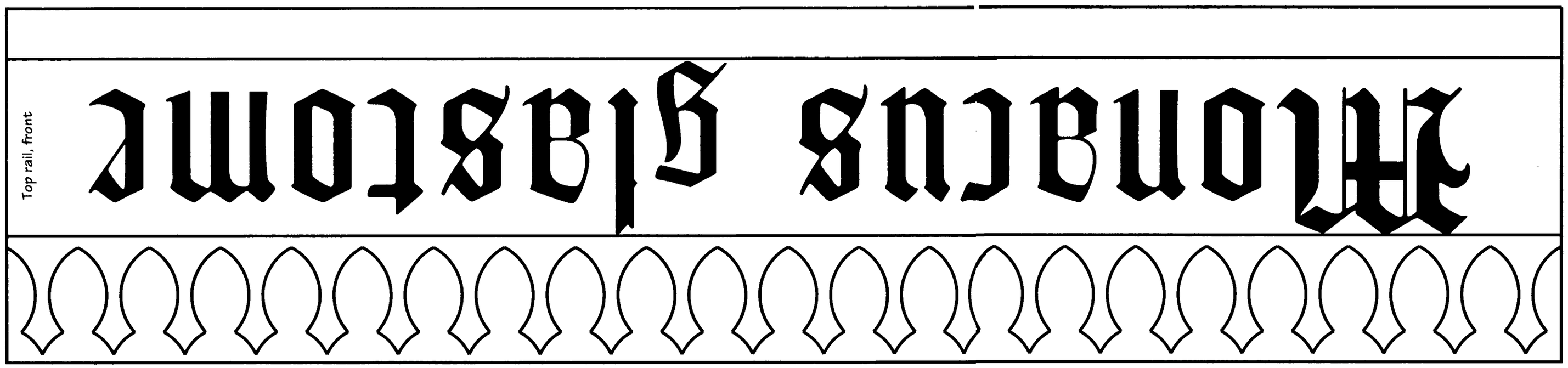
Full-size diagram of wedge for the tenons on the taboret



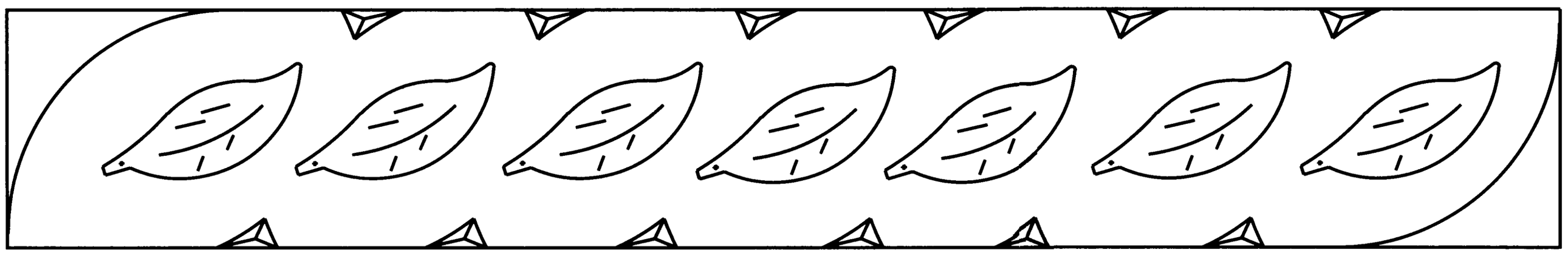
Glastonbury Chair

Full-size diagrams of carvings on the chair

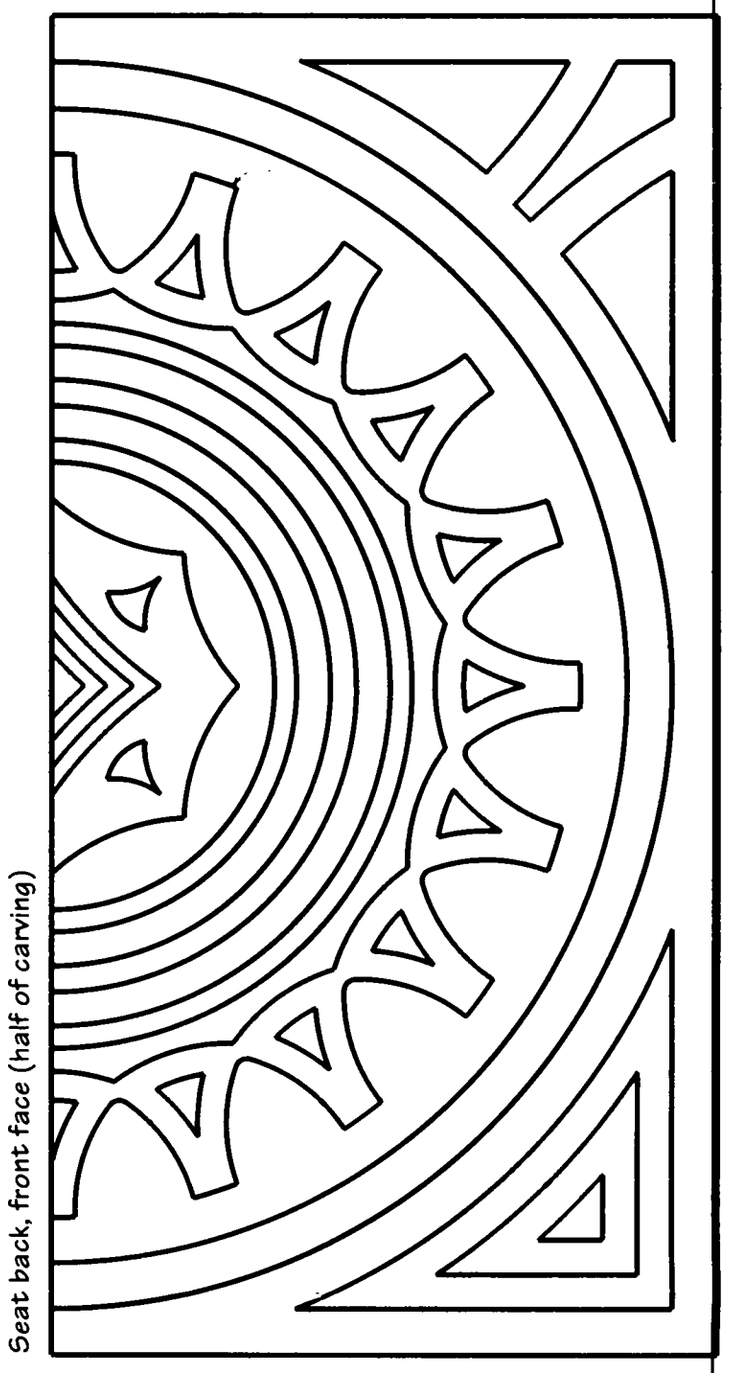
Top rail, front



Top rail, rear



Seat back, front face (half of carving)

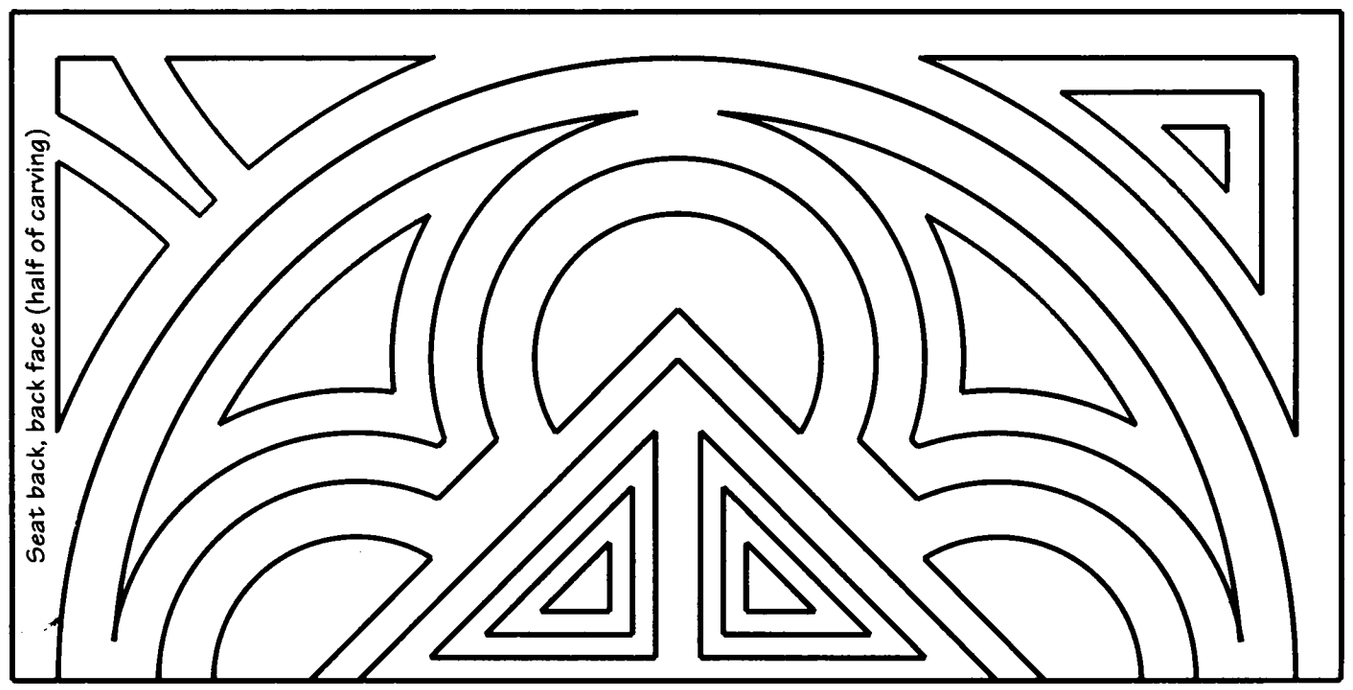


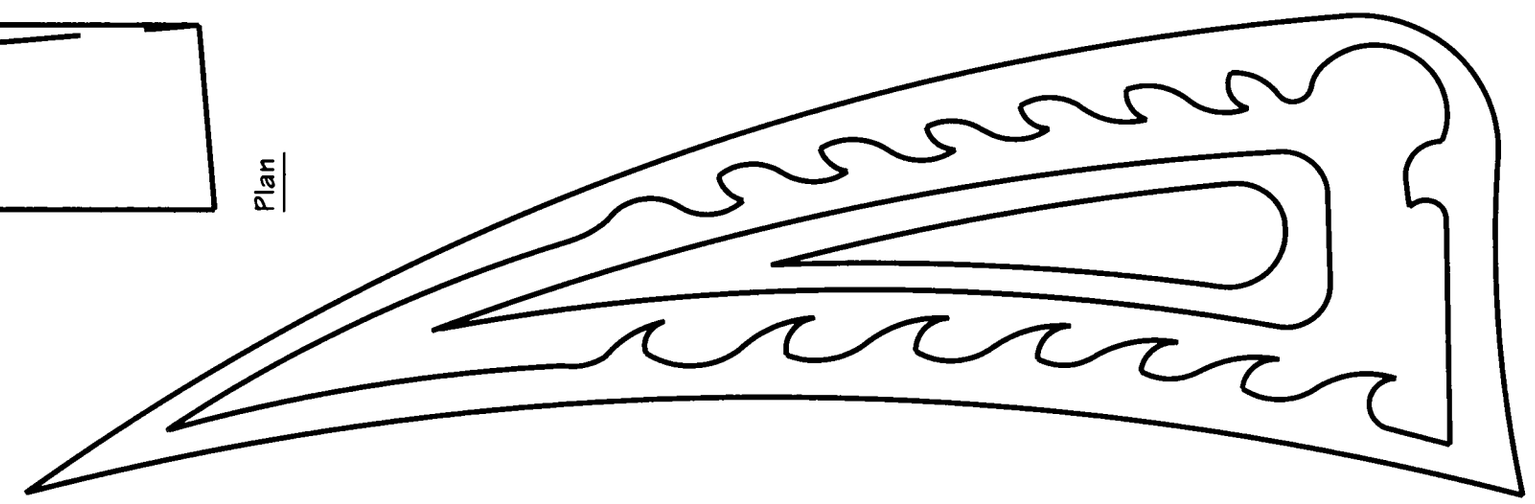
5°

Full-size plan view of 5 degree angles on chair arm

Plan

Seat back, back face (half of carving)





Outside of chair arm

Full-size diagram of seat dowel

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Practical ROUTER TABLE

Numerous router table designs have been published recently in woodworking magazines. While most have interesting and arguably beneficial features, the "cost/benefit" analysis of the time required to build in all the bells and whistles might not make sense for many woodworkers.

The table pictured here began as a simple and functional router table for our project shop here at *Popular Woodworking*.

STEP ONE: Cut the pieces to size according to the Schedule of Materials.

STEP TWO: Assemble the drawer box section by nailing or screwing the box sides between the top and bottom.

STEP THREE: Apply iron-on birch veneer tape to the front edges of the two sides, and the front edges of the assembled drawer box.

STEP FOUR: Nail or screw the drawer box between the two sides, allowing a 1" setback from the front edge of the sides. This will allow space for the inset doors and drawer faces.

STEP FIVE: Our top was constructed from a solid core door. You could just as easily glue up a couple of pieces of ¾" plywood with a ¼" hardboard top to achieve a stable and smooth work surface.

STEP SIX: We purchased the table insert from Woodcraft's catalog [(800) 225-1153 (item #16L73, $34.99)]. It offers opening sizes from 4" to 1¼", which is changed easily with snap-in rings. The Deluxe Router Base plate is well worth the money. While you can make your own insert, this one offers a sturdy base with the variable opening snap-in rings. Mounting instructions are included.

STEP SEVEN: Attach the top to the cabinet by first pre-drilling horizontal and vertical clearance holes in the cleats. Then screw the cleats to the top inside edge of each side, center the top, and screw up into the top through the cleats.

STEP EIGHT: The drawers are constructed by running ¼" x ¼" rabbets on both ends of the front and back pieces. These form tenons that are then fit into ¼" x ¼" grooves cut on the inside front-and-back edges of the sides. The bottoms are captured in ¼" x ¼" grooves run ½" up from the bottom edge of the sides and front. The bottom is then nailed in place against the bottom edge of the drawer back.

STEP NINE: The drawers are mounted in the drawer box using full extension slides to allow maximum benefit from the space. We designated the bottom drawer as bit storage and cut a ¾" insert to lay in the drawer. We then drilled ½" and ¼" diameter holes through the sub-base to allow us to store the bits upright.

STEP TEN: The doors and drawer faces have veneer tape applied to the top and side edges, leaving the bottom unfinished to allow for any final fitting. The drawer faces are screwed to the drawer fronts. The doors were hung using simple butt hinges to allow 180 degree opening for easier access to the router.

STEP ELEVEN: The fence is a straightforward design. As shown in the diagram detail, the basic assembly of the fence starts by gluing the housing assembly together. The sides fit inside the top and rear, with the rear overlapping the top's back edge.

Depending on your preference, the fence can be held in place simply using a clamp on each end (left), or the base piece can be extended 4" in length to add a homemade C-clamp (right). A simple threaded rod with a handle on one end and a nut on the other secures the fence to the table.

STEP TWELVE: A 2" radius cutout is made at the center of both the base and front pieces to form the bit clearance opening.

STEP THIRTEEN: The fence assembly is then glued together, with the front piece glued to the top surface of the base, and the housing glued into the corner formed by those two pieces. The braces are then glued in place with the innermost brace spaced 5 3/8" from the housing side and the outermost brace spaced 5 3/8" from the first brace. The fence assembly should be glued and clamped to a straight surface to form a straight and square fence.

STEP FOURTEEN: The fence faces are maple with a 45 degree bevel cut on each inside edge to allow the maximum bit clearance and minimum throat opening. A 1/8" x 1/8" rabbet is cut on the front bottom edge to allow dust clearance. The faces are mounted with two bolts each through two 4" long horizontal slots in the front. This allows the faces to slide left-to-right to expose only as much of the bit as necessary. The fence can be mounted in a couple of ways, which are detailed in the photos on the previous page.

