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September 1996 #92

Popular Woodworking

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Safety Note

Safety is your responsibility. Manufacturers place safety devices on their equipment for a reason. In most 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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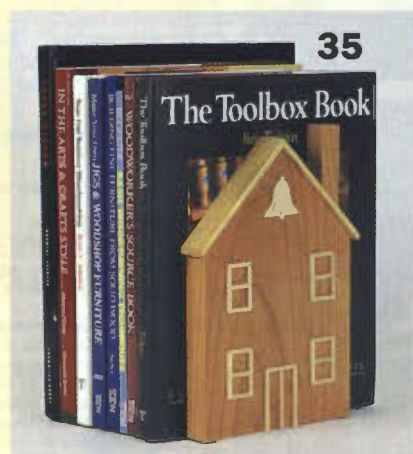
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Popular Woodworking

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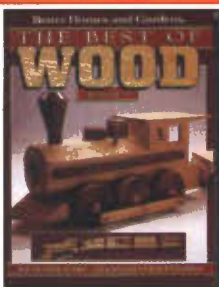
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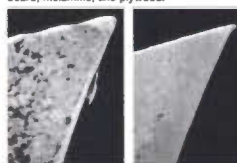
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TURNINGS

A Popular Woodworking Tune-Up



JUST AS OUR TOOLS need a tune-up from time to time, so does a magazine. With this issue, we've replaced a few parts, performed a general clean-up, and done a fair amount of polishing, which add up to something of a new look. We hope you'll agree that *Popular Woodworking* is now more accurately aligned with your needs and performing at the capacity you expect.

Here's a run-through of what you'll find. We've changed the look of our logo (which is our fancy word for the title on the cover) since it was, like the width of older ties and lapels, looking a bit dated. More importantly, the type, materials lists and photo captions are easier to read.

The PullOut™ Plans usually found in the middle of the magazine have been replaced. You may remember *PW* pioneered this plans section. Well, we're blazing trails once again. In its place, you'll now find the Project File. We think you'll agree that this section is of much greater value to you. With full-color, we'll give you all the essential information you need to build up to a dozen extra projects in each issue. You'll get a complete diagram, a thorough materials list and a photo of the finished work. Plus you'll get enough

written information to cover any construction questions.

We'll continue to provide fully described project, technique and tool features. Where patterns are called for, you'll find drawings on a handy grid that are easy to enlarge. We'll use a "one square equals one inch" system that can be scaled up or taken to a photo copy center to have an inexpensive enlargement made to the exact, full size. We'll also give you the precise percent enlargement required.

Another improvement you'll find in this and future issues is close-up, or macro, photography. We want to focus, if you will, on the most important elements of our step-by-step instructions. We'll show you what's going on where the tool meets the wood. Good photography will show you what to do, so we won't bore you with long-winded articles. Let's face it, if you were in a friend's shop and he was demonstrating something, he wouldn't go on and on telling you about it, he'd simply *show* you how!

So look through, enjoy, and let me know what you think of your new, tuned-up *Popular Woodworking*.

Stephen Shaver

A Cure for the Shakes

While on a visit to Delta International Machinery Corp.'s Tupelo, Miss. manufacturing plant, I saw a 10" contractor saw. It was the same model I'd bought in the late 1970s and still use today. My saw has always had a case of the shakes. I asked them about the linkbelts now offered in catalogs which claim to reduce the machine's vibration. They said they might help some, but I really needed a ground belt and a smaller, cast steel arbor pulley. They gave me the parts and suggested I check them out. I expected to see *some* improvement, but didn't expect the saw to run *so* smooth and quiet — far beyond my expectations! It turns out the ground belt is put through a second manufacturing process where the "V" is parallel ground. This eliminates width inconsistencies, which are inevitable with belts that are simply knife cut. The smaller pulley also reduces vibration and slows the blade rim speed but increases torque. Call Delta (800) 248-3358 to order belt #49-034 (\$13.10) and arbor pulley (on serial numbers prior to 8850000) #41-023 (\$13.15).

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**December '95 issue of
American Woodworker**

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INFEED/OUTFEED

From the Popular Woodworking mailbag. . .

PW, The Next Generation

My 10-year-old granddaughter wanted to make a toy for her younger cousins. I gave her a pile of my *Popular Woodworking* issues and told her to find a project. She picked the coon dog in issue #63, November 1991. Wow, did we have fun! Becca, in the picture, did at least 50 percent of the project, maybe more. Her cousins were happy to have a toy made by their cousin. I do appreciate you having projects most of us can make.



I've just started making the porch swing on page 41 of the September 1995 issue. You suggest using a 3/4" x 3" eye bolt. I think it was supposed to be a 3/8" x 3". Maybe I'm wrong, but the 3/4" does sound big.

I'm very pleased with your magazine, and look forward to making many more projects. Thank you.

Gordon Day
San Andreas, CA

Make that a 3/8" Gordon, and thanks for your support! — Steve

Mini Keyboards Needed for Piano Music Box

I've enjoyed your magazine for several years. My all-time favorite was the piano music box in issue #56, September 1990.

My problem is in order to make more and fill the orders I have, I need more miniature piano keyboards. When I tried to order more from Meisel Hardware Specialties (item #1648), I was told they're no longer available. Can you possibly help me locate some? It's such a neat and pretty little item. I hate to think I've made my last ones. Thanks very much.

Bill Gibson
Levelland, TX

The closest replacement I can give you is a chromatic scale keyboard for music boxes that actually plays. It's offered by Klockit [(800) 556-2548] for \$3.25, or \$2.65 in bulk. If any readers have other suggestions, please write in and let us know. — David

Bellows for Shaker Firewood Box

In your November 1995 issue (#87), you showed a Shaker firewood box. Having made this item, my wife now wants the bellows shown in the picture. I'd like some more information, or maybe a drawing, on this project if at all possible. Thank you.

William Hamilton
Bridgewater, NJ

You can find bellows at any store that sells fireplace accessories. For more details on how to create your own bellows, look for a project work-up in the next issue to help get ready for winter! — Steve

We welcome your comments, pro or con, about articles we publish or anything wood-related that's on your mind. We also want to see color pictures of what you're building. Send your input to: Infeed/Outfeed, *Popular Woodworking*, 1507 Dana Ave., Cincinnati, OH 45207. You also can e-mail us at Wudworker@aol.com. Letters may be edited for publication. PW

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TRICKS OF THE TRADE

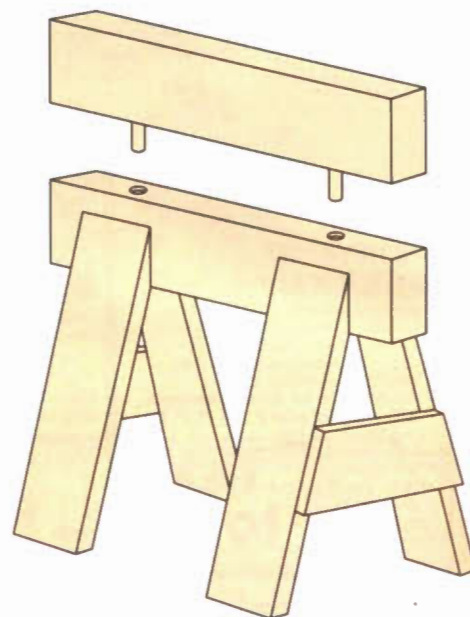
Share your best shop tips here and win!

Raising Horses

Like many woodworkers, I use an old door across two sawhorses as an assembly/glue-up table and as an extra work surface. However, my sawhorses are always either too high or too low. A simple solution that has served me well for many years is adding an extra, removable crosspiece that raises the table quickly and conveniently. Half-inch dowels give stability to the arrangement and the two cross bars can be quickly made from scrap stock.

If you happen to cut into them in a moment of over enthusiasm, they can be easily replaced and you're in no danger of the table collapsing.

Russell Smith
Birmingham, MI



Congratulations, Russell! As this issue's best tip winner, Black & Decker will "pony up" their VersaPak™ System pictured below.

WIN THESE TOOLS!



Tricks of the Trade shares readers' ideas for making woodworking tasks easier and safer. 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. We'll pay \$35 for each trick we publish, and the best submission will win a Black & Decker VersaPak™ System, including a cordless 7.2-volt drill, a cordless detail sander and a cordless multi-purpose saw.

Champagne & Caviar Idea

Drywall screws make an excellent device for removing the dried glue plug in the glue bottle tips. Just thread the screw into the tip and pull out the clog.

Michael Burton
Glorieta, NM



Using Your Head, And a Nail

To keep my handsaw from binding during a cut, I taped a nail with a diameter slightly larger than the blade of my saw to the saw's handle. When I need to saw through a thin sheet of plywood, I place the nail in the kerf to keep the kerf open. The nail's head keeps it from falling through.

Lane Olinghouse
Everett, Washington

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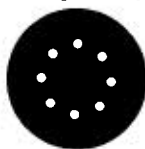


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12 Popular Woodworking

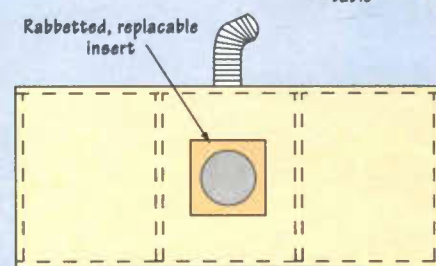
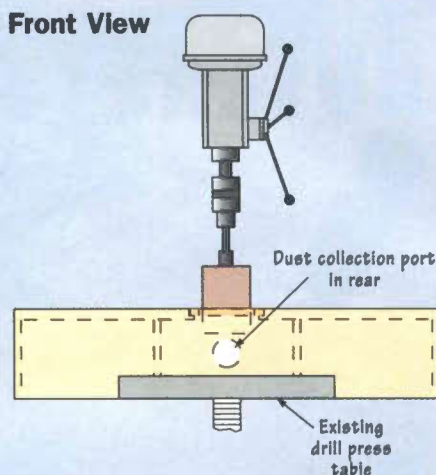
TRICKS OF THE TRADE

Silencing the Drums Of Waste

To get the most out of my sanding drums, I built a box for my drill press with six interchangeable inserts that accommodate sanding drums from 1" to 3". There's also a hole in the side of the box for my shop vacuum. By lowering the sanding drum into the box, I get a fresh section of unused sanding surface.

*Philip R. Beyers
Redford, MI*

Front View



Top View

Clean Up Your Staining Act

Plastic detergent spray bottles make great spray applicators for your stain. Fill the bottle with stain and you're ready to make the job very convenient. Spray on the stain, then use a rag to rub it on evenly. The spray gets the stain into corners and helps cover areas large or small. I leave the stain in the bottle, and at the squeeze of the trigger, it's ready for the next project.

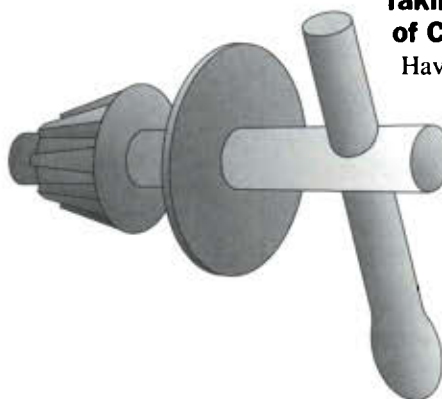
*Dale Meier
Arvada, CO*



Taking the Bite Out of Chuck Keys

Having pinched my finger once too often, I decided to take action to improve my drill chuck key. I drove the cross arm out and slipped a washer onto the stem of the key and then replaced the arm. Now the washer prevents my finger from getting near the gear teeth, but doesn't interfere with the proper operation of the key. **PW**

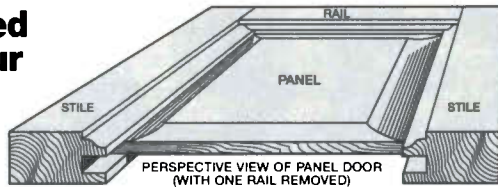
*Russell Smith
Birmingham, MI*



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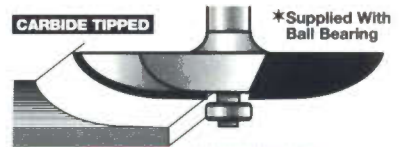
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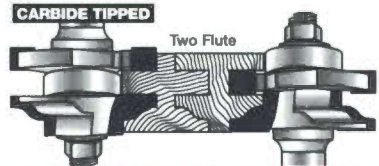


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Master the Latest Craze in Finishing

It's apparent from looking at the wood furniture and accessories market that decorative painting is experiencing renewed popularity. Despite this, many woodworkers still hesitate to take the extra time to create the added detail. But this specialty may just be the perfect match for women woodworkers, since they tend to be detail-oriented. So, if you're looking for a woodworking specialty, mastering decorative painting may be your ticket. Not only will it add interest and beauty to your woodworking, but it also can be creative and enjoyable. Here are some examples to introduce you to these increasingly popular finishing techniques. Then get started with the birdhouse in this issue's Project File.



A CRACKLED FINISH gives pieces an aged look. It's created by a crackle medium and paint that dry at different rates, then separate from lack of proper breathing space and adhesion. Another type of finish (not pictured) is grain painting. Country cabinet-makers developed this process in the late 18th century to imitate the exotic veneers of high-end furniture. The furniture was actually painted to look as if it was veneered, and the technique evolved into a folk art form.



MULTITONE STAINING can add appeal to a piece and highlight special features. The effect is created by placing several stain colorations on the surface.



TRANSFERRING and painting patterns is easy and provides endless possibilities. Pattern ideas can be found just about anywhere — such as wallpaper, fabric and carpet designs or postcards or clipings — to produce a custom look for your home. Patterns are easily transferred with a pencil onto tracing paper, then the painting can begin.



STENCILING is quick and easy. All you basically have to do is apply color with a brush through a cut opening on a piece of acetate or plastic, then add detail.



A DISTRESSED FINISH recreates the marring and wear that can occur on a wooden surface over time. It often accompanies antiquing, which is aging a piece with tinted color glazes.

If you're interested in finding out more, try *Decorative Painting with Gretchen Cagle* and *Creative Paint Finishes for Furniture* by Phillip C. Myer, both published by North Light Books. You can also develop your talent and find more projects in magazines such as *Decorative Artist's Workbook*. Who knows, you may have a new career ahead!

Photos reprinted with permission from *Creative Paint Finishes for Furniture* by Phillip C. Myer, ©1996 by North Light Books.

Women Readers!

Whether you create your own projects, or help your spouse in the shop, this is your forum! If you have a woodworking question or concern, would like to share your project ideas, or are seeking advice on anything from tools to finishing, I'd love to hear from you! Drop a letter to Dovetales, *Popular Woodworking*, 1507 Dana Ave., Cincinnati, OH 45207. You also can send e-mail to Wudworker@aol.com. **PW**

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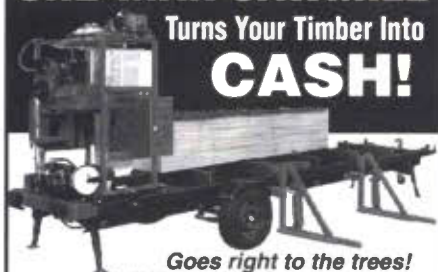
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DeWalt, an innovator in 14.4-volt cordless tools, is introducing the next generation in cordless technology. Now available in an 18-volt are a 1/2" drill/driver (DW995K) and a 5 3/8" cordless saw (DW936K).

The 18-volt technology produces 330 inch/lbs. of torque compared to DeWalt's own 14.4-volt drill/drivers which produce 231 inch/lbs. of torque. Run-time is increased by 70 percent over the 12-volt.

Mike Birch, DeWalt's product manager for cordless drill/drivers, explains that the upgrade to an 18-volt means more than adding three more 1.7 amp battery cells to the 14.4 pack. "There are considerations in the charging process, thermal implications, component implications, and implications with the switches and motors," he says. "The traditional barrier to increased voltage has been motor design. Since DeWalt designed their motors with higher voltage as a consideration, the transition was easier."

The drill/driver retails for about \$235, and the saw for about \$250. Both units include one-hour chargers (which also charge all existing DeWalt batteries) and a carrying case. Extra batteries retail for about \$65.

Scheduled for a September 1, 1996 release, is a 2 hp plunge router (DW621), offering the first integral dust extraction system. The router also features variable speed with soft start, and 1/4" and 1/2" interchangeable collets. The plunge lock is positioned on one of the handles, with the on/off switch located on the other. PW had the opportunity to test a prototype, and the router (retailing at \$210) performs well. The only hang-up may be finding a vacuum hose which provides the flexibility and mobility to allow the router to perform up to its potential.

DeWalt is also introducing a jigsaw (DW321K) in September, retailing for \$160. It will feature tool-free blade changing and shoe bevel adjustment.



The blade change system will accommodate both "T" and universal shank blades. The 5.8 amp saw complements DeWalt's recently introduced cobalt steel jigsaw blades, incorporating a unique tooth design to provide increased cutting contact and longer life.

For more information, write to DeWalt, 701 East Joppa Rd., Towson, MD 21286, or circle #160 on the Resource Directory Coupon.

REVIEW

Hurdling Fences

Following on the heels of the introduction of the JTAS-10 table saw, Jet Equipment and Tools has developed the T-square style Xacta Fence™.

The rip fence offers high density polyethylene side panels for less friction and high resistance to abrasion. The side panels can be changed or replaced by removing six external screws.

The Xacta Fence, similar in design to the Biesemeyer fence system, comes with a two-year warranty and sells separately for \$329. For a limited time, it will also come as a package with the JTAS-10, accessory table, and legs for \$1,399.



After working with the JTAS-10 in our shop, we can tell you it's a good tool at an affordable price. Offering a standard 3hp single phase (5hp optional) motor, the saw is well-made and requires only simple setup procedures. Rather than including a cheap blade which would disappoint the user, or a quality blade with an increased price, Jet has allowed consumers to decide by not including any blade which, we think, is a good choice.

As with many standard table saw accessories (throat plate, miter gauge, blade and splitter guard), they're good, but not of remarkable quality. But we're very pleased with the thought that went into the practical dust collection port for the saw.

With the addition of the Xacta Fence, the JTAS-10 saw, as a unit, proves to be a quality tool at an affordable price for the home or small commercial shop.

For a free informational video about the JTAS-10, the Xacta Fence™, and other accessories, call Jet Equipment and Tools at (800) 274-6842, or circle #164 on the Resource Directory Coupon.



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Also available from TrimTramp is the smaller Model 100. It offers a 16" crosscut capacity and a fixed, rather than adjustable, left-hand 45-degree fence. The Model 100 retails for about \$130.



For more information, call TrimTramp at (800) 387-8746, or circle #162 on the Resource Directory Coupon.

Putting on Airs

Porter-Cable has introduced a line of air-powered nailers and staplers, including an 18-gauge 1/4" crown stapler, two 18-gauge brad nailers, two 16-gauge finish nailers and a 15-gauge angled finish nailer.

Each of the tools comes with a plastic carrying case, including a fastener storage compartment, 1,000 fasteners, a 1/4" NPT male quick coupler, safety glasses, oil, and three hex head wrenches for maintenance.



While the tools accept other brand-name fasteners, Porter-Cable also offers fasteners in 1,000-piece packages.

Retail prices range from about \$100 to \$150 for the brad nailers and between \$240 and \$275 for the finish nailers.

For more information, write to Porter-Cable, 4825 Highway 45 North, P.O. Box 2468, Jackson, TN 38302-2458, or circle #163 on the Resource Directory Coupon.

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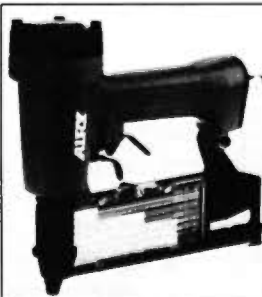
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Their model CTH1442K 14.4-volt center-handle drill/driver comes with two batteries, a carrying case and a one-hour charger for less than \$170. The tool features a keyless chuck, variable reversible speed and a two-speed gear box with six clutch settings.

For less than \$130, the model R180 2 hp, 1/2" collet router offers many features for its price. In addition to its 25,000 rpms, the R180 includes a built-in work light, spindle lock, die-cast "D" base, and a dual-depth scale that's visible during freehand and under-the-table use.

Other tools planned for release this Fall include: a biscuit joiner designed for fine detail work using compact biscuits (about \$70); 1 3/4 and 2 1/4 hp variable speed fixed base routers, both with 1/4" and 1/2" interchangeable collets, for about \$150; and a 13.2- and 14.4-volt pistol grip cordless drill/driver, both including the same accessory package as the 14.4 center handle model mentioned above.



