

The Woodworker's Journal

Vol. 16, No. 3

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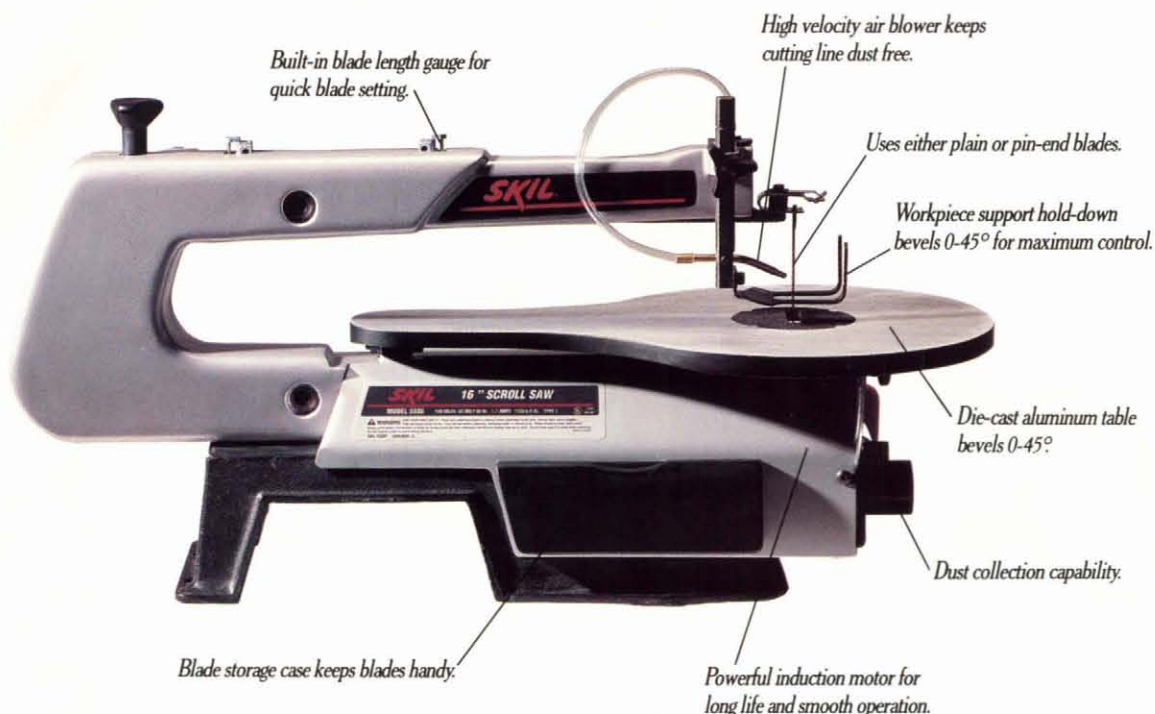
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May/June 1992



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The Woodworker's Journal

MAY/JUNE 1992 VOLUME 16, NUMBER 3

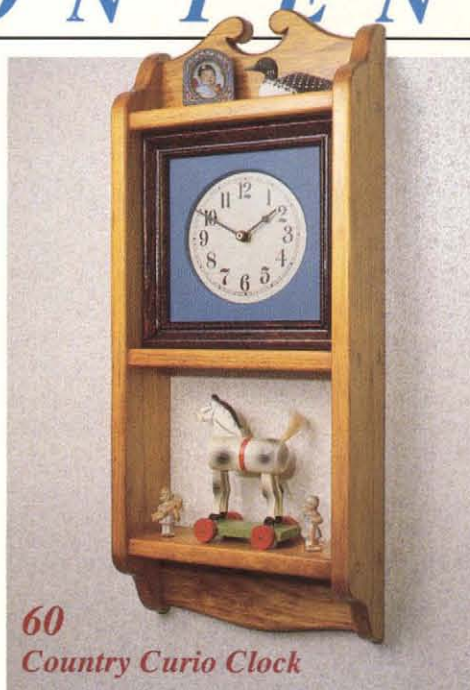
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Shoptalk

Woodworkers Alert!

Woodworkers are by nature trusting people. But that trust is now allegedly being abused by a nationwide organization that is promising small shop woodworkers up to \$20 per hour for piecework. Many woodworkers have already lost money, some have reportedly been forced to file for bankruptcy, and the Attorney General in at least two states are now investigating. Preliminary indications are that the woodworkers may be involved in the supply side of a classic multi-level "pyramid" business venture. Investigators confirm that these ventures have been around for years, with pine woodcrafts being just the latest of a long list of products included. Some ventures are legitimate, others are not, and it isn't always easy to determine who is telling the truth. Here are the details.

For most woodworkers, involvement starts when they respond to an ad in their local newspaper. A representative from an outfit called Custom Country Reproductions (also known as Country Interiors) allegedly promises them that they can make up to \$20 an hour cutting parts for simple unassembled, unfinished pine projects in their shops. After signing a contract, the woodworker (called a "cutter") is asked to cut parts for a variety of pieces, and then ship or deliver those parts to various addresses in the United States. Among the plans that have been supplied to the woodworkers are copyrighted *Woodworker's Journal* plans, photocopied without our permission directly from our *Country Projects for Woodworkers* book. Custom Country Reproductions has superimposed their company name on our plans, and claims in their contract that the plans are theirs, but reproduction of these plans is, in our opinion, a theft and illegal use of *The Woodworker's Journal* copyrighted material. We have directed them to stop this practice and have filed complaints with the Attorney General's office in New Mexico and in Missouri.

Woodworkers in several states have responded to this ad, some have invested money, time and materials, made and delivered pieces to the stipulated addresses, and then have not been paid. Several woodworkers have allegedly been forced to file for bankruptcy, and the plight of one woodworker who claims to have lost \$3,553 has been profiled by an ABC-TV affiliate, KTVI, in St. Louis.

If you are involved with this organization, and have not been paid, contact one of the above Attorneys General, or the Attorney General's office in your state. If you respond to any ads similar to this, we urge you to first talk with fellow woodworkers who are in fact making money with the organization involved. Check the business out with the Better Business Bureau, and call your local Attorney General's office or Consumer Protection Agency to check that no complaints have been filed regarding the business you plan to do work for.

Jim McQuillan

The Woodworker's Journal

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Letters

We welcome opinions and comments (both pro and con) from our readers. Address correspondence to: Letters Dept., *The Woodworker's Journal*, P.O. Box 1629, New Milford, CT 06776.

I design and build prosthetic devices and furniture for local children who are disabled, and I would like to correspond with other woodworkers who are interested in this activity.

Arthur W. Keely

2701 Fairview Ave., Vestal, NY 13850

Years ago, I was given an old Stanley tool which I have yet to identify. The name Stanley and the number 81 are embossed on the blade holder. It has a flat steel, removable blade similar to the kind found on a plane or scraper. There are two hand grips on either side of the cutting blade, making it look somewhat like a spokeshave. Can you identify it?

Jack Legato, Salem, Conn.

With some help from the book, *The Antique Tool Collector's Guide To*

Value, by Ronald S. Barlow, we learned that the tool you describe is a Wide Cabinet Scraper, manufactured by the Stanley Tool Company in New Britain, Connecticut. They were made from 1909 until World War II, and currently sell for \$20 to \$30 at antique tool auctions. By the way, readers interested in old tools are likely to enjoy Barlow's book. It's available for \$12.95 from Windmill Publications, 2147 Windmill View Road, El Cajon, CA 92020. The book includes many tool descriptions, over 2000 illustrations, and dollar values based on recent auction sales.

Recently, I built a fence with an adjustable stop for my router table using the "slot" method explained in the Shop Tips section (pg. 14) of your March/April 1992 issue. However, rather than use a carriage bolt, I used a brass toilet flange "T" bolt. The length is perfect, and it only took a little filing to get the head to fit in the slot. Also, since the bolt has 1/4-20 threads, it fit a threaded plastic

knob I was able to purchase at a local woodworking supply store.

Fred Zimmerman
St. Clair Shores, Mich.

I found the Shop Workcenter project (January/February 1992 issue) to be very helpful, particularly since I was designing something similar. But as someone with a tight shop budget, I have some suggestions to help lower the cost.

You used birch plywood for much of the project, and suggested fir plywood as an alternative. However, consider mahogany plywood. It usually will cost about the same as fir, but it has a more uniform surface. Mahogany solid stock can be used for the trim.

Also, while the plastic laminated top you used offers durability and looks good, 1/8 in. or 1/4 in. thick hardboard (Masonite) will cost less. And when the hardboard wears out, it can be flipped over to a new side or replaced.

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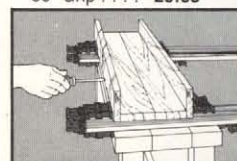
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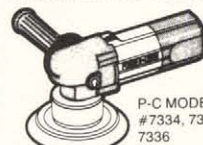


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use hard maple from your scrap bin. Rather than purchase plastic knobs, make your own from scrap wood and tee-nuts. And finally, you can eliminate the shelf standards if you bore a series of holes and hang the adjustable shelves from pegs or pins.

My changes may not make as pretty a unit, but on a budget they make the project more attainable.

Richard Bouvier, Bristol, Conn.

Odds and Ends

The Minwax Company is now seeking nominations for its 1993 Community Craftsman Award. To be eligible for the award, nominees, including individuals, communities, groups/associations, or companies, must be engaged in an activity that is improving the community, and instills a sense of pride and satisfaction through working with wood. Nomination submissions should be sent by July 31, 1992 to: Minwax PR, c/o Gilbert Whitney & Johns, 110 South Jefferson Road, Whippany, NJ 07981.

In the plunge router tool review in our January/February 1992 issue, we incorrectly listed the Hitachi M12V as a one-speed router. It should have been listed as an electronic variable-speed router (8,000 to 20,000 RPM), with a soft start motor. In addition, an optional dust pickup attachment and a carrying case are now available for both the M12V and the TR-12. Also, we have learned that Hitachi has recently introduced model no. M8V, a 1/4 in. variable-speed router with a soft start motor.

The Mississippi Woodworker's Association meets in Jackson on the first Thursday of each month. Guests are welcomed. For more information write to the Association at 5328 Hialeah Drive, Jackson, MS 39211.

The International Wood Collectors Society is a nonprofit organization, founded in 1947, and dedicated to the advancement of information regarding wood. For more information, write to the

Society at 13429 Hwy 84 N., Cordova, IL 61242-9708.

Your safety is important to us . . .

We strive to present our plans and techniques as accurately and safely as possible, and we try to point out specific areas and procedures where extra caution is required. But because of the variability of local conditions, construction materials and personal skills, we can't warn you against all potential hazards. Remember to exercise common sense and use safety measures when operating woodworking power equipment. Don't attempt any procedures you're not comfortable with or properly equipped for. Sometimes, for the sake of clarity, it's necessary for a photo or illustration to show power tools without the blade guard in place. In actual operation, though, you should always use blade guards and other safety devices on power tools that are equipped with them. Remember . . . an ounce of prevention really is worth a pound of cure.

—The Editors

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#DC1 \$199.95 (UPS \$20)



Events

We will gladly list as many events of interest to woodworkers as space permits. Listings are free and may include shows, fairs, competitions, workshops and demonstrations. The deadline is eight weeks before publication—July 1 for the September/October 1992 issue. Please address announcements to the Events Department. Readers planning on attending events should call ahead if possible. Scheduled dates and locations sometimes change between publication and the date of the event.

California: Applications are being accepted for the San Diego Fine Woodworkers Association's "Designs in Wood" competition/exhibit to be held during the Southern California Exposition at Del Mar Jun. 16-Jul. 15. Categories: Traditional & Contemporary Furniture, Woodturning, Clocks, Musical Instruments, Models, Made-for-Children, Carving. For entry forms, write to Entry Office, Southern California Exposition, Del Mar, CA 92014-2216. Deadline for applications is June 1, 1992.

The San Bernardino Woodworking Show, May 1-3, Maruko Convention Center, San Bernardino. For information call 1-800-826-8257.

The Southern California Woodworking Show, May 15-17, Long Beach Convention Center. For information call 1-800-826-8257.

Canada: Woodworking World—The Halifax Show, May 8-10, Atlantic winter Fairgrounds, Armdale, Nova Scotia. For information call 1-800-521-7623.

Colorado: For information on woodworking classes at Woodcraft Supply, Denver, call (303) 290-0007.

Georgia: Chip Carving Workshop with Wayne Barton, May 2-3, Highland Hardware, 1045 N. Highland Ave. NE, Atlanta. For information call 1-800-241-6748.

Massachusetts: ACC Craft Fair, "The Original Rhinebeck Fair," Jun. 26-28, Eastern States Exposition, West Springfield. For information call 1-800-836-3470.

For information on woodworking classes at Woodcraft Supply, Woburn, call (617) 935-6414.

Michigan: For information on woodworking classes at Woodcraft Supply, Redford, call (313) 537-9377.

Minnesota: For information on woodworking classes at Woodcraft Supply, Bloomington, call (612) 884-9657.

Missouri: For information on woodworking classes at Woodcraft Supply, Creve Coeur, call (314) 434-5779.

New Jersey: The South Jersey Woodcarvers' 13th annual Spring Woodcarving Show to benefit the American Cancer Society, Jun. 6-7, National Guard Armory, Cherry Hill. For information call (609) 227-1969.

For information on the summer workshop program at the Peters Valley Craft Center, write to the Center at 19 Kuhn Rd., Layton, NJ 07851, or call (201) 948-5200.

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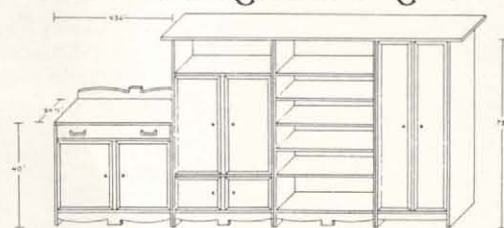
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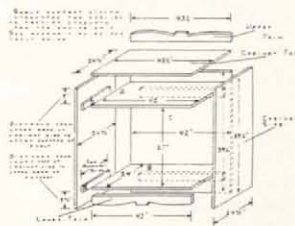
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North Carolina: For information on Penland's Summer 1992 Wood Workshops, contact Penland School, Penland, NC 28765; tel. (704) 765-2359.

Ohio: Spray Finishing Technology Workshop, sponsored by Bowling Green State University and DeVilbiss Ransburg, May 11-14, Technical Training Centers, DeVilbiss Ransburg, Toledo. For information call Dr. Richard Kruppa at (419) 372-7560.

Oregon: Summer Workshops at the Oregon School of Arts and Crafts include Special English Finishing Techniques, Jul. 13-17; Conservation & Restoration, Jul. 20-24. For information contact the school at 8245 SW Barnes Rd., Portland, OR 97225; tel. (503) 297-5544.

Pennsylvania: Application deadline for booth space at the 9th Annual Penn's Colony Festival is May 31. For information, contact Penn's Colony Festival, 603 East End Ave., Pittsburgh, PA 15221; tel. (412) 241-8006.

For information on woodcarving workshops at the Sawmill Center for the Arts, contact them at P.O. Box 180, Cooksburg, PA 16217; tel. (814) 927-6655 or 744-9670.

Tennessee: For information on the summer workshop program at Arrowmont School of Arts and Crafts, contact the school at P.O. Box 567, Gatlinburg, TN 37738; tel. (615) 436-0567.

Applications are being accepted for The Smoky Mountain Woodcarvers Association's 10th annual show, sale and competition to be held Sept. 25-27 at Dollywood, Pigeon Forge. For information contact Jack Williams, Show Coordinator, 2608 Reagan Rd., Knoxville, TN 37931, tel. (615) 691-1855.

Utah: The American Association of Woodturners' 6th Annual National Symposium, Jun. 18-20, Brigham Young University, Provo. For information call (612) 484-9094.

Virginia: Woodfest International, 35 woodworking programs and demonstra-

tions on turning, carving, cabinetry, marquetry and more, Jun. 7-11, Red Lion Inn, Blacksburg. For information contact Lloyd Sumner, 5900 Chestnut Ridge Rd., Riner, VA 24149; tel. (703) 382-1974.

Washington: The Kitsap County Woodcarvers Club's 6th Annual Juried Show & Sale, Jun. 13-14, Kitsap Mall, Silverdale. For information, contact Chuck Malven, 6015 Osprey Circle, Bremerton, WA 98312.

For information on woodworking classes at Woodcraft Supply, Seattle, call (206) 767-6394.

West Virginia: Workshops at the Crafts Center include: Progressive Windsor Chairmaking with Randall Fields, May 17-22. For information, contact the Crafts Center, Cedar Lakes, Ripley, WV 25271; tel. (304) 372-7005.

Wisconsin: The 4th Annual Dremel/Ducks Unlimited Masters Carving Competition, May 16-17, City of Racine Festival Hall, Racine. 

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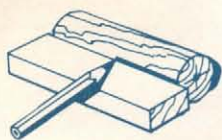
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Shop Tips

Before throwing out used foam brushes, I strip off the foam and use the remaining plastic paddle and handle as a glue spreader. And, if the paddle is too big for the job at hand, it's easily cut to a size (or shape) that suits my needs.

Dennis Preston, Brookfield, Conn.

Once a screw head is stripped, you're likely to be faced with the task of drilling it out. But before reaching for your drill, coat the screw head and the tip of your screwdriver with a bit of valve grinding compound, then give it another try. The fine grit in the compound often provides just enough added friction to permit the screw to turn. Valve grinding compound is sold at auto parts stores.

Andrew Flowers, Garden Homes, Ill.

A shop utility knife can be made in just a few minutes using a short length of dowel and an old hack saw blade. Cut $\frac{3}{4}$ in. diameter dowel stock to about a 4 in. length, then use the band saw to cut a $1\frac{1}{2}$ in. long slot in one end. Cut the old hack saw blade to a 3 in. length and glue it in the dowel slot with epoxy. The blade should extend out the end about $1\frac{1}{2}$ in. Allow the epoxy to dry, then use a grinder to shape the end of the blade and apply a bevel to the cutting edge.



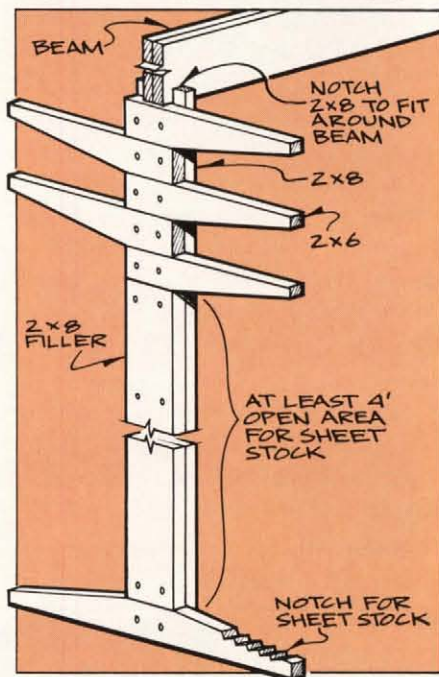
We've suggested several profiles in the sketch, but you can grind the blade to just about any shape that suits your needs. After grinding the bevel, use a sharpening stone to hone the edge.

Everett A. Crear, Schenectady, N.Y.

Here's a simple lumber storage system for the basement shop. It's designed to make use of the space beneath a central carrying beam. Common framing lumber is used for all parts.

First, cut the 2 by 8 leg several inches longer than the distance between the

shop floor and the carrying beam, then notch the leg end to fit around the beam. Cut a series of 2 by 6 supports and a 2 by 6 foot, and bolt these to the leg. If you don't want to fill out the full length of the leg with supports, just cut a length of 2 by 8 filler to span the remaining space



as shown. Make as many of these units as are needed (spaced about 4 ft. apart) for your stock.

If you would also like to store 4 by 8 sheets of plywood, allow at least a 4 ft. open area between the lowest support and the top of the foot. Make a series of notches in the top edge of each foot. Each notch will hold a single sheet of plywood. It will also keep the plywood off the floor—not a bad idea if your basement tends to be damp.

The jaws of most metal clamps will dent wood if they are used without clamp pads. Scrap blocks of wood work well to minimize the problem, but usually three hands are needed to hold the blocks while tightening the clamps.

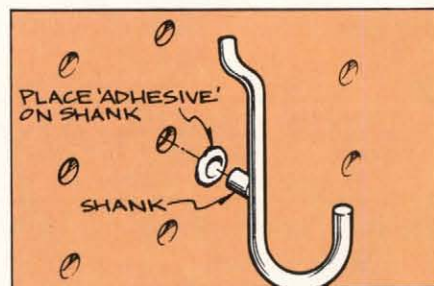
I've found an easier way to pad the jaws. Next time you are in your pharmacy, pick up a package of those rubber inserts that are put in shoes to cushion the heels. Each has an adhesive back, so you need only cut it to fit the clamp jaw, then stick it in place.

R. J. Melpignano, Bellingham, Wash.

Solder wire, sold at any hardware store, is very pliable yet holds its shape nicely. I find it comes in handy when I want to transfer the profile of a curved part or a molding. To get a near perfect duplicate of the profile, I place the solder against the part and mold it to the shape. I then use the solder to trace the pattern to my project stock or a piece of paper.

Bernard Paumier, Baltimore, Ohio

Pegboard hooks are handy, but all too often they fall from the board when a tool is removed. However, if you use the pegboard hooks that have a support shank, I have a tip that will help. Before mounting the hook, apply a wad of "reusable adhesive" to the support shank. When the shank is pushed into the pegboard hole, the adhesive adds a considerable amount of holding strength. (Dust will reduce the bond, so do a little cleanup before starting.) When



you need to move the hook, the adhesive can be peeled from the parts without much fuss. Reusable adhesive is sold in the stationery section of most variety stores. It has a putty-like consistency and is often used as a substitute for tape and tacks when mounting posters, memos, maps and the like.