David Thiel — PW staff

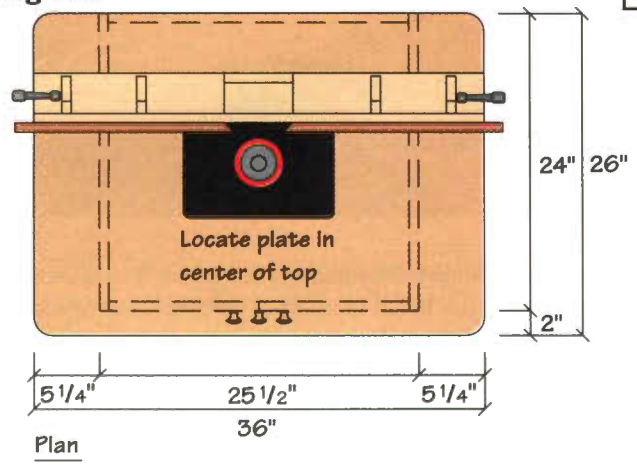
Schedule of Materials: Practical Router Table

No.	Item	Dimensions T W L	Material
2	Sides	3/4" x 23 7/8" x 35"	Plywood
2	Box top & bott.	3/4" x 22 1/4" x 24"	Plywood
2	Box sides	3/4" x 10" x 22 1/4"	Plywood
1	Back	3/4" x 24" x 30 1/2"	Plywood
1	Top	1 3/4" x 26" x 36"	Optional
4	Drawer sides	1/2" x 3 1/2" x 22"	Plywood
2	Drawer fronts	1/2" x 3 1/2" x 21"	Plywood
2	Drawer backs	1/2" x 3" x 21"	Plywood
1	Drawer face	3/4" x 23 7/8" x 6 1/2"	Plywood
1	Drawer face	3/4" x 23 7/8" x 5"	Plywood
2	Doors	3/4" x 11 7/8" x 18 11/16"	Plywood
2	Drawer bottoms	1/4" x 21 1/32" x 21 3/4"	Plywood
2	Cleats	3/4" x 1" x 21"	Poplar

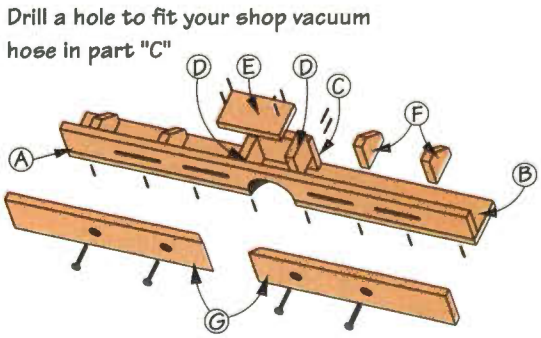
Schedule of Materials: Router Fence

No.	Letter	Item	Dimensions T W L	Material
1	A	Front	3/4" x 3" x 36"	Plywood
1	B	Base	3/4" x 4" x 36"	Plywood
1	C	Housing rear	3/4" x 3 3/4" x 5 1/2"	Plywood
2	D	Housing sides	3/4" x 2 1/2" x 3"	Plywood
1	E	Housing top	3/4" x 3 1/4" x 5 1/2"	Plywood
4	F	Braces	3/4" x 3" x 3"	Plywood
2	G	Fence faces	3/4" x 4" x 17 1/2"	Maple

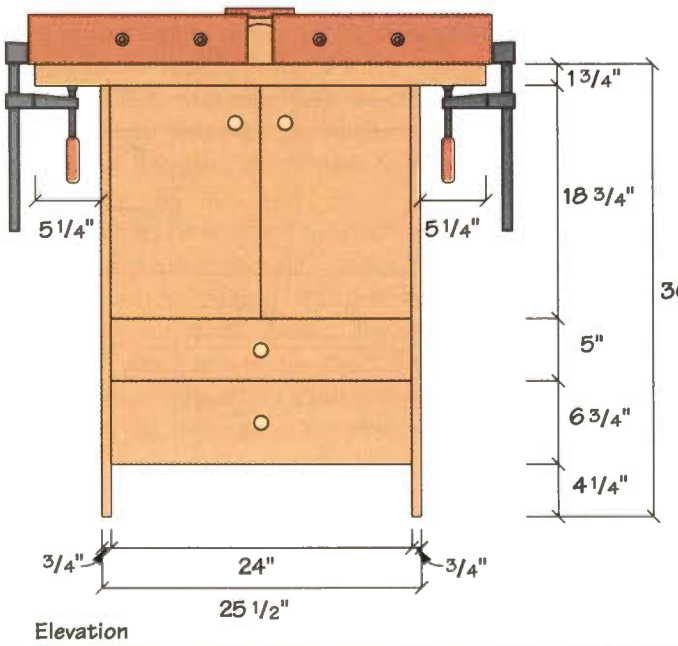
Diagrams



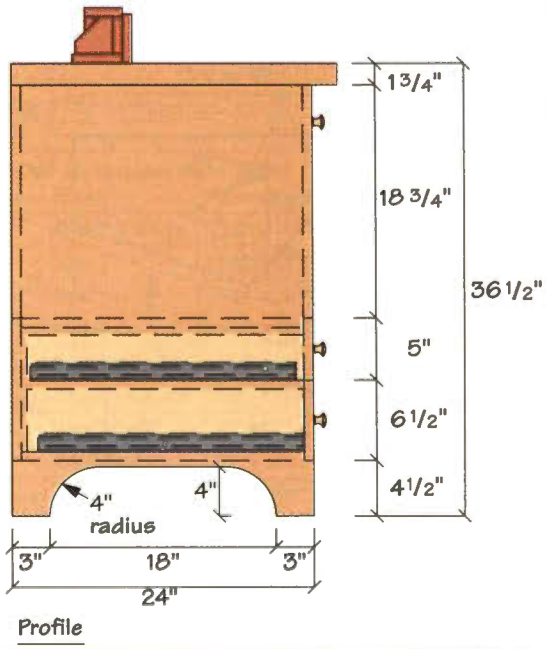
Plan



Exploded view of fence



Elevation



Profile

Mechanical Teddy Bear BANK

This old-fashioned mechanical teddy bear bank will please bear lovers young and old. Pull the lever down and the coin falls through the slot while the bear raises his arm in salute and nods his head.

STEP ONE: Begin by cutting out the 10 parts of the box, (the four sides, the base, the top and the four inside-corner cleats), as given in the Schedule of Materials.

STEP TWO: Cut four 1/8" x 3/8" rabbets on the inside ends of both sides, then rout the slot in the front for the lever and the coin slot in the top as shown in the diagrams.

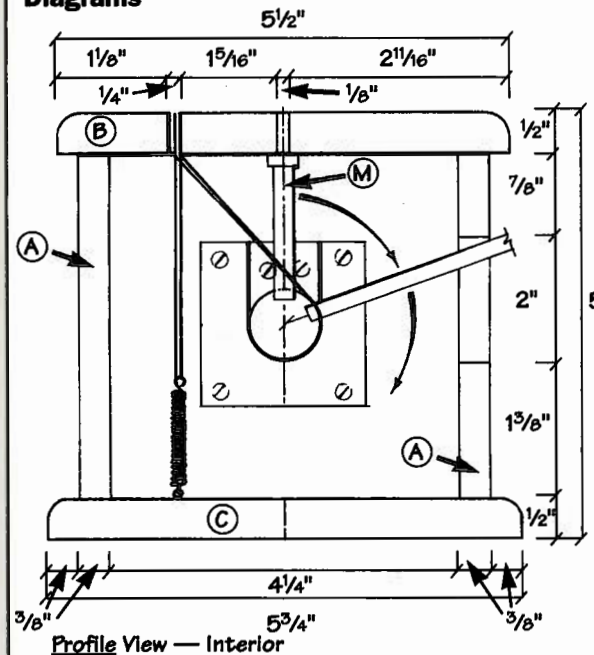
STEP THREE: Glue up the box, including the corner cleats.

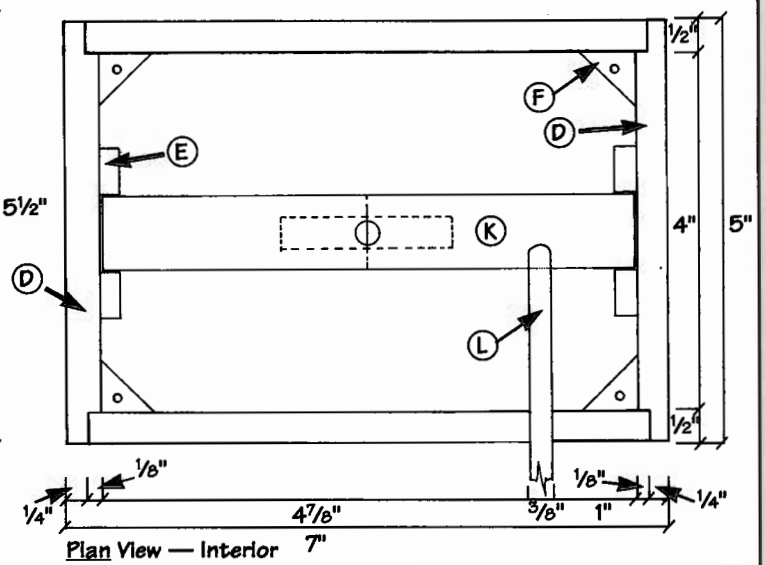
STEP FOUR: Round-over the edges of the base and the lid with a quarter-round router bit. Drill pilot holes through the lid and top into the corner cleats, countersink and screw the box together.

STEP FIVE: To create the bear, trace the patterns from the PullOut™ Plans onto your chosen wood. Then cut them out on the scroll saw. (Soft, easy-to-carve wood like basswood is best.) Trace the front view patterns of the head and body onto those pieces and cut them out. You should have six parts — the head, the body, two arms and two legs.

STEP SIX: Drill a 1/2" diameter hole completely through the length of the body, then ream the neck end of the hole to widen the front-to-back opening. This allows the head

Diagrams





to nod (see diagrams). Drill another hole through the bear's torso for the arm dowel.

STEP SEVEN: Drill 1/2" x 1/4" deep holes up into the head and into the left arm and fit stubs of 1/2" dowel for the neck and for the jointed arm.

STEP EIGHT: Use a knife to whittle the pieces to finished shape. Don't try anything fancy, just go for stylized chunky forms. Use an X-acto™ knife to detail the ears and face, then sand and apply an oil finish. Detail the nose, eyes and mouth with a dash of black acrylic paint.

STEP NINE: Drill two 1/16" diameter holes through the neck dowel. One side-to-side for the pivot rod, and another front-to-back for the control cords. The arm needs a single front-to-back through-hole for both the control cords and the pivot string.

STEP TEN: Tie the cords to the dowels as shown in the PullOut Plans. (Be sure you use strong twine and non-slip knots). There are four control cords — one to pull the head down, one to pull the head up, one to pull the arm down and one to pull the arm up.

STEP ELEVEN: Drill holes across the shoulders for the pivot rod, which is a simple finishing nail clipped to the appropriate length. Place the head into the neck opening and feed the rod through the shoulder and dowel holes. Cover these outer holes with wood putty.

STEP TWELVE: Drill a small opening where the right arm will attach. Tie the pivot string to the arm dowel, place in the shoulder opening and pull through the opposing hole. (See diagrams). The pivot strings can be knotted, and a small cut out made in the right arm to fit over the knot. This allows the arm to turn.

STEP THIRTEEN: Drill a hole in the top of the box to mate with the hole in the bottom of the bear's torso. Make sure all the control cords feed through the hole. Then glue the bear in place, adding the legs and right arm.

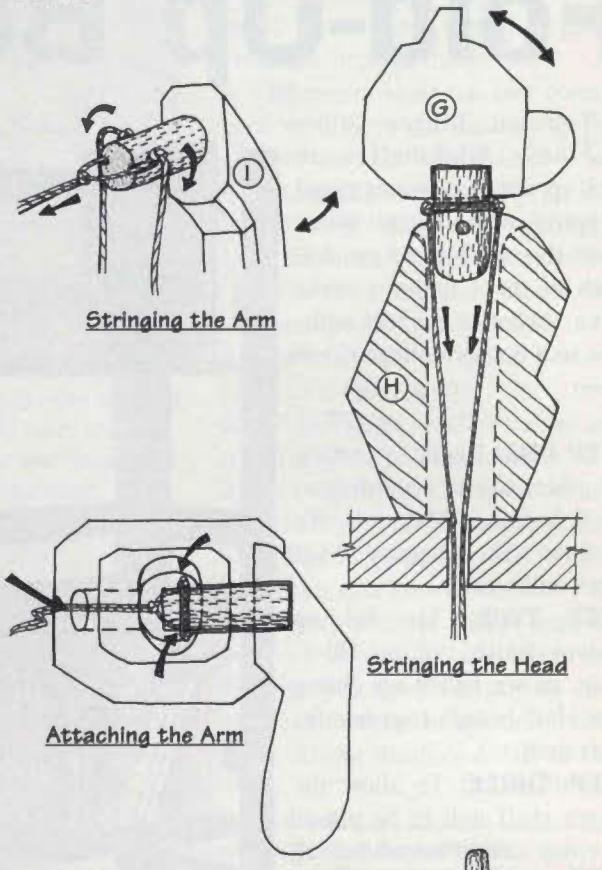
STEP FOURTEEN: Cut the shaft and levers for size. Drill holes in the shaft for the two levers at the angles and locations shown in the diagrams. Next, glue the levers into place. Glue a small piece of wood to the end of the slot lever to form the plate that holds the coin in the slot before it's released with a pull on the lever.

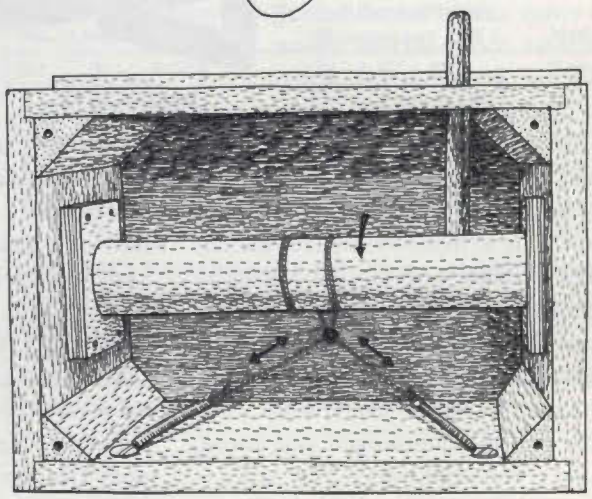
STEP FIFTEEN: Slip the shaft assembly into the end plates and place into position in the box. Only the end plates should be glued to the box to allow the shaft to move freely.

STEP SIXTEEN: Now attach the four cords to the turning mechanism. Fix either the "up" or the "down" cords to a lightweight tension "pulling" spring so that the lever action becomes the positive movement. The other two cords are wrapped and glued around the shaft. Instant glue (cyanoacrylate) is good for quickly locking the strings in place.

In action, the lever turns the shaft, and the strings in turn pull down on the arm and the head. It's a good idea to have a dry run before fixing the strings in final position.

Details





Attaching the springs and shaft

Schedule of Materials: Bear Bank

No.	Letter	Item	Dimensions T W L	Material
2	A	Front & back	3/8" x 4 1/4" x 6 1/2"	Mahogany
1	B	Top	1/2" x 5 1/2" x 7 1/2"	Mahogany
1	C	Bottom	1/2" x 5 3/4" x 7 3/4"	Mahogany
2	D	Sides	3/8" x 5" x 4 1/4"	Mahogany
2	E	End plates	1/4" x 2 1/2" x 2 1/2"	Plywood
4	F	Corner cleats	5/8" x 5/8" x 4 1/4"	Mahogany
1	G	Bear head	2" x 2" x 2"	Basswood
1	H	Bear body	2" x 2" x 3"	Basswood
2	I	Arms	1" x 3/4" x 3"	Basswood
2	J	Legs	3/4" x 2" x 3"	Basswood
1	K	Shaft	1" x 6 3/16"	Oak
1	L	Handle lever	1/4" x 3 1/2"	Maple
1	M	Coin slot lever	1/4" x Cut to fit	Maple

Fold-Up Bookshelves

Unusual hinges allow these bookshelves to fold up for easy storage and shipping, while biscuit joints make this a weekend project. Both of these features make these shelves a perfect addition to a den or college dorm room.

STEP ONE: Begin by cutting the pieces to size according to the Schedule of Materials. We used red oak, but many wood types will work.

STEP TWO: The folding shelves finish out at 10½" wide, so we ended up gluing two 5¼" boards together for each shelf.

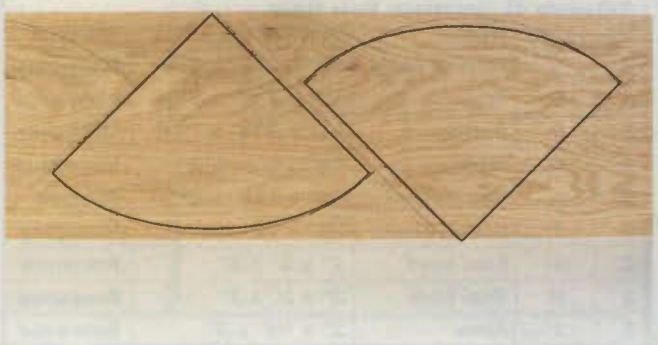
STEP THREE: To allow the corner shelf unit to be placed on either side of the wall shelf, the three corner shelves are cut with the grain running across the radius. **Photo 1** shows the layout of the shelves for the best material yield. The three shelves can then be clamped together and sanded at the same time to make the shelves match.

STEP FOUR: Lay out the rail locations on the stiles as shown in the diagram. We used a Ryobi Detail Biscuit Joiner to assemble the end frames, though dowels also would work well. Note that the non-hinged side frame in the corner unit uses a 3¼" stile.

STEP FIVE: With the glue on the frames dry, match end frames with their back stiles to form what will become the end assemblies. Next draw a 1" radius on the four outside corners of each end assembly, cut and sand to finish.

STEP SIX: Use an ⅛" roundover router bit to ease all the edges of the end assemblies except the joint edges where the side frames and back stiles meet. Use the same bit to round over the long edges of the rectangular shelves and back rails, and the curved edges of the corner shelf.

STEP SEVEN: To attach the end frames to the back stiles, use 10mm invisible barrel hinges **(photo 2)**. This type of hinge avoids interference with the shelf ends when they fold up. If you choose to use more simple butt



1 Lay out the 10¾" squares in an interlocking pattern on the board. A set of trammel points is next used to draw the 10¾" radius. The shelves can then be cut apart and shaped on the band saw, or with a jigsaw.

2 Lay out three hinges per joint, spaced on the center of the side rails. The 10mm hinges should be drilled approximately 3/16" from the inside edge of the joint to allow hinge clearance.

3 Drill 25/64" x 3/8" deep holes in both the shelf and the back stiles. The hole should be located 1/2" in from the back edge of the shelf and centered. The hole on the stile is located 1 1/2" from the back edge.

4 The mirror clips fit up into the slot on the underside of each shelf to lock the sides in place and also provide front support for the shelf.

hinges, the shelves will need to be almost 3/8" shorter to allow clearance space. Mount the hinges by drilling 13/32" x 7/16" deep holes on the back stiles and connecting frame stile, then insert and tighten the hinges.

STEP EIGHT: The shelves are attached 2" below the side rails. For the large shelf unit, use Roto hinges **(photo 3)**. This allows the shelves to pivot upward and store behind the folding side frames.

Use 10mm invisible barrel hinges for the corner shelves, again drilling 13/32" x 7/16" deep holes, locating the shelves two inches below the cross rails on the 11 1/4" wide side frame.

STEP NINE: Connect the back rails of the wall unit to the back stiles with 1 1/2" flat-head screws.

Countersink the hole 1/2" to allow space for a dowel button or plug to cover the head of the screw.

The corner shelf has one common back stile. Screw it flush to the back edge of the 3 1/4" side stile.

STEP TEN: Use a mini-biscuit joiner to cut a 3/8" deep slot, starting 1/4" back from the front of each shelf, and 5/16" in from the end. Screw metal mirror clips to the side frames to hold the shelves level two inches below the cross rails **(photo 4)**.

STEP ELEVEN: Sand all the pieces to a 150 grit finish. Use a stain or aniline dye to apply the first coat of color, then follow with a couple coats of clear finish, sanding lightly with 360 grit sandpaper between coats.

If you want to make more than one set of shelves and stack them, simply drill holes for dowels in the tops and bottoms of the side frames.