For more information, write to Ryobi, 5201 Pearman Dairy Rd., Anderson, SC 29622, or circle #161 on the Resource Directory Coupon. **PW**

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ASK THE EXPERTS

Colorfast Purpleheart

I'm having a problem retaining the beautiful purple color of some purpleheart I purchased. After planing, sawing or sanding, the wood is a dirty brown color. If I then finish the wood, it stays dirty brown. I've sanded and planed pieces and put them aside, and eventually the purple color returns. I haven't kept a record of how long this takes, but I'd guess maybe 30 days. Is there something I should be using on this wood to bring the color back?

Richard Ruehle
Findlay, Ohio

When freshly cut, purpleheart's heartwood appears to be a brownish color. As it's exposed to ultra violet (UV) rays from the sun, the color changes to a deep violet purple. This color change can take a few days, weeks or months, depending on the amount of direct sunlight the wood receives. Left exposed for years, purpleheart will continue to darken until it becomes a dark gray and, in some cases, even black.

There's no way to speed up the process, but I've found the best way to deal with purpleheart's color quirk is to assemble the piece, then expose it to sunlight until it develops its deep violet purple color. There's no practical way to expose the piece evenly, so you'll just have to let nature take its course until you're satisfied with the color. Then apply a finish that contains a UV blocker.

Until a few years ago, the only finish with UV blockers was spar varnish, which unfortunately also contains oils and phenolic resins which are amber in color. Though the spar varnish does protect against UV light, it will somewhat change the color of the purpleheart when applied.

Today, a number of water-based acrylic resin finishes are sold which hold up better against UV light than many other resins. These finishes don't contain amber oils or resins and dry crystal clear with no amber tint. Some of these finishes are also formulated with UV blocker. An acrylic resin finish with UV blocker is ideal for using on purpleheart, although it's very expensive.

The UV blocking component is pricey, and though a product may indicate that it includes UV blockers, a few drops to a batch of finish isn't adequate. To determine a good UV blocking finish, check the price. The more expensive it is, the more likely it has better UV protection.

Acrylic resin finishes with UV blockers are often sold as water-based exterior finishes or polyurethanes. Recently more brands have been popping up on the shelves of retail paint stores and specialty woodworking supply stores. **PW**

Sal Marino is technical consultant for Albert Constantine and Son, Inc. and is a woodworking writer and teacher.

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A common burl veneer pattern is called four-piece match jointed, as seen here using walnut. This match joins sides to sides and ends to ends.



General Description

A burl is a lumpy, woody growth that can occur on any tree species. Rarely larger than a couple of feet in diameter, burls occur

anywhere on a tree from its root system to its upper branches. Cell production that's grossly out of sync with the tree's normal growth patterns form these knob-like projections.

Species noted for their burls include olive ash (*Fraxinus oleaceae*), Carpathian or English elm (*Ulmus procera*), Pacific

Many beautiful species of burl veneers are available.

madrone (*Arbutus menziesii*), sugar maple (*Acer saccharum*), California laurel or myrtle (*Umbellularia californica*), redwood (*Sequoia sempervirens*), Thuya (*Tetraclinis articulata*), black walnut (*Juglans nigra*) and yew (*Taxusbaccata*, *T. brevifolia*, et al.).

The genesis of burls is poorly understood. Theories range from viruses and genetic defects to frost, fire and mechanical damage. The only certain fact of burl growth is it's gen-



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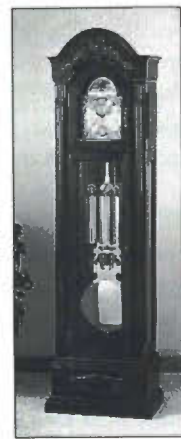
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erally faster than the growth of the rest of the tree.

Burl grain patterns are so varied, a common example is impossible to pin down. In general, many look like some weird topographic map, a sea surface gone wild or a herd of fountains run amok. Color variations are only a little more subdued. The ultimate effect of presenting a burl's beauty is in the careful cutting and matching of veneers to produce striking, repetitive patterns.

Since the Roman Empire, burls have been used almost exclusively in fine furniture, keepsake boxes, sculptures and small decorative turnery.

Working Properties

Since most commercially available burls are cut into veneers, problems in working the wood in this form are minimal. Still, if you work from a burl you've cut yourself, or you find some solid burl lumber, be prepared for the woodworking challenge of a lifetime.



Solid burl makes an unusual and highly figured desk fixture.

Movement due to humidity changes will be much more pronounced in burls. Although turning burls is easier than other woodworking processes, if you have the time and patience, solid burls can work well in other projects.

Finishing

Obviously, the whole point of a burl is its natural beauty, and a good finish will compliment it. In many burls, filling the very porous, open grain is an absolute necessity. Burls are frequently so porous that filling the grain for a glass-smooth surface is a three- or four-step process.

By Ken Textor

Availability

In veneer form, burls are widely available through mail order catalogs. Often these burls will be paper backed and much easier to use than starting from scratch with burl veneer. Striking results can be achieved without the knowledge or experience required to prepare rough burl veneers for furniture projects. Expect to pay between \$2.50 and \$15 per square foot. Variations in the price depend on the quality, species and thickness of the veneer, as well as how striking its pattern is.

Where available, solid burl lumber usually comes in turning blocks, occasionally in short planks. Prices vary greatly and are usually negotiated individually. In short, though expensive, burl is worth what you'll pay. **PW**

Ken Textor is a contributing editor for Popular Woodworking.



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By Ron Bishop

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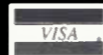
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The *Polliwog*

From shipyard to seatrials over a lazy summer weekend.

By George Sargent



KING GEORGE, that's what folks around here called him way back when Grandad was a boy. Of course he really wasn't a king, but because he lived on his own tiny island out in the river, the name seemed to fit. It was said that he spent his early adulthood sailing over the oceans aboard all manners of ships. Why he chose a life of solitude on the island remained a mystery, though his knowledge of ships and boats did not. From scraps of lumber, cloth, metal and string, the old man fashioned a myriad fleet of model boats, including square riggers, schooners, catboats, sloops, and even a Chinese junk.

What made these models so fine was neither minute detail nor sparkling finish, but their simple build, recognizable character and the fact that every one of them sailed! King George didn't see much sense in making a boat that merely sat on a shelf looking pretty.

Grandad said that one of the greatest things about King George's models was that they inspired him to build models himself. Simple, sturdy ones that required no great skill of hand nor vast experience to sail. Models so easy to build and repair that a torn sail, a dismasting, or even a loss to King Neptune himself is no big deal.

The miniature skiff *Polliwog* presented here is a good introduction to this type of model. A few years ago I worked up one for some young sailors to assemble for the Mid-Atlantic Small Craft Festival. With pre-cut parts, a few nails, a dowel rod, plastic bag sails, a little tape and string, we had 30-plus eager skippers ready to launch their handiwork in a little over an hour. The performance of these little ships was such that it inspired refinement. Thus was born the *Polliwog*.

Boat enthusiasts will immediately recognize her as a fair representation of the flat-iron skiffs once commonly found on the Chesapeake, throughout New England and beyond. This design is still favored by many sailors today for its economy and performance.

Due to the limits of this style of construction and the need to obtain good performance from a small model, some departures from the original's features have been made. Remember, this isn't a scale model, but a functional representation. Note that a keel has been substituted for the centerboard. Those who wish to represent the centerboard may do so on the sides of the keel by painting out the rest of the keel and lower portion of the rudder with black paint. Paint

Schedule of Materials: Polliwog

No.	Item	Dimensions T W L
1	Hull	1½" x 5½" x 12"
1	Keel	¾" x 1½" x 10½"
1	Rudder	¾" x 1½" x 3¾"
1	Tiller	¼" x 3"
1	Mast	¼" x 16"
1	Boom	⅛" x 11"
1	Club	⅛" x 3½"
1	Coaming section	⅝" x 3" x 8"

Diagram 1:

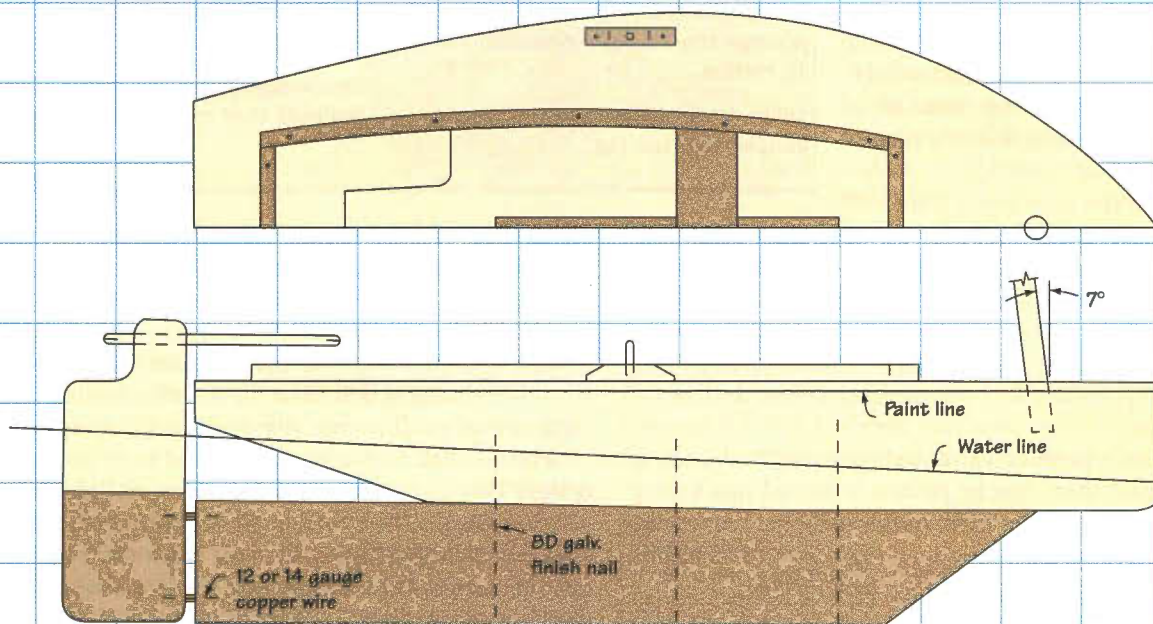
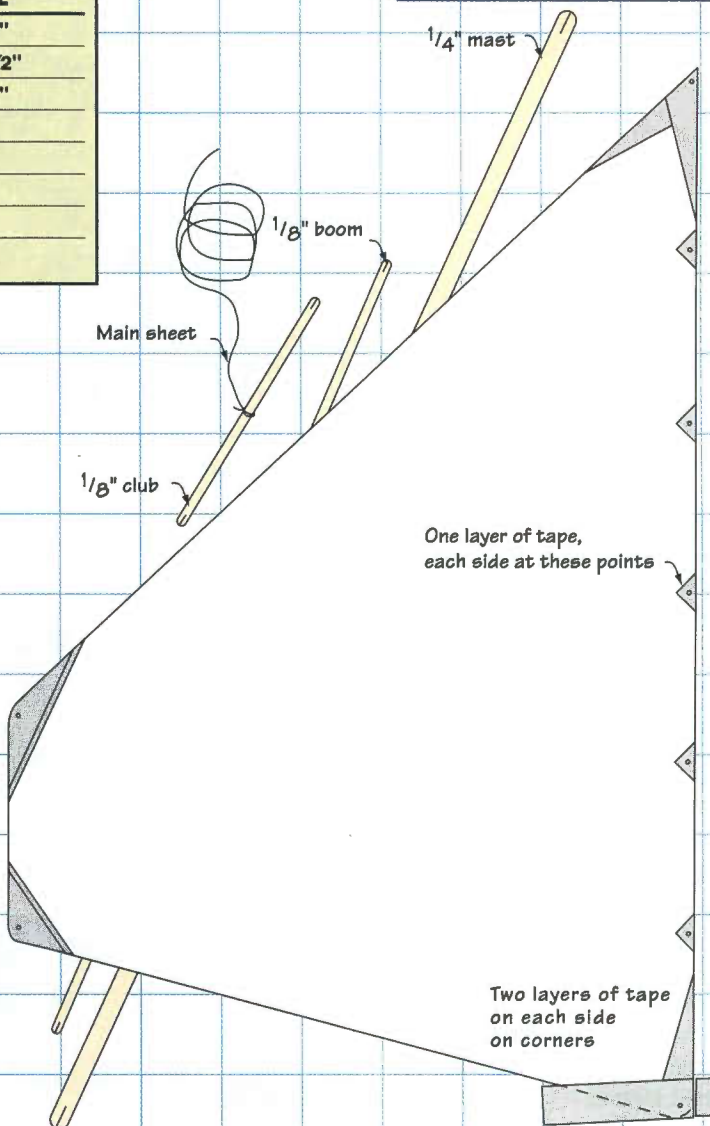
Polliwog Patterns

The elevation and plan views of the hull, as well as the sail, are shown here on a scaled grid which can be increased to full size by photocopying at 240%.

For the sail, use high density polyethylene shopping bags used by your favorite discount store. Cut the sail to shape with a craft knife or razor blade, then reinforce the corners with tape, and rig with crochet thread and needle.

These sails take shape in the lightest breeze and are more than strong enough for heavy winds. They also last for years, and when push comes to shove, give way before dismasting.

**SEAWORTHY
SMALL SHIPS**



1 square = 1"

goes a long way in detailing this sort of solid hull.

Only a few common materials are needed to build the *Polliwog*. Glue is not needed. All of the pieces — hull, keel, rudder, coaming and thole pin pads — can be made of the same wood. Spruce, white pine or cedar will do nicely. A piece of 2" x 6" (really 1½" x 5½") x 12" long will be enough for the hull. I prefer to cut the profile first (**diagram 1**). This is quite simple and involves one straight cut from the bottom of the ½"-high transom to a point 3" forward on the bottom of the hull.

Lay out and cut the half deck plan from **diagram 1** on a piece of light cardboard to use as a pattern, flipping it over on the center line to draw both sides. If you use a band saw to cut the deck plan, start the side cuts at the transom while holding the bow down firmly to keep the bow from kicking up when the blade passes through the unsupported section.

Next sand the hull smooth, rounding over the point where the bottom turns up to meet the transom. A hole for the ¼" mast, ½"-deep and raked 6 or 7 degrees aft, can be bored now. Make this an easy slip fit so the rig can be pulled for easy "stowage."

The keel can now be cut from ¾" stock and pilot holes drilled for the three eight-penny galvanized nails that fasten it to the hull. Cut out the rudder from the same stock, and drill holes for the copper wire rudder pins (stripped 12 or 14 gauge electrical wire works great) in both rudder and keel. These should be a press fit. Test fit the pilot hole and wire in scrap before drilling the actual parts.

The tiller, a piece of ½" dowel, slotted at both ends to hold the main sheet, can be pushed or tapped into a snug fitting hole in the rudder head. At this point the keel can be nailed in place on the center line, flush with the transom. Leave the rudder off until painting is completed.

The exact placement of the coaming and thole pin pads is not critical, but should resemble **diagram 1**. I used indi-

BOAT WORDS (bōt'wurds) n.

jibing: Shifting the sail from one side to the other when running before the wind.

leeward: The side toward which the wind blows.

tacking: A course run obliquely against the wind.

luff: The forward edge of a fore-and-aft sail.

boom: Any spars or poles extending from a ship's mast, used for extending sails.

coaming: A raised border around an opening in a deck.

thole: A pin inserted into a gunwale to provide a fulcrum for an oar.

aft: The rearward end of a boat.

spar: A stout pole used for masts or booms.

transom: A flat termination to the stern of a ship, above the waterline.

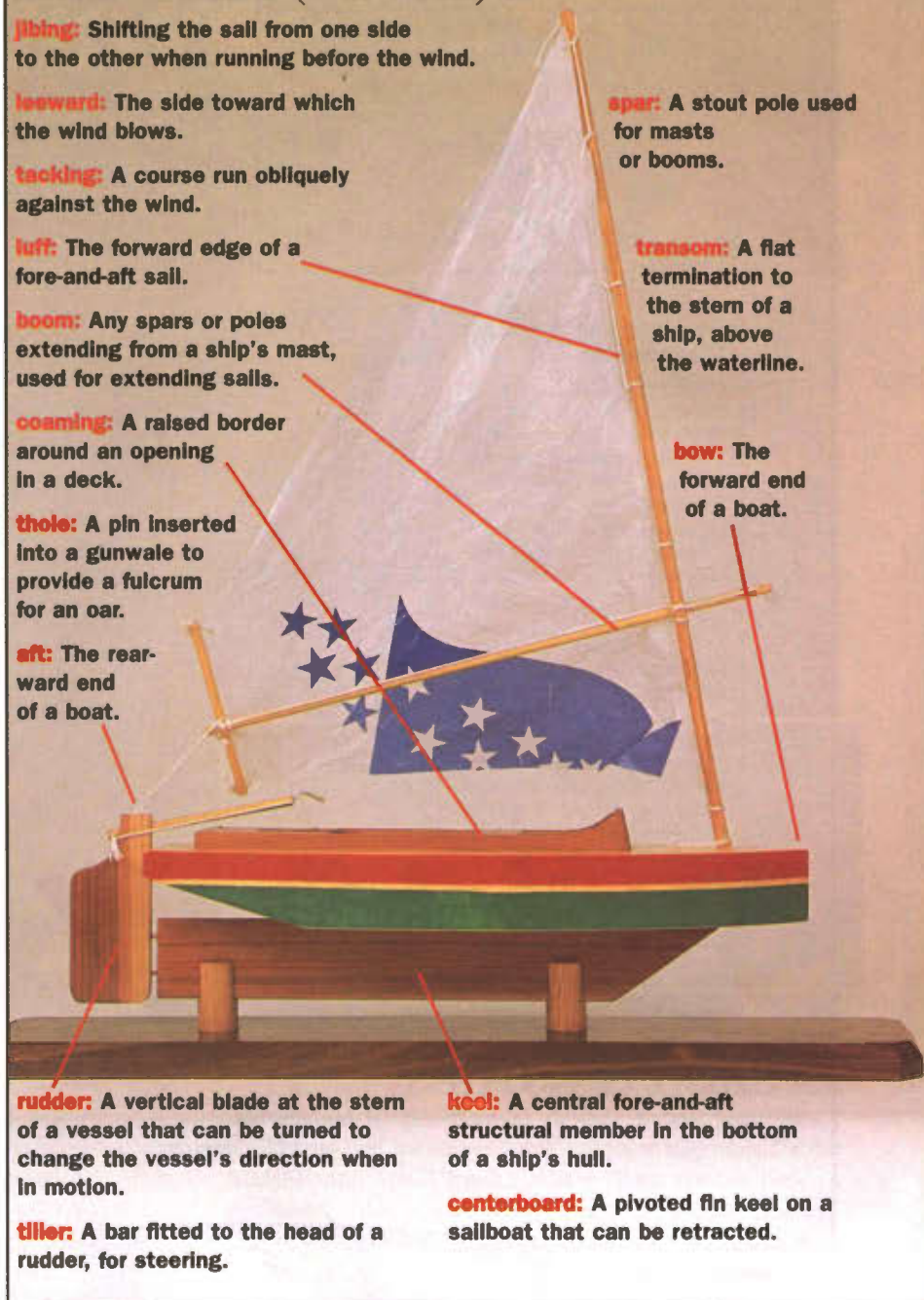
bow: The forward end of a boat.

rudder: A vertical blade at the stern of a vessel that can be turned to change the vessel's direction when in motion.

tiller: A bar fitted to the head of a rudder, for steering.

keel: A central fore-and-aft structural member in the bottom of a ship's hull.

centerboard: A pivoted fin keel on a sailboat that can be retracted.



vidual ⅜" x ⅝" spruce for the coaming fastened in place with small brads. Another option is to cut the entire coaming area out of one piece. Round toothpicks cut to length and placed in drilled sockets make great thole pins.

Spars for the *Polliwog* are common dowel rods and should be slotted at both ends for securing rigging lines. A razor saw or small coping saw works well for this.