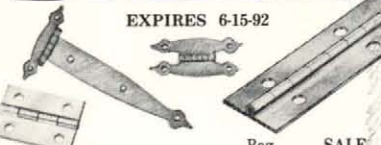
*James A. Hunter
Traverse City, Mich.*



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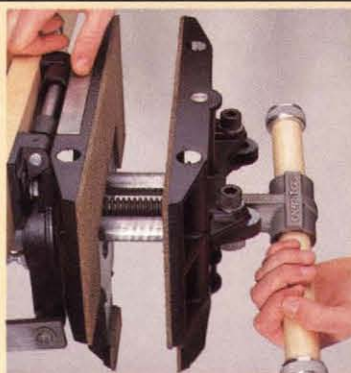
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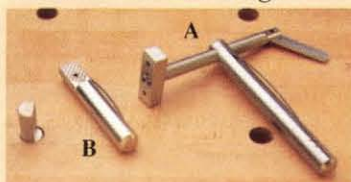
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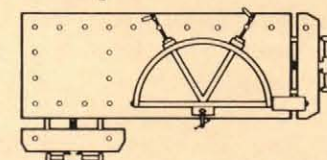
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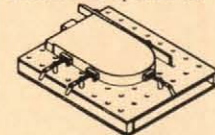


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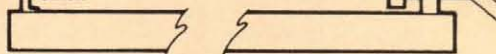


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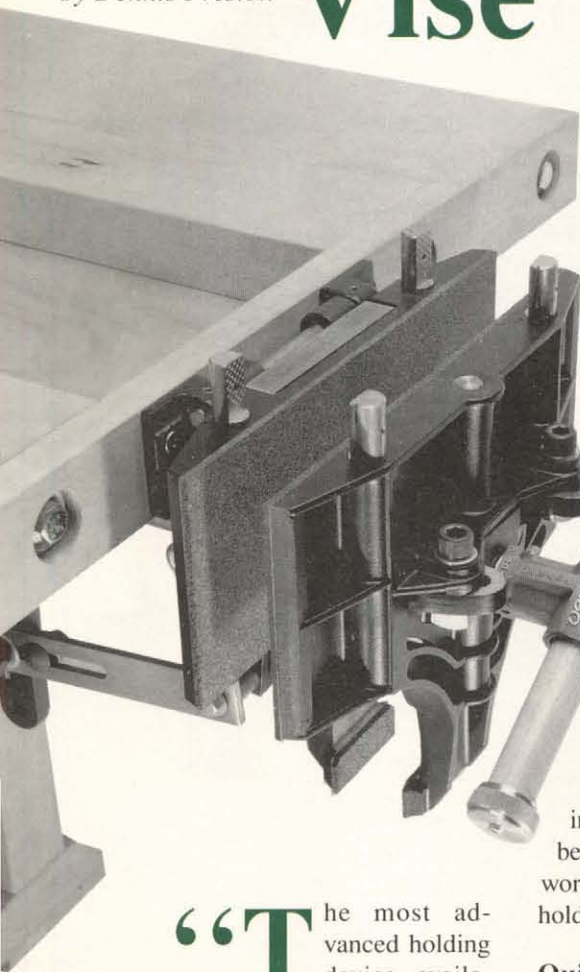
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New Product Review

Tucker Vise

by Dennis Preston



Jaws

The first thing that you notice with the Tucker is the exceptionally large 13 in. wide jaws. Closer inspection reveals a set of narrow elevated jaws (called carver's chops) opposite the main jaws. The rotating head feature allows either set of jaws to be used at any angle. The vise is locked at the desired tilt and rotation by molded plastic levers.

Along with the tilt and rotation features, the Tucker Vise incorporates a pivoting front jaw that will accommodate work with a taper of up to 10 degrees. The front jaw can either be locked (with the allen wrench provided) at a predetermined setting or allowed to "float" to accept any taper up to the limit of the jaws. The jaws are lined with a non-marring cork-rubber composition to prevent slippage.

To further enhance the holding options, four steel "dogs" are fitted in the top edge of the main jaws. This allows holding large and irregular objects. By boring a series of holes in the bench top, the hole pattern can be extended to hold the largest of work. The dogs are spring loaded to hold them at the desired height.

Quick Release

The vise has a disengaging nut so that the jaw opening can be quickly set without winding the handle through 50 or so turns. This is very handy on a vise like this with a 12 in. opening capacity. The quick release can be used in two ways: by depressing a bar located flush with the top edge of the stationary jaw or with a shopmade foot pedal connected to a lever located on the underside of the bench. The foot pedal can only be used when the vise is in the horizontal position. Automatic opening can be selected by tensioning an elastic shock cord provided with the vise. This permits hands-off opening when used in

conjunction with the foot pedal. Due to the weight of the front jaw assembly the automatic opening is used in the horizontal position only.

Castings

The very efficient look of the vise is due to the clean castings and the baked polyurethane paint. The vise is cast from ZA-12, a zinc/aluminum/copper alloy. The mechanical properties of ZA-12 are comparable to cast iron but with more ductility and 15 percent less weight (the vise weighs 50 lbs.). Other parts are predominantly stainless steel and aluminum. The quality of the fit and finish is excellent.

In Use

The mounting instructions are very clear, but fitting the vise to your bench will take about two hours since there's some routing required along with the usual alignment and drilling.

As stated earlier, the jaws are large. Not only are they wide, but the sides extend 4 in. beyond the guide rods so that boards can easily be clamped vertically. The combination of the large jaws and the ability to hold the work at the optimum position virtually eliminates planing and sawing stock at odd angles. The carver's chops provide a firm grip while allowing good access to the clamped stock. The clamping options are many.

Summary

In its time the Emmert vise was never cheap, and like its predecessor, the Tucker is no exception. At \$495 the Tucker Vise is four times the cost of the typical large bench vise. But with used Emmerts commanding \$600 to \$800, the Tucker is a bargain. If your clamping needs demand enormous versatility, the Tucker Vise is up to the task. It may well indeed be the most advanced workholding device available.

The Tucker Vise is available from Veritas Tools Inc., 12 East River Street, Ogdensburg, New York 13669; tel. (315) 393-1967 and 1080 Morrison Drive, Ottawa, Ontario, Canada K2H 8K7; tel. (613) 596-0305. 

"The most advanced holding device available in the world today," boldly proclaims the manufacturer. That's a pretty strong statement, but the Tucker Vise from Veritas *will* help you get a better grip on things.

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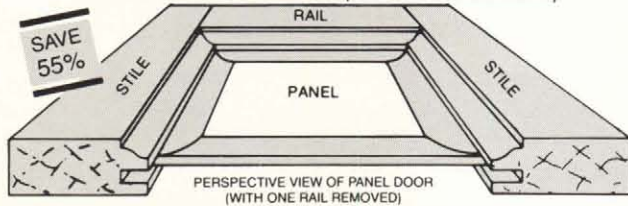
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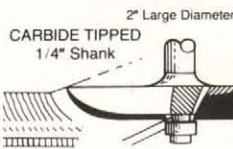
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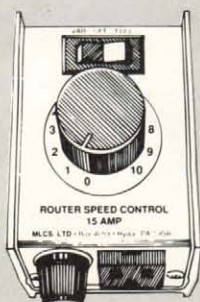
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Readers' Information Exchange

Looking for an owner's manual for an old band saw? Need a bearing for a hand-me-down table saw? Can't find a source of supply for an odd piece of hardware? Maybe our readers can help. Send along your request and we'll try to list it here—and perhaps one of our readers will have an answer for you. Due to space limitations, we'll be unable to list all requests, but we'll include as many as possible.

I need a collet nut for a Craftsman/Singer router, model no. 315.25031.

Ed Cowern

271 Clintonville Lane
North Haven, CT 06473

I have an early Shopsmith with no identifying number. It has a speed changer for which I need the small thin toothed gear which turns the speed changer bezel. Also need the manuals for the Shopsmith and the sanding and shaping attachments.

Don Henthorn

203 Ramona
Smithville, TX 78957

I'm looking for a plough plane/router plane or any old model of groove or dado plane.

Eduardo Castro

1911 W. Winnemac
Chicago, IL 60640

I am in need of a lower chuck for an Atlas jigsaw. Can anyone help?

J. E. McDermott

38 Lyncrest Terrace
Wayne, NJ 07470

I need the upper blade guide assembly for a Sears band saw, model no. 103.0103.

Noel T. Risnychok

Route 3 Box 239 "A"
Sylva, NC 28779

I need an owner's manual and parts list for a Sears band saw S# 1-3-24300 made by King Seely Corp. In particular I need to know how to adjust and align the blade.

Andrew K. Larrimore

161 Winthrop St.
Taunton, MA 02780

I have acquired a joiner's or pattern-maker's chest with the inscription "The King's Chapel, Boston 1737" hidden within. The tools inside the chest were owned by J. Hilton, and before him I.V. Hill of Grey's Inn Road, King's Cross- ing. Any information on who these people were, and the places and date mentioned would be greatly appreciated.

David Peters

P.O. Box 187
Lakeside, CT 06758

Owner's Manuals and Parts Lists Needed

Sears Craftsman scroll saw, model no. 103.23440 Al Bernard,
RD 1 Box 1800, Saylorsburg, PA 18353

Montgomery Ward 10 in. Power Kraft radial arm saw, model no. TPC 2610A . . .
Everett Bugg, 5007 Tenny, Lansing, MI 48910

Craftsman shaper, model no. 101.09740 Joe Vespasiano,
30 Arthur St., Little Falls, NY 13365

Ward's 4 1/2 in. jointer, model no. 15D2505A Linden Phillips,
RR 1 Box 262F, Westerlo, NY 12193

Shopsmith 10ER made by the former Magna Engineering Co. . Raymond E. Bloom,
193 Pocantico Ave., Akron, OH 44312-1844

Craftsman router crafter, model no. 92525 Richard Jones,
9 Ridgewood Dr., Bow, NH 03304

Shopcraft (div. of Aspen Mfg. Co.) 4 1/8 in. jointer planer, model no. T6796-20P, serial no. 003871, mfg. date 1987-88 Robert Ehrensperger,
36112 Cherry St., Gobles, MI 49055

Craftsman scroll saw, model no. 103.0404 and Craftsman scroll saw plate, no. B23 under the base, and plate no. B18 under the table. Also, no. 81213-103 under the table and no. 31212.103 under the base. I'm not sure which are the right numbers . . .

Ernie Gress, 4115 N. 4th Ave.
Phoenix, AZ 85013



Finishing

Finishing Kits

For Special Effects from Marbleizing to Gold Leaf

by James Barrett

Back in the '60s and early '70s, one could walk into practically any paint dealer or corner hardware store and find a good selection of prepackaged finishing "kits." Most were designed to create an "antique" finish. Such finishes usually consisted of an off-white or pastel enamel basecoat topped with a brushed-on glaze of a complementary color. The kits were a boon to the novice finisher/decorator because they contained all the required materials and accompanying instructions to finish (or refinish) one or two pieces of furniture or a few small items such as picture frames. The kits usually included a couple sheets of sandpaper or steel wool pads, and a cheap disposable brush or similar application tool.

What's Available Today

In today's decorator circles, faux (simulated) "pickled" finishes (a white or pastel semi-transparent stain, followed by a clear topcoat) have largely replaced the so-called antique finishes of two decades ago. While most finish companies usually sell pickling stains and compatible products (wood sealers and clear topcoats) separately, I did find several pickling stains offered in kit form; one from Bartley (discussed below), the other from Constantine. The Constantine pickling kit consists of one quart Hydrocote White Pickling Stain, one quart of Hydrocote Satin Polyshield (water-based polyurethane), and a paint-pad applicator with handle. The kit sells for \$31.50. The Delta Home Decor Pak featured in this article also includes a pickling stain, along with samples of their other water-based stains and finishes.

Most of the other finishing kits I found are what I call "special effects" kits, used to produce various faux finishes: marble, granite, gold and silver leaf, suede (flocking) and crackle finishes. I've also included a "finish restoration" kit from Formby, which contains all items needed to clean and restore the shine of existing finishes without refinishing.

The Pros & Cons of Kits

Today's kits offer the same conveniences as the antiquing kits of old—they include everything you need in one package, so you don't have to worry about product compatibility or chasing around for several different items to achieve the effect you want. And, because of advances in finish technology (namely, fast-drying aerosols and water-based nontoxic finishes), the products themselves are much faster and easier to apply than the old, slow-drying oil-based products used in the early kits. Kits also eliminate much of the voodoo involved in mastering a specialized finishing technique, such as marbleizing, gold leafing, flocking, crackling, and so on; you simply follow the



Delta Home Decor Pak



Plaid Faux Finish Marbleizing Kit

step-by-step directions on the package. Then, once you have the technique down pat, you can often buy the individual materials in larger quantities from the manufacturer to save bucks on future projects. Conversely, kits are handy when you just want enough material to create a one-time effect for a special project, such as marbleizing a table top, or applying a crackle finish to a beat-up dresser. With small quantities, you won't end up with a bunch of half-empty cans that you'll never use again (coverage figures are usually on the kit packages).

On the downside, most kits provide only enough material to do one or two small projects. Also, because the manufacturers have to sink extra money into assembling, packaging and promoting kits, you usually end up paying much more for the actual materials, ounce-per-ounce, than if you had bought them separately. Finally, your choices in colors and effects are usually more limited with kits than with individual products. Even so, they're a good introduction to learning specialized techniques or simply creating unusual effects. And, several of the ones I tried for this article are actually a lot of fun to use.

Home Decor Pak

(\$19.95 from Delta Technical Coatings, Inc.)

This "sampler kit" of nontoxic, water-based gel stains and finishes from Delta includes 2-ounce sample bottles of their wood sealer, antiquing gel (brown and black), base coat

(antique white and gold), wood stain gel (walnut and fruitwood), and pickling gel (desert white). The kit also includes an 8-ounce can of acrylic varnish, sandpaper, steel wool, foam brushes, wiping cloths and four instruction/idea booklets for creating various types of decorative finishes. While the kit is mainly designed for "experimenting" with different types and combinations of the Delta products, it does contain enough of each product to actually do a half-dozen or so small projects (each 2-ounce bottle covers approximately 4-6 square feet.) Delta offers a much wider variety of stains and antiquing gels than comes with the kit, in 2-ounce squeeze bottle, half pints, pints, and quarts.

Plaid Faux Finish Marbleizing Kit

(\$12.95 suggested list price, from Plaid Enterprises, Inc.)

This kit takes much of the "voodoo" out of creating a convincingly authentic faux marble finish. The package label boasts "three quick and easy steps," which consist of applying a solid-color basecoat (with foam brush provided), mixing and applying the marbleizing colors (with sponge provided), then creating the veined effect (with feather and veining color provided). The kit also contains a full-color instruction pamphlet and decorating idea booklet. All of the finish components are water-based and nontoxic, and one kit will cover approximately 12 square feet. Although the kit contains the basic application tools (brush, sponge, and feather) you'll need to first sand and seal bare wood (or other porous materials) with a latex primer. The manufacturer also recommends finishing the surface with a high-gloss polyurethane, which is not included. (My choice would be a non-yellowing water-based polyurethane.)

While using the kit, I found that the steps weren't quite as quick and easy as the package might lead you to believe, especially when mixing and applying the marbleizing color (which consists of color A, color B, vein color, extender, and thickener). The colors must be mixed and applied carefully to keep them separated and avoid a muddy appearance. However, the instructions are clear and easy to follow, and if followed carefully, you'll get surprisingly realistic results. (It helps to practice each step on some scrap pieces first.)

Bartley Finishing Kit

(\$12.95 from the Bartley Collection)

This gel stain/finish kit was assembled by Bartley as an adjunct to their Bartley Collection furniture kits, but is sold separately by request to anyone who wants it. The kit contains one-half pint of an oil-based gel stain, which you select from any of the 12 stain colors from Bartley, including three pickling stains (Millridge White, Provincial White and Restoration Red). Also included are one-half pint of satin gel polyurethane varnish, two sheets of sandpaper, glue (for putting Bartley furniture kits together), and a 2-part crack and gap filler. You simply wipe on the gel stain and finish with a cloth (not included). I'm a big fan of gel stains and finishes because they're easy to apply and control; for more on these, see "Working With Gel Stains" in the July/August 1991 issue.



Bartley Finishing Kit



DonJer Suede-Tex Kit

DonJer Suede-Tex and Soft-Flock Kits

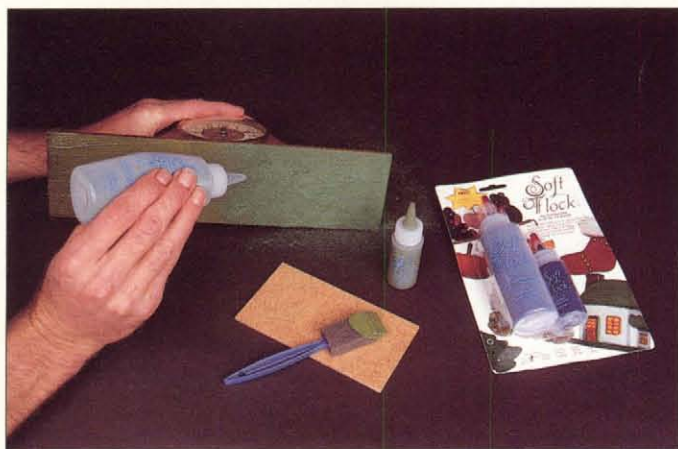
(Suede-Tex kit \$57.80 and Soft-Flock kit \$5.95 from DonJer Corp.)

These two flocking kits provide a quick and easy alternative for any project that requires felt, such as jewelry boxes, gun racks, toys, Christmas ornaments, dresser drawer linings, and so on. Application is so easy, a child can do it. With both kits, you simply apply a liberal coat of adhesive to the area you want flocked, then spray on the fibers (with the flit gun provided in the Suede-Tex kit, or the squeeze bottle in the Soft-Flock kit). My kids had fun playing with these.

Although considerably more expensive than the Soft-Flock kit, the Suede-Tex kit generally provides a thicker, more durable finish because it uses a solvent-based adhesive, rather than the water-based one used in the Soft-Flock kit.

The spray gun represents the major portion of the investment in the Suede-Tex kit (gun sold separately for \$35), which also includes two 3-ounce bags of rayon fibers (1 brown and 1 green, although the photo shows red), two 8-ounce cans of color-matched adhesives, and a brush to apply them. Once you have the gun, you can choose from any of 28 fiber and adhesive colors, available separately from DonJer (3-ounce bag of fibers, \$5.70; 1 pound bag, \$12.50; 8-ounce can of color-matched adhesive, \$5.70). One 3-ounce bag of fiber with an 8-ounce can of adhesive covers approximately 15 square feet. If necessary, the glue can be thinned with mineral spirits.

The Soft-Flock kit contains a half-ounce squeeze bottle of



DonJer Soft-Flock Kit



*Plasti-Kote
Fleck-Stone
Finish Kit*



*Plasti-Kote
Cracklin' Finish Kit*

fiber and 1-ounce bottle of nontoxic, water-based adhesive. I wouldn't recommend this kit for items exposed to moisture or heavy use, but it's fine for such items as Christmas ornaments, toys, jewelry boxes, and kids' projects.

Plasti-Kote Fleck-Stone and Cracklin' Finish Spray Kits

(\$13.85 and \$12.95 respectively, from Plasti-Kote Co.)

Finishing kits don't get any simpler than these 2-step spray finishes from Plasti-Kote. Fleck-Stone is a rough-textured faux granite finish that can also be used on a variety of materials other than wood. The kit consists of a 12-ounce spray can of water-based multi-hue textured spray paint, and a 6-ounce can of clear acrylic topcoat. Coverage varies, depending on the color of the surface being sprayed. To extend coverage, the manufacturer recommends first painting the item with an enamel in the same color range as the basecoat. Because the different colored paints "sputter" out of the can in small globules (it has a consistency of wet sawdust), you can vary the

effect by applying just a light coat and allowing some of the original surface color to show through. Because the base coat is water soluble, you must apply the acrylic topcoat to protect it from moisture. The pine board I tested was given two light coats to completely hide the surface. I applied the paint on both bare wood and wood treated with a clear wood sealer, but didn't notice any difference in the coverage rate. Fleck-Stone is available in 12 different "decorator" color combinations (Rose Quartz is shown). While Fleck-Stone doesn't look much like real stone, it does provide an interesting special effect.

The Cracklin' Finish kit consists of two 12-ounce spray cans—a basecoat of one color, and a topcoat of another. The kits come in six different color combinations—white on black, black on white, black on red, black on gold, gray on black and white on gold. To increase coverage, the manufacturer suggests first sealing the wood with a lacquer-based wood sealer. The amount of "crackle" is determined by the thickness of the base coat; one coat produces a "small" crackle pattern; additional coats produce a more pronounced pattern. The wood sample shown was given two full coats of basecoat to produce "medium" crackle finish. The paints produce a semi-gloss finish, although you can add one or more topcoats of clear lacquer to add protection or modify the gloss. Both kits are readily available at most hardware stores, home centers, and paint dealers.

The Original Old World Paint Crackle Kit

(\$19.95 from Paint Strokes, Inc.)

This three-part kit includes 8-ounce containers of a clear base coat, white "crackle" paint, one of three different colored overglazes (beige, rust, or gray), and a small, disposable paint brush. All components are water-based and nontoxic. Unlike the Plasti-Kote spray finish above, this kit provides a more "authentic" crackle effect, like you'd expect to see on real weathered-paint surfaces. The kit contains enough materials to



*The Original
Old World
Paint Crackle Kit*

cover approximately 15 square feet. As with many of the other faux finishes in this article, the manufacturer suggests a clear topcoat on heavily used items (in this case, clear lacquer or acrylic). The company plans on introducing three additional colors later this year.