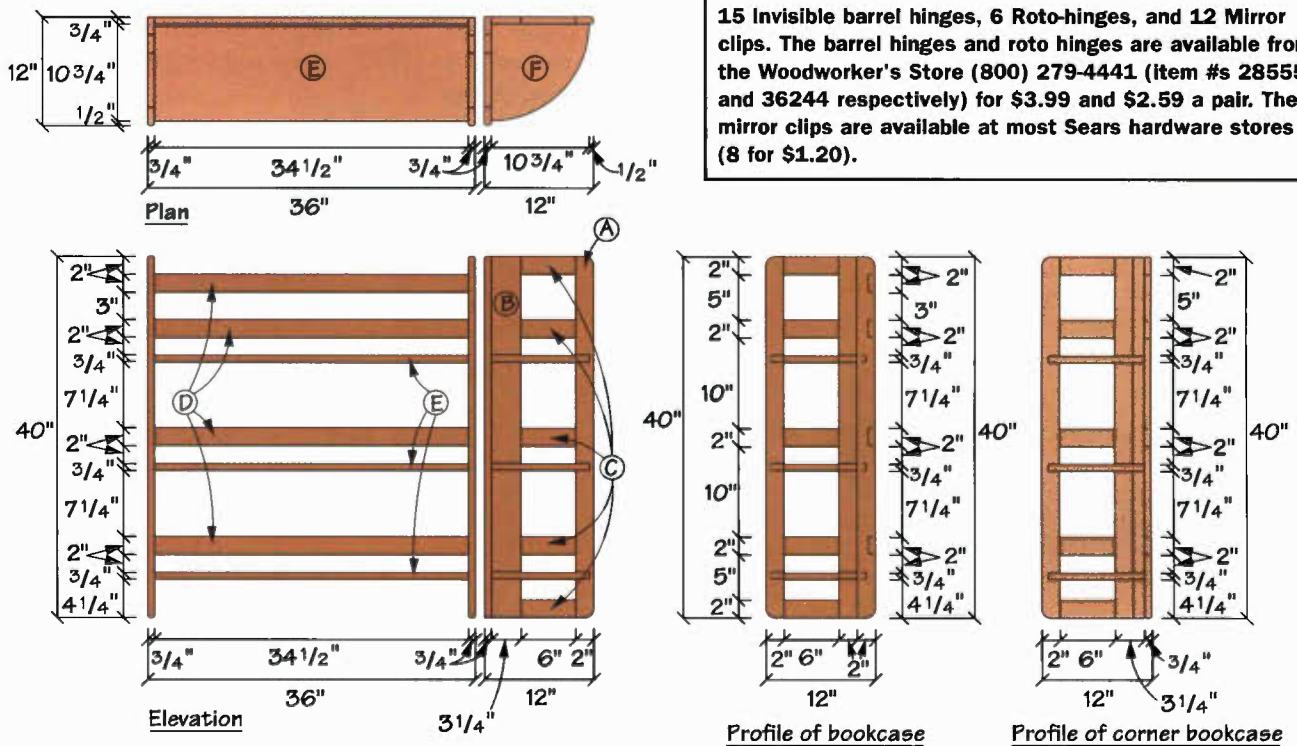
Alisha Woolery & David Thiel
— PW staff

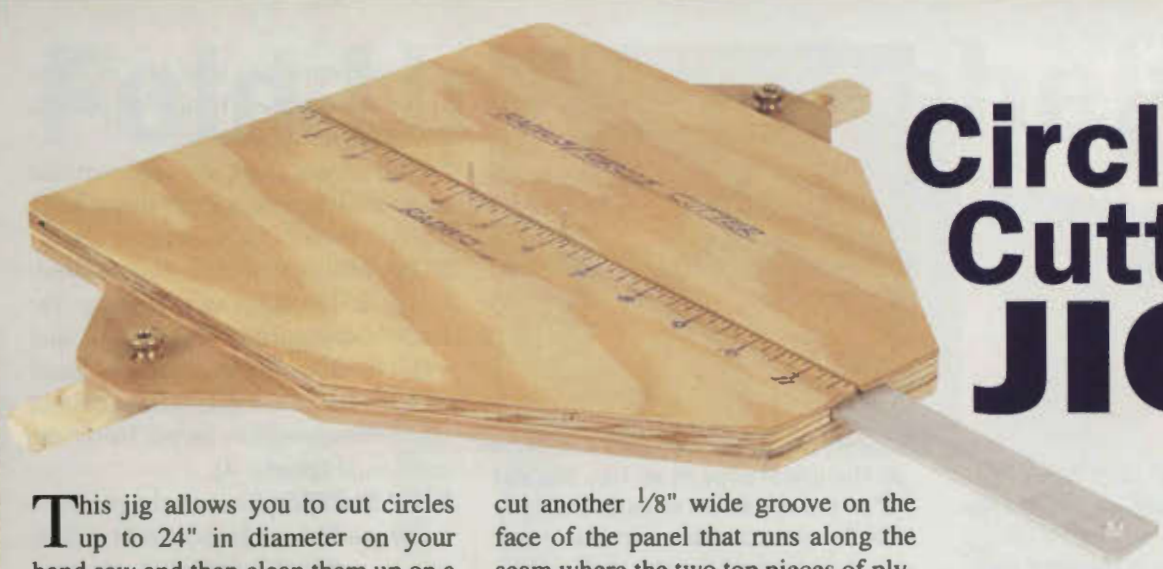
Schedule of Materials: Fold-up Bookshelves

No.	Letter	Item	Dimensions T W L	Material
10	A	Stiles	3/4" x 2" x 40"	Red Oak
1	B	Stile	3/4" x 3 1/4" x 40"	Red Oak
24	C	Side rails	3/4" x 2" x 6"	Red Oak
4	D	Back rails	3/4" x 2" x 34 1/2"	Red Oak
3	E	Wall shelves	3/4" x 10 1/2" x 34 1/2"	Red Oak
3	F	Corner shelves	3/4" x 10 3/4" x 10 1/2"	Red Oak

15 invisible barrel hinges, 6 Roto-hinges, and 12 Mirror clips. The barrel hinges and roto hinges are available from the Woodworker's Store (800) 279-4441 (item #s 28555 and 36244 respectively) for $3.99 and $2.59 a pair. The mirror clips are available at most Sears hardware stores (8 for $1.20).

Diagrams





Circle-Cutting JIG

This jig allows you to cut circles up to 24" in diameter on your band saw and then clean them up on a disk sander. It uses an idea that's been around for decades, with a few refinements of my own.

STEP ONE: First cut the pieces according to the sizes in the Schedule of Materials. The body is made of three pieces of plywood. The bottom plate is a piece of 1/4" plywood and the two top plates are 1/2" plywood.

STEP TWO: Cut a 1/8" groove in one edge of each of the top plates. These grooves will hold the sliding aluminum bar (see diagram detail). Then cut the corners off the top panels following the measurements in the diagram.

STEP THREE: Cut the bottom panel to the shape indicated in the diagram and glue it to the top panels, which should be glued along the edges you just grooved. When the glue is dry, cut another 1/8" wide groove on the face of the panel that runs along the seam where the two top pieces of plywood meet. You should now be able to put the sliding aluminum bar into the groove and see it move through the panel.

STEP FOUR: Drill and install a 1/4" insert for the 1/4" thumbscrew that will lock the sliding bar in place.

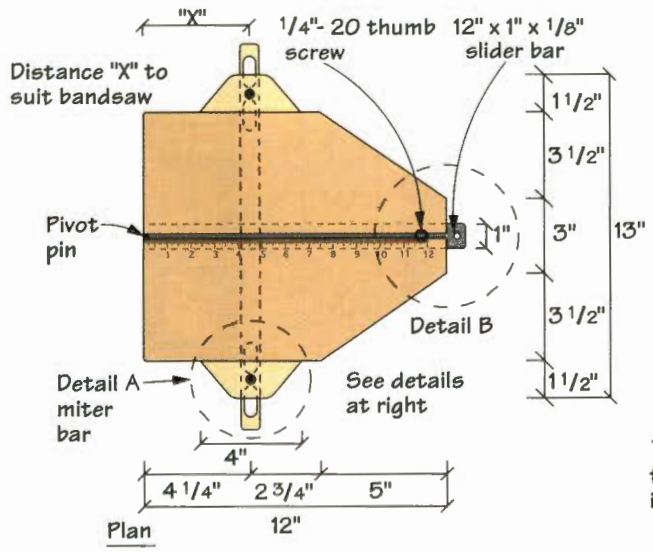
STEP FIVE: Attach the screw pivot to the end of the sliding aluminum bar. I used a #2-56 machine screw inserted into the bar after tapping the bar using a tap and die set. After inserting the 3/4"-long machine screw, cut off the head.

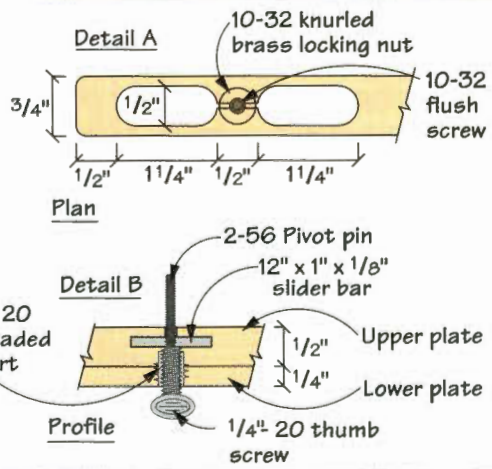
STEP SIX: Cut the miter bar to rough size and plane until it fits snugly but moves smoothly in your band saw's miter slot.

STEP SEVEN: The miter bar is locked into the miter slot with brass locking nuts on the top and screws that are flush on the bottom of the miter bar. Tightening the nuts compresses the miter bar vertically and expands it horizontally, locking it in place. Chain-drill holes on the miter bar in the locations shown in the diagram. Drill clearance holes for the locking nut and install the hardware. Attach the miter bar to the bottom of the jig using glue and screws. If desired, add a measuring gauge to your jig. To use the jig, place the device in your miter slot and set the aluminum bar for the radius you wish to cut. Lock the aluminum bar into place and then lock the jig into place on your table. Make a small hole in the center of the material you want to cut and place the material on the machine screw. Start the saw, pivot the material and your circle is cut.

—Angelo Varisco

Diagram





Schedule of Materials: Circle-Cutting Jig

No.	Item	Dimensions T W L	Material
1	Bottom plate	1/4" x 14" x 12"	Plywood
2	Top plates	1/2" x 5" x 12"	Plywood
1	Miter bar	3/8" x 3/4"x 15 1/2"	Oak
1	Slider bar	1/8" x 1" x 12 3/4"	Aluminum

Waste Basket COVER

If your waste basket doesn't match your kitchen decor, here's one solution: build a cover for the waste can. Your trash container probably will be a different size than mine, so use these measurements as a guide only. I left about 3/4" space around the can at the top, including the distance from the top of the container to the top of the cover. Because my waste basket tapered at the bottom, the clearance wasn't critical.

STEP ONE: All of the cover's parts are made out of 1 x 12 southern yellow pine. Take into consideration that 1 x 12s are actually 3/4" x 11 3/4". One panel made from two 8-foot boards should make most covers.

STEP TWO: Glue up the 1 x 12 boards into one panel. Crosscut the front, sides and top from the panel. When you finish ripping the individual parts to width, use the scrap to glue up the bottom panel.

STEP THREE: When all parts are cut according to the Schedule of Materials, begin assembly by nailing the sides to the bottom. Nail the back rail at the top back of the box, then nail the front to the box.

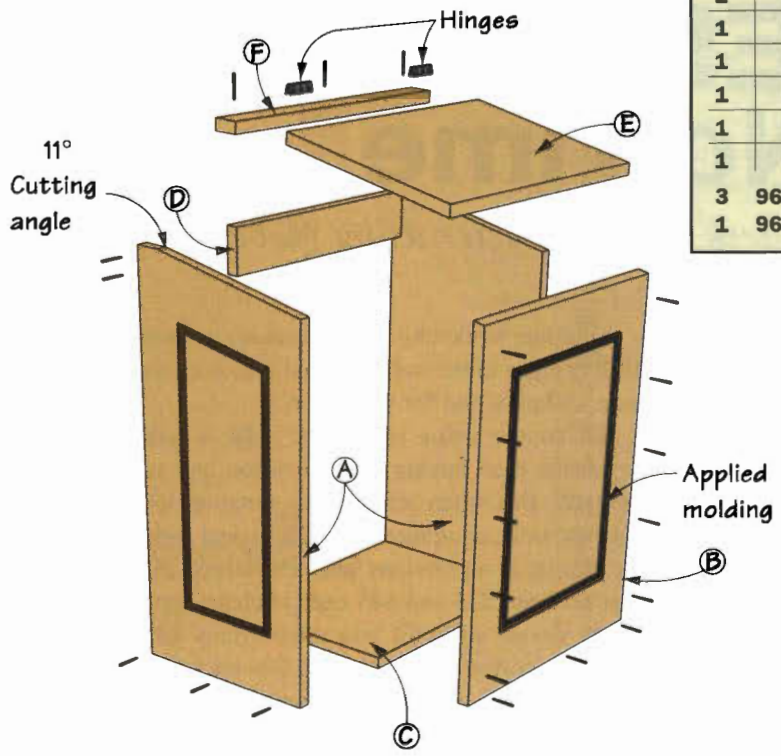
STEP FOUR: The mating edges of the lid and top cap should be beveled to fit on the top of the box (see the diagram for details). I used an overlay hinge,but feel free to use a butt hinge. Just allow for a gap between the top and cap.

STEP FIVE: Nail moulding to the front, sides and around the base to create a "frame and panel" look.

STEP SIX: After sanding, prime and paint the outside and finish the inside with clear polyurethane. I used latex paint on the outside to match the blue in my kitchen, and a white paint on the trim moulding.

—Jim Stuard, PW staff

Diagrams

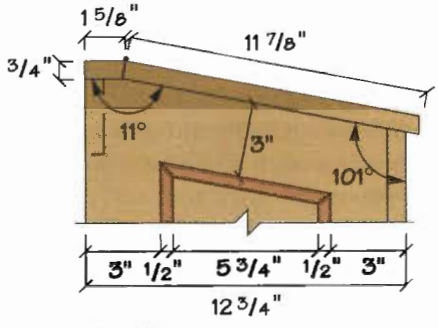


Schedule of Materials: Waste Basket Cover

No.	Letter	Item	Dimensions T W L	Material
2	A	Sides	3/4" x 12" x 25 3/4"	Pine
1	B	Front	3/4" x 17 1/2" x 23 7/8"	Pine
1	C	Bottom	3/4" x 12"x 16"	Pine
1	D	Back Rail	3/4" x 3"x 16"	Pine
1	E	Lid	3/4" x 11 7/8" x 18 1/2"	Pine
1	F	Top Cap	3/4" x 1 5/8" x 18 1/2"	Pine
3	96" lengths of 1/2" half-round moulding			
1	96" length of 1/4" x 3/4" shoe moulding			

Detail of top

Lid and cap are cut at a 51/2° angle at the hinge joint



Profile

TIMELESS DESK In No Time

This Sheraton-style computer desk is made easier using pieces from a kit.

OK WOODWORKERS, especially you beginners out there, have you ever wanted to build one of the more complicated projects in *Popular Woodworking* and then said to yourself (pick one):

- That project has turnings. I can't do that!
- How am I supposed to make a solid wood top with the limited tools I have?
- Or, I couldn't cut a dovetail on a bet.

I have one solution to all of these problems: Cheat!

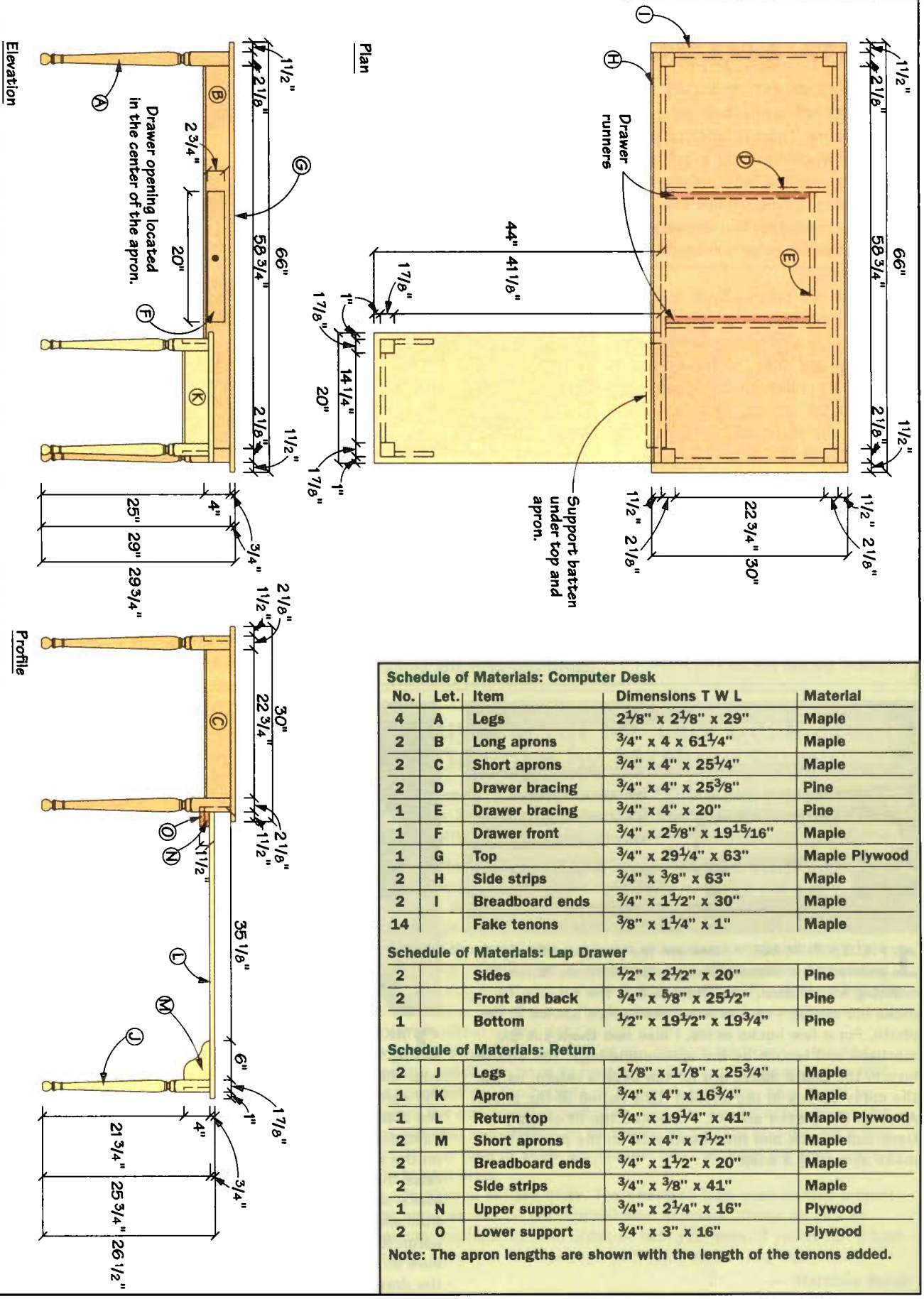
Some of you might say, "You can't cheat on things like cutting dovetails and turnings. You either can do them or you can't."

To this I say, But you *can* cheat, with a kit. There are so many suppliers, methods and materials out there that you can easily put together whatever type of project you want. To show how easy this can be done, I decided to assemble a computer workstation built around a reproduction of an 18th century tavern table. I used a custom-made kit for the base and plywood for the top.

Of course, using parts from a kit is going to be more expensive than buying the raw wood and turning the legs yourself. But when you're in a situation where you don't have the time, equipment or skills to deal with rough lumber, the choice is an obvious one. Pre-turned dining table legs cost between $25 and $45 each in cherry, on average. More exotic woods will cost you more. Many kit manufacturers also will mortise your legs for a few bucks per leg (which is worth the cost), and will even supply the table aprons, which is great when you need to finish that table fast.