The question of proper sail material is subject to some debate. There are those who will insist upon light sail cloth or other fabric. These will make very strong and durable sails, but are rather heavy and stiff when compared to my favorite choice. High density polyethylene shopping bags, the light crinkly stuff used by your favorite discount or department store, produce the best performing, and easiest-

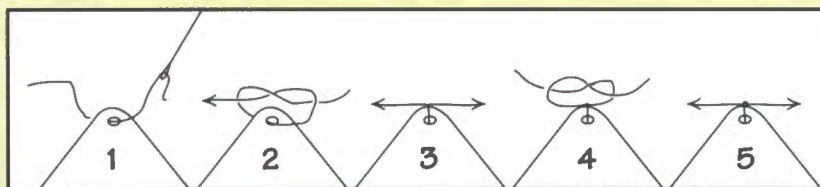
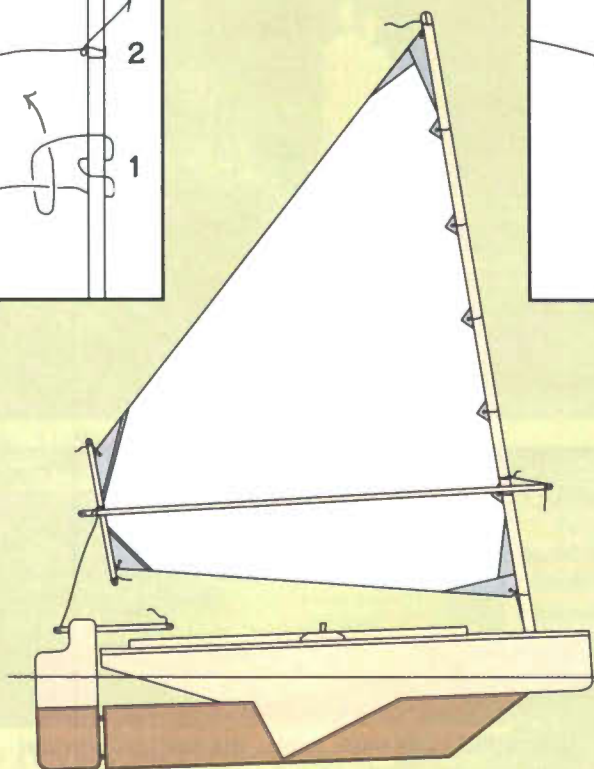
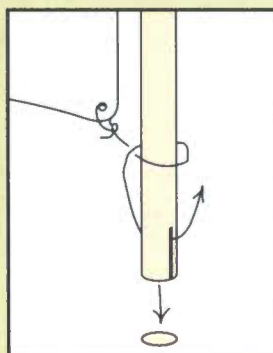
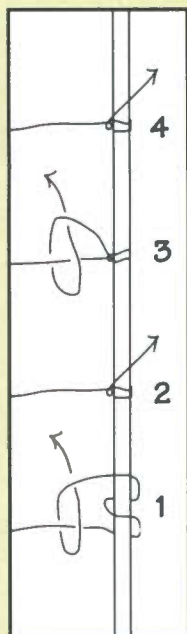


Diagram 2: Rigging

The sail rigging can be securely performed as shown at top, while the mast rigging can be done as shown below.

Once the sail is attached to the spar and club, the entire assembly can be fastened to the boat as shown below.

Tie off the rigging from the base of the sail by running the string through the cut in the base of the mast. Then insert it in the mast hole as shown below right.



leading edge and taping. Don't forget to add an extra inch or so to the leading edge to allow for the sleeve. You'll also need to cut a notch in the sleeve to secure the boom to the mast. The original *Polliwog* is rigged this way and works quite well.

"Look at that, she really sails!" is likely to be heard from onlookers when launching this little skiff. And she'll sail well indeed. With the rudder centered and the boom set about 30 degrees to the center line, the *Polliwog* will sail right across a cove in a light breeze, heading up in the puffs and even tacking in stronger gusts. If she heads up too quickly for your liking, grasp the rudder blade (not the tiller) and bend it to leeward a small amount to hold her off. By experimenting with different sail and rudder settings, you can make her sail a variety of courses and perform jibing and tacking maneuvers if conditions are right.

Since the *Polliwog* is not self righting, she can be capsized in a strong enough wind, especially with the sail close-hauled. The remedy for this is the same as that for a full-sized skiff — shorten the sail by removing the boom and rolling up the desired amount of sail around the mast.

As with all boats, the ability of your little skiff to sail successfully relies on

the judgment and skill of its skipper. Her first outings should be in light breezes. Always keep an eye on the weather and avoid strong currents, high winds and rough seas. Smooth sailing! **PW**

to-make, sails. Use **diagram 1** to make the sail to its actual size and shape, then cut to shape with a craft knife or razor blade. Reinforce the corners with tape, and rig with crochet thread and needle (**diagram 2**).

As for the best tape for this job, I've used masking tape, white and clear vinyl, and invisible transparent tapes of various brands and weights. They all work well as long as the adhesive doesn't readily dissolve in water. It's best to test whatever tape you use on a scrap of sail by submerging it in water for a couple of hours.

The sail plan above illustrates rigging similar to a full-sized version. If you prefer a more expedient style of rigging, simply tape the vertical club directly to the sail and fashion a sleeve for the mast in the luff by folding over the

George Surgent owns and operates the Seaworthy Small Ships company in Prince Frederick, Maryland, and is an active member of the Traditional Small Craft Association.

Sources

If you'd like a catalog of other plans (or kits) available from George Surgent, send \$1 to Seaworthy Small Ships, Dept. PW, Box 2863, Prince Frederick, MD 20678, or call (410) 586-2700.

Country Reflections

This charming cherry mirror/shelf accents any room.

By David Thiel



WALL MIRRORS add an extra dimension to virtually any room. This country mirror is almost like having an extra window, and also provides display space for a cherished knick-knack. Simple to construct using basic half-lap joints, this project requires very little time and even less wood.

Material Preparation

First mill your lumber to the sizes given in the Schedule of Materials on the next page. One $\frac{3}{4}$ " x 6" x 96" board is all the lumber you need. The backs can be made of any $\frac{1}{4}$ " material, but since my doors may swing away from the wall, I decided to use cherry to match the rest of the mirror.

Tips on Cutting Glass Safely

- Start and end your cut slowly to keep from chipping the edge of the glass.
- Gloves are a handy ideal
- How you snap the glass is more important than how it's cut. Place the score mark up, exactly on the edge of a flat surface and snap the glass in a short, swift downward motion.
- If you're breaking off an edge thinner than 1", again lay the score mark exactly over the edge of a flat surface and lightly tap the thin edge with a piece of dowel, or other non-metal material, until the piece snaps free.
- Make your cut in a single constant-pressure pass. Don't go back over your cut.



1 One of the more basic joints, the half-lap, provides good strength while adding an appealing accent.

Joinery

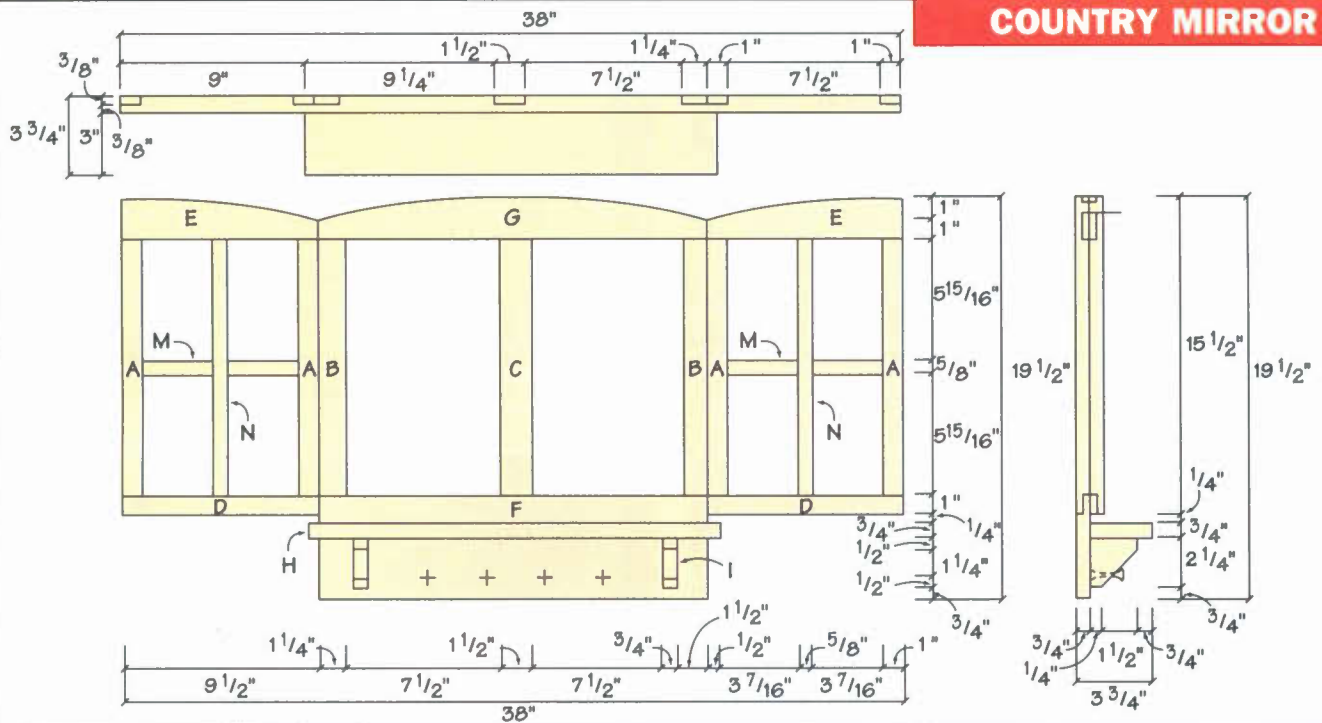
Use simple half-lap joints (**photo 1**) on all the mirror frames. Set the table saw's blade height to $\frac{3}{8}$ " to reach the exact center of each piece. Adjust this height if your pieces aren't exactly $\frac{3}{4}$ ".

Use the photo and diagrams to mark the half-lap joints, then set your rip fence to cut the joints on the stile and rail ends. Rather than use a dado, I used repeated saw passes with the miter gauge to make the joints.

Now move the rip fence out of the way and mark the center of both the upper and lower center rails. Then measure out $\frac{3}{4}$ " to either side of the center. This establishes the $1\frac{1}{2}$ " location of the center stile. Make these cuts on the back of both pieces.

When I did this step, I didn't think far enough ahead,

PHOTO BY ERIK VON FISCHER/BLINK



Schedule of Materials: Country Mirror

No.	Letter	Item	Dimensions T W L
4	A	Door stiles	3/4" x 1" x 15 1/2"
2	B	Center stiles	3/4" x 1 1/4" x 15 1/2"
1	C	Center stile	3/4" x 1 1/2" x 15 1/2"
2	D	Door rails	3/4" x 1" x 9 1/2"
2	E	Door rails	3/4" x 2" x 9 1/2"
1	F	Center rail	3/4" x 5" x 19"
1	G	Center rail	3/4" x 2" x 19"

No.	Letter	Item	Dimensions T W L
1	H	Shelf	3/4" x 3" x 20"
2	I	Shelf supports	3/4" x 2 1/4" x 2 1/4"
4	J	Backs	1/4" x 8 3/4" x 13 3/4"
4	K	Shaker pegs	1/4" x 1 1/2"
4	L	Mirrors	1/8" x 8" x 13"
4	M	Mullions	1/4" x 5/8" x 3 7/16"
2	N	Mullions	1/4" x 5/8" x 12 1/2"



2 The end joints in the rail were made with a chisel, while the center was made on the saw.

3 After cutting the arch on the rail, the stiles are set in place and the ends marked to match the arch. Then they're trimmed and sanded to fit.



4 The frames will stay flat by clamping them together using a simple MDF backing board.

and ran both cuts all the way through the pieces. This left a void on the bottom of the lower rail which I later plugged with a piece of scrap. It actually looks very nice, but you may want to stop your cut short of the edge of the board.

I couldn't cut the half-lap at the ends of the lower center rail on the saw, so I marked the location and chiseled the material away from the back of the piece (photo 2).

With all the joinery cut, lay out the required arch on the center upper rail. The full 2"-width should remain at the center, and 1" at the ends. After marking these dimensions, use a flexible metal ruler to bend an arch across the three points and mark the arch with a pencil. After cutting along the arch on the band saw and sanding any unevenness, use

the center arch to lay out the arches for the two doors, and also mark the arch on the lap joint of the stiles (photo 3).

Construction

Assembling the frames is easy. Though the joints are cross-grain glue joints, they provide plenty of strength for this lightweight mirror. You can use a piece of medium density fiberboard (MDF) as a clamping surface to keep each frame flat and square while the glue dries (photo 4).

Once dry, rout the 3/8"-wide x 1/2"-deep rabbets for the mirrors and backs (photo 5). I used a rabbeting bit with a bottom mounted pilot bearing mounted in a router table. I ran each frame face-up to minimize any danger.

COUNTRY MIRROR



5 The $\frac{3}{8}$ " x $\frac{1}{2}$ " deep rabbet will hold the $\frac{1}{8}$ " mirror and $\frac{1}{4}$ " back with room to spare.



7 Though I used a simple bevel cut on the support, you can customize your project to suit your taste.

Cut the mirror undersize to fit within the radii left by the rabbetting bit. Then fit the backs (rounded corners on the doors and clipped corners in the center section) to fit the space (**photo 6**). This allows a $\frac{1}{4}$ "-gap around the mirror to tack the backs in place — later.

Now shape the shelf supports as shown in the **diagram**, and mount them to the shelf (**photo 7**). I used carpenter's glue and a butt joint, again reasoning that a cross-grain glue joint was sufficient for this little shelf.

Once the glue has dried, locate the shelf on the face of the center frame, then mark and drill $\frac{3}{16}$ " clearance holes in the frame (**photo 8**). The Shaker pegs are located 1" up from the bottom edge and $2\frac{7}{8}$ " on center between the two shelf supports. After marking the locations, drill $\frac{1}{4}$ "-deep holes with a $\frac{1}{4}$ " drill for the pegs.

One last bit of "construction" is cutting the $\frac{1}{4}$ "-thick mullions for the doors. Then fit them in your frames to ensure a snug fit.

Finishing

After sanding all the pieces to 120 grit, apply an oil-based cherry stain that complements the cherry color without making it too dark.

One comment: To make staining easy, make sure you use only heartwood on the front. Stains penetrate sap and heartwood differently, giving an uneven appearance. Even using a gel stain produces less than good results.

Apply a clear finish over the stain. Oil, lacquer, varnish or urathane will work.



6 The backs are cut to match the rounded corners in the doors only.



8 By drilling clearance holes for the shelf and supports, locating the pieces for assembly is much easier.

Final Touches

After finishing, assemble the mirror pieces using pilot holes to direct $\frac{1}{2}$ " brass escutcheon pins through the backs and into the frames.

Now firmly clamp the shelf into position on the center frame and attach with screws. Then flip the frame on its back and, using a dab of glue each, glue the Shaker pegs into the frame.

Use decorative antique finish butt hinges to hang the doors, and pre-pilot drill for the screws. Apply the mullions to the mirror using cyanoacrylate glue. Though a wood-to-glass adhesion, the bond is more than adequate to firmly hold the mullions in place.

Now you have a handsome example of your handiwork, especially with the shelf's accent of the simple half-lap joints visible at the corners. **PW**

David Thiel is associate editor of Popular Woodworking, and has been working with wood both as a hobby and professionally since he was old enough to push a broom in his father's custom cabinet shop.

Wall Mounting Tip

When you hang your mirror, the doors may want to swing closed. To keep them in place, simply pull the hinge pin and bend it a little so that it goes in with less play.

Handcrafted Highchair

George Nakashima's signature Conoid Chair inspired the design of this figured red birch highchair. It's so strong it could even support an adult. My two children took three squares a day in it until age seven and it *never* tipped over, and the generous tray caught nearly every spill.

Bridle joints (**diagram**) are the secret to the chair's strength. Use them to join the feet and seat to the legs. Reinforce the seat with a $\frac{1}{2}$ " dowel rod driven through the back of the legs into the seat. Do the same with the arms after letting them into the side of the leg about $\frac{1}{8}$ ". Set the back side of the legs at an 82-degree angle to the floor. The top of the seat is parallel to the floor.

Scoop out the tray using a router with a $\frac{3}{4}$ " dado bit. First cut the sloped edges in steps, then blend and smooth them with an aggressive power sander. Secure the removable tray in place using toggle clamps affixed to its bottom, pinching the underside of the arm.

Schedule of Materials: Highchair

No.	Item	Dimensions T W L	Material
1	Top rail	1" x 4" x 19 $\frac{1}{2}$ "	Red birch
2	Legs	1 $\frac{1}{4}$ " x 3" x 37"	Red birch
5	Spindles	$\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x 14"	Red birch
1	Seat	1 $\frac{1}{4}$ " x 16 $\frac{1}{4}$ " x 12"	Red birch
2	Arms	$\frac{7}{8}$ " x 3" x 11"	Red birch
2	Arm suprts	$\frac{5}{8}$ " x 5 $\frac{1}{2}$ " dowels	Red birch
2	Feet	1 $\frac{1}{4}$ " x 2 $\frac{1}{2}$ " x 17"	Red birch



THE PROJECT FILE
HANDCRAFTED HIGHCHAIR

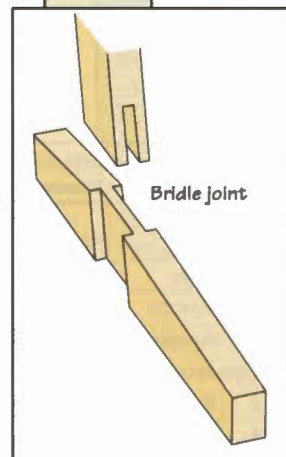
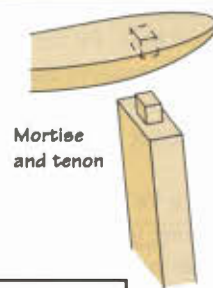
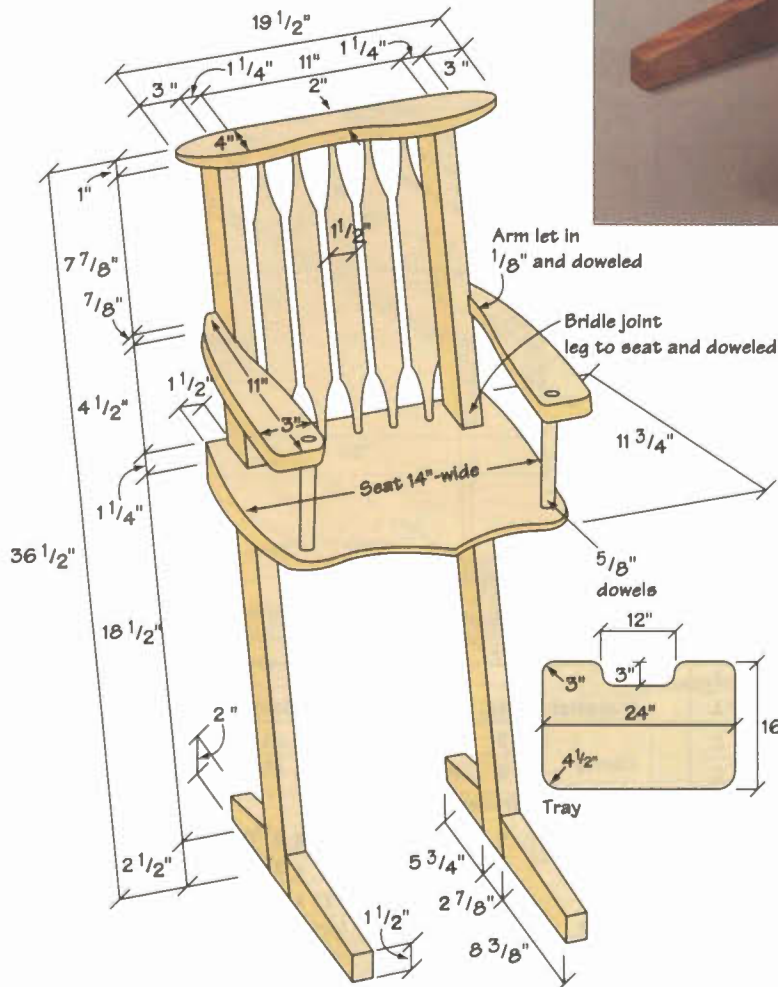
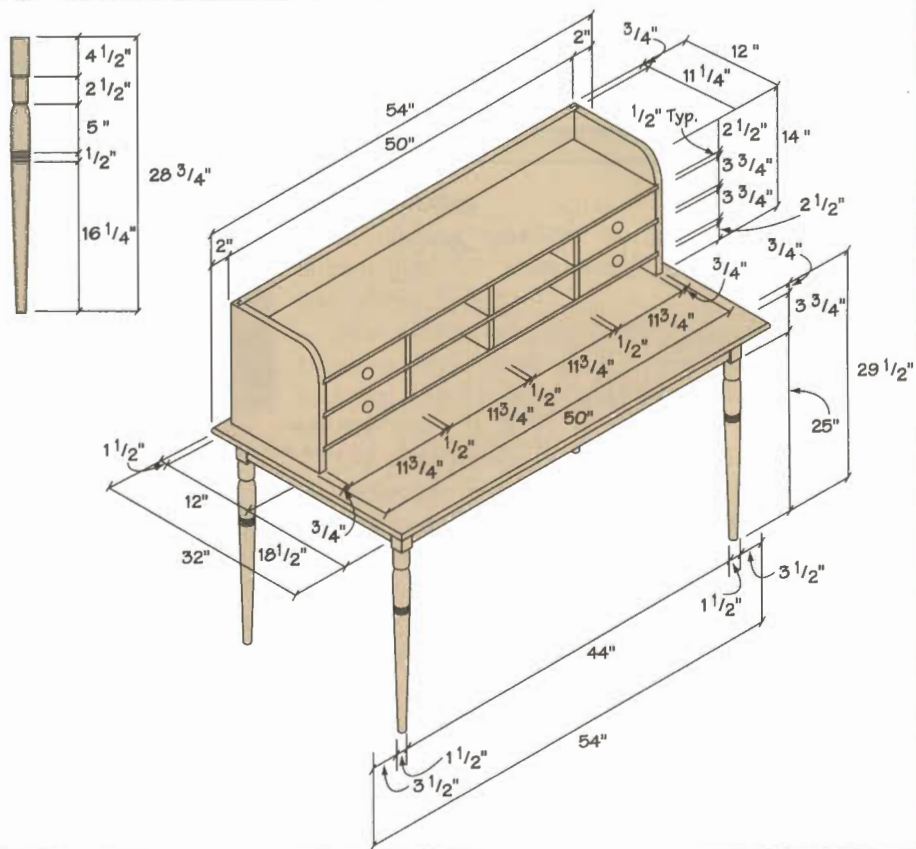


Table Desk & Organizer

The simplicity of Shaker styling combined with the subtle character of cherry and maple make a great combination. So does an organizer atop this, or any appropriately sized table, to make a functional desk arrangement.