Formby's Furniture Facelift Kit

(\$21.40 suggested list from Thompson & Formby, Inc.)

While this kit has more to do with refinishing than new finishes, I included it simply because I'm personally sold on the

Finishing

Continued

product. I hate to strip furniture, and have relied on this particular kit several times in the past to "bring back" dull or dirty finishes that didn't quite qualify for stripping and refinishing. The kit contains 8-ounce bottles of cleansing



Formby's Furniture Facelift Kit



Constantine's Old World Art Gold Leaf Antiquing Kit



Constantine's Silver Leaf Kit

liquid, buffing cream, and a clear solvent-based gloss finish, along with applicator and polishing sponges (about enough to do a dining-room table, large dresser or four wooden chairs).

In my experience, Formby's Furniture Facelift will remove surface dirt, water rings and minor scratches in shellac, lacquer and oil varnishes, while lightening the color of yellowed finishes slightly. It doesn't work on heavy scratches or finishes that have darkened, checked, alligatored, softened, or otherwise require complete stripping. This kit fills the gap between furniture cleaning and stripping, and has saved me considerable work reviving several pieces of antique and household furniture.

Old World Art Gold Leaf Antiquing Kit and Silver Leaf Kit

(\$14.45 and \$11.25, respectively, from Constantine)

These two kits enable you to apply composition (imitation) gold leaf or silver leaf to a variety of projects. The gold leaf kit includes 2-ounce jars of Venetian Red base coat, adhesive size, antiquing glaze, and satin sealer, plus a booklet of gold leaf (total 5 square feet), two brushes, and a burnishing cloth. I discovered early on why the basecoat is red: Unless applied extremely carefully, the thin gold leaf material will split or crack, exposing the basecoat beneath. According to the manufacturer, Venetian Red approximates the red earth shade used in traditional gold leaf adhesives, so if cracks do appear in the leaf, the work still looks authentic. The instructions are easy to follow, but actual application takes a careful eye and steady hand because the gold leafing material is extremely thin and delicate. The antiquing glaze and sealer are provided to give the gold leaf an aged look and prevent tarnishing.

The silver leaf kit includes 2-ounce jars of adhesive and sealer, two brushes, a burnishing cloth, and a booklet of composition silver leaf to cover 5 square feet. Both kits take some practice to master the technique.



Sources

Bartley Collection

29060 Airpark Drive
Easton, MD 21601
Tel. 1-800-BARTLEY
Bartley Finishing Kit

Constantine's

2050 Eastchester Road
Bronx, NY 10461
Tel. 1-800-223-8087 (orders only)
Tel. (212) 792-1600 (information)
Old World Art Gold Leaf Antiquing Kit, Silver Leaf Kit

Delta Technical Coatings, Inc.

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Whittier, CA 90601
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Home Decor Pak

DonJer Corp.

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Tel. 1-800-336-6537
DonJer Suede-Tex Kit
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Plaid Enterprises, Inc.

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Tel. 1-800-241-5202
Plaid Faux Finish Marbleizing Kit

Plasti-Kote Co., Inc.

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Tel. 1-800-251-4511
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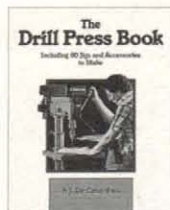
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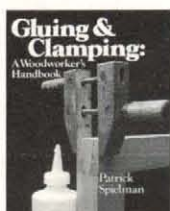
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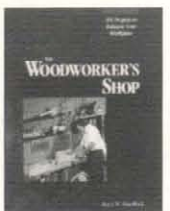
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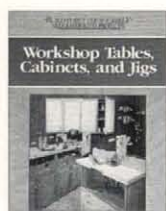
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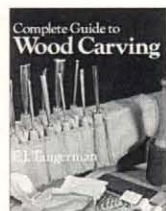
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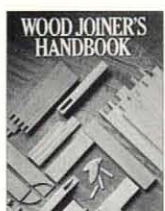
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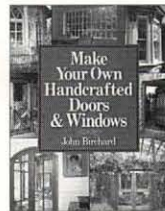
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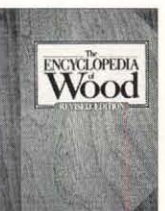
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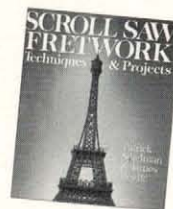
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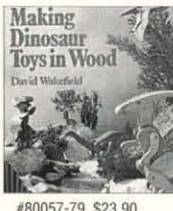
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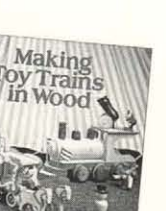
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In The Shop

After several months of cold, foggy weather, came a beautifully warm, sunny January day in the small seacoast town in which I live. With such unusual weather at hand, I just couldn't resist putting aside my stack of woodworking catalogs and taking my two kids fishing at the local pier. That evening, as I was filleting our catch in anticipation of a fresh fish dinner, the knife slipped and stabbed the end of my little finger (ouch!). The mishap wasn't caused so much by my inattentiveness, but by a dull knife—and I had just sharpened it (or so I thought) on my waterstones. You might say I literally “got the point” that my sharpening skills still needed some honing. In truth, I probably would have done a better job filleting the fish with one of my wood chisels: For several years now, I've been using a honing guide to keep my chisels and plane blades razor sharp. But the knife incident got me thinking about just how many sharpening guides existed for other tools—drill bits, planer knives, saw blades, lathe and carving tools, and, of course, knives.

The Sharpening Process

In its simplest terms, all tool sharpening can be broken down into two basic procedures: *grinding*, and *honing*. Grinding (done on a bench grinder, of course) removes bad nicks and chips from the cutting edge and/or re-establishes the correct bevel angle or cutter shape. You can achieve the same results—remove a lot of material quickly—on a coarse stone or with a file, but the process usually takes longer.

If you want an extremely sharp edge, follow grinding by honing the edge on benchstones or hand-held slip stones, using successively finer grits to remove the scratches left by grinding.

Whether grinding or honing, you'll need to hold the tool blade at the correct bevel angle. If you don't, the bevel will either be the wrong angle, will not be perfectly flat, or both.

This is where sharpening jigs and honing guides enter the picture. I'll start with jigs used with bench grinders, then move on to honing guides used with benchstones, and finally throw in a smattering of specialty sharpening devices that impressed me.

Bench Grinder Attachments

These are simply clamping jigs that hold a tool blade or bit at a preset angle to the grinding wheel as you sharpen. The small tool rests that come with most bench grinders usually don't provide enough surface area to support tools properly. Some cheaper grinders have stamped steel tool rests, which tend to flex slightly when you apply pressure on them while sharpening. Also, the rests are often hard to adjust to a precise angle, and the nuts securing them sometimes vibrate loose while grinding. All of these factors make it hard to achieve a consistent bevel while grinding.

The various jigs help eliminate this problem, either by providing additional support when placed on the tool rest, or by bypassing it altogether. In both cases, they steady the tool much better than hands alone. Also, the jigs are easier to adjust to a precise angle than the standard tool rests on many grinders.

The Veritas Grinding Jig (Photo 1) rides directly on the grinder's tool rest, and will clamp any tool with a flat or

Sharpening Guides & Gizmos

Will they really improve your sharpening skills?

by Jim Barrett

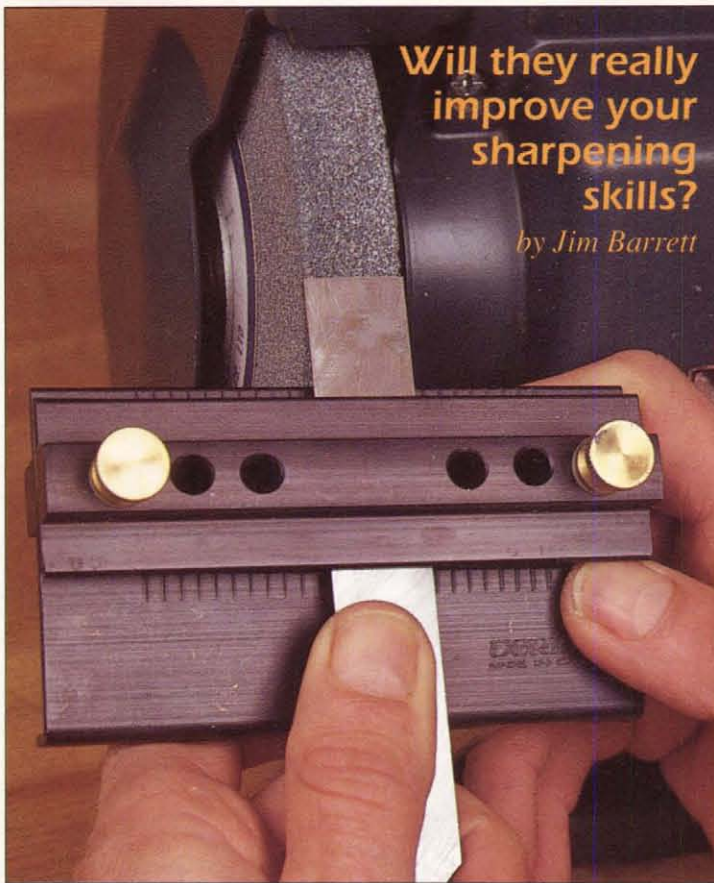


Photo 1: Blade holders clamp chisels, plane irons and other square-edged blades at a precise, consistent angle to the grinding wheel. The position of the clamp on the blade determines the bevel angle. The Veritas guide shown costs about \$17.

wedge-shaped blade or tang (typically chisels and plane irons). Several similar devices are on the market—if you're creative, you could probably devise such a clamping jig yourself.

After clamping the tool into the jig and setting the correct angle, you slide the jig back and forth across the tool rest to sharpen the blade from one side to the other on the wheel. Veritas also offers a variation of this device for sharpening skew chisels, including those with radiused edges (Photo 2).

Yet another item for the bench grinder is a special turner's jig from Lee Valley. It's designed for long-handled lathe tools, including gouges with flat bevels (it can't be used for gouges with curved or “thumbnail bevel” profiles). As shown in Photo 3, this jig mounts to the bench and bypasses the grinder tool rest altogether. The blade-to-stone angle is set by moving an adjustable rod that cradles the butt end of the tool. You can also use this jig in conjunction with the Veritas jigs above to provide additional support for long-handled skews and chisels.

If you don't already have a bench grinder, consider the 5 in. Makita shown in Photo 4. The grinder comes standard with

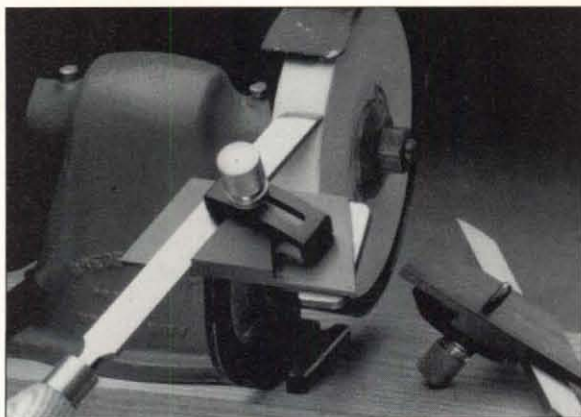


Photo 2: Skew grinding jig from Veritas holds skew at correct angle so cutting edge is flush to the grinding wheel across its width. A pivoting feature enables you to sharpen radiused skews, also. About \$22.



Photo 3: This jig supports long-handled turner's tools, even gouges with flat bevel profiles, as shown here. About \$41 from Lee Valley Tools.

attachments for sharpening circular saw blades and planer knives. Optional accessories include a conventional tool rest and a special tool rest for knives and scissors.

Other bench-mounted grinding attachments are available for sharpening router bits and drill bits. Shown in Photo 5 is a router bit sharpener from Sears. Drill bit attachments for grinders are discussed below.

Sharpening Tip: The gray aluminum oxide wheels that come with most grinders are usually too hard for grinding tool steel; that is, they tend to clog or glaze, reducing grinding efficiency and quickly overheating the tool edge. Special white aluminum oxide wheels (available from several catalog sources) should be used instead. These wheels have a soft bond and very open structure, which helps prevent clogging. While the white stones do wear out faster than the harder gray ones, they are less likely to burn the tool edge.

Honing Guides

Some veteran tool sharpeners refer to these guides as "training wheels." But hey, everybody has to learn how to walk before they can run, right? The guides don't take that much longer to use than doing the work freehand, and they enable even first-time sharpeners to get professional results.

Honing guides clamp directly to the blade and can be set to hold it at the correct angle to the stone. The Veritas, Eclipse, and Stanley guides shown in Photo 6 have rollers that ride on the stone surface. To adjust the angle, you slide the guide up or down along the blade—the closer you attach the guide to the end of the blade, the steeper the bevel angle.

The two General guides pictured are sometimes referred to as "outrigger" guides because the rollers ride on the bench instead of the stone. With these, you change the bevel angle by adjusting the height of the outrigger roller. While the General guides enable you to use the entire length of the stone for sharpening, the bench must be perfectly flat and smooth. If your bench is like mine, though, you'll probably get better results if you use these guides on your dining room table.

In most cases, you'll be honing the blade to match the existing bevel angle; you simply place the beveled edge flat



Photo 4: Makita's 5 in. bench grinder (Model 9300) includes a circular saw blade guide and planer knife guide as standard equipment. Suggested list \$434. (street price considerably less).



Photo 5: Router bit sharpening guide from Sears mounts to bench in front of grinder. Sears offers a similar guide for drill bits. About \$20.

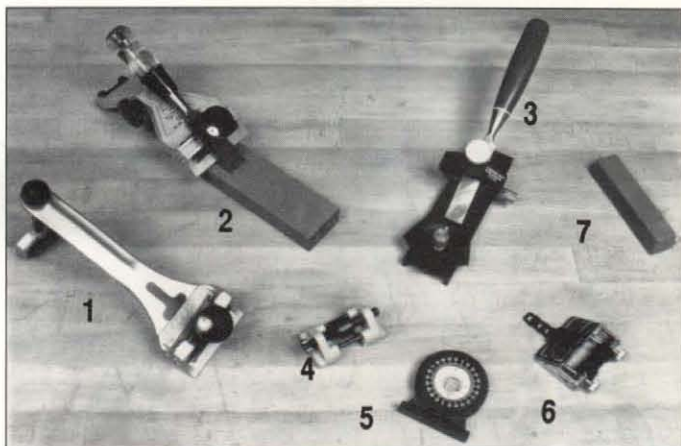


Photo 6: Honing Guides & Helpers: 1. General No. 810 Sharpener (about \$20); 2. General No. 809 Folding Sharpener (about \$16); 3. Veritas Honing Guide (about \$26) and Angle Jig (about \$15); 4. Eclipse Honing Guide (about \$18); 5. General Magnetic Angle Protractor (about \$11); 6. Stanley honing guide (about \$30) 7. Green (chromium oxide) honing compound (about \$15).

against the stone, then adjust the guide to maintain that angle. After honing the initial bevel, you can raise the angle by 1 or 2 degrees to hone a secondary (micro) bevel (see Honing Tips).

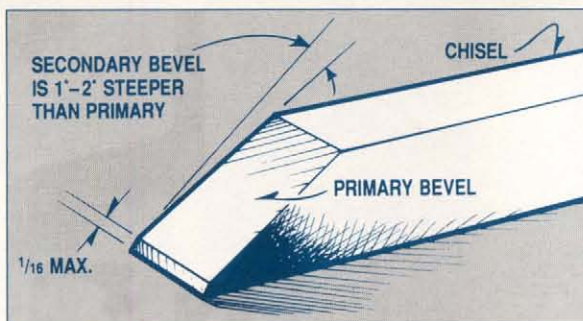
Changing the bevel to a specific angle, say 20 degrees, is a

While honing guides vastly improve your ability to achieve a sharp edge, they don't guarantee one. Following are some tips that will help you hone more effectively:

Hone a secondary bevel. Putting a secondary (micro) bevel on chisels and plane irons will enable you to hone or sharpen the tool much more quickly, because you'll be removing less material each time you "touch up" the edge. To do this, you first hone to the primary bevel (the one on the tool when you buy it). Then, raise the angle of the honing guide by 1 degree to 2 degrees and stroke it across a fine-grit stone several times to create the secondary bevel (see drawing). The next time you want to touch up the tool edge, hone the secondary bevel only—a few strokes on a fine-grit stone will do it. When the secondary bevel exceeds $\frac{1}{16}$ in., you'll need to hone the primary bevel again.

Flatten and polish back. You can improve the performance of a chisel or plane blade if you flatten and polish the back before you hone the bevel. When you buy a new chisel or plane iron, you'll notice a uniform scratch

HONING TIPS



pattern on the back left by grinding during manufacture. Remove these scratches by placing the blade flat on the stone and working in small, circular strokes. Keep using finer-grit stones until you achieve a polished finish. Also, when honing the bevel, you should also stroke the backside a few times when you switch grits, to remove the wire burr that forms on the cutting edge.

Note: A lapping table (just emery paper glued to a section of $\frac{1}{4}$ in. thick plate glass) is a better choice for flattening chisel backs, especially if your stone is not perfectly flat.

Use the whole stone. Because the on-stone guides only let you use part of the stone to

sharpen, you should frequently flip the stone, end to end, and front to back, to keep from wearing a hollow in one spot.

Don't bear down on the guide. When using the guides, position both hands to apply most of the downward pressure on the portion of the blade in front of the guide, rather than on the guide itself.

Hone the correct bevel. If you're not sure what the correct bevel is for the particular tool you're sharpening,

use the following guidelines: Skew chisels and paring chisels (softwoods) 15–20 degrees; paring chisels (hardwoods) 20–25 degrees; chisels used for both paring and light mortising (striking chisel with hammer) 25–30 degrees; mortise chisels 30–35 degrees; plane blades 25–30 degrees (depending on wood density and blade angle).

In general: If the blade edge chips or dulls quickly during use, the bevel angle is too low. Excessive tool drag or wood tearout means the bevel angle is too high. Strive to maintain the lowest possible angle consistent with the tool's application and the steel strength of the blade. ▼

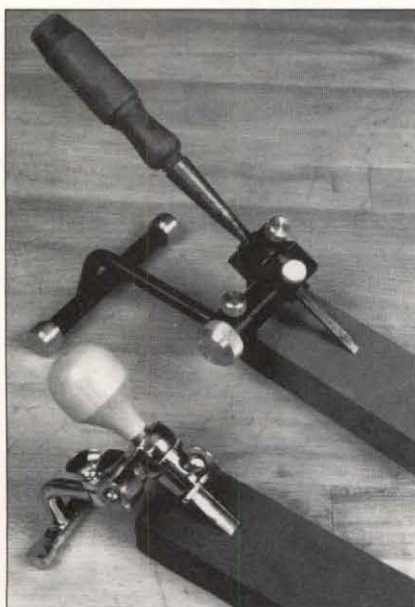


Photo 7: Universal-type honing guides from Woodcraft for straight and curved-edge carving tools: Bottom: Delux Micro Sharpening Guide (\$42.50) Top: Ez-Edge Universal Sharpening guide (\$79.95).

Photo 8: 1. Eclipse Twist Drill Sharpening Jig (about \$20); 2. Drill grinding guide (about \$14); 3. Martek Professional Drill Sharpener (about \$63); 4. Martek Basic Drill Sharpener (about \$24). Items shown are available from Lee Valley Tools.



different story, though: With the exception of the Stanley, none of the guides include scales for setting specific angles. The Stanley guide has a flip-down plastic tab that shows how far the blade must project from the guide to provide 25, 30, and 35 degree bevel angles. However, the instructions that come with most guides list the required amount of projection from the blade tip to the guide to achieve different angles. Veritas offers an angle-setting jig for their guide, which also works with the other on-stone guides. The jig has five standard angle settings

(15, 20, 25, 30, and 35 degrees), which you select by rotating the pentagonal wheel on top of the jig. Also, the Veritas honing guide has a spring-actuated cam that raises the roller by exactly 1 degree or 2 degrees so you can hone a secondary bevel on the tool without unclamping and shifting the guide. Combined with the angle jig, this feature enables you to set 25 different precise angles. The General magnetic angle protractor is even more versatile, though not quite as accurate. With it, you can set any angle from 0 to 90 degrees. You simply place the protractor on



Photo 9: Top: DMT guide and 12 in. diamond benchstone handles planer blades/jointer knives up to 12 in. wide. (about \$70) Bottom: Hone-Mate sharpener hones jointer knives without removing them from the machine (about \$23 from Woodworker's Supply, Inc.).

top of the blade (or guide) then set the guide to the angle indicated on the protractor.

A pair of universal outrigger-type honing guides from Woodcraft are shown in Photo 7. Both guides handle curved as well as straight-edged tools.

Drill-bit Jigs and Machines

Photo 8 shows several items available for sharpening drill bits; unfortunately the two guides shown (left side of photo) sharpen twist bits only; the machines (right side of photo), twist bits and masonry bits. The "generic" drill sharpening guide mounts to the bench on one side of the grinding wheel on a bench grinder. Made in Taiwan, it is virtually identical to the General No. 825 drill jig from which it was copied (not shown). Other woodworking catalogs carry the General guide, and Sears offers a similar bench-mounted jig.

The Eclipse twist bit sharpening jig works much like a honing guide—it holds the bit at the correct angle to grind the proper edge relief when the guide is rolled over a sheet of aluminum oxide or silicon carbide sandpaper. The two Martek sharpening machines in the photo are powered by an ordinary electric drill (not included). The professional model at top is the more versatile of the two, with an ability to sharpen masonry and twist bits from 1/8 in. to 1/2 in. at cutting angles of 80, 90, 118, and 130 degrees. The model at bottom grinds bits from 1/8 in. to 3/8 in. in diameter at 120 degrees only. All four items pictured are available from Lee Valley Tools (see Sources).