And when you compare the cost of a kit to the $1,500 price tag this desk would carry at a fine furniture store, the kit doesn't seem like much of an expense at all.

Diagrams



Schedule of Materials: Computer Desk

No.	Let.	Item	Dimensions T W L	Material
4	A	Legs	2⅛" x 2⅛" x 29"	Maple
2	B	Long aprons	¾" x 4 x 61¼"	Maple
2	C	Short aprons	¾" x 4" x 25¼"	Maple
2	D	Drawer bracing	¾" x 4" x 25⅜"	Pine
1	E	Drawer bracing	¾" x 4" x 20"	Pine
1	F	Drawer front	¾" x 2⅝" x 19 15/16"	Maple
1	G	Top	¾" x 29¼" x 63"	Maple Plywood
2	H	Side strips	¾" x ⅜" x 63"	Maple
2	I	Breadboard ends	¾" x 1½" x 30"	Maple
14		Fake tenons	⅜" x 1¼" x 1"	Maple

Schedule of Materials: Lap Drawer

2		Sides	½" x 2½" x 20"	Pine
2		Front and back	¾" x ⅝" x 25½"	Pine
1		Bottom	½" x 19½" x 19¾"	Pine

Schedule of Materials: Return

2	J	Legs	1⅞" x 1⅞" x 25¾"	Maple
1	K	Apron	¾" x 4" x 16¾"	Maple
1	L	Return top	¾" x 19¼" x 41"	Maple Plywood
2	M	Short aprons	¾" x 4" x 7½"	Maple
2		Breadboard ends	¾" x 1½" x 20"	Maple
2		Side strips	¾" x ⅜" x 41"	Maple
1	N	Upper support	¾" x 2¼" x 16"	Plywood
2	O	Lower support	¾" x 3" x 16"	Plywood

Note: The apron lengths are shown with the length of the tenons added.

File Base

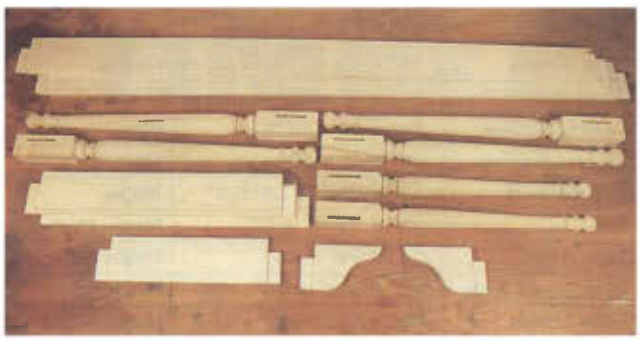
THE COMPUTER WORKSTATION we made has one small shortcoming: There is only one drawer in the whole desk. So to add some storage space, we built this small file cabinet that fits snugly under the desk or the return. The two drawers can hold either regular or legal-sized hanging files.

Begin the project by cutting the parts as described in the Schedule of Materials. Iron on edge veneer tape to the front and back of the plywood sides. The sides should equal the width of the bottom, plus the thickness of the back and bottom front edge. This makes up the skirt around the base. As shown in the diagram, the case bottom sets up 7/8" from the cabinet's bottom edge. This placement raises the cabinet about 3/4" above the floor and hides the casters nicely. It also allows the 1/2" clearance space between the cabinet top and desk apron.

Next lay out the biscuit joints for the box. Carefully check the layout measurements. Offsetting a perpendicular panel assembly is tricky and requires accurate layout! First glue the bottom to the back; then glue the sides to this assembly. After the box is assembled, glue the solid wood edging onto the top piece of plywood. Scrape and sand flush.

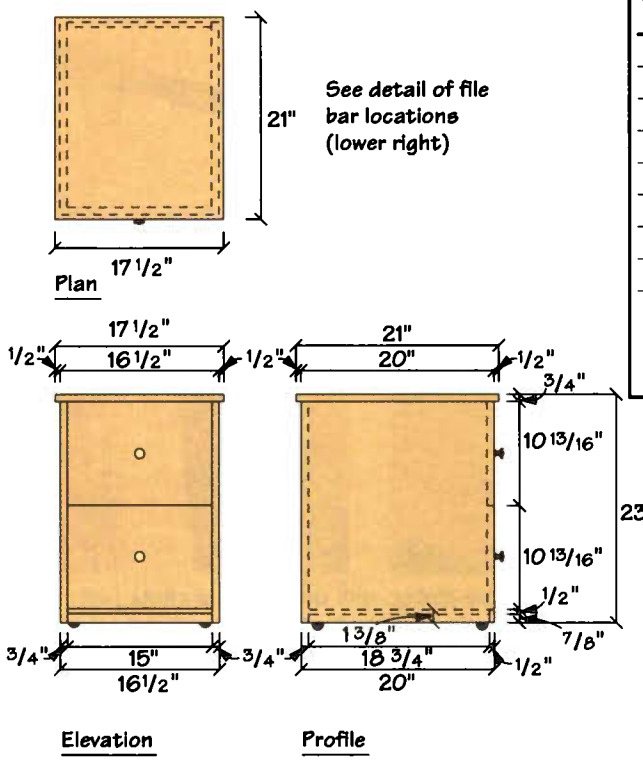
Rout the top to match the computer desk components. Position the top on the box for equal overhang on all sides. (Make sure the drawer opening is square.) Attach the top with "L" brackets and screws.

Cut out the drawer parts. Lay out the slots for the aluminum file bars according to the diagram. Using a



1 PIECES IN PLACE • Here are the pieces of the kit I ordered from Classic Designs by Matthew Burak (for ordering information, see "How to Buy the Kit..."). To make life easier, I also ordered the aprons shown in the photo. For a few bucks extra, I also had them cut the mortises and tenons on the aprons and legs. The shorter legs in the photo above are for the desk's return, as are the curvy aprons in the bottom right corner of the photo. After all the pieces arrived, I checked the fit of the mortises and tenons and then numbered all the pieces to make assembly a snap.

2 TAKE THE PLUNGE • Lay out the drawer front according to the size in the diagram on your apron. Raise your table saw's blade up so it's about 1/8" higher than the apron. Mark on your fence where the front edge of the blade is and the back edge. This will give you some guidance as you make the cut. Lower the blade and turn on the saw. Hold the apron against the fence and slowly raise the blade until it is 1/8" higher than your material. Make sure, of course, that your hands are well away from where the blade will pierce the wood. Now push the apron forward to cut the drawer front. Repeat this procedure on the other side of the apron and cut the ends of the drawer front with a coping saw.

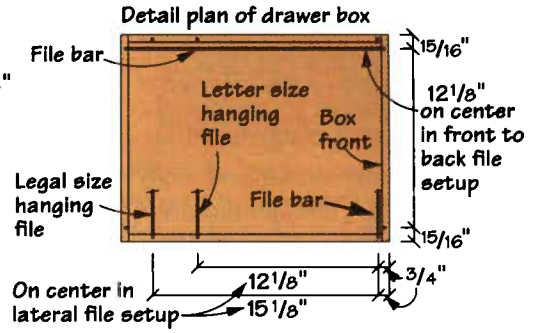


Schedule of Materials: File Box

No.	Item	Dimensions T W L	Material
2	Sides	3/4" x 20" x 23"	Plywood
1	Bottom	1/2" x 15" x 18 3/4"	Plywood
1	Back	3/4" x 15" x 23"	Plywood
1	*Top	3/4" x 17 1/2" x 21"	Plywood
2	**Drw fronts	3/4" x 14 3/4" x 10 7/16"	Plywood
2	Box frnts & backs	1/2" x 9 1/4" x 14"	Pine
2	Box sides	1/2" x 9 1/4" x 17 5/8"	Pine
2	Drawer bottom	1/4" x 13 1/2" x 17 1/2"	Plywood
1	Bottom edging	1/2" x 1 3/8" x 15"	Maple

*Full top size with edging added on all four sides.

**Full drawer front size with cockbeading on all four sides.



router with an edge guide, rout a 1/8" vertical slot about a 1/4" deep and 3/4" long. This leaves some of the file bar above the edge of the drawer. Rout half-blind dovetails on the drawer parts and assemble. Nail the bottoms into a 1/4" x 1/4" rabbet in the bottom of the drawer. Install the drawer slides, drawers and fronts. Turn the whole unit over and install the casters on the bottom, making sure to allow clearance for the wheels to swivel. Place the box on its wheels and finish.

—Jim Stuard, PW staff

STEP 1 Check Your Kit • When your kit arrives in the mail, it's a good idea to first check the fit of the parts. This is not a problem you want to discover while gluing. Also, make sure you have all of the parts and hardware before beginning assembly.

STEP 2 Cut Your Drawer Front • Though the procedure is a little tricky, I decided to cut the drawer front for the lap drawer out of the apron. This saved me a little bit of wood and demonstrates how you can match the grains should you wish to use a non-painted finish. See the photo for an explanation on how to make these plunge cuts.

STEP 3 Frame the Inside • Now dry-clamp the base and cut out the pieces for the inside frame according to the Schedule of Materials. Fit the internal drawer bracing together, then disassemble it and drill the pocket

How to Buy the Kit for This Desk From "Classic Designs by Mathew Burak"

To order the Sheraton Computer Desk Kit (item # 303-DK) call Classic Designs (P.O. Box 329, St. Johnsbury, VT 05819-0329) at (802) 748-9378. The kit is priced from $198 in maple — custom sizes available.

ABOUT THE KIT • This computer station design, like most design inspirations, was driven by necessity. Needing both room for a computer and a desk space for office work, the desk with keyboard extension was a natural evolution. The beauty of this design is it excels at both flexibility and ease of construction.

The flexibility of the removable keyboard extension has proven itself to me many times as I have reconfigured or moved to new office space. Depending on your needs, you can put the extension in line on either the right or left side of the desk. For corner installations the keyboard extension can be connected to the front apron, either to the right or left of the drawer.

You can modify the length or width of the desk or keyboard extension, depending on the space you have to work with. The only measurements that must remain constant are the heights of the work surfaces. Also, don't be afraid to change the construction materials. The top can be made from solid hardwood for a formal installation, or as simple as painted plywood for a low-tech solution. If your time or skills are limited, you can have the tops made by professionals in your area.

The legs you choose set the style. The Sheraton legs used on this project are the same ones we use on our reproduction furniture. These as well as other choices are available by mail order, or turn your own. If you're not a turner you can make square or tapered legs with fairly basic shop equipment.

— Matthew Burak

holes that will attach the frame to the top. Glue the base, clamp and let dry.

3 GLUE THE FRAME • Before gluing, drill the screw pockets (left) using a 5/8" Forstner bit. When you assemble the base, glue the shorter ends together first (right). Then glue the rest of the table. This keeps you from having to use and manage a lot of clamps. It's also a good idea to screw in the drawer guides at this point.

STEP 4 Begin the Tops • While the base dries, start making the tops for the desk and the return. Cut both tops out of maple plywood. Then cut the breadboard ends and the side edging. Glue the side edging on and plane, scrape and sand flush. Also cut these ends flush. When laying out the cut for the plywood top use the veneer pattern to establish the middle of the panel. This makes an attractive top, so use the joint of the veneer or an entire section of veneer as the center of the top.

Next make the breadboard ends with the fake through-mortises. Breadboard ends were a traditional way to hide end grain, or, in this case, the plywood core. Make the breadboard ends a little thicker and about 1/4" longer than the width of the top.

STEP 5 Peg Your Tenons • Now that the frame is dry, it's a good idea to add pegs to your tenons. This will create a joint that will last for generations. And if you stain your base instead of painting it, the contrasting color of the white oak pegs is a nice touch.

Build the Drawers

Everyone has their own favorite way to build drawers. I made my drawers using some pine I scavenged from a box

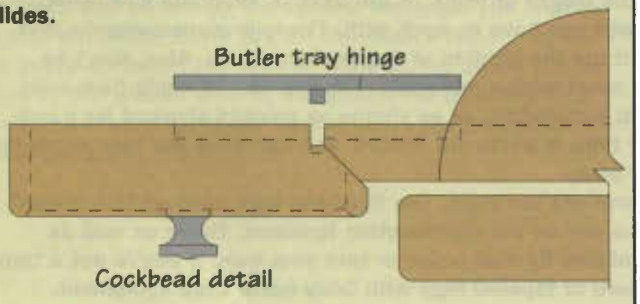
Keyboard Riser

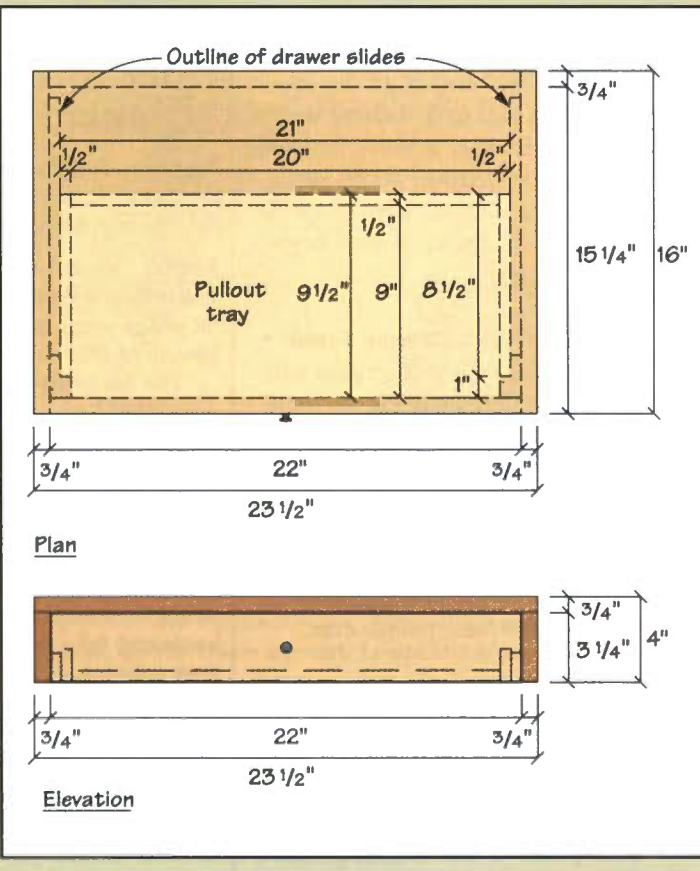
The keyboard riser is a nice addition to this project. The size in the Schedule of Materials fits most standard keyboards. If your keyboard is an odd size (because it incorporates a track ball, track pad or is one of those ergonomic things), you might have to adjust the width or depth of the box.

First cut the parts according to the Schedule of Materials. Then assemble the box with biscuits and the tray with nails and glue.

Glue cockbeading onto the front and cut the groove on the bottom of the front according to the diagram. This groove allows the front to nicely fold beneath the keyboard tray.

Then rout the inlays for the butler tray hinges and attach them. Finally, attach the drawer tray slides.





that our band saw came in. (Hey, we waste nothing here in the *Popular Woodworking* shop.)

I used a dovetail jig to make the dovetail joints on the drawer box. Because the jig has a limited number of widths it can accommodate, the jig determined what my drawer side widths were. After cutting your dovetails with a router, place a little glue into each pin opening and tap the drawer parts together.

Here's a tip for that: Use a block to tap the drawer parts together. The block distributes the force of the hammer blows equally and keeps the dovetails and parts from splitting.

I added cockbeading around the edge of the drawer front and then attached it to the pine drawer. With the drawer front attached, insert it in the opening. Glue in blocks at the back that stop the drawer at the proper depth.

After finishing the top, we painted the base with a historically appropriate color. (We used Benjamin Moore's Essex Green #43 from their MoorGlo collection, which is available premixed, right off the shelf.)

4 BREADBOARD ENDS • Rout the mortises for the fake tenons using a 1/4" plunge bit (left). Then chisel square the ends of the slots and glue in the fake tenon (right). Cut these as close to flush as possible. Use a biscuit joiner and glue to attach the breadboards to the top, then plane and scrape flush. Belt sand or plane the fake tenons flush and sand the ends of the breadboards flush. Rout a 1/8" radius on all the top edges. Finish sand the tops.

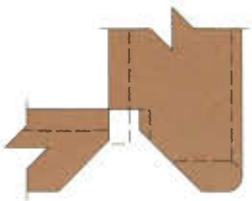
To assemble, lay the top upside down on a blanket or other clean, protective surface and screw the bases to the tops. Using a piece of plywood cut according to the diagram as a batten, attach the return to the desk base. **PW**

—Jim Stuard, PW staff

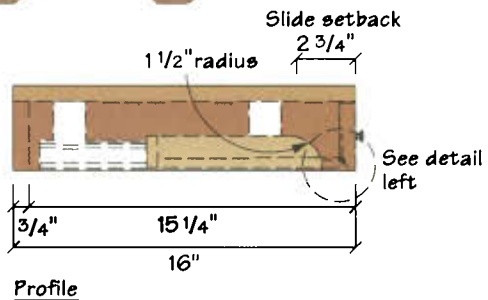
Schedule of Materials: Keyboard Riser

No.	Item	Dimensions T W L	Material
1	Top	3/4" x 23 1/2" x 16"	Plywood
2	Ends	3/4" x 3 1/4" x 16"	Plywood
1	Drawer fronts*	3/4" x 3 1/8" x 21 3/4"	Baltic birch
1	Drawer bottom	1/2" x 9" x 20"	Baltic birch
2	Drawer sides	1/2" x 1 1/2" x 8"	Baltic birch
2	Drawer caps	1/2" x 3/4" x 8"	Solid maple

* finished size includes cockbeading



Detail of hinged front. Butler tray hinge and cockbeading shown dashed to clarify profile.



Profile

5 SQUARE PEGS, ROUND HOLE • First drill 1/4" holes about 1 1/4" into the leg. Each hole is about 1" from the apron's edge. Then rip 1/4" square oak strips from some scrap. Make plugs that are about 2" long. Sand or whittle one end to be roughly round. Knock the peg into the hole until the square edges of the peg begin to cut into the leg (do not use glue). To make your pegs look authentic, cut the waste with a saw but put a piece of sandpaper between the blade and the leg as a spacer. Your pegs will stand just a little proud of the leg.

Glastonbury Chair

More than an interesting chair, King Arthur sat here, well....

IN 1500, Glastonbury Abbey was the richest and oldest Christian enclave in all of England. It had been a place of Christian worship since the first century and reputedly the site of the tomb of King Arthur. Around this time, a monk named John Arthur Thorne, treasurer for the abbey, requisitioned a chair for his use.