The sizes given in the Schedule of Materials include the extra lengths needed for tenons, dadoes and grooves. The table aprons use mortises and $\frac{1}{2}$ "-wide x $\frac{9}{16}$ "-long tenons. For the organizer joints, fit the back to the sides using a $\frac{3}{8}$ " x $\frac{3}{8}$ " tenon set in a groove on the sides. The long shelves fit into a $\frac{3}{8}$ "-deep dado on the sides and $\frac{3}{8}$ " grooves in the back. The dividers set in dadoes that are $\frac{1}{4}$ "-deep on the top and bottom shelf and just $\frac{1}{8}$ "-deep on the middle shelf. Join the drawer parts with $\frac{5}{16}$ "-deep rabbets on the sides in the front and back. Fit the drawer bottoms in grooves that are also $\frac{5}{16}$ "-deep on the sides and front, set up $\frac{1}{4}$ " from the bottom.

Use a $\frac{1}{4}$ " roundover bit in your router to make the edge detail on the tabletop and the edge of the organizer.



Schedule of Materials: Desk & Organizer

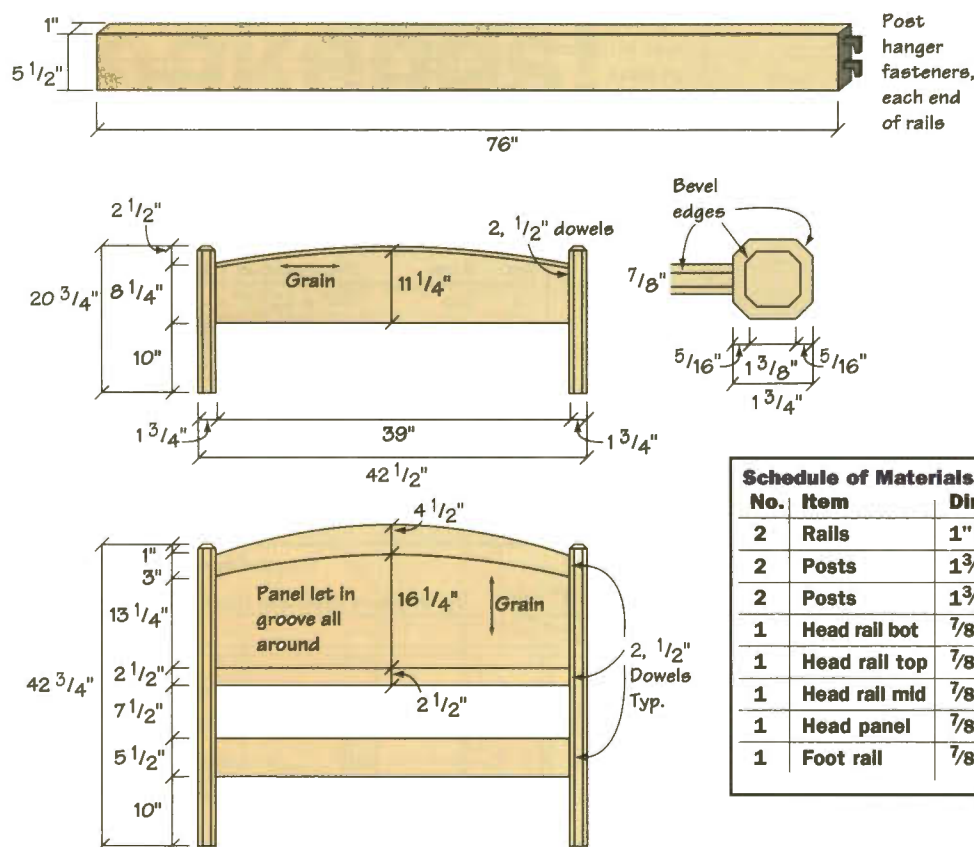
No.	Item	Dimensions T W L	Material
Table Desk			
1	Top	$\frac{3}{4}$ " x 32" x 54"	Cherry
4	Legs	$1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $28\frac{3}{4}$ "	Maple
2	Aprons	1" x $3\frac{3}{4}$ " x $45\frac{1}{16}$ "	Maple
2	Aprons	1" x $3\frac{3}{4}$ " x $23\frac{1}{16}$ "	Maple
Organizer			
2	Ends	$\frac{3}{4}$ " x 12" x 14"	Maple
1	Back	$\frac{3}{4}$ " x 14" x $49\frac{1}{4}$ "	Maple

No.	Item	Dimensions T W L	Material
3	Shelves	$\frac{1}{2}$ " x $11\frac{5}{8}$ " x $49\frac{1}{4}$ "	Maple
6	Partitions	$\frac{1}{2}$ " x $4\frac{1}{8}$ " x $11\frac{1}{4}$ "	Maple
Drawers			
4	Fronts	$\frac{1}{2}$ " x $3\frac{11}{16}$ " x $11\frac{11}{16}$ "	Cherry
4	Backs	$\frac{1}{2}$ " x $3\frac{3}{16}$ " x $11\frac{3}{16}$ "	Maple
8	Sides	$\frac{1}{2}$ " x $3\frac{11}{16}$ " x $11\frac{1}{4}$ "	Maple
4	Bottoms	$\frac{1}{4}$ " x $11\frac{3}{16}$ " x $11\frac{1}{4}$ "	Birch ply.

Custom-made Bed

Working a yellow birch panel into the headboard of a solid cherry standard-sized single bed will make this project look custom-made.

The radii of the top rail also give the bed a custom look. You don't need specific radii, just make it look good to your eye. The birch panel sets in the posts and rails $\frac{1}{2}$ " all around, so make the panels' top radius $\frac{1}{2}$ " greater than the bottom radius of the top rail. Dowel the rails to the posts and slip the panel in without glue as you assemble it. The footboard is solid cherry that's simply doweled to the posts. Use $\frac{1}{2}$ " x 2" dowels. Rout "V" grooves in the birch panel with the grain to give it a planked look. With a chamfer bit, detail the top edges of the headboard and footboard, as well as all edges on the posts except for the bottom. The bed side rails connect to the headboard and footboards using knock down fasteners called post hangers. Use the double hook variety for extra strength.



Schedule of Materials: Single Cherry Bed

No.	Item	Dimensions T W L	Material
2	Rails	1" x 5 1/2" x 76"	Cherry
2	Posts	1 3/4" x 1 3/4" x 42 3/4"	Cherry
2	Posts	1 3/4" x 1 3/4" x 20 3/4"	Cherry
1	Head rail bot	7/8" x 5 1/2" x 39"	Cherry
1	Head rail top	7/8" x 4 1/2" x 40"	Cherry
1	Head rail mid	7/8" x 2 1/2" x 40"	Cherry
1	Head panel	7/8" x 17 1/4" x 40"	Birch
1	Foot rail	7/8" x 11 1/4" x 39"	Cherry

Bookcases

When it comes to furniture projects, there isn't an easier place to start than bookcases. They're simple boxes with no drawers, no doors and straightforward joinery. As far as practical, you'll be amazed as to what can be stored in them.

The two bookcases offered here are made of solid oak (edge-glued to reach finished width). Use dados, glue and finish nails for joints. All dados are through dados except for those in the top which are stopped $\frac{3}{8}$ " from the front edge.

A $\frac{3}{8}$ " x $\frac{3}{8}$ " through rabbet runs on the inside back edge of all the sides. A stopped rabbet runs on the inside back edge of each top.

Use a template to locate the shelf pins, which are drilled to provide equal spaces. Drill extra holes 1" up and 1" down from the equidistant holes for adjustable spacing.

You can finish these bookcases with a few coats of a clear satin lacquer. But if natural color or lacquer isn't your first choice, you can choose any number of stain options or clear topcoats.



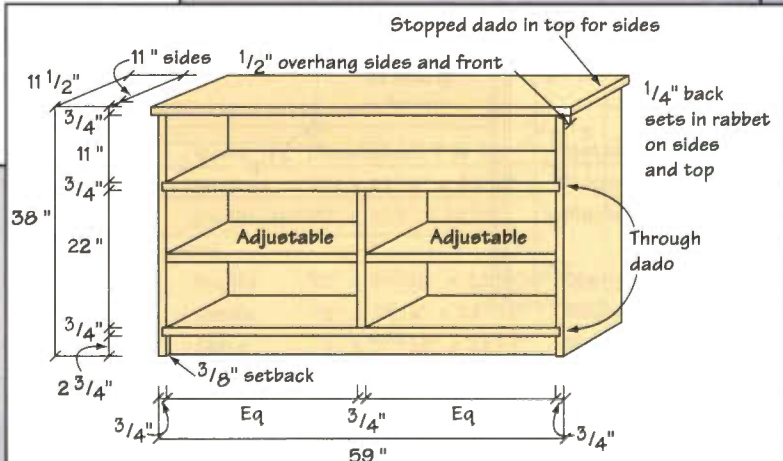
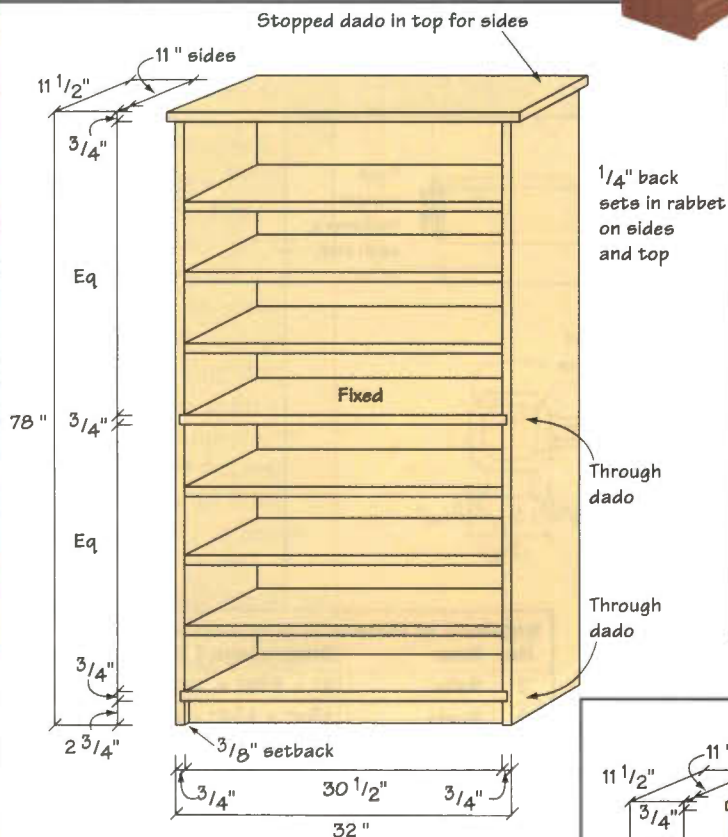
Schedule of Materials: Bookcases

Low Bookcase

No.	Item	Dimensions T W L	Material
1	Top	$\frac{3}{4}$ " x $11\frac{1}{2}$ " x 60"	Solid oak
2	Sides	$\frac{3}{4}$ " x 11" x $37\frac{5}{8}$ "	Solid oak
2	Bot/Shelf	$\frac{3}{4}$ " x $10\frac{5}{8}$ " x $58\frac{1}{4}$ "	Solid oak
1	Center	$\frac{3}{4}$ " x $10\frac{5}{8}$ " x $22\frac{3}{4}$ "	Solid oak
1	Kick	$\frac{3}{4}$ " x $2\frac{3}{4}$ " x $57\frac{1}{2}$ "	Solid oak
2	Shelves	$\frac{3}{4}$ " x $10\frac{1}{2}$ " x $28\frac{3}{8}$ "	Solid oak
1	Back	$\frac{1}{4}$ " x $34\frac{7}{8}$ " x $58\frac{1}{4}$ "	Oak plywood

Tall Bookcase

No.	Item	Dimensions T W L	Material
1	Top	$\frac{3}{4}$ " x $11\frac{1}{2}$ " x 32"	Solid oak
2	Sides	$\frac{3}{4}$ " x 11" x $77\frac{5}{8}$ "	Solid oak
2	Bot/Shelf	$\frac{3}{4}$ " x $10\frac{5}{8}$ " x $30\frac{1}{4}$ "	Solid oak
1	Kick	$\frac{3}{4}$ " x $2\frac{3}{4}$ " x $29\frac{1}{2}$ "	Solid oak
6	Shelves	$\frac{3}{4}$ " x $10\frac{1}{2}$ " x $29\frac{1}{2}$ "	Solid oak
1	Back	$\frac{1}{4}$ " x $30\frac{1}{4}$ " x $74\frac{7}{8}$ "	Oak plywood



Country Corner Shelf

With a few easy steps, you can turn an empty corner into a handsome display for your favorite knick-knacks. The shelf is constructed of $\frac{3}{4}$ " oak and uses simple butt joints since it won't need to hold much weight.

When laying out your radius lines for the three, quarter-circle shelves, place the wood grain so it radiates out from the back corner. After cutting the radii on the shelves' front edges, sand out any saw marks. Detail the top and bottom of the shelf edges using a $\frac{1}{4}$ "-radius bit. Profile the front edges of the shelf sides using a $\frac{3}{8}$ "-radius-with-bead router bit on the inside faces, stopping $\frac{3}{4}$ " from the top and bottom.

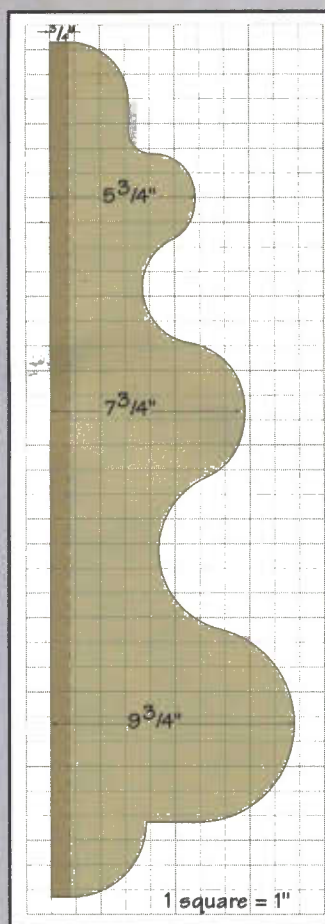
Next, pre-drill holes along the back edges of the wider side piece ($\frac{3}{8}$ " in from the edge), and screw the two sides together. Pre-drill holes for the three shelves, then fasten. Do some fine tuning with a sharp chisel and sandpaper at the top and bottom points where the edge details meet.

Now apply the finish of your choice, and hang your project on the wall!



Schedule of Materials: Corner Shelf

No.	Item	Dimensions T W L
1	Side A	$\frac{3}{4}$ " x $9\frac{3}{4}$ " x 35"
1	Side B	$\frac{3}{4}$ " x 9" x 35"
1	Shelf	$\frac{3}{4}$ " x $8\frac{1}{2}$ " x $8\frac{1}{2}$ "
1	Shelf	$\frac{3}{4}$ " x $6\frac{1}{2}$ " x $6\frac{1}{2}$ "
1	Shelf	$\frac{3}{4}$ " x $4\frac{1}{2}$ " x $4\frac{1}{2}$ "

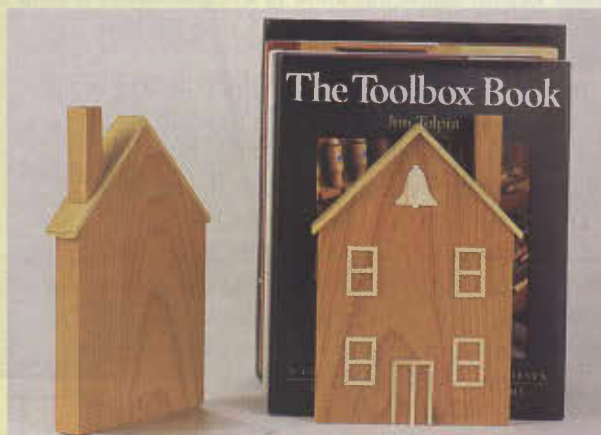


Bookends!

While these bookends look destined for a child's room or teacher's desk, the basic design can be changed to reflect any location.

The contrasting woods provide architectural detailing so that after construction a simple coat of natural Danish oil or lacquer completes the project.

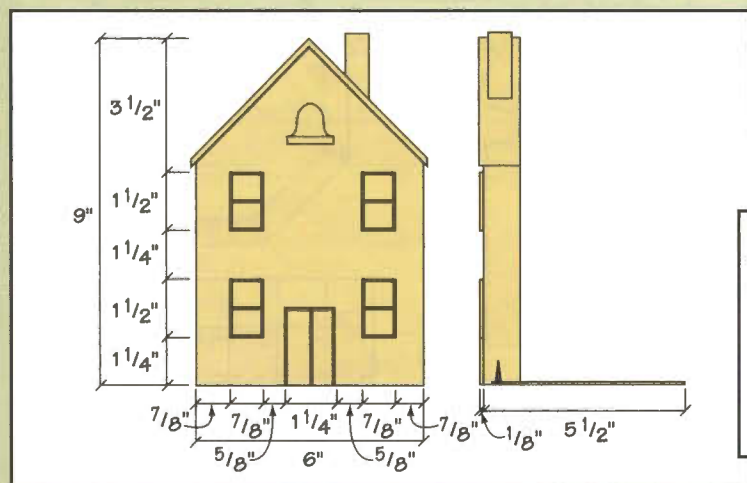
For the bottom metal parts, heavy gauge sheet metal works very well.



The general shape of the bookend is easily accomplished on the table saw. The applied windows, door and school bell can be done as a single piece on the scroll saw, or pieced as shown.

Schedule of Materials: Bookends

No.	Item	Dimensions T W L	Material
2	Ends	1" x 6" x 9"	Alder
4	Roof peaks	$\frac{1}{8}$ " x $1\frac{1}{8}$ " x $4\frac{5}{8}$ "	Maple
2	Chimneys	$\frac{3}{4}$ " x $\frac{5}{8}$ " x $\frac{5}{8}$ "	Alder
24	Sash & doors	$\frac{1}{8}$ " x $\frac{1}{8}$ " x varies	Balsa
2	Bases	$\frac{1}{16}$ " x 4" x 5"	Metal



Create & Paint A Birdhouse

If decorative painting captured your interest in this month's "Dovetails," here's your chance to give it a try. This birdhouse is a perfect gift for homeowners and bird watchers, and is also fun to create.

To make the octagonal birdhouse, simply cut the eight sides to the finished sizes shown using a 22.5-degree bevel on the long edges. The roof pieces require compound cuts, as indicated in the Schedule of Materials, so they mate appropriately at the point. The rest of the construction is self explanatory from the **diagram**. Don't forget to scroll saw two half-circles for the watermelon cutouts as accents.

Now sand the surface smooth, and apply a brush-on wood sealer. After it dries thoroughly, sand again and recoat with sealer. Once dry, you can start painting.

First apply Pure Red on the roof of the birdhouse down to about 1" from the bottom edge. Then paint a 1/2" band of Adobe Wash along the bottom outside edge of the Red, blending gently until achieving the effect shown in the **photo**. (You may have to do this twice.) Apply Pine Needle Green to the bottom of the scallops. Now paint the watermelon seeds here and there on the roof with Soft Black. Then add Adobe Wash highlights.

Next paint the base of the birdhouse with Pine Needle Green. While this color is wet, paint over it with Holiday Green. Let dry, then stroke over the base with Deep Forest Green.

Paint the watermelon cutouts with Pure Red, Adobe Wash and Pine Needle Green, then add Soft Black seeds. Now varnish the birdhouse and cutouts. You'll need a few coats to help the paint withstand the elements.