Other Devices And Gizmos

For Jointer and Planer Knives: While many types of stones are suitable for sharpening jointer and planer knives, I found only two guides for them (Photo 9). One is a planer blade holder from DMT, meant to be used with their 12 in. long diamond stones. The stones come in three grits: 600-grit (fine), 325-grit (coarse), and 220-grit (extra coarse). The extra-coarse and coarse stones are used for removing nicks and dings in the blade, or changing the bevel angle; the fine stone is for final sharpening. The jig/stone combo will sharpen planer blades and flat jointer knives (including carbide) up to 14 in. long.

The pocket-sized Hone-Mate (in foreground) enables you to

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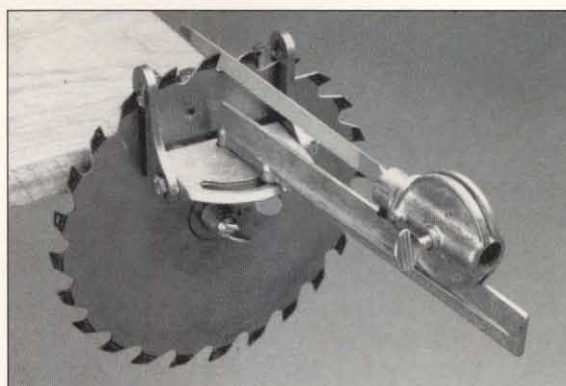


Photo 10: Circular saw blade sharpener (about \$36 from Woodcraft).

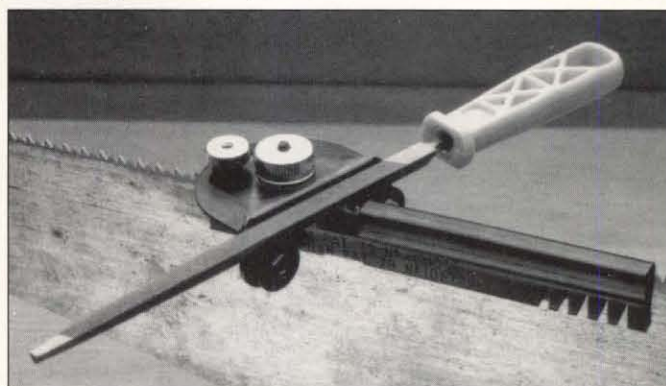


Photo 11: Hand saw sharpener (About \$20 from Woodcraft)

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hone jointer knives without removing them from the cutterhead. The plastic body holds two rectangular stones (180- and 400-grit), and is shaped to index against the cutterhead at the correct bevel angle. It's good for touching up dull blades, but not for major resharping jobs. This handy little sharpener also worked on my Ryobi AP-10 benchtop planer. It's sold exclusively through Woodworker's Supply, Inc. (see Sources).

For Saw Blades: A variety of jigs exist for sharpening hand saws and circular saw blades. The two shown (Photos 10 and 11) are available from Woodcraft. Both jigs are designed to hold a triangular saw file (included) at the correct angle to the saw teeth. The hand saw jig will sharpen most hand saws, including fine-tooth hacksaws and Japanese hand saws. The jig also sets the teeth. The circular saw jig is meant to sharpen the face of the teeth only (which is usually the way you sharpen circular blades that aren't too badly damaged). A companion device, which sets and joints circular saw blades is also available. None of these file-type jigs will sharpen carbide.

For Carving Knives and Other Cutlery: Dozens of sharpening jigs and guides have been made over the years for sharpening knives, scissors, shears, and the like. In my experience, few of the gizmos I've tried produce the super-sharp cutting edge I like to have on these tools. Shown here are two sharpening "systems" that do. The Spyderco Tri-Angle Ceramic Sharpening System is a variation of the familiar ceramic rod sharpeners. The kit includes two sets of alumina ceramic triangular stones (medium and fine grit) set at an angle

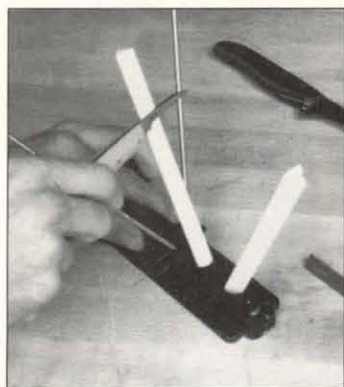


Photo 12: Spyderco Tri-Angle Ceramic Sharpening System (about \$43).

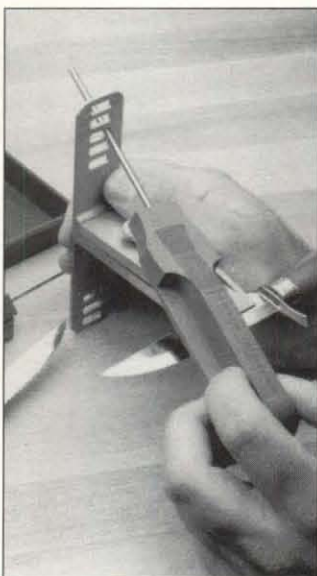


Photo 13: Knife sharpening set from Lee Valley (about \$39).

into a molded plastic base (Photo 12). Holding the knife vertically, you "slice" each side of the blade down the stones, from heel to tip. Mounting the stones in the end of the plastic jig provides the correct angle for sharpening scissors and shears. The knife sharpening set from Lee Valley Tools (Photo 13) is even more versatile and accurate than the kit above, because it offers a choice of five different bevel angles (11 degrees to 25 degrees), and three aluminum oxide hones (180, 220, and 600 grit) to take you from rough sharpening to final honing. Both sides of the blade can be sharpened without removing the tool from the jig. A special hone for serrated knives is also available.



Sources

The following sources carry one or more of the items featured in this article.

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Diamond Machine Technology, Inc. (DMT)

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Special Techniques

Collet Chuck Turning

How one pro turns small objects for fun and profit

by Nick Cook



In this feature, master turner Nick Cook explains how to use a machinist's collet chuck in the lathe to hold a variety of small, round workpieces. Included are instructions and full-size patterns for making wine bottle stoppers, toy tops, and pulls. Nick makes as many as 15,000 of each of these items in a year, and his jigs and techniques are a valuable education for those interested in making multiples.

There are a variety of chucks available to hold blanks for small turnings on the lathe. Both a Jacobs chuck and a machinist's three-jaw chuck will work. However, while both have self-centering jaws, these jaws have very limited contact area with the wood and tend to bite into it, sometimes forcing a workpiece off-center. Also, they both stick out from the headstock, which to some degree, creates more vibration than necessary.

The machinist's collet chuck, fitting directly into the morse taper of the lathe, is a far superior holding system. It is made to encircle the workpiece completely, gripping tightly and keeping the work very close to the lathe headstock. That in itself increases control and

reduces vibration. The collet is held in place with a drawbar.

Known to metal workers as a Morse taper round collet, the machinist's collet chuck has been used for years to hold round stock for all types of machining. Only in the last ten years or so has it found its way into the hands of woodturners. The machinist's collet chuck is exceptional in its holding ability, plus it's very compact and durable. Made of hardened steel, it is commonly available in both No. 2 and No. 3 Morse tapers, which will fit most woodturning lathes. Machinist's collet chucks are typically available in increments of $\frac{1}{64}$ in. up to $\frac{1}{2}$ in. diameter,

but the three projects featured here are all made with a $\frac{3}{8}$ in. collet.

You will need a hollow spindle in order to use the collet in your headstock. You will also need a drawbar (just a threaded rod) with a handle in order to pull the collet in tight to hold the workpiece (see illustration on page 27). The collets are made with a $\frac{3}{8}$ in.-16 internal thread so standard $\frac{3}{8}$ in. threaded rod will work fine for your drawbar. Drawbars are available commercially but you may want to make your own.

Making a Drawbar

You will need two pieces of a tight-grained hardwood, such as rock maple or birch for the handle. Start with two rounds approximately 4 in. in diameter by 1 to $1\frac{1}{2}$ in. thick. Drill a $\frac{3}{8}$ in. hole through the center of both pieces, then counterbore one piece so a $\frac{3}{8}$ in. tee-nut will be flush with the surface when driven up tight (Photo 1). Set the tee-nut, then glue and clamp the pieces together making sure that the holes line up. Allow the glue to set completely before turning.

Thread the glued-up blank onto a $\frac{3}{8}$ in. threaded mandrel and lock it in place with a hex-nut on either side (Photo 2).

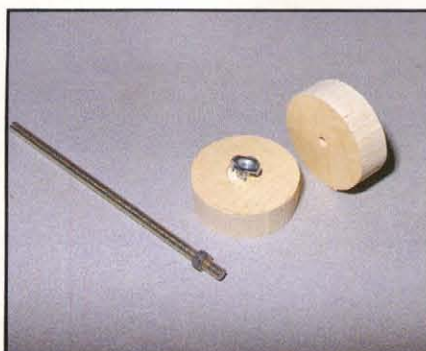


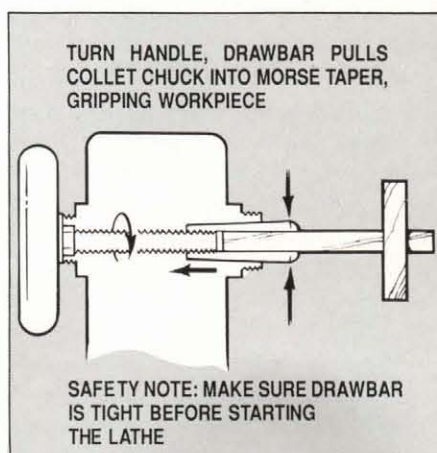
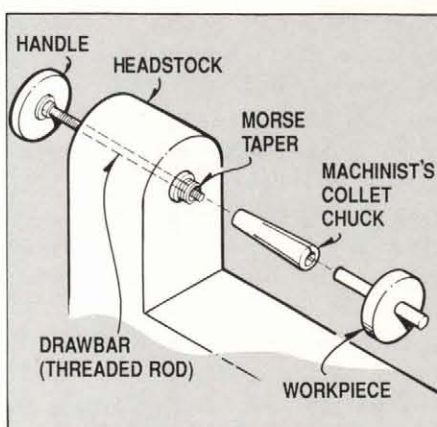
Photo 1

Now turn your drawbar handle to the shape shown (or whatever shape best fits your hand). Sand and finish to suit yourself. After removing the handle from the mandrel, you can plug the hole in the flat end.

It may require trial and error fitting to determine the proper drawbar length for your lathe, since the spindles tend to be different lengths. Once you have the threaded rod cut to the proper length, lock it into the handle by adding a washer and hex-nut (Photo 3). You may need to file down the hex-nut to fit into the spindle. As shown in the illustration, the drawbar is inserted through the back of the headstock, and threaded into the collet chuck. By turning the handle on the drawbar, you can draw the collet into the morse taper on the headstock, and thereby use the collet to grip your workpiece.

Making Wine Bottle Stoppers

Although almost 80 percent of the wine in this country comes with a cork in the bottle, once removed, the cork is nearly impossible to replace. Individuals and companies alike have made a variety of



stoppers, recorkers or decorative tops for wine bottles. They've been turned and carved out of wood, cast in pewter and molded from clay in almost infinite variety. The major problem with most stoppers, though, is that after several uses, the cork breaks or separates from the decorative portion.

Wine stoppers have been on my list of possible production items for a long time, but I always had this fear of getting them back in two pieces from very unhappy customers. After much experimentation, I settled on a rather simple design that used a dowel to join the decorative stopper with a cork drilled to accept the dowel (see Sources for pre-drilled corks). The dowel served two important purposes. First, it eliminated the problem of the cork and decorative top separating, and second, it provided an ideal way to easily mount the top blanks in the collet chuck for turning.

Cutting the blanks: All my wine stoppers are turned from cocobolo, a rosewood from Mexico, but most any

tight grained hardwood will work. Start with squares approximately 1 1/2 in. by 1 1/2 in. by any length and cut the corners off on the band saw. Set the saw table at 45 degrees and adjust the fence to cut off about 1/2 in. to create an octagon shape (Photo 4). This provides a better starting point for the final turning process. The octagon lengths are now ready to be cut into blocks. My blocks are about 2 in. long, but some may need to be shorter or longer depending on the final shapes you plan to turn.

Any type of saw may be used to cut your blanks to length, but if you are going to make large quantities you might like the idea of a sliding table for the band saw (Photo 5). This fixture fits into the miter slot and has a long cross-piece with an adjustable stop to allow for quick setup. The stop helps to make repetitive cuts fast and accurate. The band saw blade is much thinner than that of the table saw or chopsaw, and cuts down on waste.

Drill the blanks: The blanks are now ready to be drilled to accept the 3/8 in. dowels. Set up a fence on the drill press table with a "V" shape cutout in it

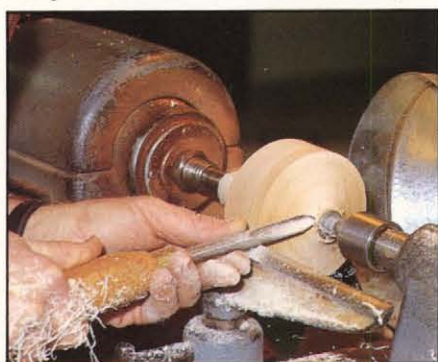


Photo 2



Photo 3



Photo 4

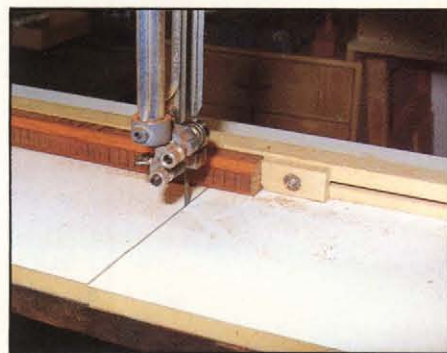


Photo 5

Special Techniques

Continued

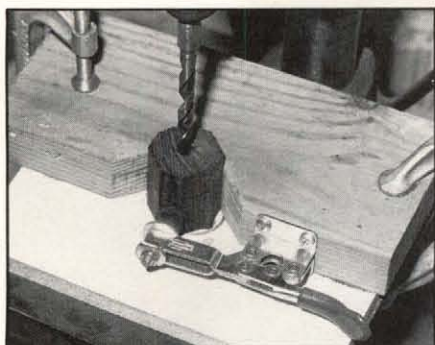


Photo 6



Photo 7

(Photo 6). This will make centering the hole more accurate and at the same time make holding the blank easier, as it has a tendency to spin as the drill bit enters the wood. The addition of a quick-release (toggle) clamping device such as a De-Sta-Co clamp makes the fixture much safer. Drill the holes 1 in. deep.

Add the dowels: Avoid using dowels from local do-it-yourself stores as most of these are imported and vary considerably in size as well as shape. They are not always perfectly round. It is much better to select hardwood dowels, usually birch or maple, that are kiln dried (see Sources). Select a drill bit very carefully to match the dowels you will be using. Brad-point bits work best in end-grain, but they may be slightly over or undersized. A too small hole, and you could split the blank when driving the dowel; too large will result in a loose fit.

Use the sliding table fixture on the band saw to cut dowels to length. A $\frac{3}{8}$ in. blade with 6 or 8 teeth to the inch is best. Too coarse a blade may result in the dowel being snapped or jammed in the fixture. Sections of dowel about $2\frac{5}{16}$ in. long should be about right, but you will

need to test-fit in the drilled blanks to make sure. You'll need just over $1\frac{1}{4}$ in. of dowel exposed, as the corks are $1\frac{1}{4}$ in. long. The little extra allows you to sand the dowel flush with the cork. Use one or two drops of Superglue (cyanoacrylate) in the hole before driving the dowel into the blank (Photo 7). This cuts down on the risk of the blank spinning when you start cutting on the lathe.

Turn the stopper tops: Fit the workpiece into the collet and tighten the collet around the dowel by turning the drawbar handle. Allow about $\frac{1}{16}$ in. to $\frac{1}{8}$ in. between the chuck and end of the blank for a slight undercut. Set the tool rest about $\frac{1}{4}$ in. from the blank, and just below the centerline (Photo 8). Adjust the lathe speed to about 1500 RPM. Always wear eye protection when using any machinery and stand to one side when you first start your lathe.

You will need a $\frac{1}{2}$ in. spindle gouge and/or a 1 in. skew for shaping your blank. I prefer a spindle gouge ground to a steep bevel or fingernail. I also use the oval shaped skew, hollow-ground to a steep bevel. Use either the gouge or the skew to rough turn the blank to a

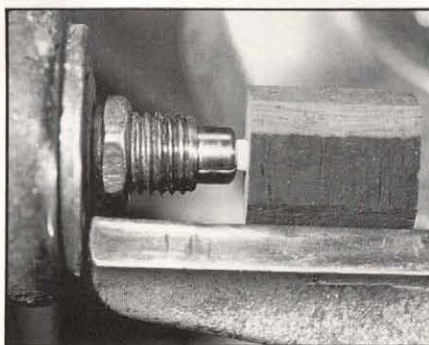


Photo 8

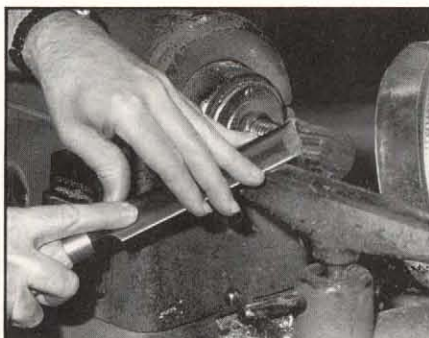


Photo 9



Photo 10

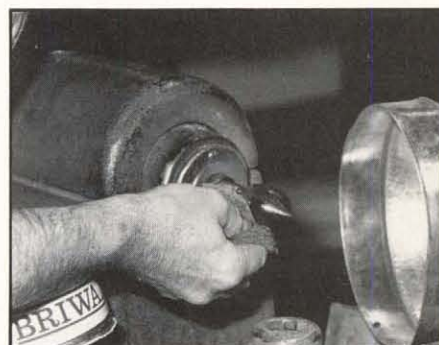


Photo 11

cylinder (Photo 9). As you get farther out from the headstock, you will need to take lighter cuts to avoid chatter. A heavy cut may also result in the dowel breaking at the chuck. The second step is to undercut the bottom of the stopper slightly. This leaves a good clean surface that requires little or no sanding, plus it allows the cork to fit more tightly against the bottom of the stopper.

Start shaping your stopper. Choose from one of the designs shown or make up your own. The possibilities are unlimited. Once you have a shape you are happy with, you will need to sand and finish it. Starting with 180- or 220-grit sandpaper, sand the stopper with the lathe running (Photo 10). Continue sanding with 320-grit, then 400-grit, and finish with 600-grit. I prefer wet-or-dry sandpaper as it tends to last longer when used on wood that has a high content of oil or wax, such as cocobolo. Finish your stopper with paste-wax (clear Briwax is my favorite), applied with 0000 steel wool (Photo 11), then buff with a soft cloth.

To remove the stopper from the lathe, turn the handle to loosen the drawbar,



Photo 12

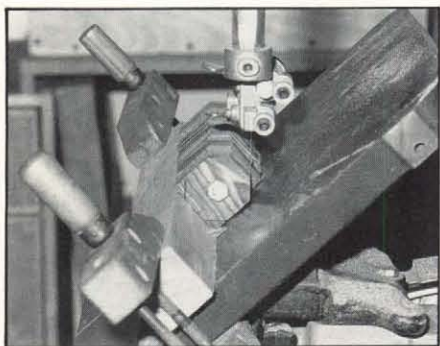


Photo 13

then tap on the handle to release the chuck from the spindle.

Add the cork: The stopper is now ready to receive the cork. Apply a small bead of glue (cyanoacrylate) around the end of the dowel and slide the cork on until it hits the bottom of the stopper. Carefully wipe off any excess glue that may squeeze out around the cork.

Unless you have been extremely careful with your dimensions, you will end up with the dowel sticking out beyond the cork. Use a belt or disk sander with 60 or 80 grit sandpaper to trim it flush (Photo 12). Your stopper is complete.

Spinning Tops

I also use the machinist's collet chuck when I turn spinning tops. They're quick and simple to make and sell well at craft shows, gift shops and galleries. As with the wine stoppers, the collet chuck keeps the work close to the headstock to help reduce vibration and chatter. For added support I also use the tailstock. I've adapted a ball-bearing revolving center by removing the point from a small cup center. This makes it into an inverted cone center that accepts the dowel end.

Stock Preparation: The tops are made from two pieces, a $\frac{3}{8}$ in. hardwood dowel and a contrasting disk. I use cocobolo, but anything with color and figure will work fine. I start with $\frac{1}{4}$ in. by 2 in. by 36 in. stock, resawing it twice to yield three pieces approximately $\frac{5}{16}$ in. thick. This produces the best color and grain. Others like to turn a piece of $\frac{3}{4}$ in. material to a cylinder, and then slice off the disk, but the end grain is less dramatic. The strips are cut into squares and then drilled to accept the dowel. Select a brad-point drill bit to match the dowel for a snug fit. Make sure you have a good sharp bit to avoid breakout on the underside. Use a "V" block to hold the blanks for drilling. You should be able to drill two or three pieces at one time.