The chair he requested was a "faldstool" (or folding stool, though the medieval definition refers to a *knock-down design* rather than a modern folding one). This chair was set apart from other faldstools of the period by its richly decorative Latin script. Across the back the words "Monacus Glastome," identified its place of origin, and on the arms were the phrases, "God save him," "May the Lord give him peace," and "Praise be to God." On the inner face of the right arm is the name Johanus Arthurus, the Latin version of John Arthur Thorne.

In 1539 the fate of the great abbey was sealed when Henry VIII dissolved the monasteries (along with the Pope's control of the Catholic Church in England). While Henry watched, his troops burned Glastonbury Abbey to the ground and murdered the abbot and two of the monks, including Brother Johanus Arthurus. Though the abbey was destroyed, the one surviving chair is now on display at the Bishop's Palace in Wells, Somerset, in England.

This reincarnation of that chair is not only visually striking but also a challenge to construct. The carving is extensive and detailed, and some of the joints are trickier than they might appear. However, if you're willing to take your time, the results will be stunning.

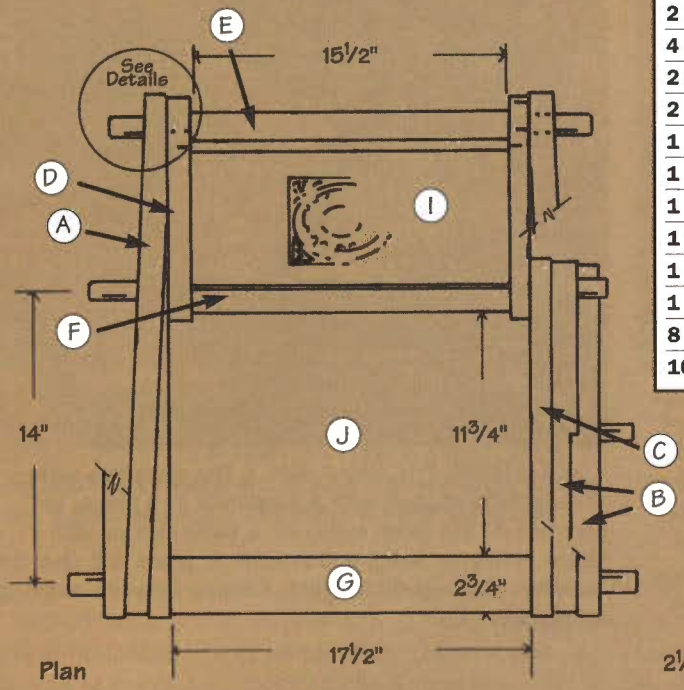
The drawings, Schedule of Materials and the PullOut™ Plans provide all of the information necessary to build this chair, but I suggest making cardboard patterns for the arm and leg pieces. Deviations from the drawings might slightly alter the angle of some of the miter cuts or the location of the dowel holes. Except for the maple dowel pins and wedges, the original chair was made of white oak.

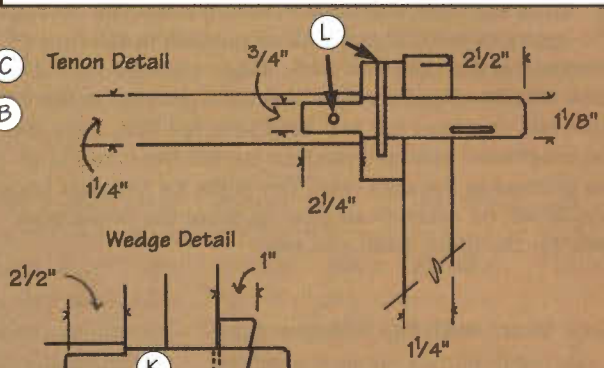
Diagrams

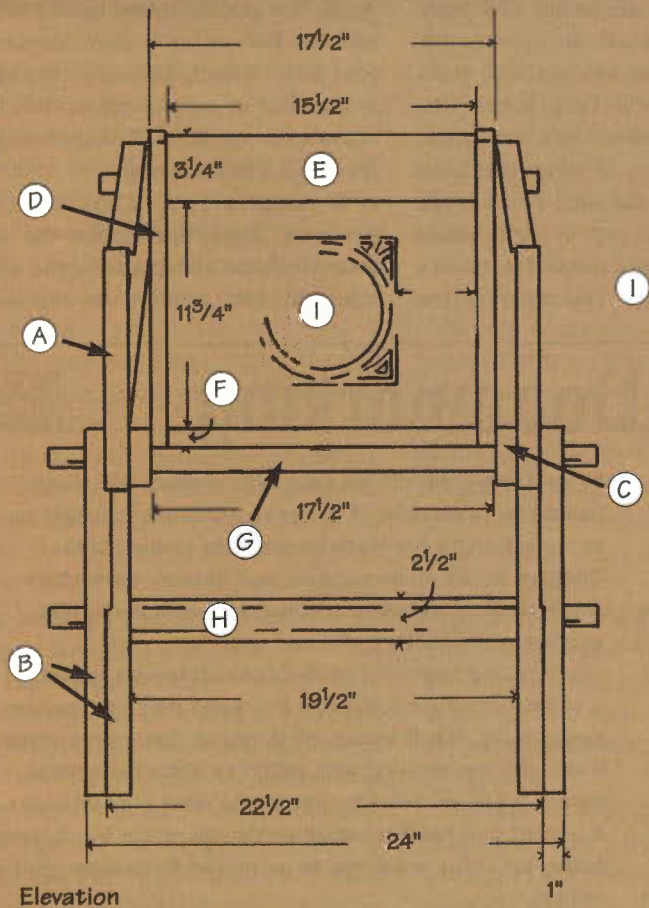
GLASTONBURY CHAIR

Schedule of Materials: Glastonbury Chair

No.	Letter	Item	Dimensions T W L	Material
2	A	Arms	1¼" x 8" x 27"	White Oak
4	B	Legs	1" x 2¾" x 25½"	White Oak
2	C	Side rails	1" x 3" x 17¼"	White Oak
2	D	Side rails	1" x 3" x 18½"	White Oak
1	E	Back rail	1¼" x 3½" x 15½"	White Oak
1	F	Rear seat rail	1¼" x 2¾" x 15½"	White Oak
1	G	Front seat rail	1¼" x 2¾" x 17½"	White Oak
1	H	Stretcher	2¼" x 2¼" x 19½"	White Oak
1	I	Back panel	¾" x 12½" x 16¼"	White Oak
1	J	Seat panel	¾" x 18¼" x 12½"	White Oak
8	K	Dowels	1⅛" x 7¼"	Maple
16	L	Dowels	⅜" x 2"	Maple







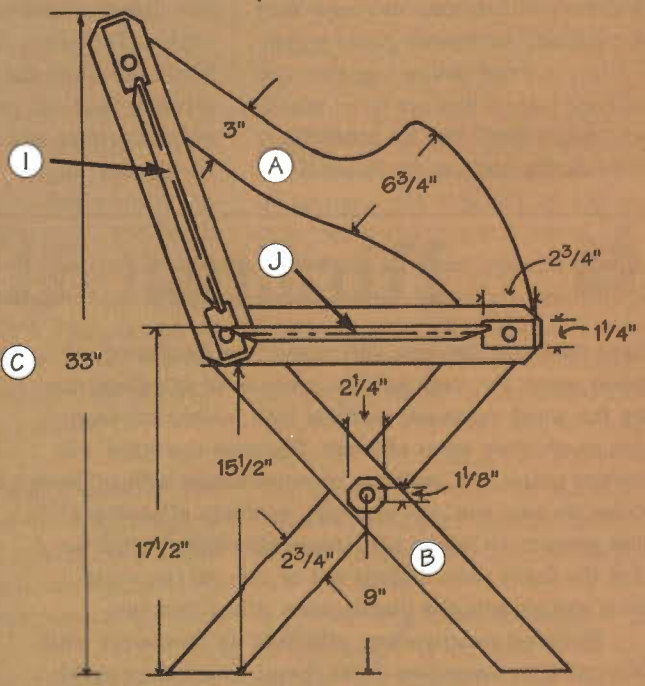
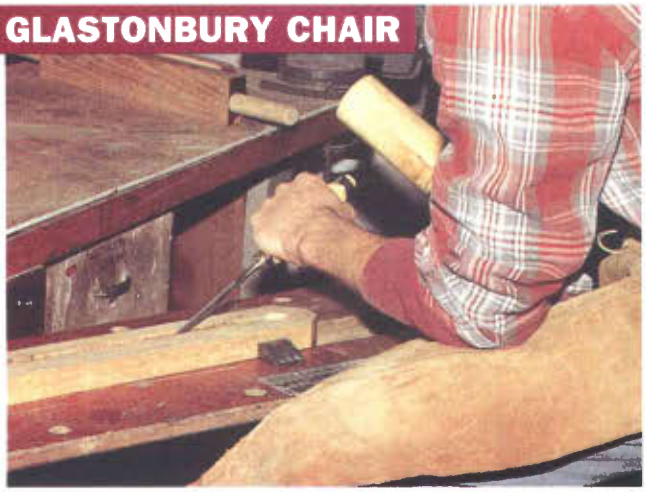


Photo by D. Tyler Huff



1 GROOVES FOR THE SEAT • Before assembly, it is necessary to cut ½" x ⅜" deep grooves in the frame members of the seat and back. These grooves start 1" back from the interior edge. Make the grooves in the back rail, rear seat rail and front seat rail first, then use the assembled seat and back to lay out the location of the grooves in the side rails. The angle for the seat back groove will be determined after locating the dowel positions for the arms, back and seat.

2 CHAMFERS THE HARD WAY • The chamfers were originally shaped with a drawknife or a plane, but they can be cut more easily on a table saw or with a router. However, using a drawknife or plane will give the chamfers the slightly irregular surface found on the original pieces.

STEP 1 Start With the Frame • After rough cutting the pieces to the sizes given on the Schedule of Materials, begin construction with the seat and back section. On the original chairs the seat and back panels were made from a single ¾" thick board, but even in a centuries-old copy they are made of two boards glued together. I recommend gluing together seat and back panels that are three boards wide, rather than two, for economy.

The dimensions in the Schedule of Materials include an extra ¾" in both the length and width of these panels to provide the ⅜" tongue that fits into the groove in the seat and back frames. The seat and back panels join together along the rear seat rail located underneath the back panel. The seat panel intersects this rail at an angle of about 110 degrees to the back. To allow the seat board to fit properly into the groove in the cross rail, the groove slot should be cut on a 20 degree angle. The grooves are made as shown in photo 1.

STEP 2 Putting in the Panels • The ¾" panels fit into the ½" wide grooves by cutting a chamfer on all four edges (much like a raised panel) to one face of each of the panels. The chamfer is cut at a 15 degree angle, leaving a ⅜" thick edge.

To ensure a tight fit, dry assemble the back frame, then place the seat panel between its side rails and slide this unit into position on the back

Medieval Woodworking

Most medieval furniture was made from freshly cut or green wood. Not only was the process of aging and curing the wood unknown; working with freshly cut wood was much more labor efficient. Because the wood was worked green, the methods of construction differed from those we now use. For example, sections of furniture that were to be joined with dowel pins were drilled so that the holes were slightly out of line. As the wood dried and shrank, the pieces were pulled into line.

Medieval woodworkers often set up temporary manufacturing communities in the forest where they could fell trees and immediately turn them into lumber and then into furniture. Woodsmen would fell the trees, sawyers would cut them into boards either with saws, or by splitting them off the logs with wedges and sledge hammers. Craftsmen of all types would immediately go to work turning the fresh lumber into useful items. Coopers would make buckets and barrels, carpenters would make furniture and construction timbers, and wrights would make carts and wheels.

Working the wood in its green state was easier for a variety of reasons. Freshly cut wood may foul modern power tools, but it works much easier than cured wood when you are working with primitive hand tools made from a grade of metal far inferior to what is used today. If lumber and furniture were made where the trees were felled, no extra wood had to be moved to another destination.

3 HOLES FOR THE DOWELS • The holes for the dowels holding the chair together (shown during assembly) must be carefully drilled into the rails and stretcher. The holes must be straight, and drilling into end-grain can be tricky. If possible, use a drill press for this operation.

4 ADD THE ARMS • As a result of trimming the arms, the holes through which the large dowels pass will also be on an angle. Again, use the side rail assembly to determine the hole locations and angles, then drill.

structure. Once positioned, it should be easy to mark where the seat will need to be notched to fit around the side rails of the back.

STEP 3 Installing the Dowels • The entire chair is fit together on eight 1 1/8" dowels that are 7 1/4" long. To install the dowels, separate the seat/back assembly and add the stretcher piece to the pile. Because the ends of six of these dowels are inserted into the ends of 1 1/4" thick rails, they will have to be reduced in size **(see PullOut Plans)**. Reduce a 2 1/2" long section of each dowel that will be inserted into a rail to a diameter of 3/4".

The dowels must also pass through the seat and back side rails (see the diagrams for locations). Predrill a pair of the side rails to accept the dowels, then join them at the point where they would naturally meet at the base of the seat by inserting a short length of 1 1/8" dowel through the corresponding holes. Be sure the seat rail is resting on top of the back rails.

The original chairs' joints were made without the benefit of glue, and the large dowels were held in place in the rails by small dowels as shown in the diagram detail. This combination of large and small dowels held the back and seat frames together, which, in turn, held the back and seat panels in place. For this procedure to work properly you must have a good snug fit at all of the major joints. A snug fit means that the pieces should go together with a firm tap using the palm of your hand.

The 16 small dowels connect the large dowels to the chair's rails. They should be cut an inch or two longer than necessary, tapped lightly into place with a mallet, then trimmed off carefully. The small dowels should be positioned so that they help bear the weight of someone sitting in the chair. The dowels in the top and bottom rails of the back should be inserted vertically, and those in the front rail of the seat horizontally.

If you wish, you can replace the small dowels with screws. The heads of the screws should be countersunk about 1/4" beneath the surface and the hole plugged with a short length of dowel. The finished work will be virtually indistinguishable from the original means of construction.

STEP 4 Arming Your Chair • The arms require an 8" wide board. You can cut both arms from a single 42" long board by laying them out on the board with the narrow portions interlocked.

Because the seat of the Glastonbury chair is 2" wider than the back, the arms must rest on a slight angle. To allow them to rest flat against the side rails, the inside surfaces of the top and bottom ends of the arms must be worked down at an angle of about 5 degrees **(see PullOut Plans)**. Achieve the proper fit by slowly removing the excess wood with a rasp or hand sander. Use the side rails of the seat and back as a jig. Align the free ends of the seat and back rails with the top and bottom ends of an arm. The three pieces should now be positioned in a triangle. Clamp the seat and back rails to the workbench so they can't shift out of position, and fit the arms against the rails.

STEP 5 Four on the Floor • Although the four legs are all the same dimensions, the outside legs will need to be notched out to a depth of 1/4" at the point where the legs cross so that the legs will interlock slightly. By interlocking in this manner, the legs themselves will support the weight of the person sitting in the chair, rather than the dowels. Also, the notch will determine front, back and inside surface as does the miter on the base of the feet. Make the chamfer cuts on the tops of the legs to soften the corners.

STEP 6 Holding It All Together • The wedges in the ends of the large dowels are actually what hold the chair together (see diagram detail). For the greatest strength, cut these wedges from 1/4" maple or ash. The slots in the large dowels for the

5 ADD THE LEGS • Attach the legs by marking and drilling the locations for the top dowel holes as shown in the diagrams. Next mark and drill the stretcher dowel location 12" up from the bottom on the leg's center line. By slipping the legs over the dowels, the ¼" deep notch on the outside legs can be marked then cut away.

6 CONNECT THE LEGS AND SEAT • With the wedge slots and wedges cut, the legs and seat assembly are locked into place by tapping the wedges home with a mallet. The wedges should be tight, but don't need to be driven in with excessive force. As the chair is used it may be necessary to check the wedges for any loosening.

wedges are difficult to cut. Start these slots by drilling two ¼" diameter holes in the large dowel. One of them should be a vertical hole at the rear of the wedge slot, and the other on a 15 or 20 degree angle at the front. The wood between these holes can be removed with a chisel or sharp knife.

The rear edge of this slot (the edge closest to the chair) should extend slightly beneath the surface of the arm (or leg) against which the inserted wedge will rest. This way the wedge is actually pulling against the body of the chair and not just against the end of the slot. It's best to locate the wedge slot locations once the chair is partially assembled to assure a fairly snug fit.

Carving

The carving on this chair is the most tedious and time-consuming work. Although the ornate carvings are an integral part of the historical representation of this chair, the piece is both attractive and serviceable if left uncarved. The PullOut Plans include patterns for many of the historically accurate carvings shown in the opening photo.

Finishing

During the Middle Ages, the concept of a clear finish such as shellac or varnish was unheard of. The only finish most pieces of furniture received was to have the surface scraped with the edge of a flat piece of metal until it was smooth to the touch.

To make your Glastonbury chair look like it has withstood the wear and tear of the centuries, it can be aged artificially. Corners can be worn away with a wood rasp, damage can be inflicted by striking the surface here and there with a length of chain or a cloth bag containing a handful of various-sized nails. After distressing, go over the surface again with a scraper so that the damage doesn't look too new. Remember, we are not trying to make a fake to fool people, we are just making your furniture more fun to look at.

The mellow surface tones of surviving pieces of medieval furniture are the result of centuries of use and cleaning. Most of this cleaning was done with a slightly oily rag which, over the centuries, invests the surface with natural moisture. It also helps prevent cracking and splitting of the wood.

If the modern reproductionist feels the uncontrollable urge to apply a surface treatment to the piece, then keep with the original treatment. Use oil alone. The simplest finish I can recommend would be to coat the finished piece with either tung oil, or boiled linseed oil. If you want to darken the natural color of the wood, you can add a bit of oil stain to the oil.

Undoubtedly, this chair was originally designed to have a pillow or cushion on the seat. Select the fabric for the cushion cover based on the amount of carving you execute on the chair, and how dark a finish you apply. A rich tapestry, a damask trimmed in fringe and tassels, or leather in natural or dyed colors, could all be used as historically appropriate seat covers.

The finished Glastonbury chair proves to be a surprisingly comfortable seat, its heavy design notwithstanding. The strange scooped-out areas on the top of the arms were designed for monks who kept their hands in their laps, either tucked inside of their sleeves, or holding a brevery (medieval prayer book). Perhaps I am particularly fond of this piece because I was able to sit in the original, but whatever the case, it is one of my favorite pieces of furniture. **PW**

Dan Diehl *is a cultural historian who has been digging around in the past for over a quarter of a century. The author of numerous articles and books on historical crafts, he has made one of almost every historical object imaginable, including a fully working copy of an early 15th century cannon. This article is excerpted in part from* Constructing Medieval Furniture *by Daniel Diehl (ISBN 0-8117-2795-5), and is available from Stackpole Books.*

Secret SPACES

The easy way to add hidden compartments to your projects.

THE SECRET COMPARTMENT in my family's Chippendale-style desk saved me from being late to school at least a dozen times while growing up. My mother, you see, would regularly lose her car keys. So my father would hide a spare set of keys in the secret compartment behind one of the desk's pilasters.