Drill a few holes into the sides of the cutouts. Then tie a jute bow around the perch of the birdhouse, dip the ends in craft glue, and push them into the holes on the cutouts. Glue small flowers and moss to the grapevine wreath, then attach it to the birdhouse with hot glue.

To hang the birdhouse easily, attach a screw-in-eye hook at the tip of the roof. And when you're ready to present your gift, be sure to include a bag of birdseed!

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Schedule of Materials: Birdhouse

No.	Item	Dimensions T W L
8	Sides	1/2" x 2 3/8" x 8"
1	Bottom	1/2" x 5" x 5"
8	Roof	1/2" x 2 1/2" x 7"
1	Dowel	1/4" x 3"

*Compound angle: Set blade at 19 1/2".
Set gauge at 11 3/4".



Misc. Materials

Accent Country Colors bottled acrylic paints

Paintbrushes (wide, medium and thin)

Palette (an aluminum pie plate will do)

Container for water

Varnish

Screw-in-eye hook

Jute twine

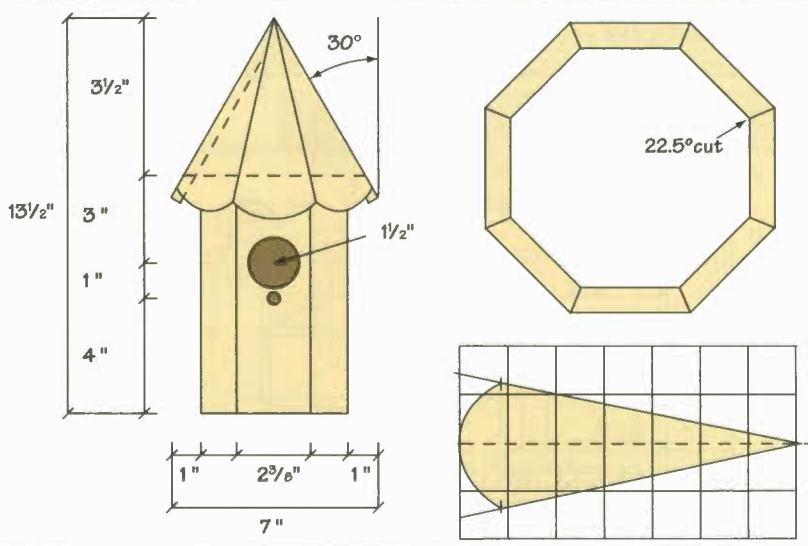
Craft glue

Hot glue gun with glue sticks

3" grapevine wreath

Small fabric flowers (optional)

Green moss



The Bench of Yesteryear

This sturdy, simple settee was once a fixture in every home — now make one a part of yours.

By Robert Treanor

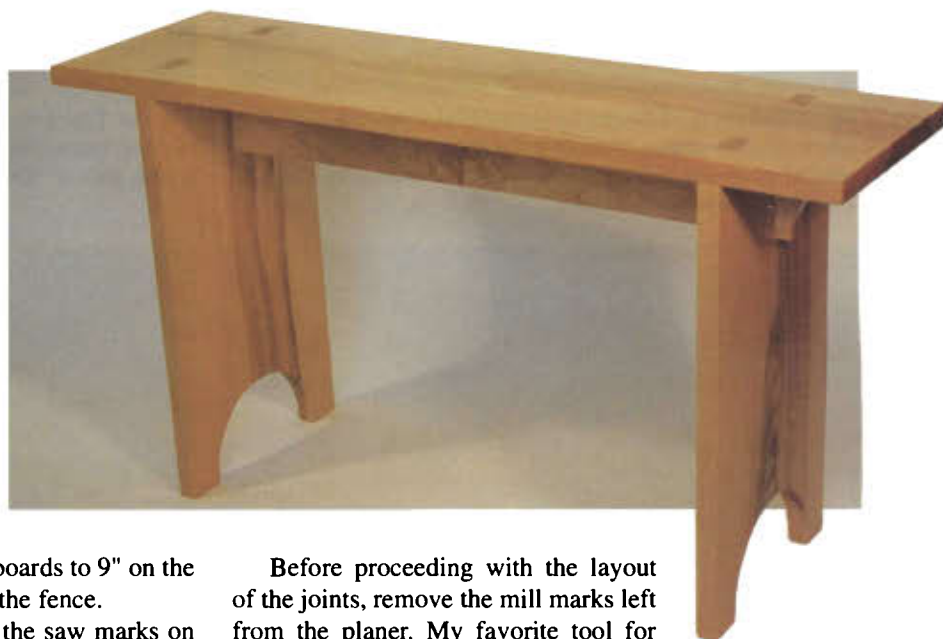
THIS SHAKER-INSPIRED BENCH can be made from a single 1" x 12" x 72" board (pine was a common choice in the 18th and 19th centuries). And the construction is simple enough that a beginning woodworker, even using fairly basic tools, can complete it in a short amount of time.

Start by milling the board down to $\frac{3}{4}$ "-thickness, then crosscut it into three pieces, one for the top and stretcher and the other two to form the legs. (Leave a little extra length, as the pieces will be cut to their finished length and squared later.)

With a hand plane or jointer, square one long edge to the faces. Then rip the boards to 9" on the table saw with the squared edge against the fence.

Use your plane or jointer to remove the saw marks on the fall-off from the top board, making sure it's square to the faces as before. That done, rip that piece to width to form the stretcher.

Next crosscut all of the parts to length on the table saw. Begin by removing as little as possible from one end of each piece. Then clamp a stop at the finished length of the piece, butt the square end against the stop, and cut each part to finished length.

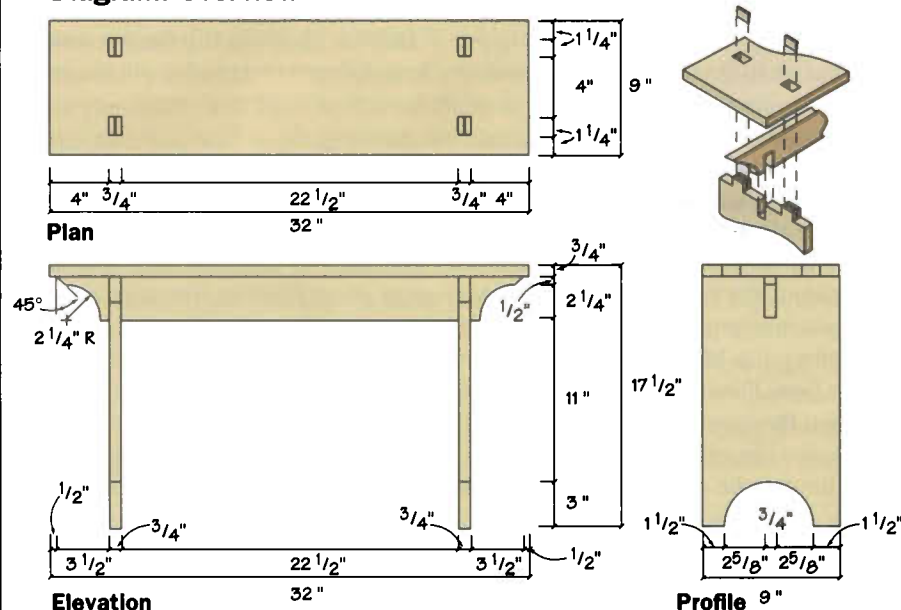


Before proceeding with the layout of the joints, remove the mill marks left from the planer. My favorite tool for this job is a cabinet scraper (**photo 1**).

Of course, the marks can be sanded off as well — the decision is yours. Once this is done, the legs are ready for cutting the through mortise and tenon joints.

The first step is to lay out the top of the leg. Set a marking gauge to the thickness of the top plus $\frac{1}{32}$ ". The extra length in the setting will cause the tenons to protrude above the top of the bench. (This extra material is easily removed

Diagram: Overview



The shape of the stretcher end adds a graceful design element to a fairly simple project.

Schedule of Materials: Small Bench

No.	Item	Dimensions T W L	Material
1	Top	3/4" x 9" x 32"	Maple
2	Legs	3/4" x 9" x 17 1/2"	Maple
1	Stretcher	3/4" x 2 3/4" x 31"	Maple

RUSTIC BENCH



1 A fast method for removing milling marks is with a cabinet scraper. Though used less today with the advent of power sanders, the finished result can't be beat for a handcrafted look.



2 The first cut in forming the tenons is made with a backsaw. Carefully cut straight down along the waste side of the layout line.



5 Laying out the through mortise locations requires critical measurements. Using a try square and a sharp pencil or knife helps keep the mortise location accurate and always reference from the same edge.



6 By making a shallow V-cut along the mortise's edges, the chance of tear-out is reduced when drilling the mortise. It also guides the back of the chisel when squaring up the mortise.

after the bench is assembled.) Referencing from the top of the leg, scribe a line all the way around to determine the depth of the tenons on each leg. Then use a knife or pencil guided against a try square to lay them out. The layout lines should extend from the top of the leg down to the depth line scribed in the previous step, and should be located on both faces of the legs as well as across the top.

There are several ways to cut the tenons, but with only eight cuts to make, I chose a backsaw. To do this, secure the leg in a vise with the top end parallel to the benchtop. Make sure you cut straight along the line's waste side (**photo 2**).

Cut away most of the waste along the center of the joint with a coping saw (**photo 3**). The remaining waste from the center of the joint is best removed at the bench. Clamp a straight, square piece of hardwood exactly along the baseline. Then use a chisel to carefully chop away the remaining waste with the back of the blade against the guide block (**photo 4**). Chop halfway through from one face. Then flip the leg over, and complete the chopping from the opposite face to avoid tear-out. While the guide block is in place, chop a shallow V-groove along the layout lines at the outside corner of the joint. This will help guide the saw when you later cut off the ends.

From the locations shown in the **diagram**, lay out the

exact placement of the legs on the top. Then scribe two lines defining the thickness of the legs all the way around the top.

Place the leg with its tenons against the top and between the two layout lines just completed. With a try square held against the reference edges, mark the mortises' position with a sharp pencil (**photo 5**). Next, flip the top over, and while referencing from the same edges, lay out the mortises on the opposite face. As a final step, mark a center line lengthwise on each mortise.

Begin handcutting the mortises by making a careful knife cut over the pencil line. Next, use a sharp chisel to plow a shallow V-groove to outline the mortise. Make sure you stay on the waste side of the knife line (**photo 6**). These shallow grooves act as limiting cuts to prevent tear-out while drilling the bulk of the waste from the joint. They also provide small ledges to guide the back of the chisel when making the finishing cuts.

Using a drill bit that's as close to the mortise's width as possible without exceeding it, bore out most of the waste from the mortises. Use a scrap piece as a backing board under the top to prevent tear-out.

Clean out the mortises as you did the ends of the tenon boards. You may prefer to use a guide block or simply use



3 A coping saw allows access to deep locations. A convenient alternative to the jigsaw, it's also a lot quieter and inexpensive.



4 Using an alignment board to support the chisel during the cut helps to ensure a straight and accurate joint.



7 Use your chisel to square up the mortise walls after drilling work to the center of the mortise. Then flip the board and repeat your work.



8 Wedging the tenons adds strength and an artistic touch to a straightforward project.



the shallow V-grooves cut into the material to guide the chisel. Make a slow series of shallow cuts rather than trying to clean the mortise in one chop. Again, cut halfway down from one face, flip the board, and finish the cut from the second face (**photo 7**). Test fit the joint as you go. You want a press fit requiring only firm hand pressure or light taps with a mallet. Don't force the joint.

Once the joints are fit, dry-assemble the bench and check it for squareness. Then lay the bench on its side and, with the stretcher held in place, locate the position of the half-lap joints to affix the stretcher.

Now disassemble the bench and mark out the half-lap joint at the top of the legs. Cutting these joints is simply a matter of using a backsaw and chisel to clean out the bottoms of the joint. Pare and trial fit them until the laps go together with only hand pressure. Forcing these joints can easily split off the ends of the stretcher.

Next disassemble the bench and cut the details on the bottoms of the legs and the ends of the stretchers as shown in the **diagram**. Then sand the offending saw marks from the parts. You might also give all the parts a final sanding now, working up to a final 220 grit.

The last step prior to final assembly is cutting the kerfs in the tenons that accept the wedges that will hold the

bench together. The backsaw is used again here. Make sure you cut along the wide dimension of the tenon so, when wedged, the tenon will be pushed along the grain of the top rather than across the grain to avoid splitting. The four wedges are cut from scrap stock. Before gluing the bench together, it's prudent to dry assemble the parts once more.

To begin final assembly, spread a thin layer of glue in the lap joints and assemble the stretcher and the legs. Next, spread glue on the tenon on top of the legs. After tapping the top down onto the tenons to close the joints, spread a thin layer of glue on the wedges and tap them into place (**photo 8**). When the tone changes, the wedge is set.

After the glue cures, cut the protruding wedges off with a backsaw. Then, with a plane set to take a fine cut, hold it at an angle to the tenon and plane the ends of the tenons flush with the top.

Now sand the ends of the tenons and break any sharp edges elsewhere. I suggest finishing the bench with tung oil, since it's easy to maintain and repair, especially since this handy bench is sure to see lots of hard use. **PW**

Robert Treanor has a workshop in San Francisco. He specializes in Early American and Shaker furniture.



A Tall Order In a Short Time

Produce a pickled pine tall clock with the first project from "The Little Shop That Could."

By Steve Shanesy

THIS TALL CLOCK may look like it was built from clear pine [that can run upward of \$6 a board foot (bf)], but it was actually built using #2 grade ponderosa pine that went for \$1.41 a foot. And I only pitched four of the total 31 bf I purchased cutting around knots. When you're on a budget, it pays to buy smart.

With no jointer nor planer in this shop, I bought nominal 1 x 12 material already surfaced on four sides (S4S). The wide stock meant no edge gluing was necessary, saving some time. In all, you'll need about 18 to 20 hours to build and finish the clock.

I based my project dimensions on two factors: the clock's 8¹/₈" diameter face and the lumber's 11¹/₈" net width. Refer to the Schedule of Materials for a complete cutting list.

First, Build Two Boxes

When you review **diagram 1**, you'll see the clock's basic elements are an upper and lower box with four vertical supports. Take away the crown and base moulding, and it looks like an oversized box kite.

To begin construction, cut out the parts to make the two boxes. No fancy joinery is required, so simply butt joint



the parts, fastening them with glue and nails. The sides overlap the front and back. Note that the lower box bottom is inset and the top has a rabbet on four sides to produce a 1/4" lip (**photo 1**). Leave the lid loose and you have a secret storage compartment! The lid on the upper box is also loose to allow access to the light fixture while the bottom overlays the four sides.

Before assembling the upper box, cut the holes required for mounting the clock and the "can"-type recessed light fixture. Center the hole for the light, but refer to **diagram 1** for locating the clock hole. Cutting these holes presented a problem for the tools that I initially purchased for the shop, so an additional expense was required. Do we buy a power jigsaw on a tight budget? Of course not — so a narrow-bladed, \$9.95 compass saw was the solution. After cutting the holes (**photo 2**), assemble the box then pre-sand with 120 grit paper.

Now, Make the Uprights

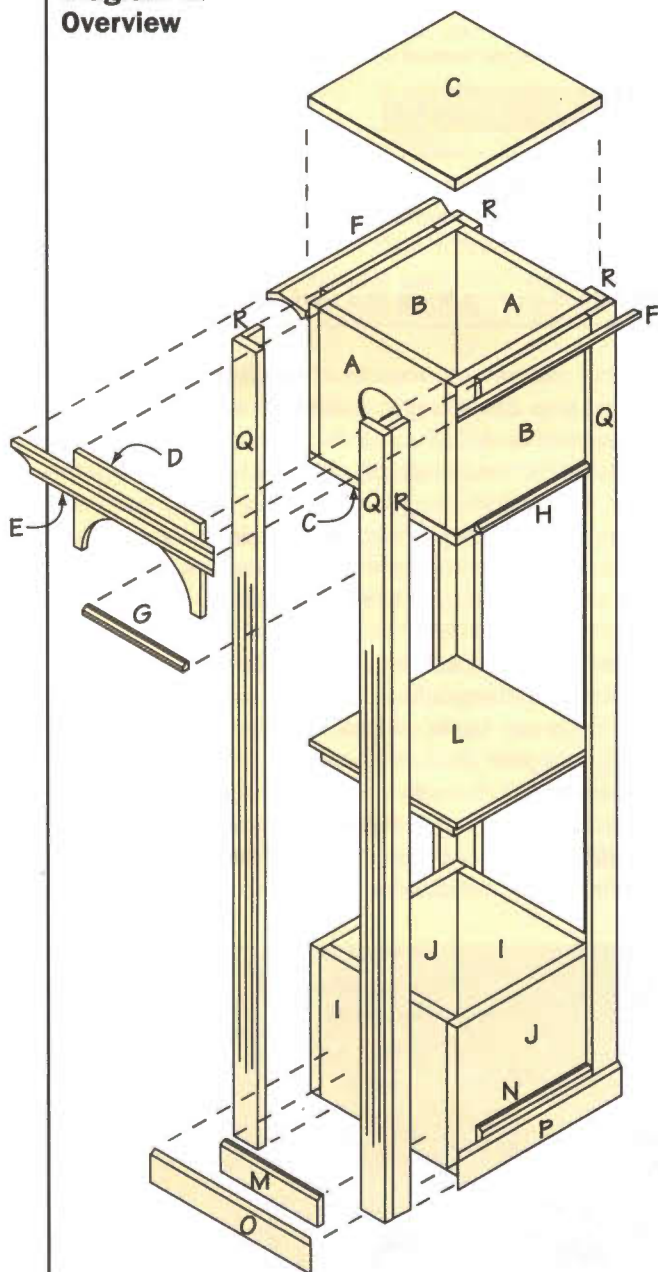
Make the four legs that tie the two boxes together from two pieces of 3/4" material, one 1 1/2"-wide and the other 3/4"-wide. The two pieces are nailed and glued to form an "L" shape that's

Editor's Note: In our last issue I outfitted a basic woodworking shop with a scant \$498 in tools and equipment. I then built a portable workstation that folded in half for out-of-the-way storage. Reckoning many of you ply your craft under similar circumstances — in a crowded garage or basement — I wanted you to know that at *Popular Woodworking* we can work that way, too. "The Little Shop That Could" shows how you can produce good woodworking results on a tight budget. This tall clock is project number one.



1 Cutting rabbets on the table saw is a two-step process. First, run the part on edge to the depth required, as above. Next lower the blade, reset the fence and run the part flat to cut away the waste.

**Diagram 1:
Overview**



Schedule of Materials: Pine Tall Clock with Shelves

No.	Letter	Item	Dimensions T W L	Material
Upper Box				
2	A	Front & back	3/4" x 11 1/8" x 13 3/8"	Pine
2	B	Sides	3/4" x 11 1/8" x 13 3/8"	Pine
2	C	Top & bottom	3/4" x 11 1/8" x 12 7/16"	Pine
1	D	Clock surround	3/4" x 10 5/8" x 7 1/4"	Pine
1	E	Crown mid fnt	3/4" x 2 1/2" x 18"	Pine
2	F	Crown mid sds	3/4" x 2 1/2" x 14 1/2"	Pine
1	G	Bot mid fnt	3/4" x 3/4" x 10 5/8"	Pine
2	H	Bot mid sds	3/4" x 3/4" x 9 7/16"	Pine
Bottom Box				
2	I	Front & back	3/4" x 11 1/8" x 5 3/4"	Pine
2	J	Sides	3/4" x 11 1/8" x 8"	Pine
1	K	Bottom	3/4" x 9 5/8" x 11"	Pine
1	L	Top	3/4" x 11 1/8" x 12 7/16"	Pine
1	M	Fnt mid/filler	3/4" x 2 3/4" x 10 5/8"	Pine
2	N	Sds mid/filler	3/4" x 2 3/4" x 9 7/16"	Pine
1	O	Base mid fnt	3/4" x 3" x 15"	Pine
2	P	Base mid sds	3/4" x 3" x 13 1/8"	Pine
Legs				
4	Q	Uprights	3/4" x 1 1/2" x 70"	Pine
4	R	Uprights	3/4" x 3/4" x 70"	Pine

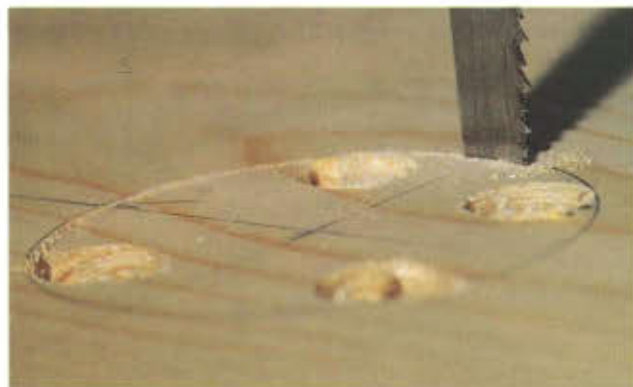
The clock face was purchased from Klockit. For more information, call 800/KLOCKIT.