After drilling, stack 20 to 25 pieces on a $\frac{3}{8}$ in. threaded rod and tighten with hex-nuts on each end. This will let you cut the corners off to produce an octagon shaped blank. Use the band saw set at 45 degrees and a fence at least 2 in. high (Photo 13). /

Now you are ready to assemble the tops. Start by drilling several $\frac{1}{2}$ in. diameter holes, $\frac{3}{4}$ in. deep in a scrap of



Photo 14

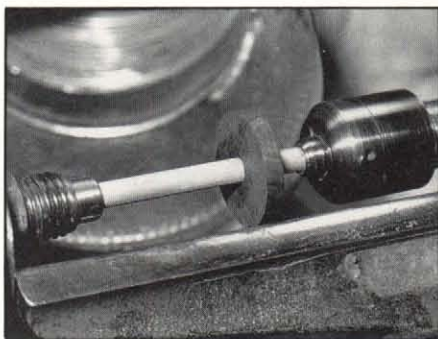


Photo 15

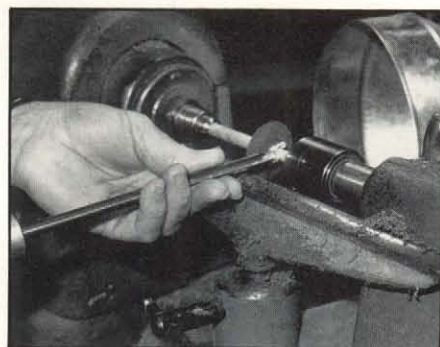


Photo 16

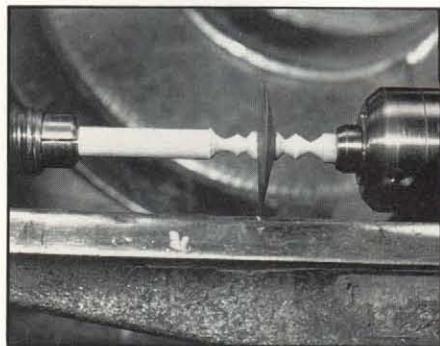


Photo 17

wood. Place the disk over a hole, dip one end of a 4 in. long dowel in cyanoacrylate glue, then drive it into the blank. It will bottom-out in the hole to provide a consistent length of dowel below the disk (Photo 14).

Turning the top: Insert about $\frac{1}{2}$ in. of the long end of the dowel into the collet, and pull it up tight with the drawbar. Place the revolving center against the other end and apply just enough pressure to keep it from bouncing around. This provides the additional support needed to rough turn the disk (Photo 15).

For turning, you'll need a $\frac{1}{4}$ in. deep fluted bowl gouge, ground to a fairly steep bevel on the end and ground almost vertical on both sides. Once round, you may shape the disk using very light shearing cuts across each face. Use the vertical sides of the gouge with the flute upright to make the lightest cut possible on the final pass (Photo 16). This should leave a surface that requires little or no sanding. Continue with the gouge and shape the dowel $\frac{1}{4}$ in. to $\frac{3}{8}$ in. on either side of the disk (Photo 17). Sand the disk as needed to produce a good surface. Apply paste wax and buff

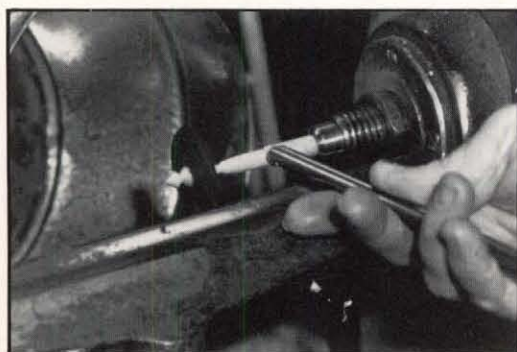
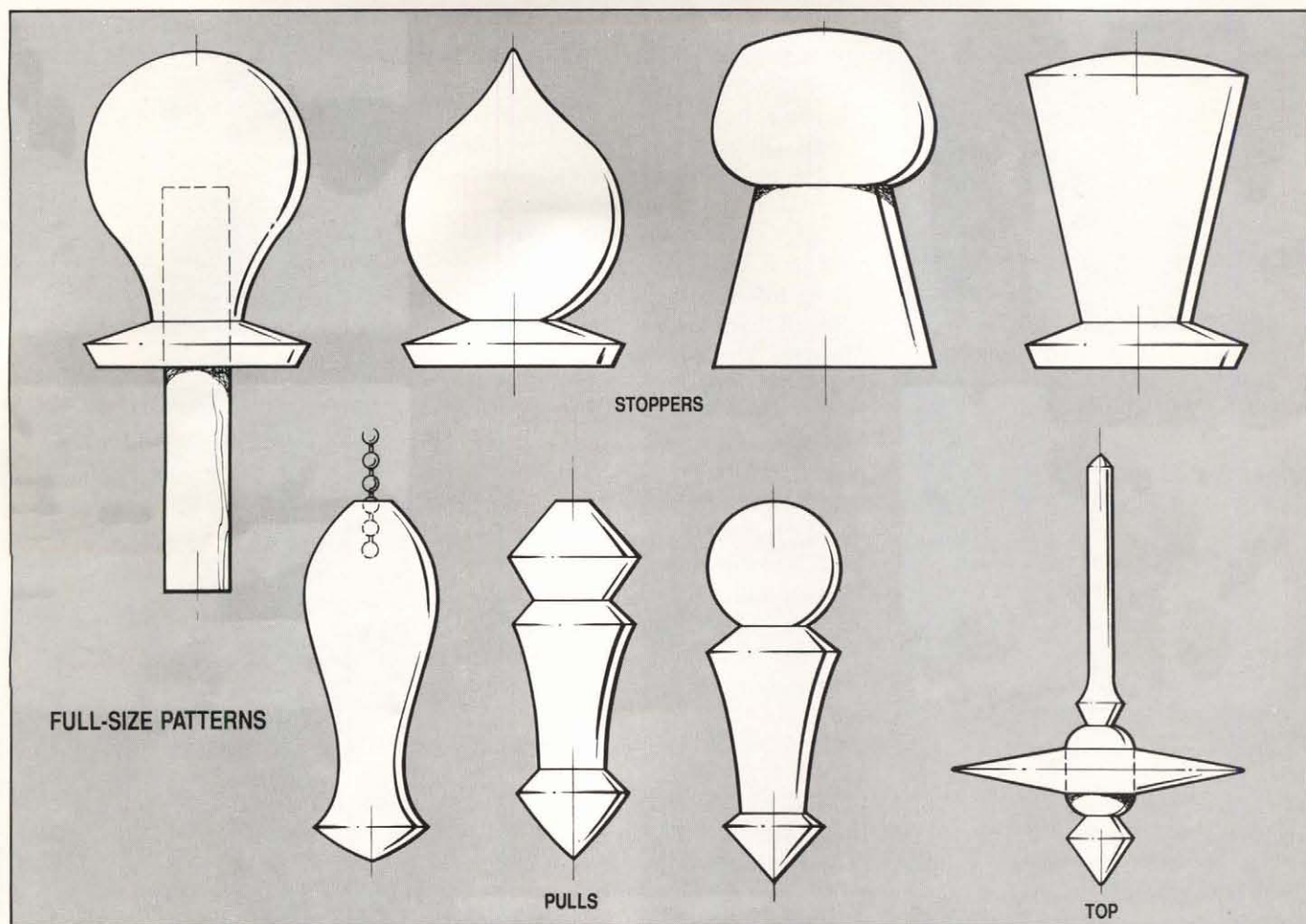


Photo 18



Photo 19

with a soft cloth.

Finish shaping the short end of the dowel and separate it from the revolving center. Then, starting at the other side of the disk, make a series of very light shearing cuts back toward the collet (Photo 18). Roll the gouge to the left to allow the bevel to ride on the dowel and work like a skew. You may need to

support the loose end with your fingers to keep it from bouncing around (Photo 19). Sand the stem if necessary and touch it with a bit of paste wax applied with your finger.

With the stem spinning between your fingers, make a final cut to separate the top from the collet, leaving a point on the end. The top should spin easily with

just a snap of your fingers.

Pulls

Other quick and simple projects, such as pulls for ceiling fans, lights or anything else that may have a string or chain hanging from it, can be turned using the collet chuck and the same basic system used for the stoppers and tops. You don't



Photo 20

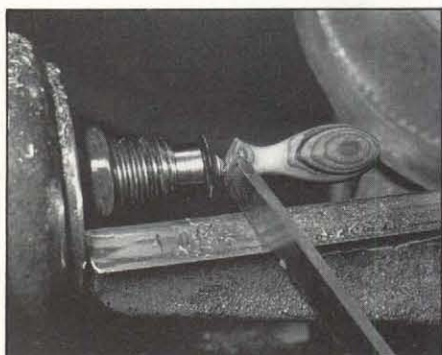


Photo 21

even need a dowel to hold the stock for turning.

Start with a piece of wood $\frac{3}{4}$ in. to 1 in. square by 2 to 3 in. long. Use a $\frac{3}{8}$ in. plug cutter mounted in a drill press to cut a $\frac{1}{2}$ in. to $\frac{3}{4}$ in. tenon on one end of the block. Once again, you'll need a "V" block or some sort of clamp to hold the workpiece and keep it from spinning. If you're using larger stock, you may need to remove excess waste from around the tenon.

Insert the tenon into the collet chuck and tighten it with the drawbar. You won't need the tailstock on such a small piece of stock. Start by roughing the blank into a cylinder, then make a shearing cut across the end to clean it up. Now make a $\frac{1}{2}$ in. deep hole in the end of the blank using a $\frac{1}{8}$ in. drill bit mounted in a hand-held pin vise (Photo 20). This is where you'll glue in the chain later.

Use a $\frac{1}{2}$ in. spindle gouge or a small skew to do the final shaping of your pull (Photo 21). This is a good practice project so let your imagination go wild. Play with all kinds of shapes; balls, teardrops, cones or combinations of

Sources

MSC Industrial Supply Co.

151 Sunnyside Blvd.
Plainview, NY 11803
Tel. 1-800-645-7270
 *$\frac{3}{8}$ in. No. 2 Morse taper round
collet, no. 09732249*

Craft Supply USA

1287 E. 1120 S.
Provo, UT 84601
Tel. (801) 373-0917
*Turning tools, corks,
cyanoacrylate glue, paste wax*

Tatro Wood Products

7011 Marcelle St.
Paramount, CA 90723
Tel. 1-800-748-5827
Commercial grade birch dowels

Tropical Exotic Hardwoods of Latin America

P. O. Box 1806
Carlsbad, CA 92018
Tel. (619) 434-3030
Cocobolo and other exotic woods

Nick Cook Woodturner

585 Cobb Parkway So., Suite I
Marietta, GA 30062
Tel. (404) 421-1212
*Corks, stopper and top blanks
(drilled & doweled)*

these. Practice making good clean cuts that require little or no sanding, especially where you separate the pull from the rest of the stock. Before separating, however, you'll need to do whatever sanding is required. Then finish with paste wax and buff with a soft cloth. Once separated, you may need to do a little additional finishing on the end.

Place a drop of cyanoacrylate glue in the hole and press in a $\frac{1}{4}$ in. or so of beaded chain. Beaded chain is sold in most hardware and craft stores. 

Nick Cook's work has appeared in dozens of exhibitions and is presently featured in over 30 galleries from coast to coast. A founder and director of the American Association of Woodturners, Nick also gives workshops and seminars at schools, shows, and craft centers. He lives and works in Marietta, Georgia.



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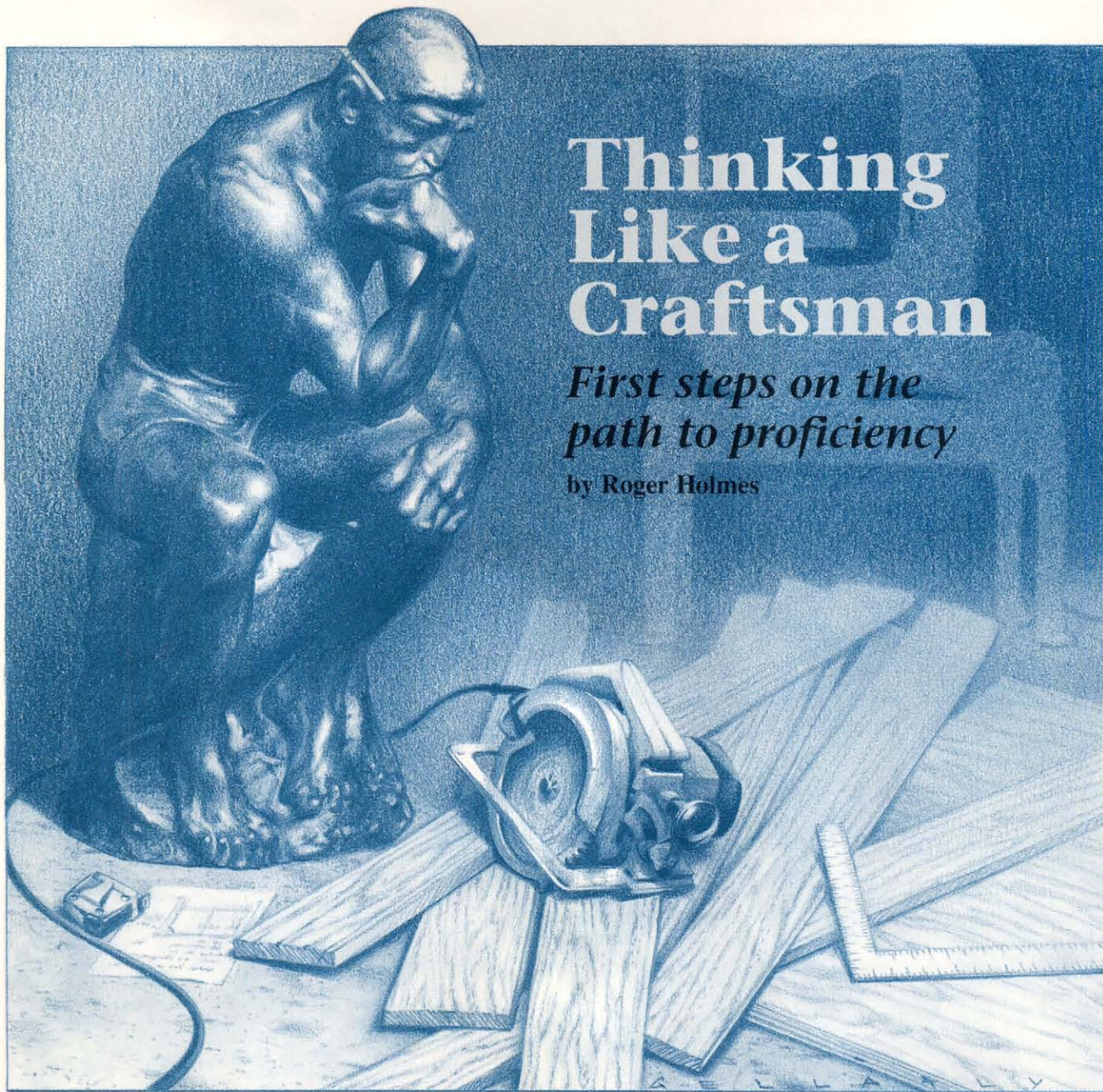
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Thinking Like a Craftsman

First steps on the path to proficiency

by Roger Holmes

I was feeling cocky. Nine months after arriving at Alan Peters' English workshop, I had been entrusted with making a complicated desk. Now, I thought, I'm a real craftsman. Weeks later, I held a more modest view. The desk was a success—the joints were tight, the drawers slid smoothly and the finish glowed. I had proved I was good with my hands. But the job had crawled along. My dovetails were gap-free, but slow in the making, and each stage of construction was preceded by a great deal of head scratching as I tried to

figure out what came next. A craftsman's skill, I learned, resides as much in his head as in his hands.

An accomplished craftsman is not unlike an accomplished musician. A beginner concentrates on his instrument while reading the score note by note. The accomplished musician, master of his instrument, concentrates on making music. He knows the score intimately, beginning to end, and is conscious not of the individual notes but of the harmony or melody that sings from his horn or his strings.

The craftsman's results are rather more concrete, but his performance is no less artful. His tools are extensions of his hands, instruments of his intentions. He is as little conscious of "technique" as the horn player is of his fingering. Years of practice have made these second nature. Before he begins a project, he knows where he is going and how he will get there. Each stage of the process is efficiently organized, as is each individual task. In short, an accomplished craftsman wastes neither time nor motion.

It's been 20 years since my first glimpse of all that craftsmanship entails, and I'm still striving for it. I'll never be the equal of the men I met in England—few of us will. Journeyman cabinet-makers in small shops specializing in furniture of the highest quality, they honed their skills daily for many years. Nevertheless, learning to think like a craftsman is a big step on the road to becoming one. Weekend woodworkers or professionals, we can all benefit from an organized approach to our work.

Learning to Relish Routine

Even the most complicated woodworking projects can be broken down into a hierarchy of discrete steps, the most basic of which comprise a surprisingly small number of manual skills—sawing, slicing, boring and so on. Whether it's a table, a chair or a chest of drawers, the stages of construction and the individual techniques involved in them are all much the same. The craftsman makes a virtue of woodworking's routine, repetitious nature. By doing the same job in the same way, time after time, you save time and, if your technique is sound, motion. Unless you're prone to day-dreaming, you cut down on mistakes, too.

When I cut dovetails, for example, I work my way across the board making all the right-to-left slanting cuts first, then work my way back the other way, cutting those slanting from left to right. It's not the only way or necessarily the best way to do it, but because I do it that way every time, I have gotten good at it. I do it without thinking (but not without concentrating), accurately and quickly.

Extending your routines beyond the actual sawing or planing extends your efficiency. Stack the parts to be cut in some sort of order. It can be arbitrary—largest to smallest, for example—or determined by the task. Always place the parts in the same spot on the bench or work table. If the operation requires more than one tool, put the tools in the same place and in the same order. This kind of orderliness may sound excessive, but it makes a difference. You'll develop a satisfying—and efficient—

rhythm for these repetitive tasks.

From conceiving the design to buffing the final finish, from placing tools on a bench to arranging your entire workshop, thinking like a craftsman will improve your work. The examples and tips that follow are but a few of hundreds you might adopt, but the idea behind them is most important. In a nutshell (with apologies to William Strunk and E.B. White), it is: Omit needless work.

Design

At every stage in the design process, evaluate the project not only for looks and function, but think about how you're going to make it. If there is no visual or functional reason for making the carcass sides $\frac{1}{16}$ in. thicker than the drawer fronts, make them the same thickness—it will save you time at the planer. The same applies to widths and lengths, specification of veneers, hardware and so on. In general, the fewer differences there are between parts, the easier the work of building will be.

Joinery

Joinery is often an important visual as well as a structural consideration, and many factors can influence your decision to dovetail a carcass rather than join it with splined miters. But once decided, think about how the process of making the joints might be rationalized. If there are several different components to be splined, can you standardize their sizes or their configuration to realize savings of time or material? Can you reduce the number of different-sized mortise-and-tenon joints from six to three? If so, you'll eliminate three mortise-gauge setups, three drill press setups, three table saw setups and so on. These decisions often have a cascading effect that can save a great deal of time or eliminate complexity where errors can creep in.

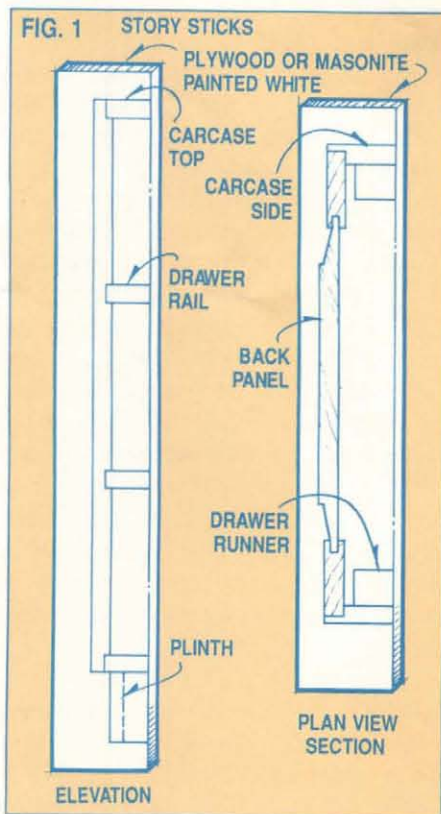
Cutting Lists

Cutting lists are a good way to organize your work. At a glance, you can see the dimensions, material and, if you wish, the joinery for any part. Use the cutting list as a final check on your design.

Examine it to determine which parts might be made the same thickness or width, which might be made of the same material, and so on. Those with computers can run up handy cutting-list forms.

Story Sticks

In addition to working drawings and cutting lists, an invaluable aid to efficient working is the story stick (Fig. 1). Sometimes called a "rod," these are narrow pieces of wood on which the lengths and widths of all the major parts



have been accurately set out full size. Rather than measure each drawer side in a stack with a ruler and risk marking some at $21\frac{5}{8}$ and others $21\frac{3}{8}$, you mark them directly off the story stick.

The story stick also saves time. When selecting and cutting material to rough and then final dimensions, you needn't return to the plan or cutting list to check every measurement. It's surprising how much information you can get on a 3 in. wide piece of plywood. It helps to paint the stick white and, if the piece is complicated, use different colored pen-

cils or pens (sharp pointed) to indicate different parts.

Selecting Material

Of all the stages in a project, I think this is one of the most important and one of the most difficult to organize efficiently. There are obvious routines you can develop for those projects where you work your way through a stack of lumber or plywood, cross-cutting and ripping parts roughly to size, with no regard for figure or color.