After frenzied searching for my mother's keys, I would head for the desk. That's usually about the time mom would say, and this is the honest truth, "Never mind. I found my keys in the freezer."

Building secret compartments into custom furniture has been a time-honored tradition since this country was founded. Early American cabinetmakers would typically add a few compartments to a desk at the request of the patron, who might need a safe place to put a will, some jewelry or even a love letter or two.

You can add a secret compartment to your latest project with just a little planning and a few simple tricks. We got the inspiration to construct a sneaky nook while Associate Editor Jim Stuard was building his Sheraton-style desk (see **"Timeless Desk — In No Time"**). Halfway through the project, we both noticed some unused space behind a drawer **(photo 1)**. "Hmmm," we thought, "what a great place to build a secret compartment."

So that's what we did. And while you might not be building a desk in the near future, we'll show you some of the basic principles for adding secret compartments. And we'll give you a few ideas for places to put them.

We added a secret compartment to this Sheraton-style computer desk using a few scraps of pine and a $3.49 magnetic touch latch. While the compartment couldn't be used for your gold bullion, it holds documents and small pieces of jewelry nicely.

1 This dead space behind the lap drawer inspired us to add a hidden compartment. Many pieces have dead spaces that are just ripe for secret hideaways.

2 The magnetic touch latch was screwed to the side of the desk's frame. When the compartment is closed, the latch holds the box in place.

3 Here's what the hidden compartment looks like with the top of the desk removed. The left side of the box is attached to the frame with a simple butt hinge. The right side is held in place with the touch latch.

Modern woodworkers have one distinct advantage over their Colonial counterparts when it comes to building a secret compartment: commercially available touch latches **(photo 2)**. These spring-loaded latches hold a secret panel in place with a strong magnet or hook until that panel is pressed. Then the latch releases and pushes the panel out, revealing the secrets behind. Touch latches cost between $2.50 and $4 each, depending on the quality and size.

If your panel is too heavy to be held in place by a magnetic touch latch, try a mini-latch — a touch latch with a positive mechanical closure. Another alternative is concocting your own mechanical device. Colonial woodworkers, who couldn't just head down to Ye Ole Builders Square for a large selection of touch latches, would construct their own spring-loaded devices from scraps and steel springs.

Our compartment is small (4" x 2½" x 20"), and is made of lightweight ⅜" thick pine **(photo 3)**. One end of the box is attached to the desk with a butt hinge. The other end is held in place with a magnetic touch latch. The latch mechanism is screwed to the carcase of the desk. The metal plate that attaches to the latch magnetically is screwed to the box. From below the desk, the bottom of the secret compartment looks like a piece of pine that covers some dead space. Push one end, and the box swings down to reveal its goodies. If you're going to use a magnetic touch latch, make sure the compartment itself is light and will hold only lightweight objects, like important papers.

If we had to build this again, we would use the mechanical latches instead. When you pound the desk's top, sometimes the box would open.

Compartment in a Chest of Drawers

An easy way to add a secret compartment is in a chest of drawers **(see diagram 1)**. You can even use this method

Antique Secrets From a Furniture Historian

Hidden compartments were commonplace in furniture in the 18th century. Some fall-front desks would have as many as a dozen secret nooks, some of which haven't yet been discovered by their owners. Take the case of Michael Dunn of Claverack, New York, who bought a slant-lid desk made in China about 1730, according to *House Beautiful* magazine. After finding several secret compartments, he found a long thin drawer filled with silver Dutch coins — hidden from the Germans during World War II.

Furniture maker and historian Jeffrey P. Greene says desks were the most common place to build secret compartments. The reason for that was two-fold. First, desks and their drawers create a lot of empty spaces that are perfect for secret places. And second, desks were the cornerstone of 18th century commerce and would sometimes hold all the records for a business. So it was the logical place to keep important papers.

But secret compartments weren't necessarily standard equipment on desks.

"Until the 1790s, all these pieces were built to order," says Greene, the author of an excellent new book "American Furniture of the 18th Century" (The Taunton Press). "Customers would have to ask for the compartments because they could be another day's work on the piece."

One of the most common places to hide things in desks are behind the pilasters next to the center door.

Diagram 1

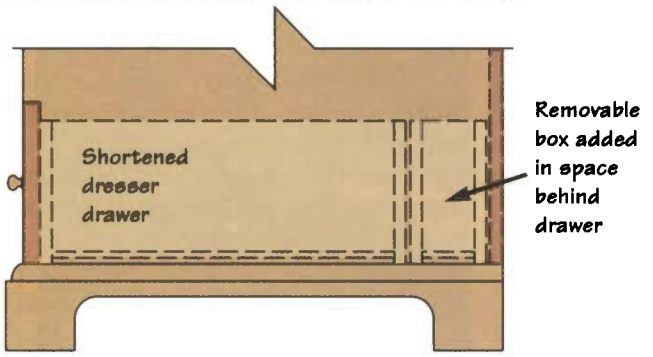
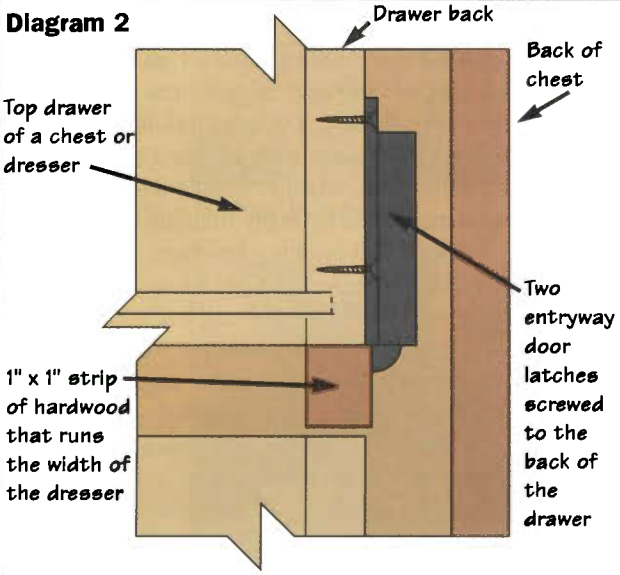


Diagram 2



to add a secret compartment to an old chest of drawers. First, build the bottom drawer about 6" shorter than the others, or rebuild an existing drawer to the shorter depth. Then build a box that fits into the dead space behind the drawer. Depending on how the drawers slide into the carcase, you could just let the box sit on the drawer's runners. To get to your compartment, remove the drawer and grab the box.

For added protection, consider lining your box with fire-resistant drywall, which you can glue to the interior of the box. This will make your secret compartment a bit smaller, but it also will resist flames for an hour or so, as well as bandits.

A Not-So-Secret Compartment

Another trick you can add to your dresser is inexpensive, sneaky and is borrowed from 18th century cabinetmakers. This method, told to us by furniture maker Jeffrey Greene, uses door latches to lock the top drawer in place. If done correctly, the drawer will look either like it's a false drawer, or that it's mysteriously locked.

Here's how it works: First attach two small entryway-style door latches to the bottom of the back of the drawer **(diagram 2)**. Use latches that have a triangular-shaped bolt, which allows the door to shut easily without turning the doorknob, but requires the knob to be turned to pull the door open.

With the drawer fully shut, attach a sturdy length of hardwood between the sides of the carcase and between the drawers. Attach the wood directly in front of the catches. This will prevent someone from pulling the drawer out from the front. To open the drawer, you must pull out the drawer beneath it, reach into the dresser and push the catches up with you fingers. Then the drawer will open.

When you're finished with your sneaky business, merely push the drawer back in place. The latches will lock the drawer back into place in the dresser.

These are just a few of the ways you can add secret compartments to your projects. The other methods we know of, well... we need to keep at least a few secrets to ourselves. **PW**

—Christopher Schwarz, PW staff

The pilasters many times look like carved columns. If you tug on the pilaster, it comes loose and is attached to a tall, skinny hidden drawer. Another common place to hide things in American desks is in the "pigeonholes." These holes for letters usually have some decorative trim above them. If you tug on the trim, it comes loose and is attached to a shallow drawer.

Because these two types of drawers are so common, Greene calls them "semi-secret" compartments. One of the most clever and truly secret compartments Greene says he has seen is in an 18th century desk. Behind the center door there were four drawers. If you took all four drawers out, you could then remove the entire case around them. Then behind that case, was a second set of small drawers.

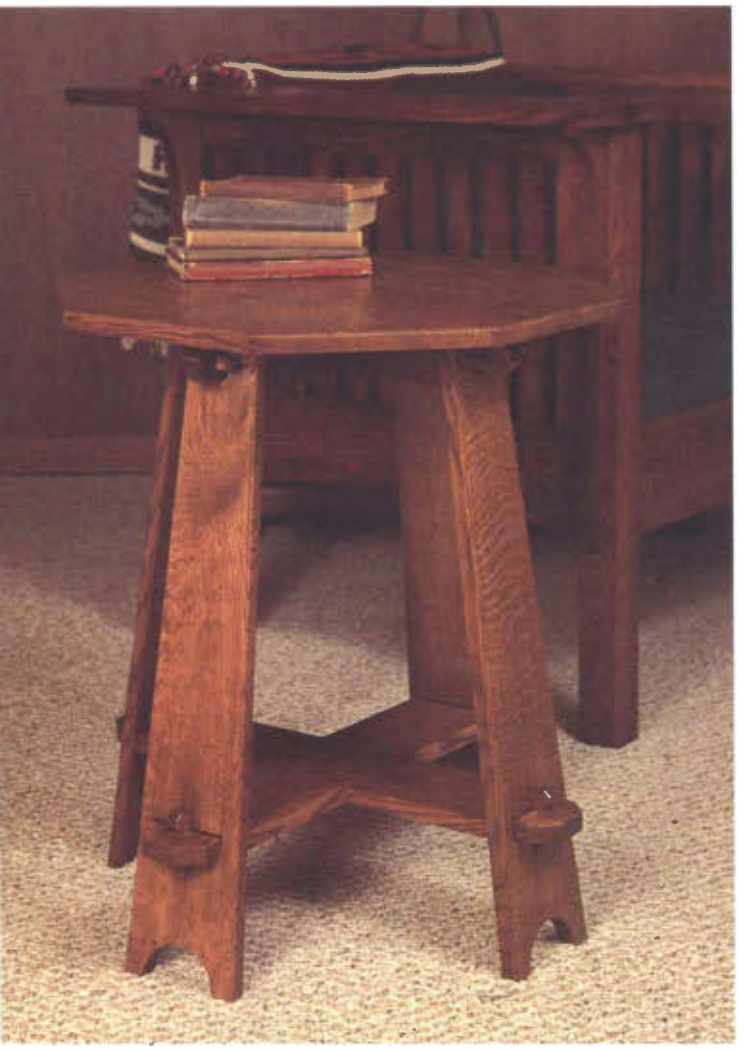
"Everything was dovetailed," he says. "The first set (of drawers) is like a mini chest of drawers. The whole thing is pretty incredible."

Apart from desks, Greene says gaming tables were another common place for cabinetmakers to install hidden compartments. Many early American gaming tables have a folding top that is supported by a swing-out leg. When the top is unfolded and the leg swung out, you can reach behind the leg and sometimes find a small drawer, Greene says. Unlike the compartments in desks, which were used for valuables, the hidden compartments in gaming tables usually held playing counters or cards, he says.

Arts & Crafts

TABORET

Save a bundle building these antique treasures.



IF YOU'VE NEVER SEEN one of these little tables for sale, you're in for a big shock. I first saw a taboret like this buried under a heap of junk in a small antique shop in Tallahassee, Fla., in 1990. It was about 20" high, signed by L. & J. G. Stickley and about $1,500 over my budget. And that Florida table wasn't an overpriced aberration. In 1996, tables like this were selling at auction in Chicago for between $800 and $1,500.

However, you can build one of these highly desirable tables in quartersawn white oak for about $75. Or you can buy ash, another wood commonly used for these tables, and spend about $40. We used quartersawn white oak because we thought the exceptional ray flake (technically called medullary rays) in the oak was worth the extra cost.

The design for this table is based on several originals. The splayed legs are inspired by a similar table built by the Limbert Furniture Co. The graceful tapering of the legs can be found in pieces built by the Tobey Furniture Co. And the table's top, whether octagonal or round, can be found on pieces made by many manufacturers, including Gustav Stickley and Stickley Brothers.

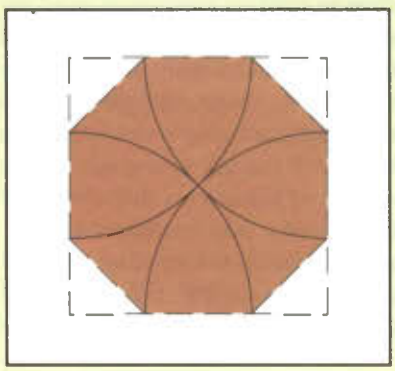
We also decided to make the table a knock-down piece. Many pieces of Arts & Crafts furniture could be easily disassembled this way for delivery by train, which saved significantly on shipping costs. This table can be taken apart and mailed in a small box, which makes it a great gift because the whole thing can be assembled in about five minutes using only a screwdriver.

STEP 1 Prepare the Top • Begin by choosing the boards for the top and legs and cutting the material to rough

1 GLUE THE TOP • After deciding the best arrangement for the boards, apply glue to the edges and clamp the top until all excess squeezes out. Use a hammer and a block to coax mating pieces flush. The three boards for this particular top were arranged to get rid of the knot on one of the boards. That knot, which you can see in the bottom right-hand corner of the top, was eventually cut away as waste. After clamping the top, set it aside for the glue to dry.

Lay Out an Octagon

This method goes back to the time of Pythagoras and the ancient Greeks. All you need is a trammel, a straight edge and a surface to work on. First, cut the top square. Next, determine the center of the top by drawing intersecting lines with a straight edge, from opposite corners, across the top. Set your trammel points to make a mark as long as the distance from the center to an outside corner. Put the pin in one corner. Pivoting from the corner, draw a radius where it intersects with the square along the two adjacent sides. Repeat for all corners. Connect the marks.



2 ANGLED MORTISES • **To chain-drill your mortises, set the table on your drill press to 8 degrees and clamp a fence to one end. We used a 3/4" brad-point bit, but you can also use a Forstner or spade bit for this job. Drill from the face of the legs so that any tearout will occur on the back side, or even better, use a backing board.**

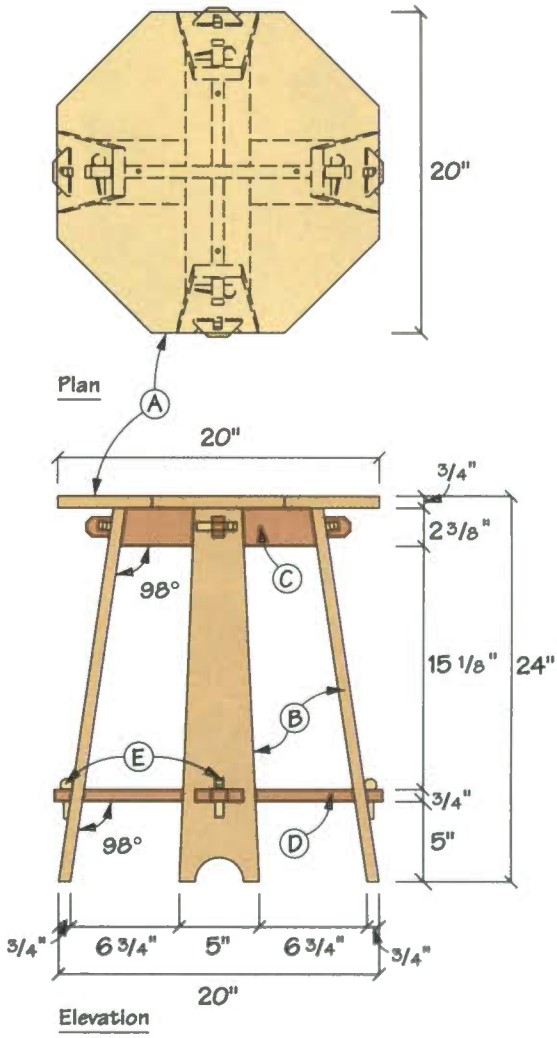
3 MORTISE AGAIN • **After marking the location of the top mortise on the leg, we then marked on the drill table where the board sits when the first hole is drilled and then where it sits when the last hole is made. These marks, shown above, help you cut the other legs faster and more accurately.**

size. We tried to pick boards that had the most dramatic ray flake and curl for the highly visible parts, but quartersawn oak can be tricky. What looks dramatic in the rough can look mundane after finishing.

The 20" top is made from two or three boards glued along their edges. It's a good idea to try several different arrangements of the top pieces before gluing to get the best grain pattern.

Once the glue is dry (a couple hours should be sufficient), cut the top to its desired shape. We used a circle-cutting jig with a band saw to cut the round top and trammel points to lay out the octagonal top (see **"Lay Out an Octagon"** for information on an easy method). Flatten the top with a cabinet scraper, if you have one, or a belt sander followed by a random orbit sander. To give the top a thinner look, cut a 1/8" chamfer on the top's edge using a router and a chamfer bit.

Diagrams **TABORET**



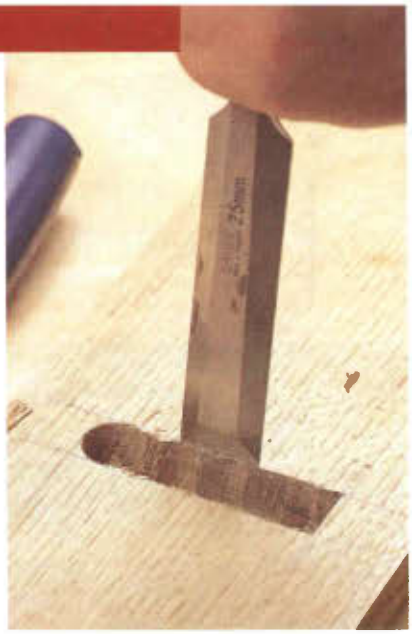
Schedule of Materials: Taboret

No.	Lett.	Item	Dimensions T W L	Material
1	A	Top	3/4" x 20" x 20"	White Oak
4	B	Legs	3/4" x 5" x 23 5/8"	White Oak
2	C	Top Stretch*	3/4" x 2 3/8" x 16 1/2"	White Oak
2	D	Bott. Stretch*	3/4" x 4" x 20 1/2"	White Oak
8	E	Wedges	1/2" x 3/4" x 2 1/2"	White Oak

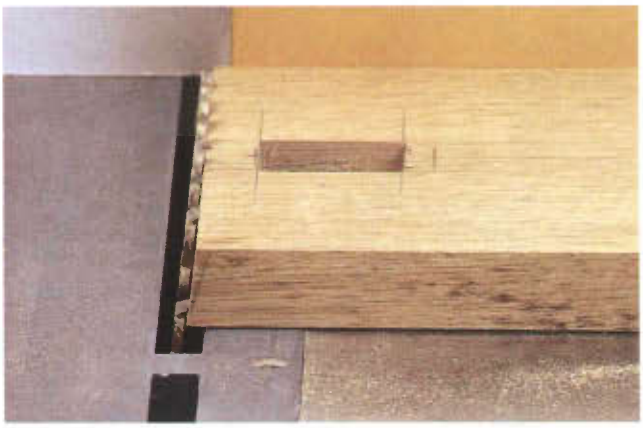
* These lengths are for the octagonal ends on the stretchers; for the rounded stretchers, add 1 3/4" to the length of the top stretcher and subtract 1/2" from the bottom stretchers.