1 1/2"-wide on each outside face. Before joining these pieces, though, two operations are necessary. First, use a sanding block (**photo 3**) and sand the edge to be joined, eliminating the ragged edge left by the saw. (One drawback to the inexpensive table saw is that the arbor run-out produces an unacceptable rough sawn edge. In the next issue, we'll solve this problem with a router table edge-jointing system.) The second operation is to use the table saw to cut the three quirk details on the front face of the uprights.

WOOD WORDS (wood'wurds) n.

compass saw: A narrow, taper bladed 12" to 14" saw used to cut gentle curves.

quirk: A narrow groove moulding, sunken fillet or shallow channel detail.



2 My inexpensive solution to cutting the round cutouts for the clock, light fixture and applied clock surround moulding is a narrow-bladed compass saw. Before sawing, I drilled relief holes.

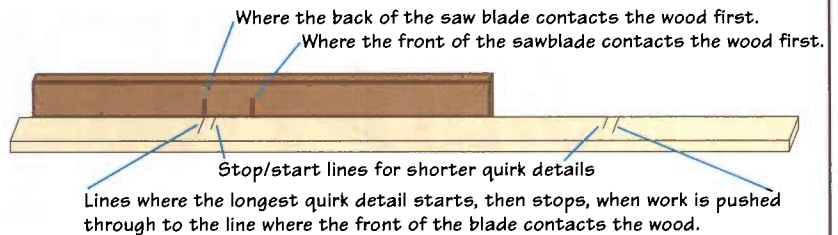


3 Before gluing and nailing the two piece uprights, I block sanded the rough edge left by my inexpensive table saw. The sanding assured the butt joint would seat properly on the mating part.

CLOCK SHELF



Diagram 2: Fence Indexing



How to mark the quirk details on your fence and workpiece.

4 Before running the quirk details, mark the saw fence where the front and back of the blade breaks the plane of the saw table top.

Lay out and mill these $\frac{1}{16}$ "-deep details by marking start/stop reference lines on the rip fence which then correspond to reference marks on the back side of the uprights (**photo 4 & diagram 2**). Start the cut by indexing the first layout line on the back of the stock to the line past the blade on the fence. Then slowly lower the stock onto the blade and push the piece through until the opposite layout line matches the line on the fence at the front of the blade. The quirk details used here have a $\frac{1}{4}$ " space between them with the middle one $1\frac{1}{2}$ " longer at the top and bottom. With this complete, assemble the legs, then presand them.

Attach the Uprights to the Boxes

This assembly is a breeze. Start by placing the two boxes so they're the proper distance apart and oriented as they should be when assembled. Next, apply glue to the box corner edges and lay the upright in place, making the ends of the upright flush with the top of the upper box and the bottom of the lower one. Now nail the upright to the box. Use the finish nails sparingly and on the side edge only. Continue with this until all four are attached. At this stage the project looks more like a box kite than a clock!

Before applying the mouldings, add filler pieces to the front and sides. These build-up pieces go between the uprights at the top of the upper box and bottom of the lower one. The upper pieces simply back up the crown and give you something to nail to. The lower one projects above the base moulding, providing the additional chamfer detail.

Now, Make the Mouldings

Let's begin with the easy mouldings with the chamfer detail. Cut them (with the exception of the clock surround moulding) to width, but wait to cut them to length. The clock surround piece is fit so that it's the full width between the uprights and long enough to extend down to the horizontal center of the clock hole. Use the compass saw again and cut out the half circle so that a $\frac{1}{4}$ "-gap will be created between the edge of the cutout and clock frame.

With this done, set up your router in a router table with a 45-degree chamfer bit. I installed my router in its designated workstation location as described in the last issue. (I also purchased a chamfer bit, adding an additional \$19 to my equipment total. I could've cut the straight chamfers on

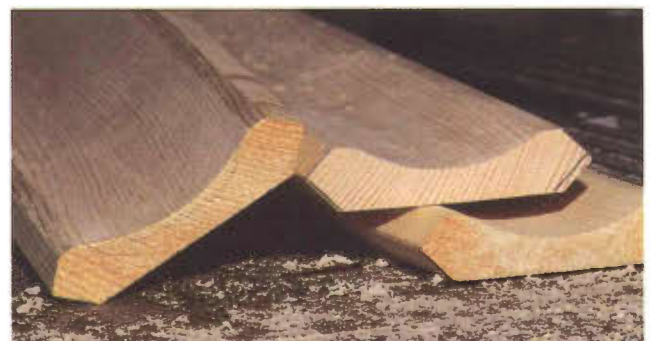
the table saw, but the round for the clock face would've been too time consuming to make by hand.)

I ran the beveled edges on the base moulding, the piece just above the base moulding, the clock surround (**photo 5**) and the moulding which is applied to the top box's bottom edge. I cut each piece to length, then nailed and glued them in place, mitering the corners of the base moulding.

Now it's time for the most challenging part of the project — making the coved crown moulding and cutting the required compound miters using only the table saw. To mill the cove, first clamp a board at an approximate 33-degree angle on the saw blade's infeed side. The board serves as a fence to run your stock against as you make the series of shallow cuts which create the cove. Determine the distance of this auxiliary fence to the blade by raising the blade to the highest point of the cut you'll make, about $\frac{3}{8}$ ". Position the fence so that the width of the stock is centered



5 The chamfer detail is cut on the half circle clock surround moulding by running the part face down on the router table.



8 The three completed crown moulding parts ready for cutting to length.

on the blade when it passes over it at an angle. When satisfied, run each piece of moulding over the blade, raising the blade about $\frac{1}{16}$ " for each pass (**photo 6**). When complete, you'll be left with some elbow grease sanding to remove the saw marks, but it's not a terrible task.

To complete the moulding profile, remove the temporary angled fence and use the regular fence with the blade tilted to 45 degrees. Make the four bevel cuts shown in **photo 7** to produce the finished moulding profile shown in **photo 8**.

To cut the compound miters on the crown's front corners, tilt your saw blade to 30 degrees and set your miter gauge to 35 degrees. To make a right side miter, set the miter gauge in the slot to the left of the blade. Position the stock face down with the top edge exiting the cut (**photo 9**). To make the left miter, move the miter gauge to the right slot, only this time position the stock face up with the top edge leading the cut. When attaching the crown to the project, first nail the front piece after very carefully positioning it not only side to side, but also square to both sides. After it's attached, mate the side pieces to it, gluing the miter joint and nailing the sides in place.

Before final sanding and finishing, holes need to be drilled for the wood pegs that support the adjustable glass shelves. To make certain the shelves sit level, I made a simple drilling jig from a piece of scrap material (**photo 10**). I also made a simple depth stop to make sure I didn't acci-

dentally drill all the way through the soft pine (**photo 11**).

Set all the nail heads and putty them, then sand the project completely using 150 grit paper. Now you're ready for the pickled pine finish. To produce the white effect, use white or off white latex paint thinned one part paint to $1\frac{1}{2}$ parts water. Work one section at a time, using either a brush or rag to apply a modest amount of the thinned paint. Immediately wipe off most of the paint. After it's dry, apply two coats of clear finish over the white, lightly hand sanding between coats with 360 grit paper.

Install the light fixture according to the manufacturer's directions. Make sure you drill vent holes in the back of the upper box near the top to allow heat build-up from the fixture to dissipate. Run the plug wire down an outside back leg of the unit, holding it in place with small, insulated "U" nails. I installed an inline switch at a convenient location about midway down for easy on/off control. The clock unit press fits into the hole so it can be removed to adjust the time or replace the battery.

All in all, "The Little Shop That Could" in fact did, and I concluded my \$73.40 worth of wood, clock and light fixture was a darn good investment. Especially when you compare it with a not too dissimilar unit in the Spiegel catalog for twice the money. It, of course, is smaller, and doesn't have a light, fancy coved crown or quirk details, either! **PW**

Steve Shanesy is editor of Popular Woodworking.



6 The coved crown mould is made using the table saw. Run the stock over the blade at an angle against an auxiliary fence set about 33 degrees askew to the fence.



7 Complete the crown mould profile by making four, 45-degree cuts on the corners of the stock.



9 The compound miters for the crown mould are cut on the table saw by tilting the blade to 30 degrees and setting the miter gauge to 35 degrees.



10&11 Two simple drilling jigs assure correct location and depth of drilling. Shown at right are a detail of the two jigs at work and the results they produce.

Essential Hand Tools

There are lots of tools we want — these are the tools we need!

By David Thiel

MY DICTIONARY defines essential as absolutely necessary, or indispensable. To give that label to any tool is heady stuff, but I imagine we've all called a tool "essential" when trying to rationalize a purchase. Suddenly the tool we *want* becomes the tool we *need*, and therefore essential. My list presented here transcends rationalizations. When I say essential, it must be a hand tool that always gets used and is immediately missed if misplaced or borrowed.

I started by dividing hand tools into two categories: powered and non-powered. My reasoning is that if you can pick it up and work with it, plugged in or not, it's a hand tool.

Non-Powered Hand Tools



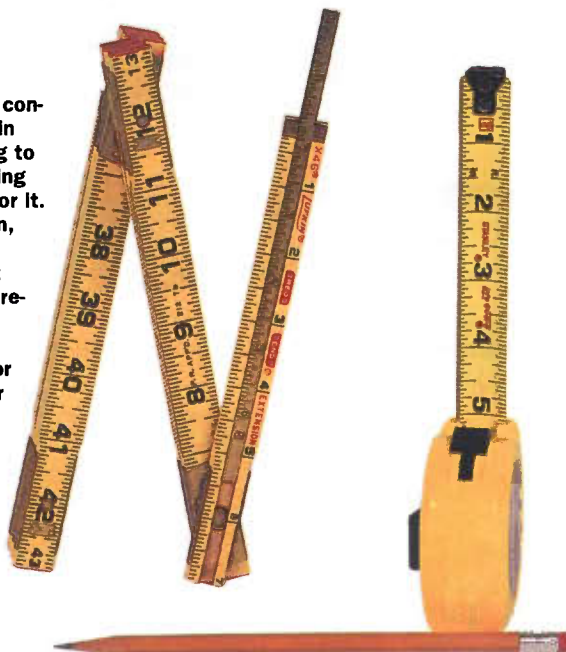
Chisels, Screwdrivers & Hammers

Three items which involve a fair amount of personal preference are pictured here. A basic set of bevel-edge wood chisels (minimum of four sizes) must be a part of your hand tool collection, as must a basic set of screwdrivers. Two sizes of Phillips, two sizes of straight, and I'd throw in a four-in-one for when you can't find the others or are travelling light. I recommend

Craftsman when it comes to screwdrivers. They take a lot of abuse, and a lifetime guarantee goes a long way. I'd also recommend large handles. When it comes to hammers everyone has a preference, but every shop should include at least a finishing hammer (framing hammers don't count) and a mar-proof assembly hammer. (I use a dead blow myself.)

Rules

A folding rule may not be considered an essential tool in every shop, but I'm willing to argue that if you start using one, you'll always reach for it. A folding rule (the wooden, zig-zag variety, preferably with a metal extension at one end), provides measurements (without drooping) over any 60" span. It can accurately check a box for square, as well as interior dimensions, and provides easy depth readings for mortises. In a pinch, it can adequately double as a marking gauge or combination square with the help of a finger. In my book, it's essential.



Tape Measure

A tape measure should be, at a minimum, 12' and have a wide blade with markings thin enough to be useful. The tape measure also should easily lock and unlock; and the case should be durable enough to take a few falls without harm.

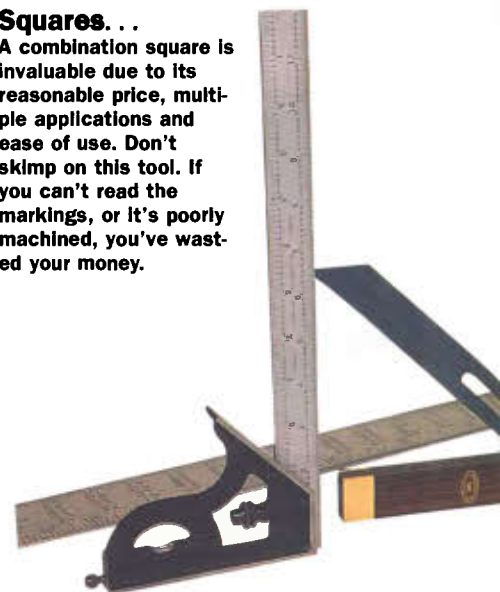
Pencil

Don't laugh. If you don't have one, you'll wander around your shop for ten minutes before you get any work done. Look for a soft lead pencil to avoid marking too deeply on your wood.



Squares...

A combination square is invaluable due to its reasonable price, multiple applications and ease of use. Don't skimp on this tool. If you can't read the markings, or it's poorly machined, you've wasted your money.





Clamps

A category of hand tools that we can never have enough of is clamps. My choice for these must-have items are at a minimum: four Bessey 48" K-Body clamps, four each of 24" and 8" shallow-jaw bar clamps, and 18" deep-jaw bar clamps. I further suggest a couple of the one-hand quick-adjust clamps, a couple spring clamps and some small "C" clamps.

Hand Saws

They don't see as much use in the modern shop as they once did, but they're invaluable at times. No less than a standard crosscut saw and a good dovetail saw will suffice.

Hand Planes

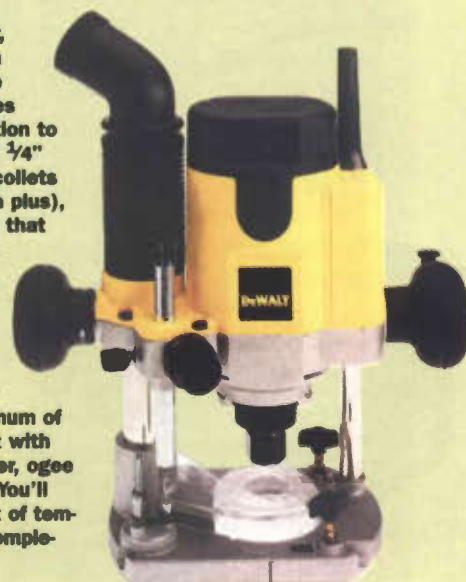
They're slowly being left in the dust by powered tools as well, but I don't think you can call yourself a woodworker if you don't have at least a block plane and a jack plane. Make sure you know how to sharpen the blade, set the cap-iron, and apply your planes properly to the task at hand.



Powered Hand Tools

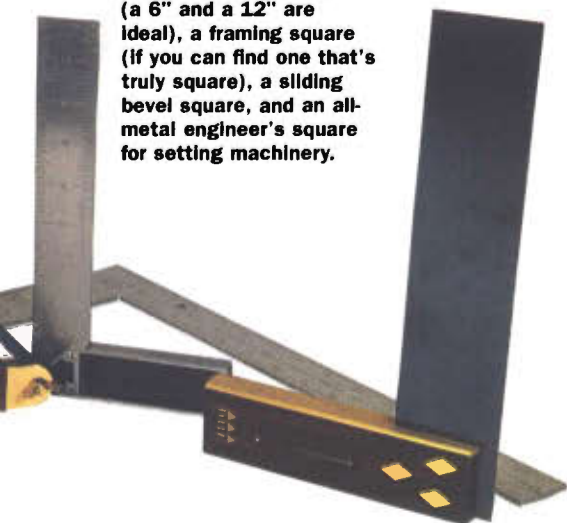
Routers

When it comes to a router, the essential one will be a 1½ hp plunge. You'll have some individual preferences in features, but pay attention to ease of depth adjustment, ¼" and ½" interchangeable collets (one-wrench operation is a plus), and a handle arrangement that feels good in your hand. A slow start motor with variable speed is a valued feature as well. Tooling for your router should be considered as an essential piece of the tool. Your set should include a minimum of a flush cutting straight bit with bearing, roundover, chamfer, ogee and a 2-flute straight bit. You'll also want to pick up a set of template guide bushings to complement the bits.



And More Squares

Other essential squares include a good try square (a 6" and a 12" are ideal), a framing square (if you can find one that's truly square), a sliding bevel square, and an all-metal engineer's square for setting machinery.



Drills

Most of us are now using some type of cordless drill in our shops. But I'd have to say it's not an essential item. A corded drill is! Preferences aside, the basic essential should be a ¾" variable speed, reversible drill with a 10-0-0 cord! Tooling for the drill should include a set of twist bits, a set of spur bits, a set of speed bores or spade bits (with a brad point on center and spur tips), a countersink, and a magnetic bit holder with a small assortment of straight, Phillips and square drive tips.



My First Toolbox

WHILE WRITING "Essential Hand Tools," I remembered a letter I once received from a 12-year-old asking what tools were necessary to start woodworking. I thought about my list, and realized the essentials could be a lot less for a child setting up shop.

How wonderful for a child to have a parent or grandparent help him or her set up a first tool box. And sharing the craft can be a great way to bridge the generational barrier.

I learned woodworking around age twelve (with help from my woodworking dad), and I still recall my first toolbox. It held a measuring tape, a folding rule, a hammer, a spiral ratchet screwdriver, some loose screwdrivers, a hand drill, a combination square, a block plane, a set of four chisels and my one power tool — a jigsaw.

Looking back on that toolbox from the vantage point of the *Popular Woodworking* shop's cornucopia of tools, I'm not sure I'd change much. I'd replace the hand drill with an electric, and it would've been better to learn with a handsaw, rather than the jigsaw. I'd keep the ratchet screwdriver. It taught me a lot about finesse, precision and fixing mistakes.

To help spark the enthusiasm in woodworking, a great first project is a toolbox to hold all the new tools. After some thought, I assembled the toolbox pictured here as a good first effort. It can be built using only the tools it holds, and though a little heavy, is of a size that won't be outgrown too soon, if ever.

I opted for a tray that sits *on* the lower box rather than *within* because I hated putting too many tools in the lower

section and not being able to get the upper tray in! This design keeps you from overfilling the lower section.

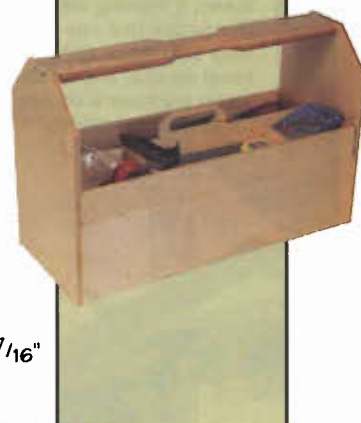
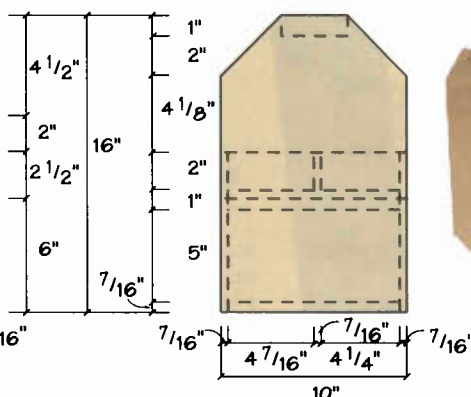
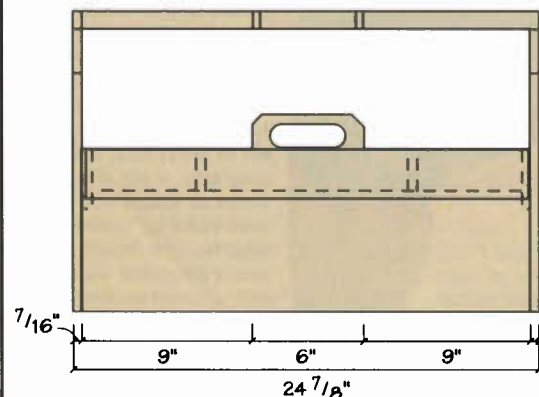
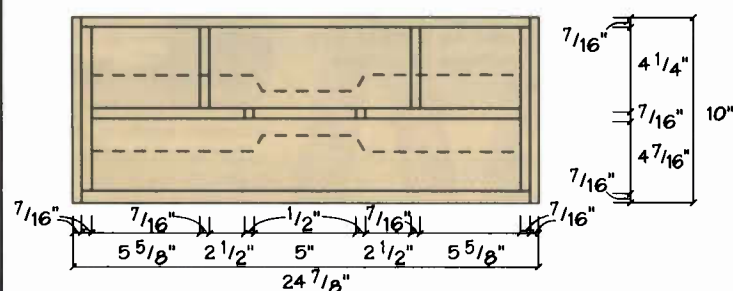
The handle, though visibly clunky, provides a good surface for clamping, cutting, kneeling or sitting when the work gets too strenuous. A dowel rod wouldn't do as well.

I used $\frac{1}{2}$ " baltic birch plywood for strength and weight. The Schedule of Materials calls for $\frac{7}{16}$ " material, because that's what my plywood actually measured.