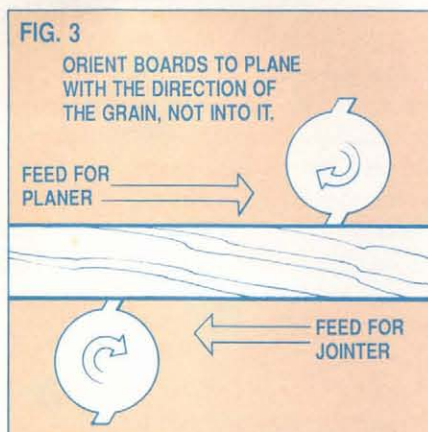
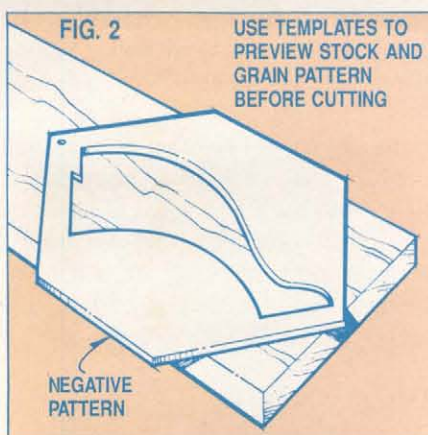
But flipping through a stack of boards trying to find the ones with just the right grain and color for a tabletop can't really be "organized." Nevertheless, templates can save time and effort when selecting wood for shaped or multiple parts, such as chair legs (Fig. 2). They can also be valuable for selecting solid wood or veneers for a stack of drawers or doors where the overall pattern formed by the grain is important.

Generally, I work my way through the cutting list, moving back and forth from the lumber pile to the handsaw and sawhorses, the band saw or the table saw, trying to select "show parts" (those parts that are most visible) in groups—tabletops, carcass sides, door and drawer fronts. I cut them roughly to length and width, leaving enough to allow for edge planing and final dimensioning.

Although this isn't a terribly efficient system, I do what I can by trying to gang together very narrow or very short pieces, which will save time later. If you need four 3/4 in. thick drawer runners, each 1 in. wide and 18 in. long, it's more efficient to face-plane and thickness a single 5 in. wide piece and then rip the runners off. Be aware, however, that ripping often releases tension in the wood, and ganged parts might bow or twist once separated.

Final Dimensioning: Planing

Once you have nice stacks of roughed-out parts, things begin to move more smoothly. The next task is to plane one face and one edge of each part, creating working surfaces from which all subsequent operations are gauged. I usually



stack parts according to function—all the door rails together, drawer fronts together, boards for carcass sides and so on—then group these by the thickness of the rough-sawn boards. One or more shop carts are very handy for wheeling stacks of parts from one machine to another.

As you stack, orient the parts so the grain won't tear as you plane the face. Most of the time, you can tell which end to feed first by looking at the grain pattern on an edge (Fig. 3). You can quickly work through a stack arranged according to grain direction.

As the boards come off the jointer, restack them face down, maintaining the orientation (Fig. 4). When each part has a working face and edge, you can begin planing. If your planer is located adjacent to the jointer, as shown in Fig. 4, the stock will already be correctly oriented for feeding into the planer.

However, if your planer is located in line with the jointer, you'll have to turn

the stock end for end to orient the grain correctly. Work from the thickest to the thinnest parts. Run all the parts that are thick enough through each setting, maintaining the same orientation for the next pass as you pull them from the planer. (Of course, if you notice tears on a part, try reversing it for the next pass.) Remove parts that have reached the correct thickness and introduce thinner rough parts as you wind the planer table up. Note: If your planer has a tendency to snipe, be sure to add sufficient length to your stock to allow for trimming the sniped ends.

Ripping and Crosscutting

There's nothing terribly complicated about cutting pieces to final width and length. When ripping, you'll save time and limit errors by working through the stacks of parts from the widest to the narrowest, making sure to cut all parts of the same width at the same time. If possible, set stops on a radial-arm saw or table saw miter gauge to crosscut to length. Trim one end of each part perfectly square, then set the stops and cut groups of pieces that are the same length.

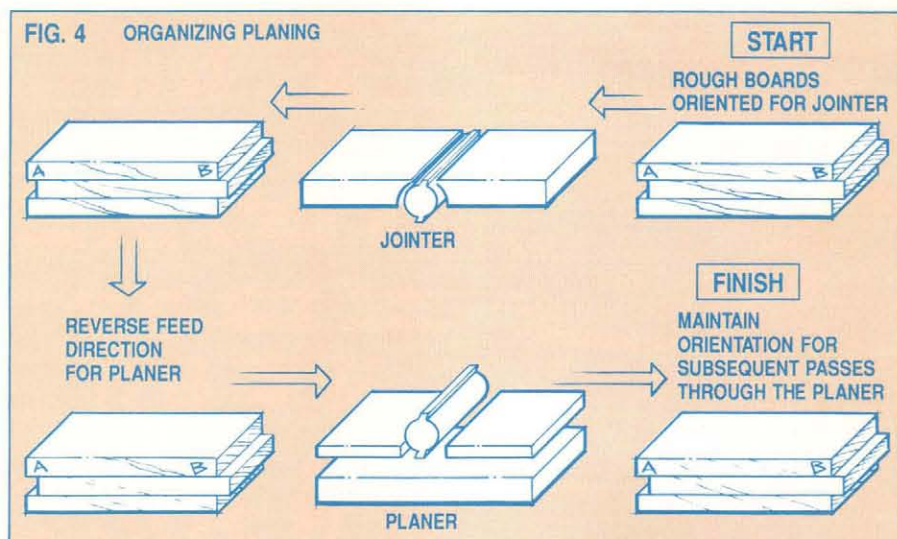
Jigs

As you move through the project, cutting joints and shaping the parts, use jigs and fixtures wherever possible. These can be simple blocks of wood clamped on a fence for a stop, or elaborate contraptions that hold parts for shaping. Jigs increase speed and accuracy, and reduce the risk of error. If you set fences and stops on a mortising machine, for example, you avoid having to mark out the mortises on each part. If you're cutting a lot of mortises, you'll save a lot of time.

Multiples

You don't have to be General Motors to understand that making things in batches is cost effective. Cottage industrialists can benefit from economies of scale, even when the scale is small. It doesn't take any more design or machine-setup time to make two, three or more "units" than to make one. Some things, like

FIG. 4 ORGANIZING PLANING



dining chairs and night tables, come in sets anyway. But you needn't stop there. A furniture maker I know builds a "spare" for most of his commissioned pieces and makes a tidy sum selling them through a gallery. Home hobbyists may not have the same economic incentive, but they often have an assured market—relatives and friends happy to receive a gift or even pay for a piece.

Organizing Your Workshop

A poorly organized workshop can suck the fun—or the profit—right out of woodworking. It never fails to amaze me how much time can be wasted searching for a box of screws or an infrequently used tool. Having to search for a frequently used tool can ruin my day.

There isn't any right or wrong way to set up a workshop. Your workshop should reflect the way *you* work. Take time to consider the kinds of things you make, how often you make them and the processes involved. Position benches, fixed machines, hand tools and storage according to the way projects most often make their way through the shop. Put your lumber racks, for instance, where they're easy to restock (accessible to outside door or driveway), perhaps close to a radial-arm saw or band saw that you use to rough cut parts. Place the jointer and planer nearby, with a work table or room for a rolling trolley to hold the parts you're working on.

It's often helpful to identify "work

triangles," groupings (in a variety of actual shapes) of machines, benches, handtools and so on that are frequently used together. The band saw-jointer-planer arrangement above can speed the rough-cutting and dimensioning of parts. A table saw, workbench and handtool rack may take care of most of your joint-cutting needs.

Most of us don't have the luxury of assembling our ideal shop, but with a little thought even a basement shop that shares space with the kids' train set and the washer and dryer can be made a more productive and pleasant place to work.

Repetition and Safety

A craftsman makes the most of repetition and routine. You get into a groove when doing a skilled operation—cutting dovetails or tenons, planing edges for joints. But remember that repetition can lead to carelessness, particularly with machinery. Guard against this by taking a breather every 15 minutes or so, not long enough to break your rhythm, but enough to keep you from getting mesmerized.

A Final Thought

The economic incentives for learning to think like a craftsman are obvious—efficient work is more profitable. But there is a great deal of personal satisfaction as well. It comes with increased confidence in your abilities and the pleasure you take in your work. 

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Heirloom Project

Cherry Lingerie Chest



A drawer for every day of the week

If furniture trends can be determined by current furniture catalogs, then a traditional bedroom classic—the lingerie chest—is enjoying newfound popularity. Our chest is long and lean,

and like its forebears, has a drawer for every day of the week. The chest is also an ideal introduction to a simple form of frame-and-panel case construction, using tongue-and-groove joinery.

Case Construction: Two Choices

Where case pieces are concerned, woodworkers using solid stock typically have two construction options. First, they can use wide boards (or edge glue several narrower pieces) to obtain the widths needed for the case sides, or second, they can use a frame-and-panel method of construction. Using a single wide board, or edge-gluing to yield a wide surface, may seem easiest, but there are several problems inherent with this method. First, if you do find a wide enough board, it may have some cup or twist. Edge-gluing narrower stock usually eliminates problems like this, but even with ideal stock, a wide flat surface may not be the most attractive option for your project. Also, with wide solid surfaces, considerable allowance for expected wood movement must usually be designed into the piece.

A frame-and-panel case may seem like considerably more work than solid board construction, but like much woodworking routine, once time for machine set-ups is factored out, there really isn't all that much more work involved. For our Lingerie Chest, the case is just three separate frame-and-panels, joined with tongue-and-grooves. The seven drawers are all identical, so you'll be able to mill all the drawer parts with a minimum of table saw settings. The eight drawer frames are also identical, so once again, a minimum of settings is required. Our chest uses cherry for all visible case parts, with the drawer boxes and drawer frames (excepting the front rail) being a secondary wood, such as poplar.

The Frame-and-Panels

The stock for all the frame-and-panel parts (excepting the $\frac{1}{4}$ in. plywood for the back panels) is $\frac{3}{4}$ in. thick. Rip and crosscut to yield the overall lengths and widths as listed in the Bill of Materials for the stiles (A, B, G) the rails (C, D, H, I, J), the side panels (E) and the facing (F). The overall dimensions include allowance for tenons and tongues.

All the tongue-and-groove joints are made with the dado head set for a $\frac{1}{4}$ in. wide cut, but note that the tongue on the front stile is offset to be flush with the inside edge, to avoid interfering with the bead that's cut on the front corner. With the exception of this offset joint, all the tongue-and-groove joinery can be accom-

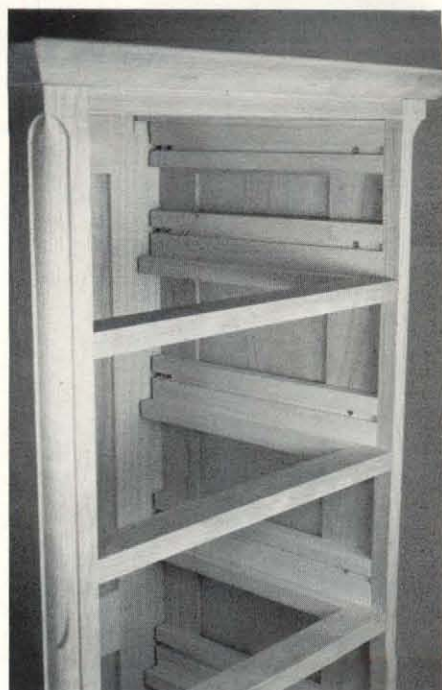
plished with just two rip fence settings (just make sure all stile and rail parts are identical thickness). As shown on the exploded view, the dado head depth-of-cut varies (the panel grooves in the frame stiles are $\frac{1}{2}$ in. deep; $\frac{5}{16}$ in. deep in the rails), but by organizing your work you can make all like cuts at one time.

The side panels are cut to size, then using the table saw set-up shown in Figure 1, the bevels are cut. The table saw blade is raised up through the Masonite, leaving a no-gap surface for you to run the panels across. Don't try cutting the bevels with your regular table saw insert—the gap may swallow the narrow $\frac{3}{16}$ in. edge, causing an accident. You'll need to do some sanding to clean up the cuts and square the bevel shoulder. A better choice for the cutting the raised panels is a dedicated panel raising router bit (see Sources). The bit leaves an even tongue to fit within the grooves in the stiles and rails, a distinct advantage over the beveled face of the table saw cut raised panel wedging into the

grooves. Also cut the birch plywood back panels (K).

Case Assembly

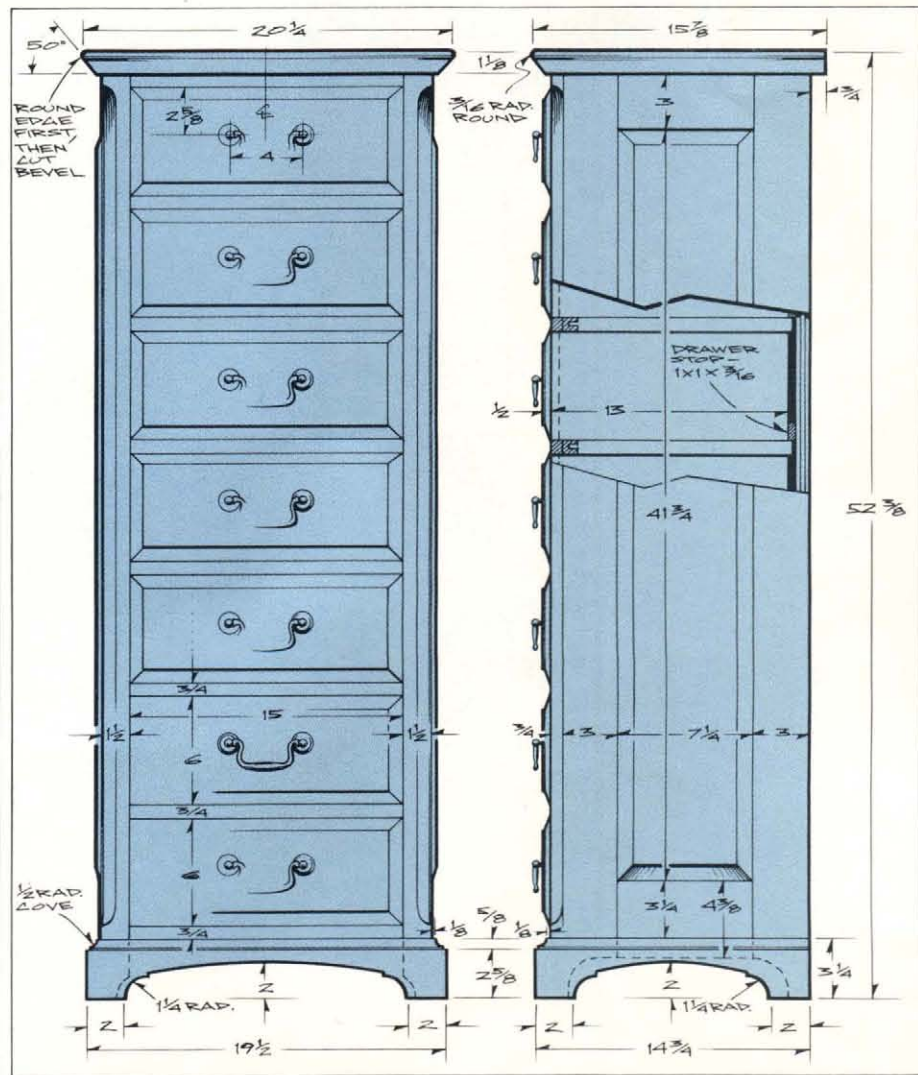
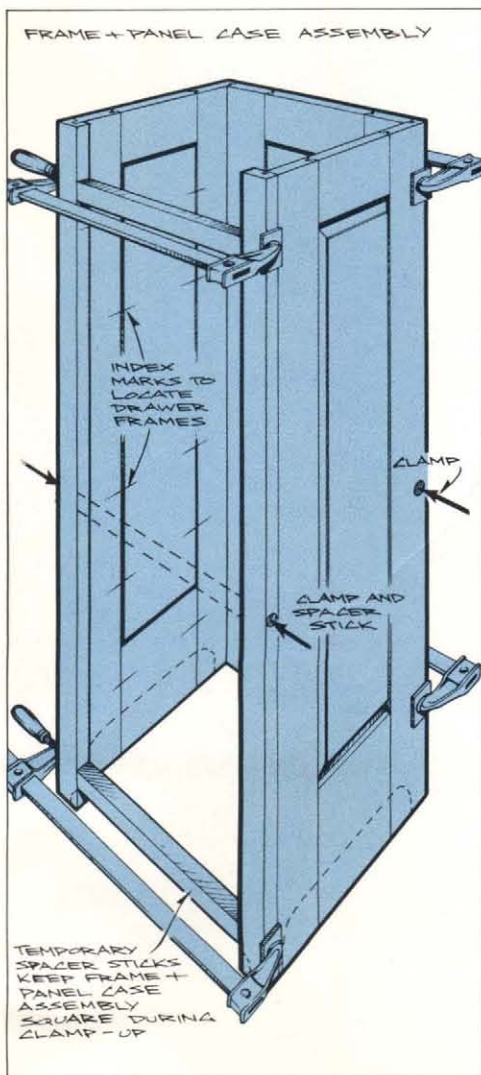
Glue the facings (F) to the front stiles (A), and check the assembly for squareness. When dry, glue and assemble the side and back frame-and-panels. Pin the raised panels on-center at the top and bottom to center them within the frame openings. Once these three separate frame-and-panel assemblies are out of clamps, lay out and make index marks on the inside of the side frames to locate the drawer frames. Then glue up the three frame-and-panels, as shown in the case assembly detail. The spacers across the front are needed to keep the entire assembly square. Take measurements across the case diagonals (the measurements should be identical) to insure squareness, then let dry.



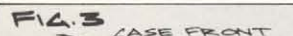
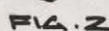
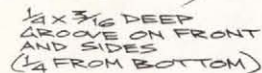
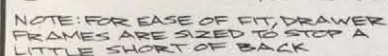
Drawer Frames

There are eight identical drawer frames (the topmost frame is upside down),

each consisting of a rail (L), joined with a tongue-and-groove joint to a pair of runners (M). Take your rail length



INSIDE VIEW
(FROM REAR)
OF DRAWER
(W/ ASSEMBLY)



MAKE FIRST
PASS ON
CASE FRONT

STOCK
REMAINING
FROM FIRST
PASS. CLEAN
AND WITH
SECOND PASS ON
BASE SIDE

CASE SIDE



$\frac{1}{2}$ DEEP X
 $\frac{1}{4}$ WIDE
TONGUE

5/16 DEEP
X 1/4 WIDE

 $\frac{1}{4}$ RAD

	FENCE
---	-------

measurement—and the notches at the rail ends—directly from the case assembly, while it's still in clamps. When joining the rail and runners, use a framing square to insure squareness. The guides (N) are glued and clamped to the runner/guide assembly. We show a groove for the screws, but they could just as easily be countersunk. By the

way, if you have enough foresight, you can cut the tongue-and-groove joint at the same time as the frame-and-panel joinery; just allow a little extra length on the rails so they can be trimmed later to fit the actual case. Our Drawer Frame Detail shows the groove in the rail as stopped about 4 in. from each end, since there's no need to run the groove along the full length. Once the drawer frames are out of clamps, notch the ends of the front rails to fit tightly between the case facings. Then install the drawer frames in the case (four screws for each drawer frame), using the marks for alignment.

Drawers

The seven drawers each consist of a pair of sides (O), a front (P), back (Q), birch plywood bottom (R), and face (S). We show a dado-and-groove joint, but use whatever joint you prefer. The bevel on our drawer face is cut using the set-up shown in Figure 2. It's similar to the side panel set-up, with the same blade angle, but different blade height and fence settings. As illustrated, we've sized the drawers a little short of the case back, and then used stops (T) glued to the case back to properly locate the drawer face bevel with respect to the case front. When positioned correctly, the bevel on the drawer face should be flush with the case front, as shown in the photo.

Details/Base/Top

Part of the charm of our chest is the $\frac{5}{8}$ in. radius bead cut on the front corners. It's done with the router and a $\frac{5}{8}$ in. radius beading bit (see Sources). Be sure to block the chest up so the side panels aren't resting on the floor. As shown in Figure 3, make index marks to indicate the cut ends, make a pass with the router on one face, then switch the router to the opposite face and make a second pass. This second pass is needed to produce a symmetrical form on the bead ends. Ideally, both passes will be indexed perfectly, but if you end up with a small step, some clean-up work with chisels may be needed.

Next up are the top (U) and base (V, W). The top is just solid boards, edge-glued to yield the $15\frac{7}{8}$ in. width. Round the edge with a $\frac{3}{16}$ in. radius roundover bit (see Sources), then, using the table saw, cut a 50-degree bevel on the sides and front. The base parts are cut from a single board about 50 in. long. Use a $\frac{1}{2}$ in. radius cove bit (see Sources) to mold

one edge of the board, then use miter cuts to establish final length. Lay out the base profiles as indicated, joining the $1\frac{1}{4}$ in. radii with long, gentle curves. Before adding the base parts, use a hand-held jigsaw to cut back the case bottom at the front, back and sides. The base is glued and finish-nailed to the case, with a long glue block (X) providing additional support for the base front. The top is screwed in place through the upside down uppermost drawer frame.

Finishing Touches

Our cherry chest has a Minwax cherry stain, topped with two coats of clear shellac and finally one coat of McClosky's Heirloom Satin Varnish. The solid brass bail pulls (Y) are from Horton Brasses (see Sources). The levelers (Z) were purchased from a local hardware store.

Assembly Tip

It may be tempting to try to get all your tongue-and-groove joinery exact (with tongue length identical to groove depth), but in practice, it's a good idea to trim a hair from the tongue (or tenon) length—or make the grooves (or mortises) just a bit deeper. This insures that shoulders along the joints close up good and tight during assembly.