STEP 2 The Big Mortises • Cut the large 3/4" x 3" mortises in the legs for the bottom stretchers by first chain drilling a series of holes. The trick here is to drill the mortises at an 8-degree angle to match the angle of the legs that taper in toward the top. These mortises are centered on the leg and the bottom edge is 5" up from the bottom of the leg.

STEP 3 Smaller Mortises • The 3/4" x 1 1/4" mortises for the top stretchers are cut in the legs in a similar fashion, 1/2" down from the top. However, for these cuts you'll need a fence fastened in the opposite direction as used on the large mortises to accommodate the vertical rather than horizontal mortises.



4 CLEAN-UP • The hardest part about removing the waste is making sure you follow the 8-degree angle you just chain-drilled in the legs. When you're working on the side of the leg that will face out, work the bottom edges and sides of the mortises. Then flip the piece over and clean up the top edges and sides of the mortises.



5 BEVELS FOR FLAT FEET • Set your table saw's blade to an 8-degree angle. Then cut the bevel on the top of the leg with the front face of the leg facing up. Then turn the piece over so the backside of the leg is facing up and cut the bevels on the bottom of the legs. Take care not to remove too much material.

6 EASY TAPERS • The legs are 5" wide at their base and 3" wide at the top. After marking the line on the leg, cut the taper on your band saw or table saw. Save the scraps to make the wedges for the tenons (or for a doorstop in your shop).

STEP 4 Clean Your Mortises • Because these mortises will be visible when the piece is finished, clean up the chain-drilled mortises. Use a 1" chisel to remove the waste on the long sides and a 1/2" chisel on the shorter sides. A mallet is handy for starting your cuts.

STEP 5 Bevel the Leg Ends • Because the legs cant slightly toward the top of the table, you need to bevel the top and bottom edges of each leg. This allows the leg bottom to sit flat on the floor and the table top to rest flat on the legs.

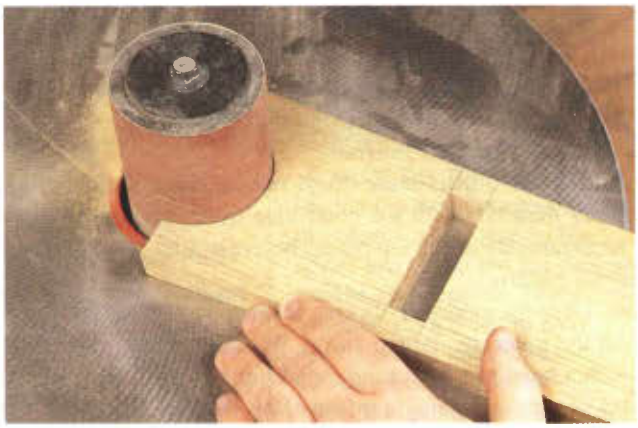
STEP 6 Taper the Legs • The graceful taper of the legs makes this hefty oak piece appear a little lighter. While you could use a tapering jig on your table saw (see **"R.J. DeCristoforo's Master Jig"** article for an excellent example), we decided to make the cuts on the band saw. After we cut the taper on both sides (cutting a little wide of the line), we ran the edges on a jointer to clean up the cuts.

Then, to give the legs even less heft, we routed a 1/8" chamfer on the long front edges of all four legs. This chamfer is quite common on many Arts & Crafts-style pieces.

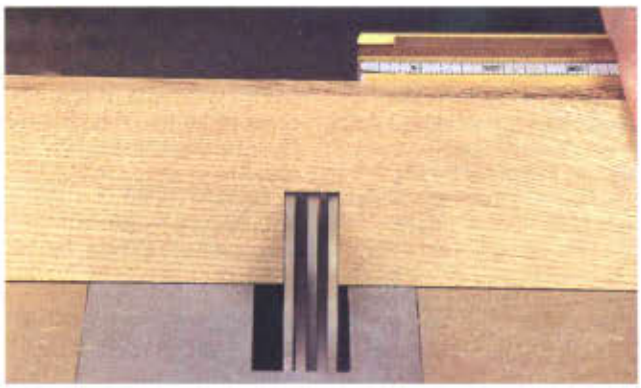
STEP 7 Cut-outs • The curved cut-outs on the bottom of the legs were cut with a jigsaw and cleaned up with a spindle sander. If you have decided to have an octagon top, you might consider making these cut-outs as half-octagons.

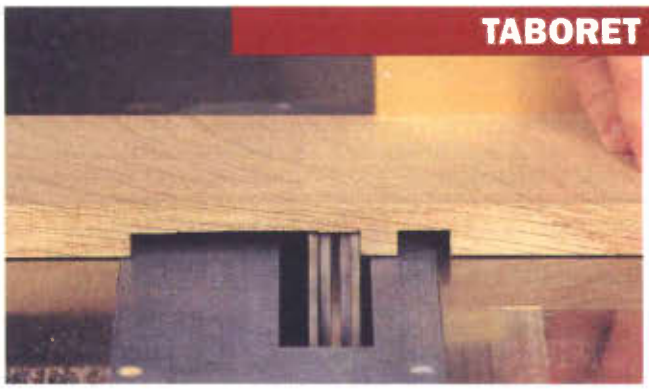
STEP 8 Start the Stretchers • The top and bottom stretchers are joined with a half-lap joint we made with a dado set. After you make your cuts, you'll probably have to clean up your work with a file or shoulder plane to get a good fit.

STEP 9 Stretcher Shoulders • The patterns for the shoulders are included in the PullOut™ Plans in this issue. The top stretcher should measure, shoulder edge-to-shoulder edge at its widest point, 13 1/4". The bottom stretcher, 16 3/4". One thing to keep in mind here is that the shoulders on the stretchers must be beveled or angled at the same angle you beveled your mortises and the tops and bottoms of the legs. We used

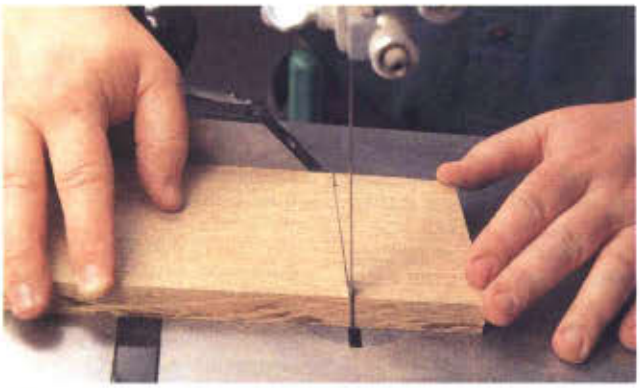


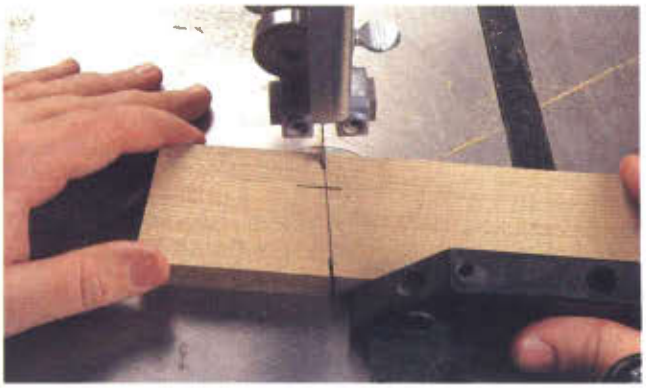
7 CUT-OUTS • We used a 3" diameter for the half-circle cut-outs. Set your compass to mark a 1 1/2" radius, then put the pin of the compass in the center of each leg at the bottom. Clean the cut with a spindle sander.





8 HALF-LAPS • The half-lap joints in the top stretchers were cut with our dado set configured to make a 3/4"-wide cut that was 1 3/16" high (left). The dadoes for the half-lap joints in the bottom stretchers were cut using several passes with a dado that was set for 3/8" high. We made the first and last cuts on the 4"-wide dado (right) and then made several passes to clean out the waste between.





9 SHOULDERS • The shoulders for the tenons on the bottom stretchers must be cut with an 8-degree bevel. Set this angle on your band saw table and then make the cuts as shown in the photo (left). Then set your table back to level to cut the shoulders on the top stretchers (right), angling the miter gauge to match. Then make the cuts in from the ends of the stretchers using a fence on your band saw. You won't be able to remove all of the waste this way on the bottom stretchers because of the bevel. So finish those cuts with a backsaw.

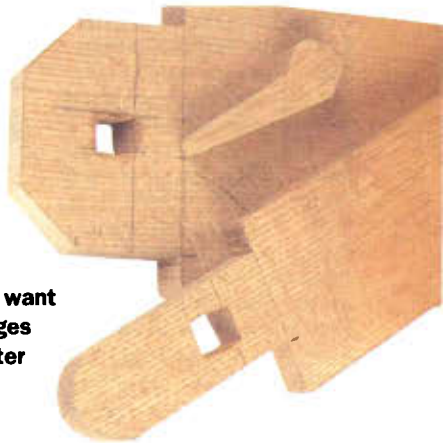
a band saw for these cuts and cleaned out the waste with a rasp and a file.

STEP 10 Mortises for the Wedges • The location of the 1/2" x 5/8" mortises on the stretchers are in the PullOut Plans. The reason these mortises are a little longer than they are wide is to give your wedges something to grab onto. The extra 1/8" in length should be located behind the line where the front face of the leg meets the tenon (as shown in the photo). This will make for a much tighter joint. Cut the wedges from scrap using the pattern in the PullOut Plans. Bevel the edges using sandpaper or a belt sander.

Because the table is held together with eight wedges and four screws, make sure all of the mortises and tenons fit snugly. A file and sandpaper will make most of your joints snug. When everything fits well, number your pieces on the insides of the mortises and then finish the disassembled pieces. We used brown aniline dye on the raw wood, then sprayed on a coat of lacquer. When that had dried, we applied a warm brown glaze on all the pieces and wiped the excess glaze away until all the pieces were a uniform color. After allowing the glaze to dry overnight, we applied three more coats of lacquer. Any clear finish, such as varnish or shellac, will work fine.

When your finish is dry, it's time for the final assembly.

10 MORE MORTISES • Make these mortises with a 1/2" bit in your drill press. Then square the corners with a chisel. The wedges are made from scrap that has been planed down to 1/2" thickness. You might want to make a few extra wedges because some will fit better than others.



First drill four clearance holes through the top stretchers that will take a 3" screw. Drill or ream these holes into an oval shape to account for future wood movement. Then countersink the holes from the bottom to allow the screw to seat at least 1/2" into the top. Put the base together with the wedges. You might have to use a mallet to get the wedges in snugly. Then put your top face down on a smooth cloth. Position the base upside down over the center of the top and mark the locations of the four holes on the top. Pilot drill small holes in the top and then screw your top to the base. **PW**

—David Thiel and Christopher Schwarz, PW staff

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HALF-ROUND Cherry Table

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USUALLY EDITOR STEVE SHANESY writes the "Little Shop That Could" series, but when a business trip called him out of town, I volunteered to fill in. As a woodworker trained in a small commercial shop, I learned woodworking in a well-equipped shop. While I wholeheartedly support the "Little Shop" philosophy of building projects with a minimum of tools, I feared this project might prove a little awkward for me.

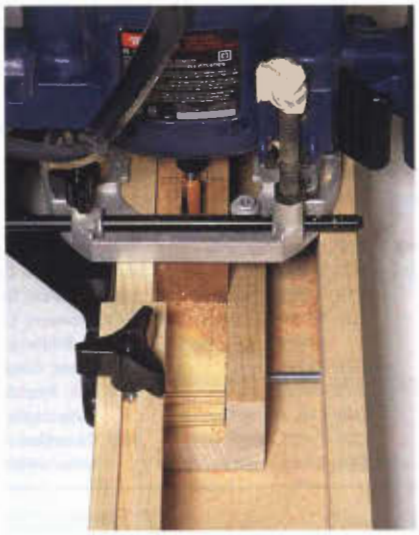
Indeed, at almost every turn I went for a tool or machine that "didn't exist" in the world of the Little Shop, and that made the experience even more entertaining. What I came to realize was that the limited tools required construction solutions based on available tools, not the quickest or even the easiest method other tools might allow.

I also learned, of course, you can get great results without a shop full of equipment. The table I chose for this issue's project shows how to use a mortising jig that I built for the Little Shop.

To begin the table, I cut the three legs to their squared stock size given in the Schedule of Materials. I wanted to

Editor's Note

In issue #91, I built this workshop on wheels, which folds in half for storage. Then I outfitted it with $498 in tools and equipment. Reckoning many of you work in small shops with limited tools, I wanted you to know that we can work that way, too. "Little Shop" projects are designed to be built simply. For a copy of issue #91, send $4.50 to Popular Woodworking • Back Issues • 1507 Dana Ave. • Cincinnati, OH 45207 • Ask for #58066.



1 MORTISES • The guide bar attached to the router determines the side to side location of the mortise, while the adjustable stop blocks on the jig determine the length. The depth should be cut using multiple passes; increase the depth of the cut with each pass.

2 EASY TENONS • With the saw blade height set for 1/8" and the rip fence set for 5/8" (allowing for a 1/8" blade kerf), use the miter gauge to define the shoulder of the tenons at 3/4" on all four sides. Walk the piece away from the rip fence a little bit at a time, and the tenon appears.

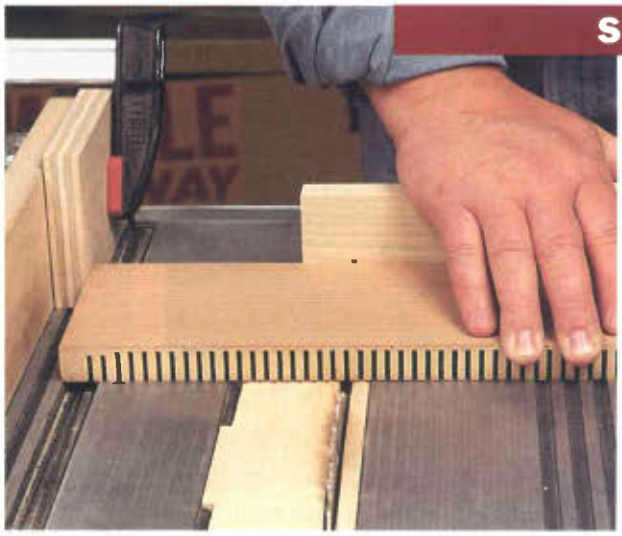
use mortise and tenon joinery on the legs and stretchers, so I had to first build the mortising jig (see **"Mortising With a Router"** on next page).

STEP 1 Mortise the Legs • I made a couple of changes to a classic mortising jig design that appears on page 168 of *Tage Frid Teaches Woodworking: Shaping, Veneering, Finishing* published in 1981 (The Taunton Press). I enlarged the size of the jig and added a handy clamping mechanism that holds the workpiece in place. The jig is a bargain because it can be made with scraps and a few knobs.

Each table leg receives a 1/2" wide x 3/4" deep x 2 1/4" long mortise in the center of each leg's width, with the mortise starting 1/8" down from the top edge. The legs are placed in the jig and mortised using a 1/2" straight router bit in two passes.

With the mortises complete, the legs are tapered in the Hepplewhite style on the table saw using a simple tapering jig. The taper begins four inches down from the top of the leg and ends in a 3/4" square at the bottom.

The two rear legs are tapered only on the inside two faces, while the front leg is tapered on the three inside faces. This means you'll have to lessen the taper angle for the two side cuts on the front leg to end up with a 3/4" end.

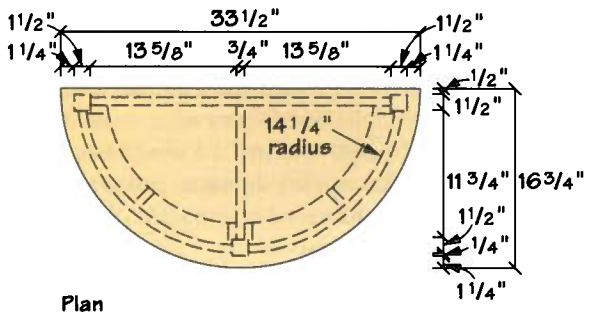


3 Depending on your material, you'll want to check the flexibility of the piece at the 5/8" kerf depth, and also make sure your cuts aren't so deep that they telegraph through to the front of the piece.

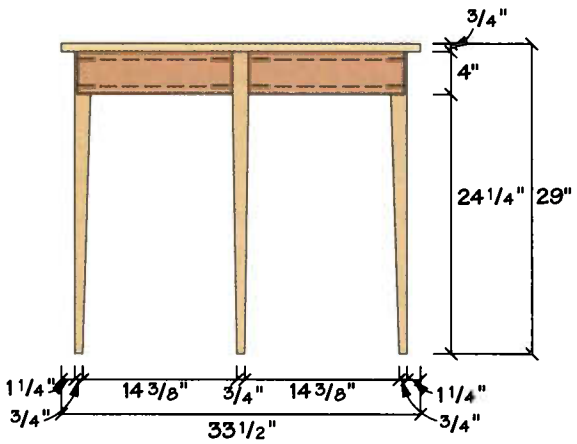
STEP 2 Make Your Tenons • The stretcher tenons are made on the table saw using the simple tenoning method in the photo. The frame can now be dry fit. Where the two stretchers meet in a "T," use a simple dowel joint.