Construction is simple, requiring only glue and nails. All the cuts can be made with a jigsaw and a straight edge. The **diagram below** should provide all the information needed to make this important first project.

Schedule of Materials: First Toolbox

No.	Item	Dimensions T W L
Box		
2	Ends	$\frac{7}{16}$ " x 10" x 16"
1	Bottom	$\frac{7}{16}$ " x 9" x 24"
2	Sides	$\frac{7}{16}$ " x 6" x 24"
1	Handle	1" x 3 $\frac{3}{4}$ " x 24"
Tray		
2	Ends	$\frac{7}{16}$ " x 3" x 9"
1	Bottom	$\frac{7}{16}$ " x 9" x 22 $\frac{7}{8}$ "
2	Sides	$\frac{7}{16}$ " x 2 $\frac{1}{2}$ " x 23 $\frac{3}{4}$ "
1	Center Divider	$\frac{7}{16}$ " x 4" x 22 $\frac{7}{8}$ "
2	Dividers	$\frac{7}{16}$ " x 2" x 4 $\frac{1}{4}$ "



Biscuit Joiner

I've included it here due to its increasing use in the modern shop. This simple tool has a purpose in the joinery of many woodworking projects, and many woodworkers consider it essential to any tool collection. I'm a hesitant convert, but I do admit that I continue to find useful and expedient applications.



Power Saw

The question of which power saw is necessary may be debatable. One is certainly essential, *which one* is up to you. A circular saw provides invaluable service in cutting sheet goods if you're limited to working with a small table saw or radial arm saw. Don't bother spending the money on a worm gear drive unless you'll be using this for hard duty every day. If you're in the other camp, a jigsaw may be the essential tool for you. Frequently more convenient than a band saw, the jigsaw offers a variety of cutting applications in most materials. Essential features include comfort, adjustable orbital action and an easily adjustable base arrangement. Ease of blade change can prove to be essential as well.



Power Sander

The two essential sanders are a belt sander and a random orbit sander. The belt sander should have a 4"-wide belt to provide the widest sanding platform. Dust collection is an important feature with this tool. A true random orbit is the essential finish sander. Features to look for include dust collection (every little bit helps) and, of course, comfort.



A few non-powered tools fit into a miscellaneous category. If you don't think these tools are essential, wait until you need one. They include:

- an extension cord (minimum 12')
- a pair of scissors
- a good bench brush
- two glue scrapers (one that can be abused)
- an awl
- a putty knife
- a nail set
- a four-in-hand rasp and file
- sets of box and Allen wrenches
- a pair of channel locks
- end cutters
- a hack saw
- a sharpening stone
- a short pry bar

I'd also throw in a good varnish brush and some lint-free rags as essentials to any finishing work.

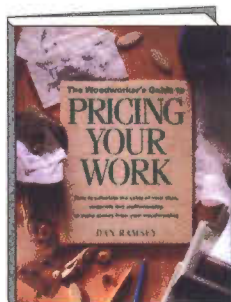
I'm sure you've thought of at least one tool that you think should be in this list and isn't. But I'll fight to the end supporting each and every one of the tools mentioned as essential in my shop (at least when my wife asks). **PW**

David Thiel is associate editor of Popular Woodworking.





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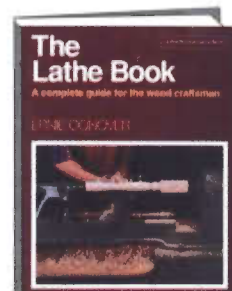
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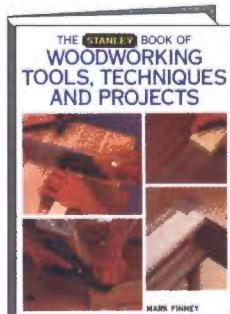
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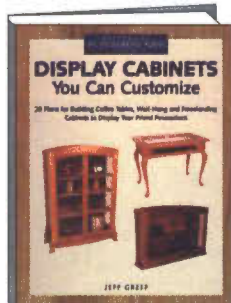
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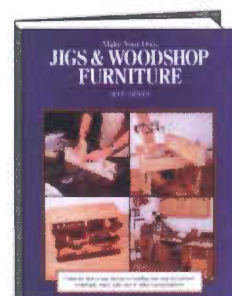


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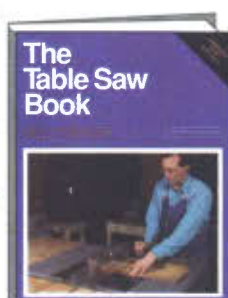
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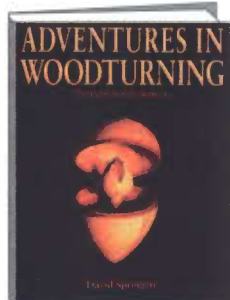
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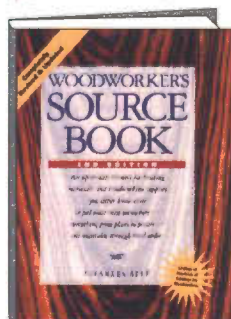
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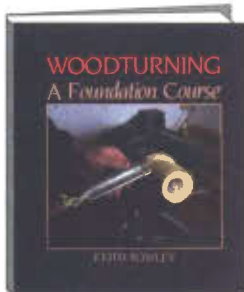
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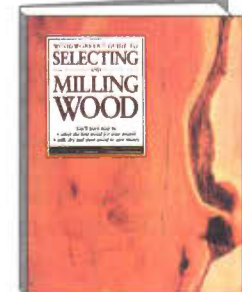
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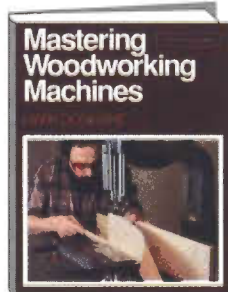
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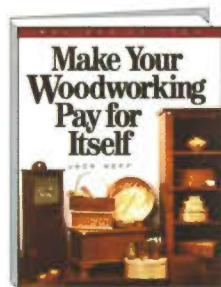
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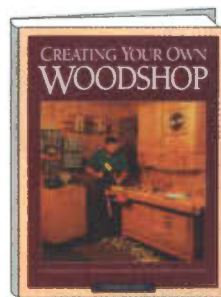
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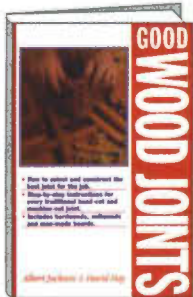
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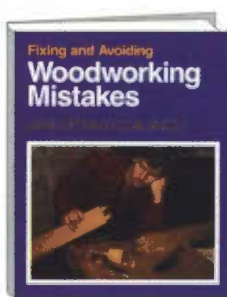
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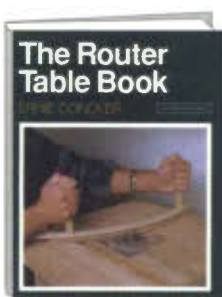
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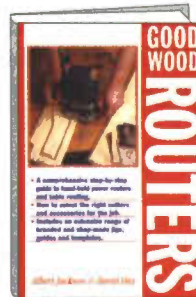
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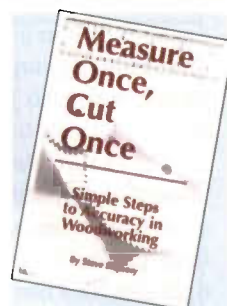
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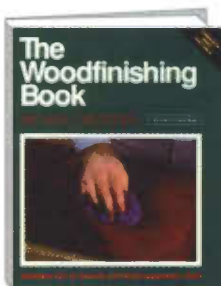
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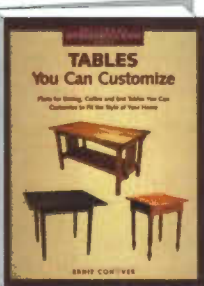
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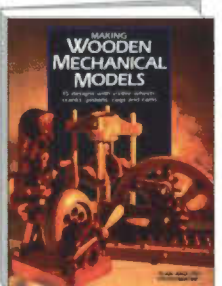
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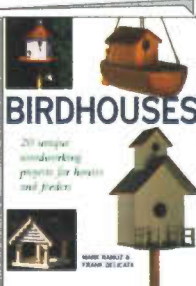
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A Tip-Top Chair/Table

This flip-top table is more than a conversation piece. It's a real space saver, too.

By Steve Shanesy

YOU'VE HEARD THE OLD SAYING, "What goes around comes around." Here's an example proving there's a lot of truth in that expression. During colonial times, log cabin homes were tiny, so furniture often had to serve multiple purposes. Today, affordable new homes have shrunk in size, so you may be looking for space saving furniture solutions, too.

The chair/table was a popular item in colonial times. It usually functioned as a chair, but quickly converted to an extra table when company dropped in. My version, made from poplar, is based on traditional designs. It's just the right size for a breakfast or small dining room table, or even a generous-sized card table.

I chose to paint the base using my own homemade milk paint, accented by stain and shellac on the top. When I found a piece of curly maple in my scrap pile, I made it the drawer front, just as might've been done when tri-cornered hats were all the rage.

Except for the battens under the table top, all the material is $\frac{3}{4}$ "-thick. I jointed and planed my boards to thickness, but if you're not equipped, you could buy 1" x 12" pine already surfaced and proceed from there. These wide widths work well for the glued-up sizes required and really make the piece look authentic.

Gluing-up the Pieces

From the 35 board feet of material needed to complete this project, select your best boards for the top. Cut them to rough length and glue them up. After drying, set the top aside and begin working on the base.



PHOTO BY ERIK VON FISCHER/BLINK

Cutting Out the Chair/Table

Cut your rough-sized parts to finished sizes following the dimensions given in the Schedule of Materials. To make the chair seat box especially sturdy, rabbet ($\frac{3}{8}$ " x $\frac{3}{4}$ ") all edges but the front of the top and bottom parts and the back edge of the sides. By doing this, you'll make a strong joint that's invisible from the top or bottom.

The top will be a bit deeper than the rest of the box. I used a dado set to make a stopped rabbet on the edges. This construction allows the drawer front to overlay the sides and bottom (**see diagram**) so the



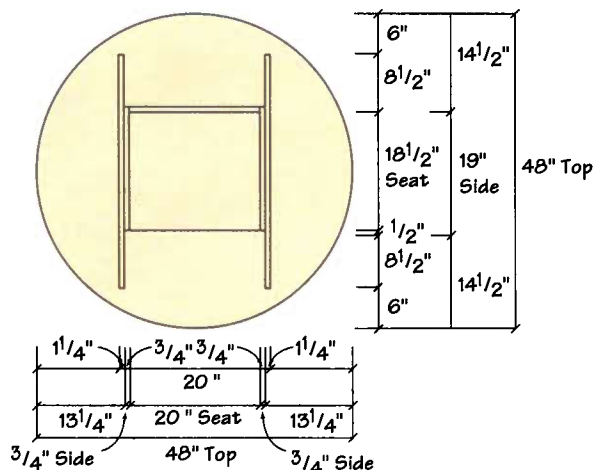
1 Square out the stoppered rabbet left by the dado set using a chisel.



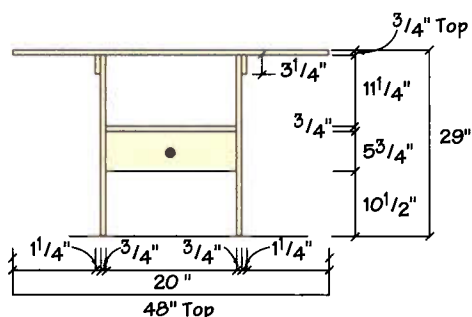
2 Faster than a speeding router, a plane can make quick work of a chamfered edge on a short piece.

Diagram: Overview

Plan



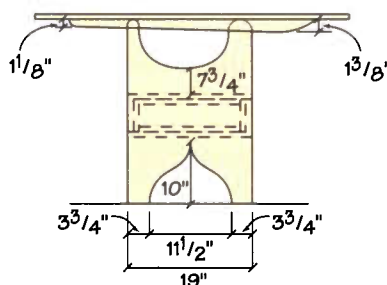
Elevation



Schedule of Materials: Colonial Chair/Table

No.	Item	Dimensions T W L
1	Top	3/4" x 48" diameter
2	Sides	3/4" x 19" x 28 3/4"
1	Seat box top	3/4" x 18 1/2" x 20"
1	Seat box bottom	3/4" x 17 3/4" x 20"
2	Seat box sides	3/4" x 5 1/2" x 17 3/4"
1	Seat box back	3/4" x 5 1/2" x 19 1/4"
2	Battens	1 1/4" x 1 1/2" x 36"
2	Drawer sides	1/2" x 4 5/8" x 16 7/8"
1	Drawer subfront	1/2" x 4 5/8" x 18 3/16"
1	Drawer back	1/2" x 4 1/8" x 18 3/16"
1	Drawer bottom	1/4" x 16 5/8" x 17 15/16"
1	Drawer front	3/4" x 5 5/8" x 19 7/8"

Profile



A Pencil Tip

If dead on accuracy isn't critical, here's a quick and easy way to draw straight lines along the edge of a board using a pencil and your middle finger as an edge guide. First use a ruler to mark the board the distance from the edge you want. Then set the pencil in place using your middle finger to establish the distance by placing it against the edge of the board. Now simply move your hand on down the board's edge.



joint won't be visible from the front. Use a chisel (**photo 1**) to square up the curved stopped rabbet. The back sets into rabbets all around.

Before assembling the box, drill five countersunk clearance holes in each side for screwing the box to the chair sides later. To assemble the five pieces that make up the 6 1/4"-high seat box, simply glue and nail them together from both the top down and through the side. As is my practice, I clamped across the pieces to pull them tight while nailing in place. To complete your seat box, plane a bevel on the seat front edge (**photo 2**). In this case, using a hand plane to connect two pencil lines is quicker and easier than setting up a router with a chamfer bit.

Cutting the Sides

To cut the shape of the chair base and armrest on the sides, first draw them freehand on a piece of paper. The only

absolutes are the shape of the back of the chair arm where the top will pivot (I started with a 3 1/2"-diameter) and the placement of the seat box (17" from its top to the floor). You'll find these shapes drawn on the scaled grid in the **diagram above**. Using these as starting points, you can draw



3 Before sawing the chair arm shape, make relief cuts.



4 Now proceed with sawing the irregular shape.



5 Sand the saw cuts smooth, working to the pencil line.

TABLE CHAIR



6 Screw the chair seat box to the chair sides. The task is easy when you first lay the parts in position on their sides.

the cutouts for the base “legs” and armrest. The latter should be up about 8" from the chair seat. Transfer the patterns to the wood parts, then cut them out with a band saw (**photos 3 & 4**). After sanding smooth (**photo 5**), you’re ready to fasten the seat box to the sides (**photo 6**).

Making the Top

Working from the bottom side, use trammel points with a pencil at one end to swing the largest arc that your glued-up table top blank will allow. In my case, it was 47". Next, cut away most of the waste using a jigsaw, staying about $\frac{1}{8}$ " to the waste side of the pencil line (**photo 7**). To complete shaping your top, use a $\frac{1}{4}$ " straight bit in a router that’s mounted to a circle cutting jig (**photo 8**). Then place the jig’s centering pin in the same hole you used to swing the trammel points, and make your cuts for the round top. (I say “cuts” because safety requires only taking about a $\frac{1}{4}$ "-deep pass at a time.)

To give your top a “planked” look, use a “V”-shaped bit in the router to plow a $\frac{1}{16}$ "-deep groove through the edge joints on the top and bottom (**photo 9**). This also masks minor imperfections along the joint lines where mating edges don’t align perfectly. Use a clamped straight edge to guide the router.

To complete the top, make two battens which run across the grain on the under side. These are used in pivoting the table top.

The battens are made from stock measuring $1\frac{1}{4}$ "-thick x $1\frac{1}{2}$ "-wide and 36"-long. Glue on a $3\frac{1}{2}$ " length of fall-off from this material that’s cut to a half round shape. Center each $9\frac{1}{2}$ " from one end. This is where the top pivot action takes place. Once the glue dries, draw lines and cut tapers on the battens to give them a less chunky appearance. Cut the tapers using the band saw, then sand smooth. To complete their shaping, run a $\frac{3}{8}$ " roundover bit in your router along the bottom edges and ends.

The battens must be carefully positioned before they’re fastened. To set the battens the correct distance apart and parallel, cut a spacer from scrap material that’s about 15"-wide and $\frac{1}{4}$ " longer than the chairs’ width. To position the battens, shift them and the spacer around until you arrive at



7 After using trammel points with a pencil at one end (called a beam compass) to draw the circle for the round top, a saber saw cuts to the waste side of the line.

a location where all similar relationships are of equal length to the top’s outside edge. Before securing the battens, very carefully select the proper length screws to be sure they won’t go through the top. Since you’re working with solid wood, make the clearance holes in the battens oversize to allow for wood movement.

Installing the Top

Now decide where to drill the hole to accept the $\frac{3}{4}$ " dowel that will be the axle for the pivoting top. Before committing to the big hole, however, drill a small, $\frac{1}{16}$ " hole in the chair side, then place the top in position. Next tap a 2"-long nail through the hole and into the batten alongside it. The nail should provide enough support to test the pivoting relationship between the top and the base. The nail hole in the batten will serve as the center mark for drilling a $\frac{3}{4}$ "-deep hole in the batten to receive the dowel axle.

After drilling the final pivot holes, partially insert the pivoting dowels (just enough so they’ll work but can still be removed). Then lower the top so you can drill $\frac{1}{4}$ " holes through the batten and into the top support at the front of the armrest. Putting a small removable dowel here allows the table to be lifted by the top so it moves without pivoting. Lastly, tip the top to its upright, chair back position and drill through the same $\frac{1}{4}$ " holes into the sides of the chair near the back edge. These will accept the same dowels to lock the top in place in the upright position. Now fashion the dowels for these two small holes by gluing one end into a small wood pull (**above**) for easy inserting and removing.

As I moved the top up and down, I realized the “peaks” at the front of the arms where the top rests were likely to suffer damage from the battens as the top is lowered. So smooth your peaks’ outside edges with files, then use sandpaper to give them a “horn”-type shape.



Wood pulls fitted with short lengths of dowel are used to hold the top in place at front.



8 Cut your top to a perfect circle using a router and circle cutting jig. To be safe, make a series of $\frac{1}{4}$ "-deep cuts and use a $\frac{1}{4}$ " straight router bit.



TABLE CHAIR

9 "Plank" the top by making shallow "V" grooves along the edge joints of the glued-up top. If you used narrow boards, only make four equally spaced grooves.

Lastly, Make the Drawer

Make the sides, front and back of the drawer with $\frac{1}{2}$ " plywood and the bottom with $\frac{1}{4}$ " plywood. The construction is simple. Use rabbet joints on the sides to receive the front and back. For a finished front, as mentioned earlier, I scavenged a piece of curly maple fall-off from the scrap pile. To "dress it up," I sawed a bevel on each edge using the table saw set to 15 degrees and ran the part on its edges. The front then simply screws on to the drawer subfront. (For more information on a table saw jig for this step, see the "Recipe Cabinet" article in this issue.)

Drawer Pull

Rustic period hardware is often hard to find, so I made my own. I purchased two cut nails at the hardware store then bent them to the shapes shown below.



Finish with Milk Paint and Shellac

Since everyone's talking about "environmentally friendly" finishes these days, I thought we'd stick with both the colonial theme and that same old expression, "What goes around comes around." There's probably no finish that's more environmentally friendly than milk paint. And shellac, with its alcohol base, runs a close second, even ahead of oil and some waxes.

The fun part about milk paint is you can easily make it yourself, and inexpensively, too. You probably have half the ingredients in your kitchen already! Here's my recipe: 1 part non-fat dry milk, 3 parts water, 1 part whiting (calcium carbonate that you can get at most paint stores), 1 egg white per quart, and the powered tempera color (poster paint) of your choice. Your final concoction should have the consistency of heavy cream.

Milk paint brushes on a bit runny and doesn't cover like modern oil or latex

paints. It will look a bit streaky and leaves brush marks. Much of this will go away after a second coat. It dries in about 45 minutes. Part of the charm (and authenticity) of the finish are the brush marks and partial translucency of the color. If you don't think you'll like this result, select a store bought paint.

If you do choose milk paint, remember to store it in the refrigerator if you plan to keep it more than a day because that egg can get pretty smelly. Finish the chair base by putting two quick coats of brushed on shellac over the milk paint. The shellac makes the color a bit darker, locks the color down and protects it against scratching.

Finish the poplar top using a warm brown stain after sanding to 120 grit.

After the stain dries, brush three coats of shellac on each side. The shellac makes a nice, warm looking finish that dries to the touch in about 15 minutes and can be recoated in about an hour. After the second coat, sand lightly with 360 grit paper.

If you haven't worked with shellac, I suggest you give it a try. It may be one of the most overlooked, easy to use (and environmentally friendly) finishes available today. Mastering its use mostly requires no more than a little bit of practice to develop a steady, even brush stroke using a good paint brush.