Sources

Pulls: Solid brass bail pulls are available from Horton Brasses, Nooks Hill Road, Cromwell, CT 06416; tel. (203) 635-4400. Order part no. H-10 and specify a $1\frac{1}{8}$ in. diameter backplate, a 4 in. boring and the type of finish preferred. The pulls shown are antique finish, but bright or semi-bright finish are also available.

Router Bits: Beading, cove, roundover, and raised panel cutting bits are available from MLCS Ltd., P.O. Box 4053JP, Rydal, PA 19046; tel. 1-800-533-9298. For the $\frac{5}{8}$ in. radius beading bit, order part no. 749 ($\frac{1}{2}$ in. shank); for the $\frac{1}{2}$ in. radius cove bit order part no. 343 ($\frac{1}{4}$ in. shank) or part no. 643 ($\frac{1}{2}$ in. shank); for the $\frac{3}{16}$ in. radius roundover bit order part no. 351 ($\frac{1}{4}$ in. shank) or part no. 651 ($\frac{1}{2}$ in. shank); for the raised panel cutter, order part no. 686 ($\frac{1}{2}$ in. shank).



Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
Side Frame-and-Panel			
A	Front Stile	$\frac{3}{4} \times 3\frac{1}{4} \times 51\frac{1}{4}$ *	2
B	Back Stile	$\frac{3}{4} \times 3 \times 51\frac{1}{4}$	2
C	Top Rail	$\frac{3}{4} \times 3 \times 8\frac{1}{4}$ *	2
D	Bottom Rail	$\frac{3}{4} \times 6\frac{1}{2} \times 8\frac{1}{4}$ * **	2
E	Panel	$\frac{3}{4} \times 7\frac{3}{4} \times 42\frac{1}{4}$ ***	2
F	Facing	$\frac{3}{4} \times 1\frac{1}{2} \times 51\frac{1}{4}$	2
Back Frame-and-Panel			
G	Stile	$\frac{3}{4} \times 3\frac{1}{4} \times 51\frac{1}{4}$ *	2
H	Top Rail	$\frac{3}{4} \times 3 \times 11\frac{1}{2}$ *	1
I	Center Rail	$\frac{3}{4} \times 3 \times 11\frac{1}{2}$ *	1
J	Bottom Rail	$\frac{3}{4} \times 6\frac{1}{2} \times 11\frac{1}{2}$ * **	1
K	Panel	$\frac{1}{4} \times 11\frac{1}{2} \times 20$ ***	2
Drawer Frame w/ Guide			
L	Rail	$\frac{3}{4} \times 1\frac{1}{2} \times 16\frac{1}{2}$	8
M	Runner	$\frac{3}{4} \times 1\frac{1}{2} \times 12\frac{1}{8}$ *	16
N	Guide	$\frac{3}{4} \times 2 \times 12\frac{3}{8}$	16
Drawer****			
O	Side	$\frac{3}{8} \times 6 \times 13$	14
P	Front	$\frac{3}{8} \times 6 \times 14\frac{5}{8}$	7
Q	Back	$\frac{3}{8} \times 5\frac{1}{2} \times 14\frac{5}{8}$	7
R	Bottom	$\frac{1}{4} \times 12\frac{13}{16} \times 14\frac{5}{8}$	7
S	Face	$\frac{1}{2} \times 6 \times 15$	7
T	Stop	$\frac{3}{16} \times 1 \times 1$	14
Top/Base/Hardware			
U	Top	$1\frac{1}{8} \times 15\frac{7}{8} \times 20\frac{1}{4}$	1
V	Base Front	$\frac{3}{4} \times 3\frac{1}{4} \times 19\frac{1}{2}$	1
W	Base Side	$\frac{3}{4} \times 3\frac{1}{4} \times 14\frac{3}{4}$	2
X	Glue Block	$\frac{3}{4} \times 1\frac{1}{2} \times 15$	1
Y	Bail Pull*****	Solid Brass, 4 in. O.C. Boring	7
Z	Leveler	1 in. dia.	4
* Stile widths include tongue. Rail and runner lengths include tenon(s).			
** Width of bottom rails is before cut-outs are made in side and back frame-and-panel assemblies.			
*** Side panels are solid stock, and panel width and length allows for some wood movement. Length and width of plywood back panels is exact groove-to-groove distance. In practice, cut these plywood panels a little under-size so they don't interfere with the rail shoulders seating flush when the back frame-and-panel is assembled.			
**** Drawer parts are dimensioned exactly to fit length and width of drawer opening. In practice, measure your drawer openings and size the drawers about $\frac{1}{32}$ in. less in width, $\frac{1}{16}$ in. less in height.			
***** See Sources			

PICNIC TABLE

Admirer of our best work from friends and fellow woodworkers is always appreciated. But our finer woodworking skills must on occasion yield to more mundane requests. You won't need your chisels and dovetail saws for this picnic table, but it's sure to be a big hit with the family. And given prices we've seen for similar picnic tables, you may start a burgeoning business building these backyard classics for friends and neighbors.

Your power equipment needs for this project can be filled with only a circular saw and drill. Sure, you can also use the table saw, but since no ripping is required, and the pieces being worked are a little long for many small table saws, you might as well just get out the extension cord and build this project where it will be used—outside.

Our backyard classic is exactly that—a time tested classic piece. We haven't altered the basic design, since it's rather hard to improve on a project that so well combines utility with ease of construc-

tion. All the supplies that you'll need can be found at your local lumberyard or building supply center.

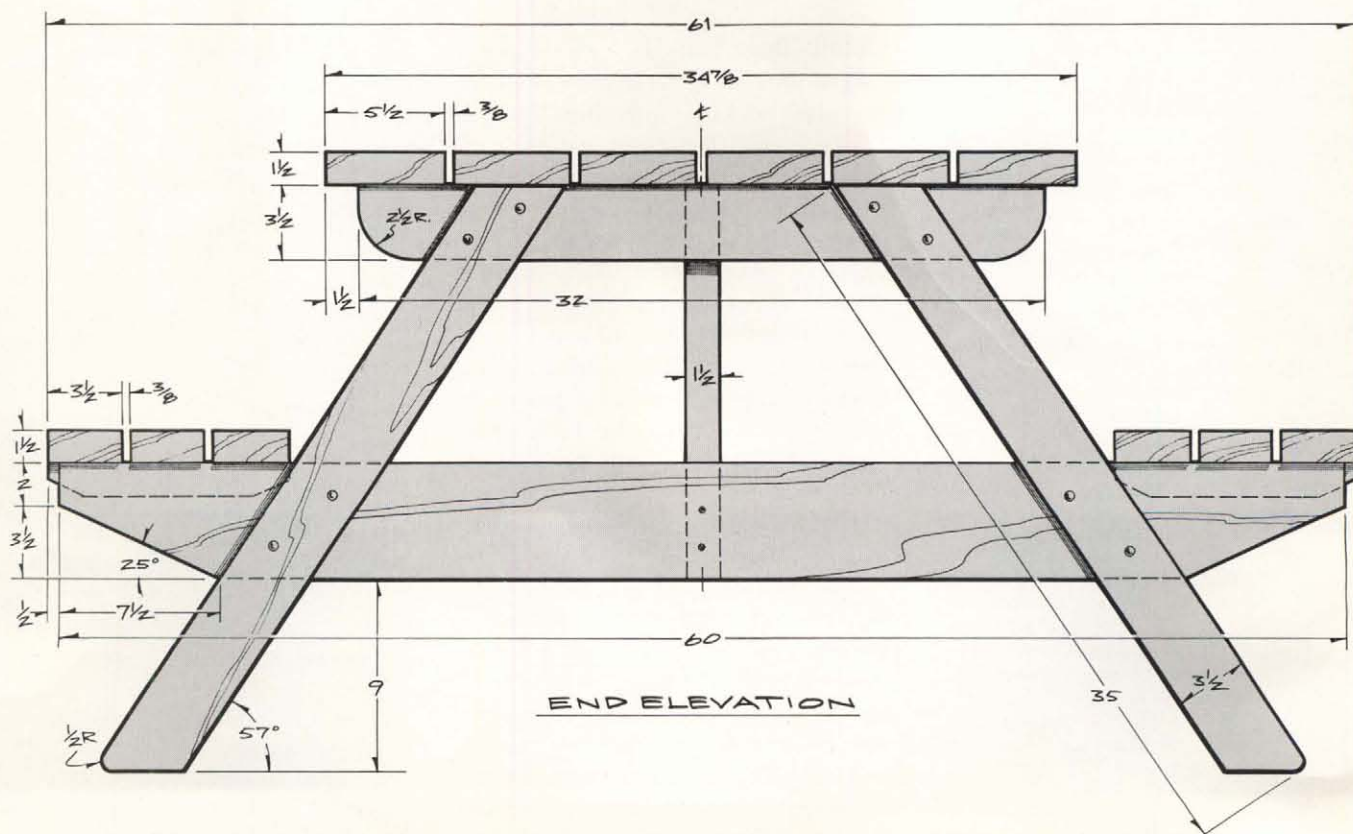
Buying Stock

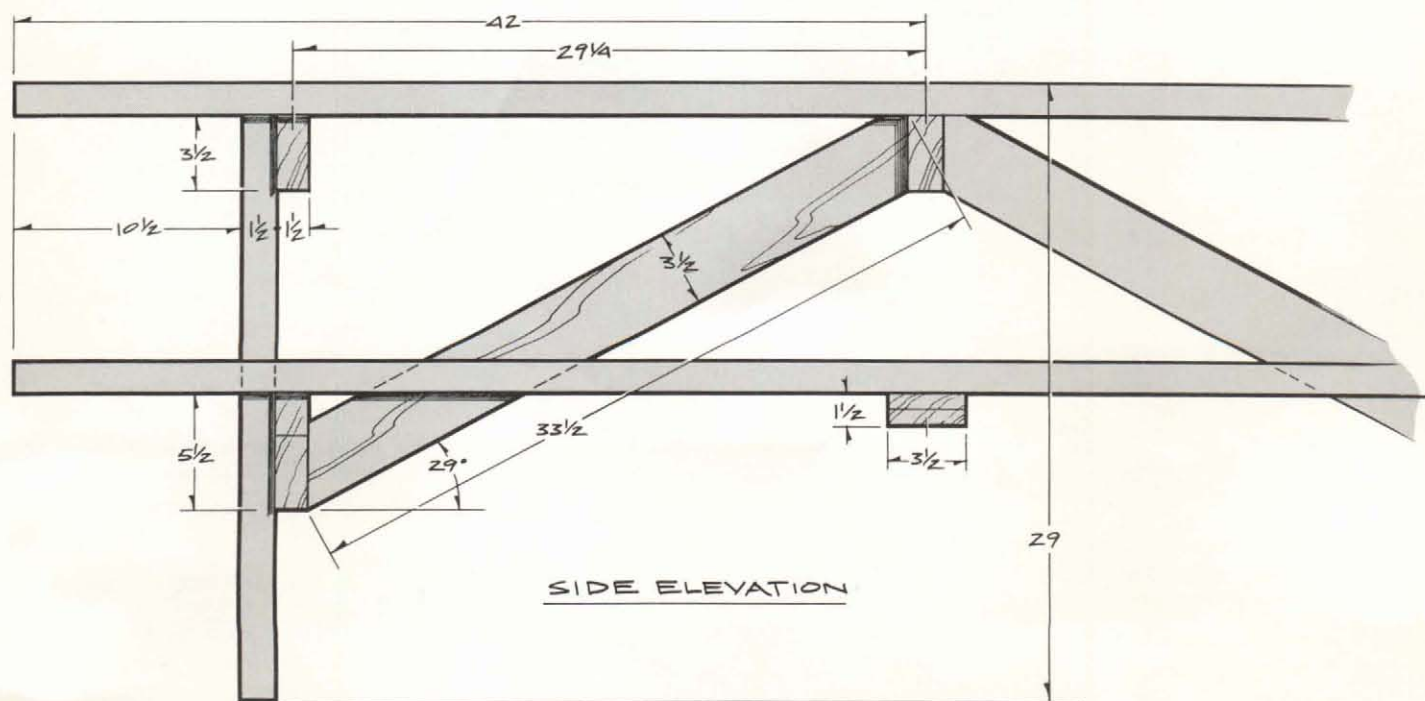
The picnic table is constructed entirely from construction lumber: 2 by 4's (actual measurement 1½ in. by 3½ in.) and 2 by 6's (actual measurement 1½ in. by 5½ in.). Your choice of stock will depend on your budget. The best choice is redwood, but not all lumberyards stock redwood, and the cost will be somewhat higher than regular fir. No doubt, some will consider using pressure-treated stock, but we strongly recommend against using a treated wood, or painting your picnic table with any product that contains fungicides and other similar chemicals.

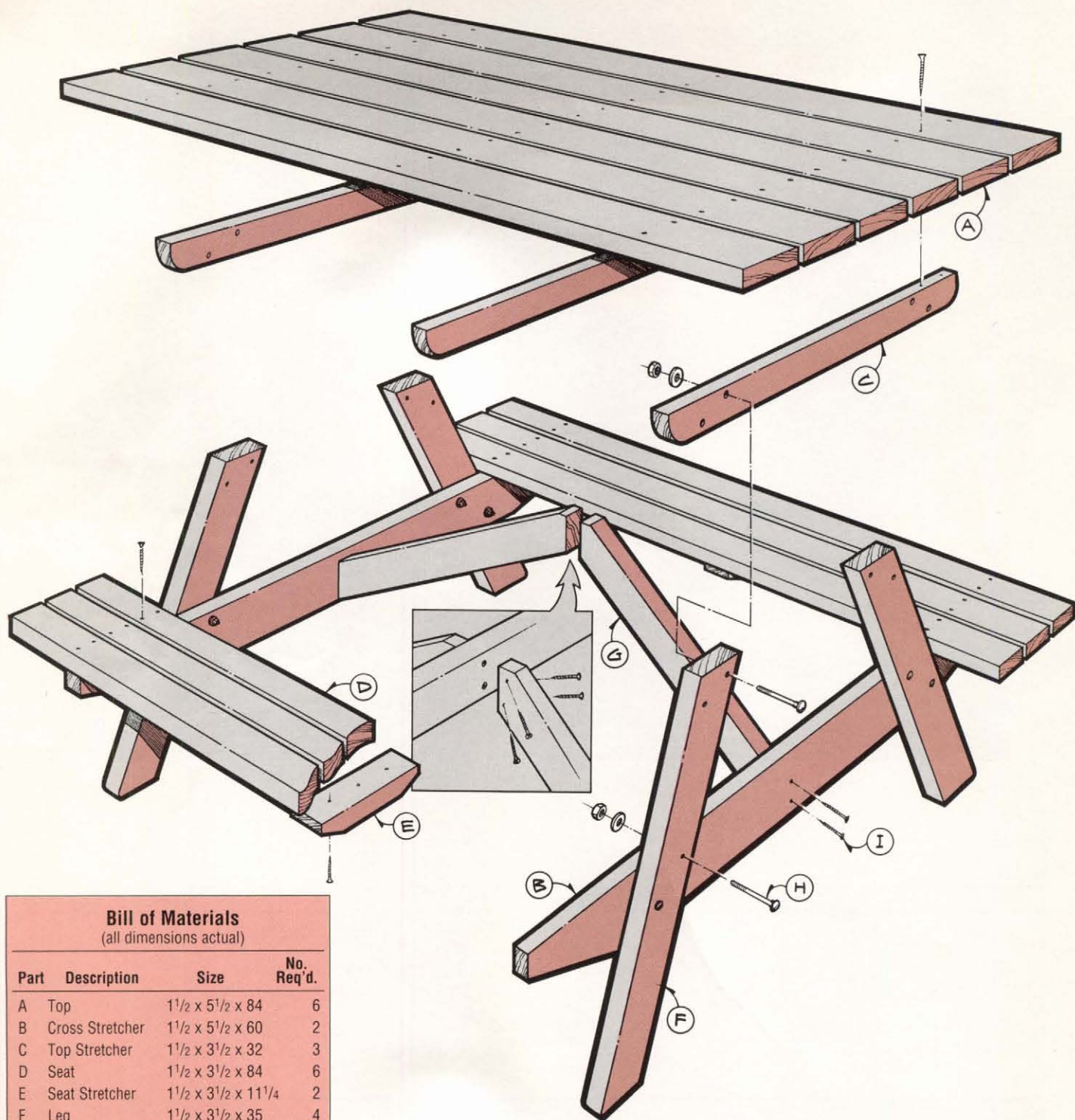
Yes, a pressure-treated picnic table would probably last 40 years, but, as Frank Allen at Weyerhaeuser (a major producer of pressure-treated wood products) says: Would you feel comfortable eating on a table that had been treated

with arsenic? Using chemically treated wood or paint for a piece of furniture that may come in contact with food or skin just isn't wise. Besides, regular construction lumber is inexpensive, and when properly painted, should last for many years.

All the wood parts for the picnic table can be cut from just a few boards. You'll need six 8 ft. long 2 by 6's for the top (A), and one 10 ft. long 2 by 6 for the cross stretchers (B). You may be able to find 7 ft. long 2 by 6's, but the 8 ft. length is more common. Don't worry about the ⅛ in. kerf that's lost when you cut the 10 ft. long 2 by 6 in half to yield the two cross stretchers, no one will ever know that it's missing. All the remaining parts are 2 by 4's. Since 7 ft. long 2 by 4's are common, you can just buy six of them for the seats (D). Finally, buy three 10 ft. long 2 by 4's. One will yield the three top stretchers (C) and the pair of seat stretchers (E), the remaining two will yield the legs (F) and center braces (G). The legs and center braces have







Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top	1 1/2 x 5 1/2 x 84	6
B	Cross Stretcher	1 1/2 x 5 1/2 x 60	2
C	Top Stretcher	1 1/2 x 3 1/2 x 32	3
D	Seat	1 1/2 x 3 1/2 x 84	6
E	Seat Stretcher	1 1/2 x 3 1/2 x 11 1/4	2
F	Leg	1 1/2 x 3 1/2 x 35	4
G	Center Brace	1 1/2 x 3 1/2 x 33 1/2	2
H	Bolt/Nut/Washer	3/8 x 3 1/2 long	16 each
I	Screw	2 1/2	76

angles cut on their ends, and to insure accuracy, it's usually a good idea to have a little extra stock to play with. Cutting these parts from the 10 ft. long boards allows this.

If you'd like a visual representation of our suggested stock layout, see What To Buy. Where we suggest buying exact

lengths that yield no waste, make certain to select boards that aren't damaged or checked on the ends. A little trimming of the seat boards won't affect the overall project, and will probably be needed just to clean up the factory ends, but any substantial shortening of these parts isn't recommended. If good boards can't be found, purchase longer boards and trim as needed to yield the specified final size. As always, when buying construction grade lumber for use in furniture,

remember that you'll probably need to pick through available stock to select boards that are straight and have a minimum of knots and other defects.

Cutting

Cut the various parts to the indicated sizes. A speed square (available at your local hardware store or building supply center) is handy for making accurate crosscuts with a circular saw. Just locate the speed square so the blade is in line

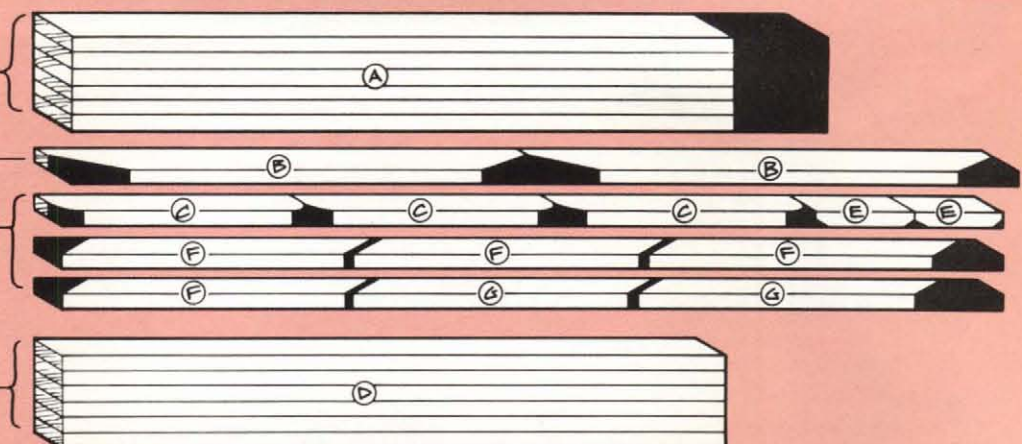
WHAT TO BUY

BUY 6
2 x 6 x 8's

BUY 1- 2 x 6 x 10'

BUY 3
2 x 4 x 10's

BUY 6
2 x 4 x 7's



with your cutoff mark. Gauging the base of the circular saw against the speed square insures a straight and accurate cut. The speed square (sometimes called rafter square) can also be used to lay out the angles on the ends of the legs and center brace, if you don't have a protractor. However, don't cut the center braces yet. These won't be cut to final length until later. The $\frac{1}{2}$ in. radius at the bottom end of the legs and the $2\frac{1}{2}$ in. radius on the top stretcher ends can be laid out with a compass, then cut with a hand-held jigsaw and sanded smooth.

Assembly

When working outdoors, it's often difficult to do things on an uneven surface, such as is usually the case with a lawn. A four-by-eight sheet of $\frac{3}{4}$ in. thick plywood (if one is available) serves as a handy work surface, and in several other capacities, as we'll see.

Start by making the top/top stretcher subassembly. Find and mark the center point along the length of the top boards, then make index marks on-center $29\frac{1}{4}$ in. to either side of that center point. Also mark the center point along the top edge of the three top stretchers. Now position two of the top boards $\frac{3}{8}$ in. apart on-center to the center marks you made on the top stretchers. Several $\frac{3}{8}$ in. thick spacer sticks will come in handy for maintaining the suggested $\frac{3}{8}$ in. spacing between the top boards.