STEP 3 Add the Apron • To strengthen the base frame even more and add a little more balance to the appearance, I made a curved apron that runs between the legs. I'm too lazy to steam bend wood, so I used the table saw to back-kerf a piece of medium density fiberboard (MDF) cherry. I made a 5/8" deep cut every 1/4" across the

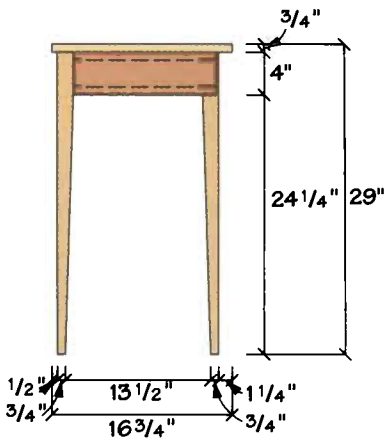
Diagrams



Plan



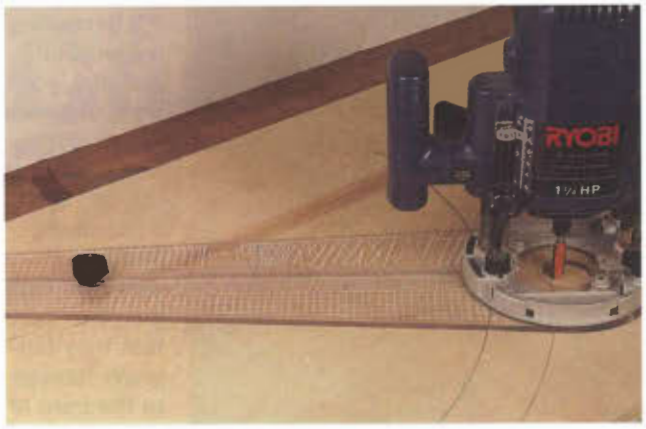
Elevation



Profile

Schedule of Materials: 3-Legged Parlor Side Table

No.	Item	Dimensions T W L	Material
1	Top	3/4" x 33 1/2" x 16 3/4"	Cherry MDF
3	Legs	1 1/2" x 1 1/2" x 28 1/4"	Cherry
1	Stretcher	3/4" x 2 1/2" x 29 1/2"	Cherry
1	Stretcher	3/4" x 2 1/2" x 13 1/4"	Cherry
2	Aprons	3/4" x 4" x 22"	Cherry MDF
4	Apron supports	3/4" x 2" x 22"	Plywood
6	Support spacers	3/4" x 1" x 1 5/8"	Plywood
2	Top edging	3/16" x 7/8" x 60"	Cherry



4 CIRCLE CUTTING • Cutting circles (or half circles) is easy and accurate with a router compass jig from Woodcraft (#04E44 $29.99 [800-225-1153]).

length of the piece. A more scientific method to calculate the kerf spacing is in the accompanying article, **"Radius Kerfing,"** on the next page.

STEP 4 Cut the Top • An optional purchase for the project is the jig shown in the photo, which is used to swing a router to cut round shapes. It became important as I realized the Little Shop didn't have a band saw or a jigsaw (though you might). The purchase *is* optional, as the jig can easily be made in your own shop from a piece of 1/4" plywood.

The plunge router base is attached to one end of the jig with a clearance hole to allow the bit to descend. The other end can be as simple as a nail driven through the plywood at the appropriate radius point, or as fancy as the adjustable pin shown on the jig in the photo.

Either way, the jig is used with the straight router bit to cut the 16 1/2" radius for the top. The apron supports are also cut this way at a 14 1/4" radius to the outside edge and at 12 1/4" radius on the inside. Cut them long and fit them into place between the legs.

5 APRON SUPPORTS • The supports are spaced to the same height as the stretchers using 1" x 1 5/8" blocks. Two are glued and nailed in place flush to the outside ends of each curve, and one is placed at the approximate center of the curve.

STEP 5 Fit the Supports and Aprons • The apron supports fit between the legs and are notched back 1" on the leg. This allows a 1/4" reveal when the curved apron is put in place.

With the supports assembled, the aprons are fit to the supports, trimming the length of the apron on the table saw. You also will find that if the ends of the apron occurs at one of the gaps left by the saw kerf, the radius fit is easier.

STEP 6 Glue the Apron • Glue the aprons to the supports and glue the assembly in place between the legs. Use plenty of glue on the front edges of the supports.

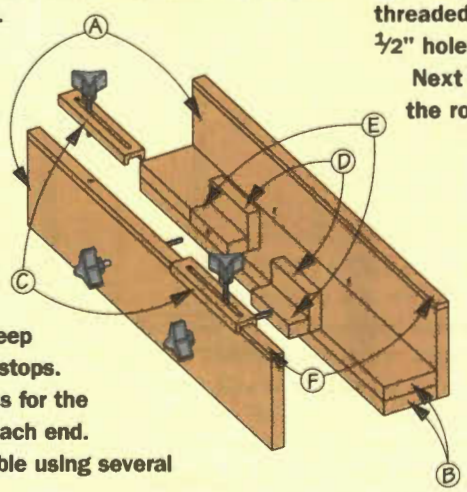
STEP 7 Finish the Top • This step may be the most challenging. To finish the edges of the top (which you will have noticed is grained front to back due to my scrap situation) I found the best factory edge on my board and set my rip fence for 3/16". Normally I would have then headed for the planer after ripping the piece and run the strip down to the 3/16" shy thickness I wanted. But, having no planer, the saw cut was the best option.

Mortising With A Router Jig

The mortising jig is easy to build, consisting of a double-thick bottom and two sides. The intricacy comes when the fittings are added to the jig.

First glue the two bottoms together, then cut the edging for the sides and glue them in place. While these pieces are curing, make the stops. Cut the groove in the stops in one strip, and cut to length later. Use the table saw to cut the 3/16" deep groove in the bottom of the stops.

Lay out the slot locations for the pieces, stopping 3/4" from each end. Rout the slot on a router table using several passes to complete the cut. Now cut to length.



The adjustable stops are tightened to the side using a handle fitted with a 2 1/2" length of threaded rod, a threaded insert and a 1 1/2" length of 1/2" dowel. Drill two 1/2" holes 2 1/4" deep into the top of one side.

Next drill a hole through the length of the dowel to let the rod pass through. Now glue the threaded insert

Schedule of Materials: Router Mortising Jig

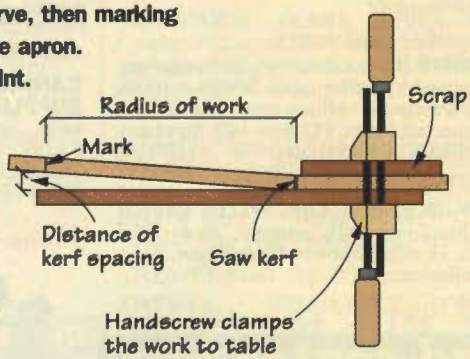
No.	Let.	Item	Dimensions T W L	Material
2	A	Sides	3/4" x 4 7/8" x 26"	Plywd
2	B	Bottoms	3/4" x 3 1/4" x 26"	Plywd
2	C	Stops	1/2" x 1 1/4"x 7"	Maple
2	D	Clamp faces	3/4" x 2"x 4"	Maple
2	E	Supports	3/4" x 1 1/4"x 4"	Maple
2	F	Edges	1/4" x 3/4"x 26"	Maple

Materials from Woodworker's Supply 1-800-645-9292
2 2 1/4" star knobs cat# 862-214 • $1.40 each
2 large 3-prong knobs cat# 862-207 • $.95 each
4 threaded inserts cat# 812-438 • $1.75/10
1 36" length 1/4" threaded rod

Radius Kerfing

A method for radius kerfing shown in *Cabinetmaking and Millwork* by John L. Feirer not only shows how to determine the perfect distance between kerfs, but also allows the kerfed side of the piece to close against itself forming a more rigid back, eliminating the need for the apron supports shown in the table article.

With this method, the kerf cuts are made to within 1/16" of the outside surface. The correct spacing for the kerfs is determined by finding the radius of the curve, then marking that length from one end of the apron. Make your first kerf at this point. Clamp the apron to a work surface and raise the apron until the kerf closes. The distance from the work surface to the end of the apron is the distance needed between kerfs. Set your spacing and make your cuts.



Gluing on the back edge wasn't too difficult, but with only a couple of pipe clamps and a few one-handed C-clamps the front edge proved more difficult. Contact cement was the answer, although I used regular wood glue at the ends to overcome the wood's natural tendency to spring back.

Later, I planed and sanded the edges flush to the top and was ready to do some final sanding and finish the table. The wood was of a fairly consistent color so I opted for a simple brushed-on natural varnish finish.

With the finish dry, I drilled four clearance holes in the stretchers (two per stretcher) countersinking the hole 1" and attached the top with 2" screws, allowing them to bite 1/2" into the top.

With the table finished, I'm able to say that working in the Little Shop was a learning experience. While I enjoyed the challenge, I still like my commercial tools. **PW**

—David Thiel, PW staff

6 SUPPORTS • The supports can be glued in place between the legs at this time. Allow some glue to dry in the saw kerf cuts at either end of the radius to help the apron hold its shape at the ends.

7 TRICKY FRONT • For both the back edge and the front, I applied a coat of contact cement to the strip and to the top's edge. Wood glue was used for the last two inches; then by starting the front edge at the center, and working both sides around the top, I was able to achieve a tight, even bond. My pipe clamp held the ends in place while the cement cured.

Knobs for stops

Adjustable stops

and dowel in place. Use the threaded rod to align the dowel and insert while the glue cures.

We then added the clamping device to Frid's jig. First mark the clearance hole locations on the sides 1 15/16" up from the bottom and 8 5/8" in from each end. Drill the two clearance holes with the sides clamped together to ensure alignment. Glue the two sides to the bottom. Now glue the clamp faces and supports together, then drill a clearance hole in the center of the support and through the face. A threaded insert is then placed in the face at the exit of the clearance hole. A 5 3/4" piece of threaded rod is then attached to a handle and then run through the clearance holes. When the threaded rod connects with the threaded nut, the clamp pieces pull against the side.

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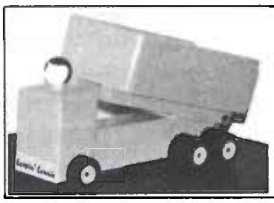

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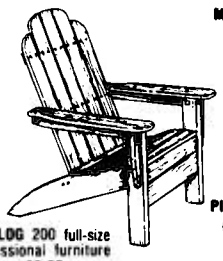

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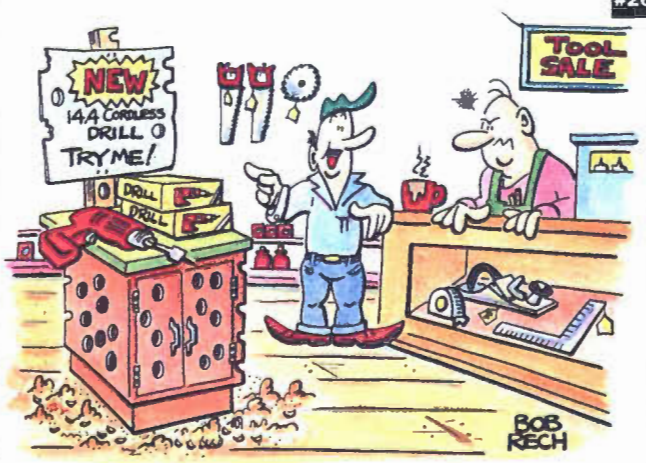

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Winning entries will be chosen by the editorial staff.

The winner will receive a Porter-Cable Whisper™ Series Model 360VS belt sander, featuring a redesigned 12 amp motor. The model 360VS is the most powerful 3" x 24" belt sander in its class, as well as the most quiet. In fact, this belt sander is 63 times quieter than its predecessors. It has a belt speed range of 1,000 to 1,500 SFPM for rapid stock removal as well as low-speed options for plastics.

The two runners-up will each win a one-year subscription to *Popular Woodworking*.

The winner of our "Caption the Cartoon Contest #24" from the May issue and recipient of the Porter-Cable 690 router is:
Larry Purschwitz, from Cocoa, Florida.

The runners-up receive a one-year subscription to *Popular Woodworking*:

Ken Goranson, from Mason City, Iowa, for:
"From now on listen to me. I said I want you to construct a replica of Dinah Shore."

Adam Rum, from Huntington, New York, for:
"There was a guy named Tex, who said he would build a T-Rex. When he did, he used my shed; And now Tex will soon be ex!"

#24

"I told you to build it outside my shop, not out of the side of my shop!"

Advice You'll Swear By

Learn the master's art of sweet-talking your project.

REAL WOODWORKING SECRETS are rarer than snake feet. I harvested my first pearl of woodworking wisdom in my seventh-grade shop class. Mr. Clopper ran a tight ship in the wood shop. He didn't broach dissent, and he frolicked little. I (and most of my 40 other classmates) had been coming into his office roughly every five minutes, asking our universal refrain, "Is it sanded enough?" or, "Am I done yet?" The last time I entered his sanctuary, Mr. Clopper had a funny look on his face: "Gimme that pig, Schultz!" (We'd been making pig-shaped bread boards that we'd cut out with coping saws and smoothed with rasps — they needed quite a bit of sanding.) Anyway, Mr. Clopper grabbed one of those rectangular carpenter's pencils with a blunt lead the size of a crowbar and he gouged a bunch of lines about 1/4" deep across my Philippine mahogany pig. He seemed really satisfied by passing on this bit of woodworking lore, smiling and saying, "Sand until the lines are gone." The pig looks like a fat zebra to this day, but I learned a secret then, as you can probably imagine.

I've acquired most woodworking secrets in the same painful fashion. Lesson 1: Don't drop the drawknife. Lesson 1a: Don't catch the dropped drawknife. Lesson 1b: Apply pressure with a clean cloth. Or, Lesson 2: Is this switch wired right? Lesson 2a: Why is it dark? And Lesson 2b: Why's the table saw still running? Knowledge acquired in such a painful way is deeply personal. It's a legacy of information you want to hoard, and consequently most woodworkers are shy about sharing their true expertise.

Nonetheless, despite the arduous and grudging acquisition of much of this knowledge, the time has come for me to pass on a bit of lore I've seen nowhere else. I discovered this on my own, through years of practice and after visiting the shops of some of the finest woodworkers across the nation. It's taken years to make the connection. I'd see their great furniture and hear the swearing, cursing and great combinations of four-letter words spent profligately and with abandon, but I'd never thought of the obvious: A well-placed expletive outlasts polyurethanes, hide glue, aliphatic resins, super glue and virtually all fasteners. A timely epithet squares edges, stops bit burn and makes short boards longer. It is a universal cure-all, but it's trickier than a two-legged dog on ice skates to get set up and working.

I tried for years to develop a universal curse that I could utter at the beginning of a project, but it seemed to have no effect, except the dog left the workshop. I tried specific curses for specific ills, but there were no correlations.

Finally it dawned on me: Cursing stops the damage before it gets worse. For example: Saw kerf starts to bind, blue smoke billowing out from the blade? Stop, shut off the machine, swear like a blue-tongued pirate and then slide a wedge into the already sawn kerf. The rest will cut easily. Screwing up an assembly? Imagine you're Marge Schott confronting the press and blast 'em with profane and rich verbiage; then disassemble, wipe off the glue and dry clamp the assembly before trying again with glue — you'll find it'll slide together just like you'd anticipated.

This technique, this hard-won skill, swearing, I give to all you woodworkers just starting out. Use it as a talisman against the ill-will and bad wishes other craftsmen hold in their hearts as they critically scan your work. Remember I stand there with you, I know their derision, I feel your pain.

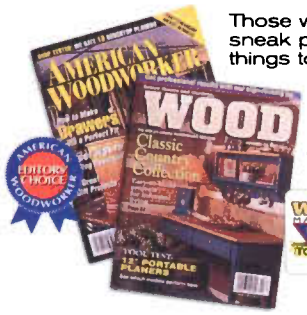
"!'/@ 'em."

You heard it here first.

• *One final caveat:* For me, swearing works only during the machining and assembly stage of woodworking. My venom curdles most finishes I've tried, and it makes sandpaper clog prematurely, too.

***Andy Schultz** is a furniture maker and woodworking writer who resides in Lincoln, Nebraska. His new book, "Build Your Own Entertainment Centers" (Betterway Books, Cincinnati, Ohio), is now available in stores.*

This Delta exclusive gives you a lock on snipe control. Patent-pending cutterhead snipe control lock stabilizes the cutterhead during operation, for complete rigidity.



Those who've had a sneak preview have nice things to say about it. Priced in the middle of the pack—we're betting it'll end up at the head of its class.

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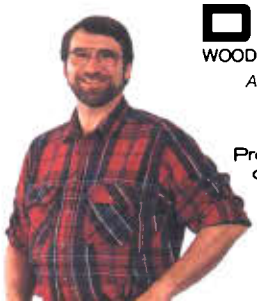

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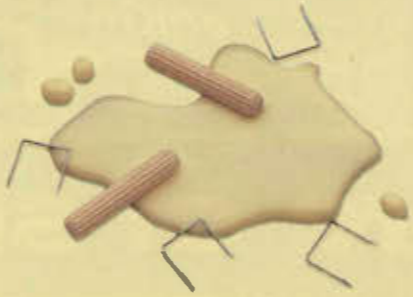

The new Ryobi Detail Biscuit Joiner uses miniature "Accu-biscuits" for neat, tight, professional joints.

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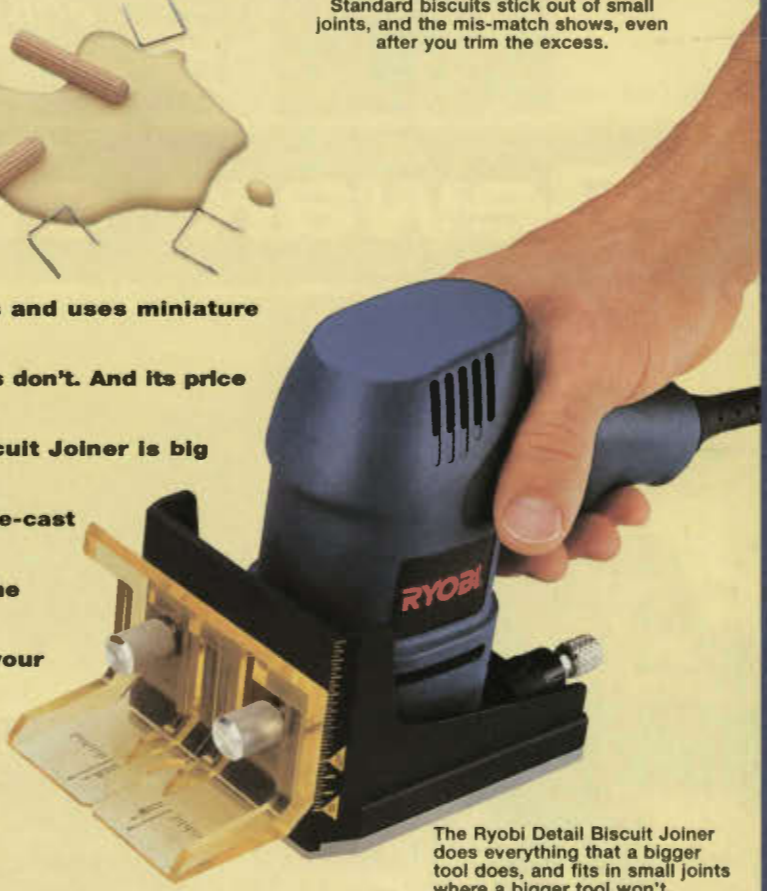

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