Dual purpose, space saving furniture using environmentally friendly finishes. . . sounds like an advertisement you might see in a magazine or on television for a contemporary line of furniture. Thinking back to colonial times when this piece of furniture was popular, you might conclude that there's really nothing new under the sun. Darn, there's one of those old sayings again! **PW**

Steve Shanesy is editor of Popular Woodworking. Prior to joining the magazine, he spent 15 years in custom furniture manufacturing, building and finishing cabinets and furniture of many periods and styles.



Basic milk paint ingredients are readily available. Most of them can be found in your kitchen.

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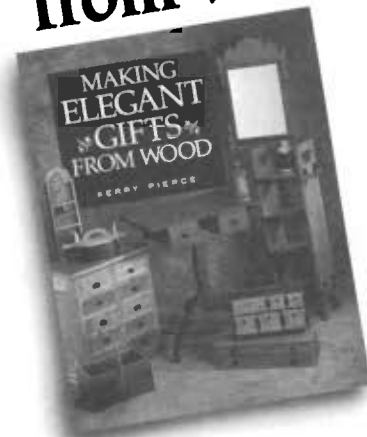
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Maintain Your Handsaws Like a Pro

Get rid of those ragged cuts for good with these saw tune-up tips.

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Maintaining handsaws in mint condition doesn't require membership in a secret society. A few special tools are needed and, as there are more than a few teeth on a saw, some patience is necessary.

You may ask why you should sharpen your own handsaws since professional sharpening services are available. I know of two reasons — it isn't easy to find a sharpener who's devoted to the craft, and when I'm involved with a project and realize my



sawing tool needs attention, I don't want the tool and the project put on hold. I want the saw rejuvenated now!

What Is a Saw?

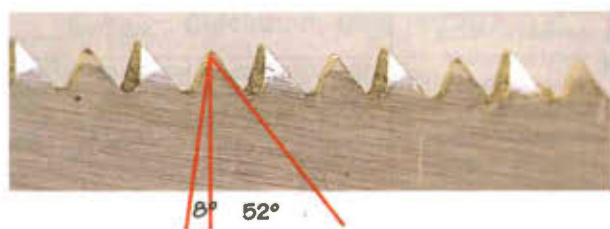
Knowing a saw blade's characteristics is a good first step. Common handsaws are designed for ripping (cutting lengthwise with the grain) or crosscutting (working across the grain or at an angle to it). Finesse tools like backsaws and dovetail saws are essentially crosscut saws. How the tools perform their function depends on the design of the

teeth, and that's a critical factor in the sharpening process.

Whether a saw cuts "coarse" or "fine" relates to the number of points per inch (PPI). To know the number of teeth per inch, just deduct one from the PPI. The more PPI, the smaller the teeth, which leads to slower but smoother results. That's why backsaws and dovetail saws have a lot more PPI than common rip saws or crosscut saws.

Saw teeth are shaped for the job they must do (**see below**). Teeth for

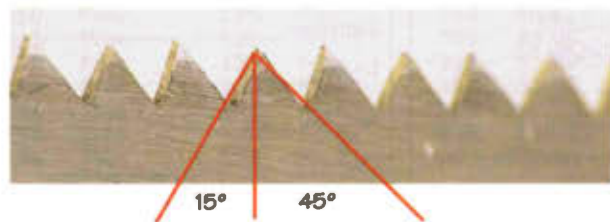
Ripsaw



Rip teeth filed straight across



Crosscut Saw



Crosscut teeth filed at a 70 degree angle



Common tooth angles for rip saws and crosscut saws

How files are positioned for the sharpening stage.

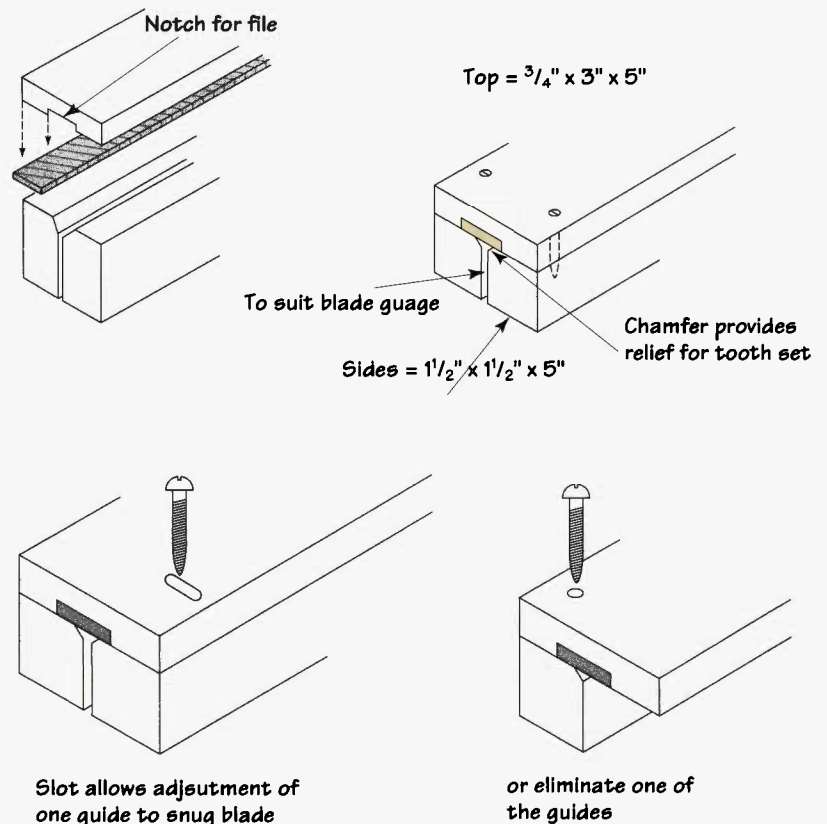
crosscutting are designed to move across the grain like so many small, sharp knives. The teeth are bevel-filed and the cutting edges slant at a sharp angle so a shearing action, as opposed to a chiseling action, results. Rip teeth are filed straight across and have cutting edges that are almost perpendicular to the blade. This is efficient for cutting with the grain. Each tooth performs like a tiny chisel, chipping out its own bit of wood. If you examine the waste from sawing operations, you'll see that crosscut saws produce sawdust, while a rip saw spews out small chips of wood.

Sharpening Phases

Sharpening handsaws involves jointing, setting, filing and, optionally, side jointing.

Jointing, which is accomplished by passing a mill file across the tops of the teeth in a heel-to-toe direction, is done to verify that all teeth have the same height. Jointing can be done freehand, but that's risky. It's wise to acquire a commercial jointer or make one along the designs detailed in **Diagram 1**. The idea is to make as few light passes as needed; only until you can see a bright spot on the tip of each tooth. The amount of jointing must be

Diagram 1: Two Alternative Designs for a Saw Jointing Jig



judged by the saw's condition. If the tool is fairly new and has been cared for, jointing may not even be necessary. I don't believe it's necessary every time you sharpen the saw.

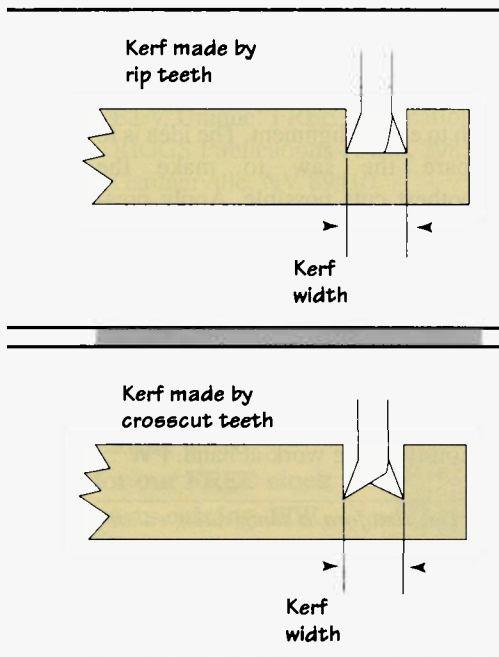
Setting means bending the upper one-third to one-half the length of each tooth with alternate teeth pointing in an opposite direction. It's done so the kerf will be wider than the gauge, or thickness, of the blade. This is necessary so the blade moves through its kerf without binding.

To do this operation freehand is out of the question. This is where a saw set, which costs about \$13, comes in to use. The tool, which operates with pliers-like handles, performs two operations simultaneously: a block presses and holds the saw blade on an anvil, and a beveled punch, or plunger, bends the tooth onto the inclined section of the anvil (**Diagram 2**). The anvil on the tool I use is an adjustable wheel with numbered settings that closely correspond to the

PPI of a saw. Set the number to an index mark and the anvil is positioned so all teeth will be bent an equal amount. I can't guarantee that all saw sets work the same way, so it's important to read the instructions provided with the tool.

Anyway, with the saw clamped in a vise or between boards, start at the heel end and set each tooth that points away from you. Then reverse the saw and repeat the operation on the alternate teeth. Be sure to check whether you may have missed a tooth or two. The set must be uniform throughout if the saw is to cut straight.

Filing, which actually sharpens the teeth, can be viewed two ways. One is as a touch-up chore (like occasionally stropping a razor) when the saw is in respectable condition to begin with. It also can be seen as renovation, when it's just a step in a complete sharpening cycle. In either case, clamp the saw between boards in a vise so the teeth project a bit above the top of the



The difference between teeth on rip saws and crosscut saws.

boards. The idea is to prevent the blade from chattering and to minimize the screeching noise caused by filing.

Now place the correct size tapered file (**see chart below**) in the gullet that's on the left of the first tooth that's set toward you. For a crosscut saw, place the file across the blade, then swing it left to 60 degrees. Keep the file horizontal and snug in the gullet. File on the forward stroke only, lifting the file to reset it for another stroke. Stroke only as many times as needed to remove half the flat made when jointing. Repeat the procedure in alternate gullets for the length of the saw. Then reverse the saw and repeat the operation.

File Selection Chart	
PPI*	File to Use
4½, 5½, 6	7" slim taper
7, 8	6" slim taper
9, 10	6" slim taper
11, 12, 13, 14, 15	4½" slim taper
More than 16	5" superfine (No. 2 cut)
*points per inch	

Ripsaws are treated in similar fashion except that filing is done straight across (at a right angle to the blade).

Needless to say, success in this venture depends primarily on your degree of expertise with a file. If you're just touching-up, the file's position can be determined by the existing angles of the teeth — just position the file accordingly. If you're doing a complete job, then application of the file becomes more critical.

If at this point you're exclaiming, "Oh golly!" don't despair. There's another option; namely, a saw sharpening jig of the type shown set up in the **photo at right**. This jig is adjustable so correct angles and planes are established for various saw blades, including circular ones. All you must do is concentrate on stroking the file that's included.

Side jointing is a last, optional step, done with the fine side of an oil stone as shown in **diagram 3**. The operation dresses the points of the

Diagram 2: Saw Set Tool

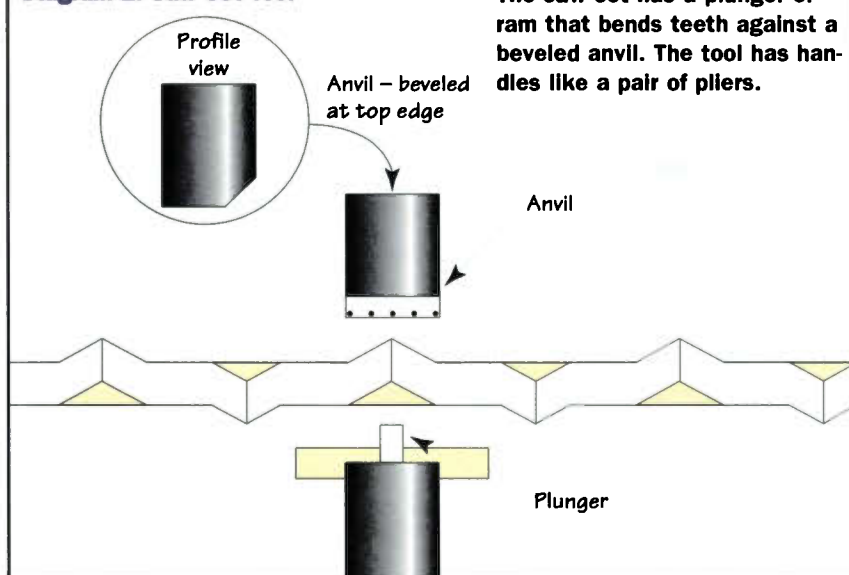
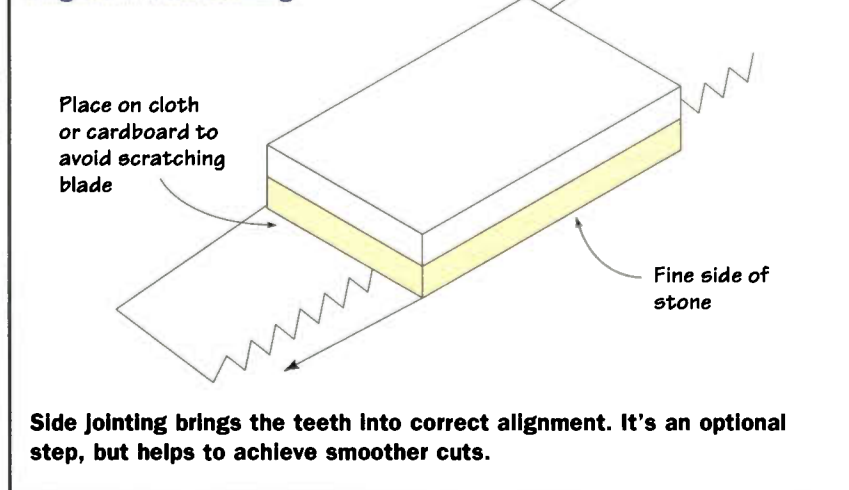


Diagram 3: Side Jointing



The saw sharpening jig is adjustable to suit the saw being worked on. It assures that all teeth will be filed to correct angles. Your only concern will be stroking the file.

teeth to exact alignment. The idea is to prepare the saw to make the smoothest cuts possible. Apply pressure with just the weight of the stone; a couple of strokes on each side of the blade are enough to do the job.

Like all tools with edges for cutting, proper sharpening not only gives the best results with the least effort, but also gives the user greater satisfaction from the work at hand. **PW**

R.J. DeCristoforo, a contributing editor for Popular Woodworking, has written more than 30 books, including Jigs, Fixtures and Shop Accessories.

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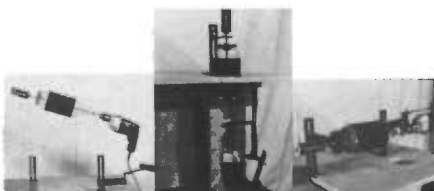
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#20

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Norma Rose, from Missoula, Montana, for:
"This cuts through jackasses as well as sawhorses."

J.F. Sexton, from Minnetonka, Minnesota, for:
"Looks like those 'horses' are ready for the glue factory."



#18

"I guess my saw horses just became quarter horses."

Taking the High Road

Taking a few lessons from the “Old School” can put new pride in your work.

IBELIEVE IN TAKING THE HIGH ROAD. If I’m going to build something, I don’t want it to be cobbled. To me, cobbled says something about a person. It’s an eyesore, usually doesn’t perform its task adequately, and won’t resist the wear of years of use. The craftsman of old valued the quality of workmanship above the sheer quantity of it. He simply would not settle for “cobbled.”

Old World Values

In the heyday of woodworking (i.e., the 18th and 19th century), when young men sought apprenticeships with master woodwrights, the beginner relied heavily upon character, having little experience or skill to offer. One required characteristic was patience. That’s because the woodwright wouldn’t slap things together in great haste, as is common practice today. Back then, wood was worked versus being machined. The old ways are where the “working” part of “woodworking” came from. If you doubt this, try dressing your rough sawn lumber by hand or sawing your boards from a log with a pit saw! Until the advent of low-cost power tools, few would’ve considered woodworking to be recreational.

The craftsman of old knew more about his raw material’s quirks, characteristics and unique uses than most of us realize today. Back then, the craftsman relied upon his intimate knowledge of the material to get the project to turn out right, keep the boards straight and true, drawers tight, etc. Now we often rely more on the accuracy of our machines and the strength of adhesives and fasteners. In fact, we’re often not even using “wood,” but rather some wood composite or substitute. The new material is much more precise and much less changeable, but much less interesting as well. Don’t get me wrong, I use these materials, too. But, for all their advantages, they don’t provide the natural pleasure of working real wood.

More Than a Competency Test

One common Old World practice was the graduation test. When an apprentice finished his tenure, the master would require a demonstration of the student’s newly honed skills on a challenging project. This often took the form of a tool chest or workbench. Once completed, it told a story about the craftsman. How organized is he? Does he pay attention to detail? Does he choose the right woods and the right joints? In short, it served as a woodworker’s “resume.”

Sometimes this Old World standard still works today. I recently decided it was time to make that work-

bench I’ve been dying to build, so I pushed all those other projects onto the back burner and began working. When I got the benchtop laminated and all the dog holes and leg joints cut, I took it to a cabinet shop that had a wide planer. The supervisor was impressed enough with my work to offer me a job as a cabinetmaker! Mind you, I never worked even a day as a professional woodworker, but my “resume” (i.e., workbench) told a story the fellow was interested in.

New World Versus Old World?

Isn’t it fascinating how we all acknowledge the need for New World standards of workmanship (emphasizing speed, quantity and unit price, amongst others) while simultaneously clinging to the romance of the old? Anyone who’s ever shopped for a nice dresser has pulled out a drawer to see if it was dovetailed. Why? Perhaps in our collective subconscious we recognize some very fine ethics prevailed in the “Old School,” many of which are sorely lacking today.

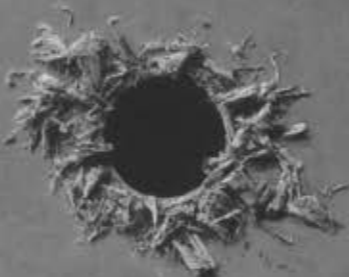
For example, after I began working for this cabinetry shop, a co-worker relayed the story of a top cabinetmaker who once questioned the accuracy of a batch of parts cut on a computer controlled panel saw. The co-worker’s remark was something like, “old so-and-so is of the ‘Old School,’ he just has real difficulty changing.” How remarkable that we should be so eager to ridicule the “Old School” in the name of being “progressive,” while simultaneously being greatly impressed by much of the great wood works of old!

It seems to me that the mass produced, progressive school has shot itself in the foot by dismissing the “Old School” entirely. Granted, few can make a living manufacturing wood products the old way. Considering the wealth of skill and knowledge common to craftsmen of old, I would still consider myself to be a beginning woodworker. But it’s nice to know that taking the high road can still have tangible dividends and is still something we value, if somewhat unwittingly. But when we’re after quality and craftsmanship, a mass produced item is the last to be considered. Find a hand-crafted solid wood dresser or highboy from the 18th or 19th century and study it — you’ll be amazed at how it was built! **PW**

Lawrence Heinonen is a cabinetmaker who is currently specializing in the restoration of large, 19th century homes.



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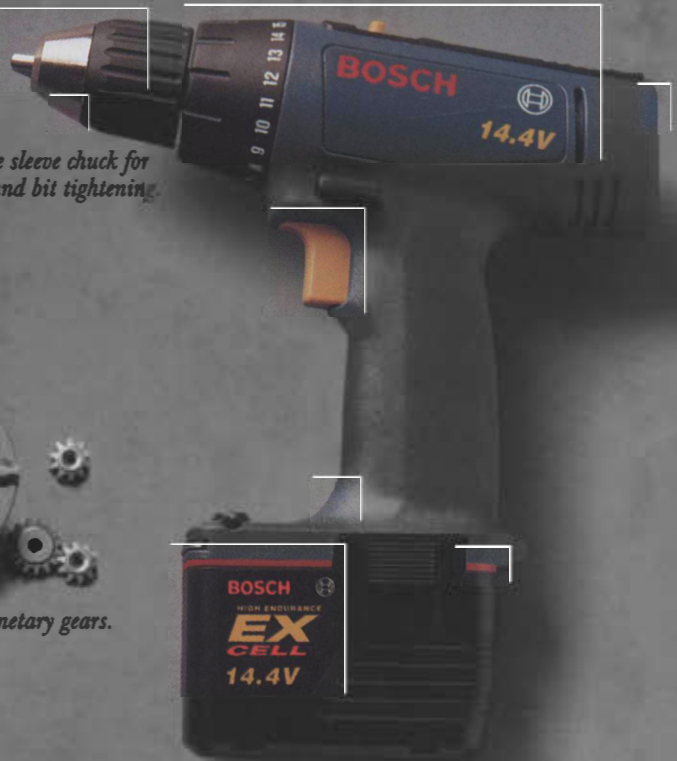


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