Secure the top boards to the top stretchers with the $2\frac{1}{2}$ in. long decking screws (I). For long-term durability, coated or stainless-steel screws outlast many galvanized screws. The important thing when assembling the top boards to the three top stretchers is to make certain

the parts are square. Use a framing square to check squareness before firing in the screws. If you start with 8 ft. long boards for the top, you may want to assemble first, and then mark and trim the assembled top to the final 7 ft. length. If you use 7 ft. long boards or cut to final length first, the plywood edge comes in handy as a visual aid for keeping all six top boards aligned evenly. Using a power drill or drill/driver to drive the screws should result in the screws being pulled in just a little below the wood's surface. Decking screws have exceptionally deep threads and should pull in easily without pre-drilling pilot holes or countersinking.

Next, make the leg/cross stretcher subassemblies. An easy way to correctly position each pair of legs with respect to the cross stretcher is to butt the bottom end of the legs against a flat surface, such as a straight-edged board or a one-by-two lath strip nailed flush with the edge of your plywood sheet. Then lay the cross stretcher in position, 9 in. up from the bottom end of the legs. When spread apart properly, the outside edges of the legs should touch a point $7\frac{1}{2}$ in. from the cross stretcher ends, or exactly where the 25-degree bevel on the cross stretcher ends terminates (see End Elevation). Once the parts are positioned correctly, drill the $\frac{3}{8}$ in. diameter bolt holes as shown for the bolts (H) that secure these parts (if you are working outside, without a sheet of plywood below, use a block to back up the hole drilling so as to not ruin a bit in dirt or stone). The nuts should be tight on the bolts, but not excessively. Repeat this assembly procedure with the remaining leg/cross stretcher subassembly.

Next up is joining the leg/cross stretcher subassemblies to the top/top stretcher subassembly. Lay the top upside down on a flat surface (once again, that sheet of plywood will serve well here), then locate the leg/cross stretcher subassemblies in position. Temporarily clamp them in place, while you drill the bolt holes (same $\frac{3}{8}$ in. diameter as before), then add the carriage bolts, washers, and nuts.

Now cut the center braces. The best system here is to cut one end first, then trim back the other end to fit. Use a carpenter's square to check that the leg/cross stretcher is square to the top while you get the proper center brace length. Secure the first center brace with two screws through the center top stretcher (see detail), then toe-screw the other center brace. The lower ends of the center braces are secured with screws through the cross stretchers.

All that's left is to add the seats. First screw the seat stretchers to the seats (on-center from the ends), then mount the seat/seat stretcher subassembly to the table. Use the $\frac{3}{8}$ in. spacer sticks that you cut earlier to maintain proper spacing of the seat boards.

A Finish

A stain and clear finish may look best when your picnic table is new, but for maximum protection, an opaque stain or a paint would be the better choices. Take extra care to thoroughly coat the leg ends that will rest on the ground, since they are the first place decay will occur. Like any outdoor furniture, the finish should be renewed regularly, or whenever any wear occurs.

The ubiquitous breadbox was once so commonplace that some long forgotten soul gained a taste of immortality by using it as a comparative measure to indicate rough size. "Bigger than a breadbox." How many times have we all heard that well worn phrase!

Today, with modern refrigeration and the use of preservatives, it can be positively frightening how long a loaf of bread can forestall the inevitable. But, whether your palate craves fresh-baked breads, rolls and pastries, or just a plain loaf of store-bought white, the breadbox is a time-tested way to keep those baked goods handy on a counter or table. We do recommend, though, that you wrap baked goods to retain freshness.

The breadbox shown, crafted in butternut, is courtesy of Jefferson, Ohio, high school shop teacher Joseph M. Herrmann. For nearly a decade, Herrmann has used this project to acquaint his 9th grade Industrial Arts classes with the basic elements of wood-working. According to Herrmann, the breadbox is an ideal project to get started on because it is made with a variety of the most common shop tools and equipment, from the table saw to the router.

Perhaps best of all, there are no fussy joints to cut. The basic box can be made

Butternut Breadbox

Build this kitchen classic from just one board

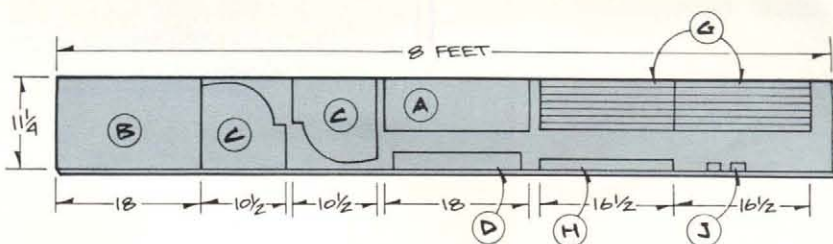


with almost any simple construction method, from dowels to screws and plugs (as we show) or even biscuits, if you own a biscuit joiner. Use whatever method you are most comfortable with.

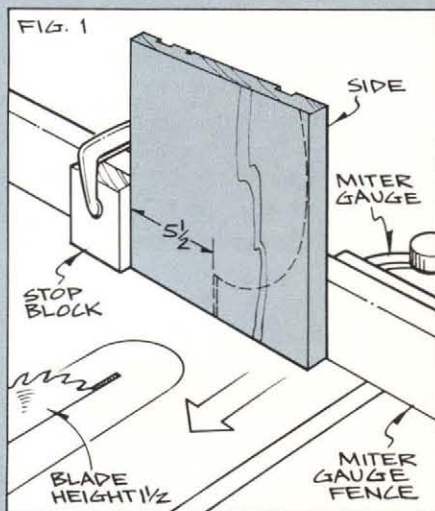
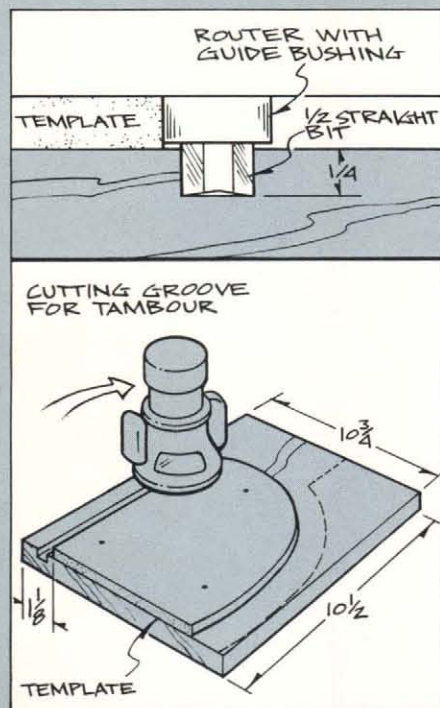
Stock Preparation

All the wooden parts of the breadbox, including the tambours, can be obtained from a single board measuring $\frac{3}{4}$ in. thick by $11\frac{1}{4}$ in. wide by 8 ft. long (see Cutting Diagram). If you plan on making the breadbox from pine, the fact that the widest part is only $11\frac{1}{4}$ in. across will enable you to get the parts from a standard one-by-twelve. You could

CUTTING DIAGRAM



FULL-SIZE PATTERN FOR ROUTER WITH 5/8 DIA. GUIDE BUSHING.



well be used for these parts. The holes in the back permit some air circulation within the box, so any residual odor from the finish isn't imparted to the baked goods.

Router the Tambour Grooves

The tambour grooves in the sides are cut with a router, a 5/8 in. (outside diameter) guide bushing, a 1/2 in. straight cutter, and a template. To make your own template, just trace the full-size pattern provided directly onto a piece of 1/4 in. hardboard or plywood. This is easy to do by slipping a piece of carbon paper between the pattern and the template stock. Then cut the template out with a jigsaw or band saw, and sand the edges smooth. Now, using three small brads, or doublestick tape, fasten the template in position on the inside face of the side stock. Note how the bottom edge of the template is flush with the bottom edge of the side, and how the back edge of the template is located 1 1/8 in. from the back edge of the side. Using the router, guide bushing and 1/2 in. straight cutter, rout the groove as shown in the detail.

Once the groove in one side has been completed, remove the template, flip it over so the opposite face is up, and fasten it in place on the remaining side. When the tambour grooves have been established in both sides, switch to a 1/8 in. straight cutter in the router, and using the edge guide (remove the template and make sure the workpiece is clamped securely to the workbench), rout the 1/4 in. deep groove for the false back. Stop the groove about 6 3/4 in. from the bottom end of the sides. To avoid burning your router bit, it's a good idea to make the groove in two passes, each removing about 1/8 in. of stock.

Shape the Sides

Now lay out and cut the profile on the front edge of the sides. For the curved portion of the profile, use a pencil to scribe a line about 5/8 in. from the tambour groove. Then use a square to scribe the short straight section at the top. To get a true cut at the short straight section, raise the blade in the table saw 1 1/2 in. high, then with the stock on end, use the miter gauge to pass the side over the blade. As shown in the Fig. 1 detail, by clamping a stop to the auxiliary miter gauge fence (locate the stop 5 1/2 in. from the blade), you can insure that the cuts in both sides are indexed identically. Use the band saw or a jigsaw to cut the curved section paralleling the tambour groove, then sand smooth.

Make the Tambour Door

Ready-made solid tambours on canvas are very expensive. But making a tambour door is really quite easy. You'll need a bullnose router bit that cuts a 3/4 in. diameter bullnose, and the canvas (I). A standard unbleached duck canvas, available at most fabric stores, is best for

edge-glue narrower boards to obtain the wider parts, but if you don't own a jointer, then the ability to get all the parts from a single board is important.

Crosscut your source board to yield the lengths shown in the Cutting Diagram. The top (A), bottom (B), and sides (C) will now be their final lengths, but you'll need to do a bit more crosscutting and ripping to yield the front (D), the blanks for the tambours (G, H) and the stops (J). Cut a 1/2 in. by 3/4 in. rabbet in the ends of the front, and a 1/2 in. by 3/4 in. notch in the ends of the bottom edge as shown in the exploded view. Also at this time, use a 3/8 in. radius beading bit in the router to mold the front and side edges of the top and bottom. Then cut the back (E) and false back (F) to length and width. Herrmann used Masonite pegboard for the back and Masonite for the false back, but plywood can just as

the tambour's backing.

The basic steps are shown in the Making the Tambour Door illustrations. With the bullnose router bit in the router table, and using the fence and a feather-board (see Cut the Bullnose), you can easily shape the bullnose on your tambour strips. As shown, the strips are $\frac{3}{4}$ in. square at this point, and about an inch longer than final size. Next, using a good quality carbide blade, rip the strips on the table saw to establish their final $\frac{3}{8}$ in. thickness. A sharp blade will eliminate the need to sand. Also cut the bottom tambour, which as shown is a little thicker than the $\frac{3}{8}$ in. thick tambours. A $\frac{3}{8}$ in. radius rounding over bit can be used to round the top edge of the bottom tambour to match the radius of the other tambours.

Position the canvas on a flat surface with some wax paper under it, and tack the four corners down. Apply glue (Herrmann uses Titebond for the entire project, and employs a $\frac{1}{2}$ in. wide brush to carefully apply glue to the tambours),

then use a section of $\frac{3}{4}$ in. thick plywood to weight or clamp down from the top, as shown in the clamping detail. When applying the glue, take care not to be too generous; excess glue will be forced up between the tambours, which isn't desirable. You want the tambours glued to the canvas, not to each other.

You'll also need some waxed blocks at the ends to hold the tambour assembly up tight. A lot of clamp pressure isn't needed here; the idea is to make certain that the tambours are all bunched tightly together. One clever way to achieve this is to first lay out all the tambours dry (no glue) on the canvas, and then clamp the two end blocks in place based on this test layout. This gives you a ready-made jig for holding the tambour assembly in position once glue is applied.

Once the tambour assembly is dry, it is cut to final length on the table saw. The same section of plywood that you used in the clamp-up is used to hold the tambour assembly down while you make the cut to final length. Using a

Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top	$\frac{3}{4} \times 6\frac{1}{2} \times 18$	1
B	Bottom	$\frac{3}{4} \times 11\frac{1}{4} \times 18$	1
C	Side	$\frac{3}{4} \times 10\frac{3}{4} \times 10\frac{1}{2}$	2
D	Front	$\frac{3}{4} \times 2 \times 16\frac{1}{2}$	1
E	Back	$\frac{1}{8} \times 11\frac{1}{4} \times 15\frac{3}{4}$	1
F	False Back	$\frac{1}{8} \times 6\frac{3}{4} \times 15\frac{1}{2}$	1
G	Tambour	$\frac{3}{8} \times \frac{3}{4} \times 15\frac{7}{16}$ *	14
H	Bottom Tambour	$\frac{7}{16} \times 1\frac{1}{8} \times 15\frac{7}{16}$ *	1
I	Canvas	13×18 **	1
J	Stop	$\frac{1}{4} \times \frac{1}{2} \times 1\frac{1}{2}$	2
K	Knob	$\frac{3}{4}$ dia.	1

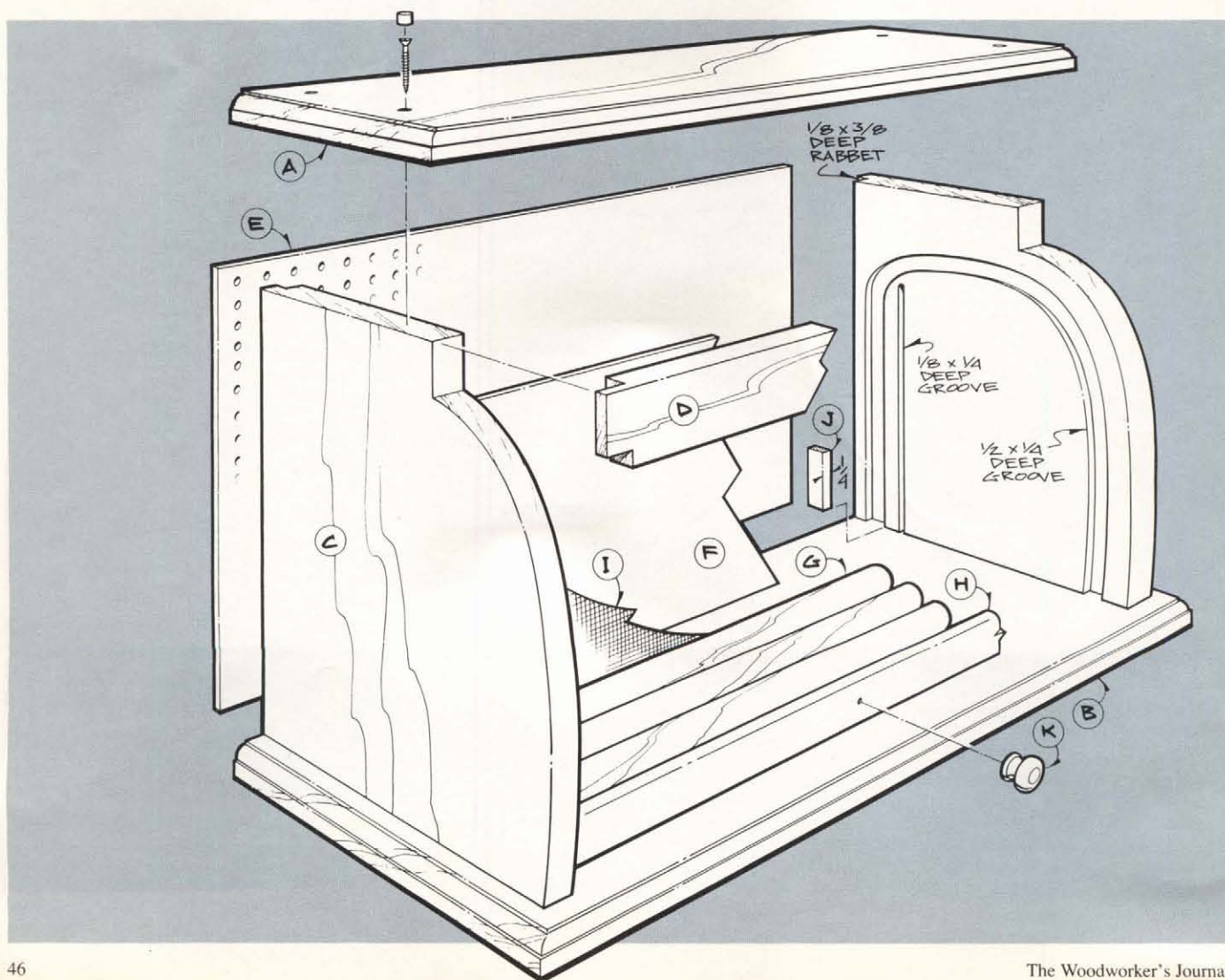
* Length of tambours is after final trimming, and allows $\frac{1}{16}$ in. space for fit within tambour grooves.

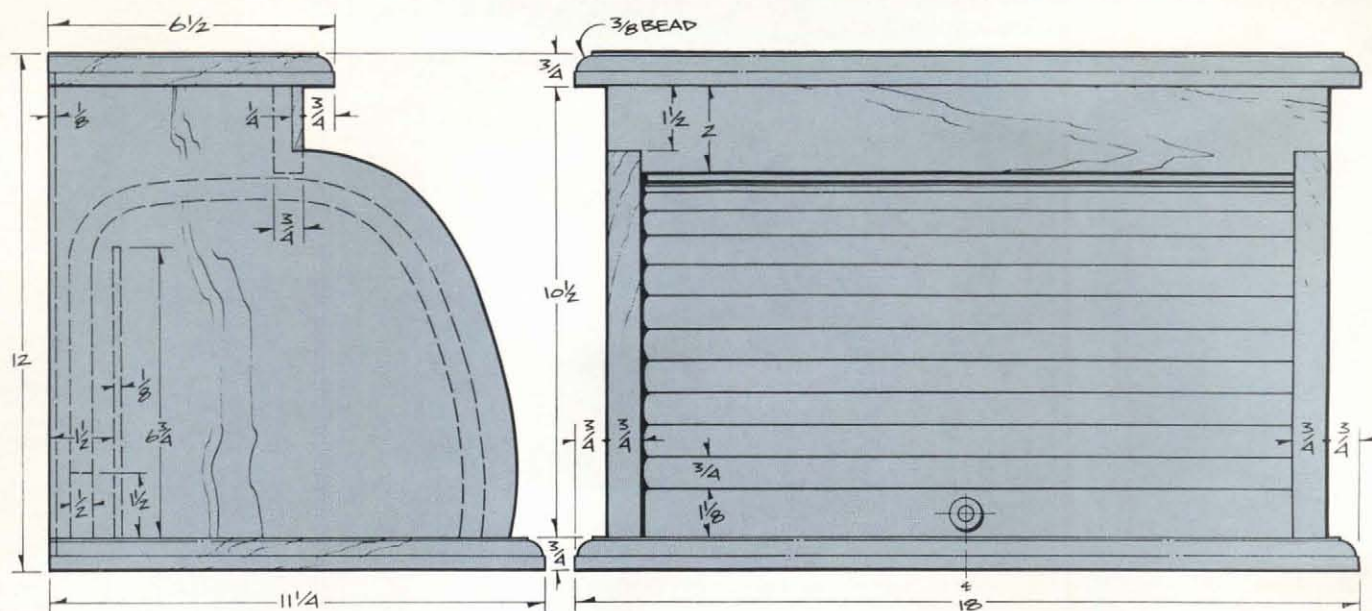
** Length and width of canvas is rough size, before tambours are added and tambour assembly is trimmed to final size.

sharp utility knife, cut back the canvas just a bit at the bottom end, so it won't show when the tambour door is open.

Assembly

When cut to length, the tambour door should slide easily within the tambour





grooves. Test assemble the box to make certain the fit isn't too tight.

The tambour door and the inside face

of the sides should be finished before the final assembly. For the sides, Herrmann uses a clear stain that's just a boiled

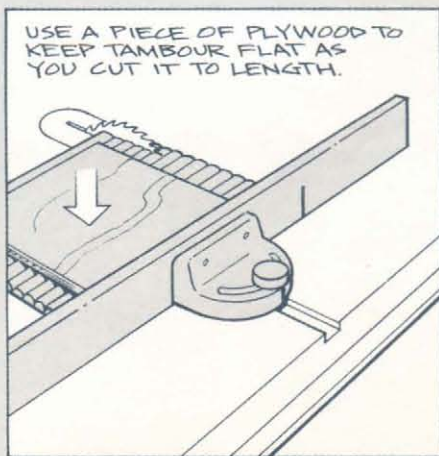
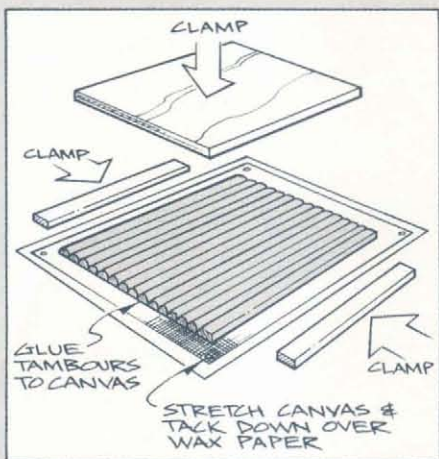
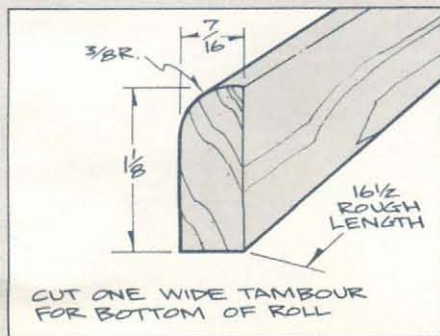
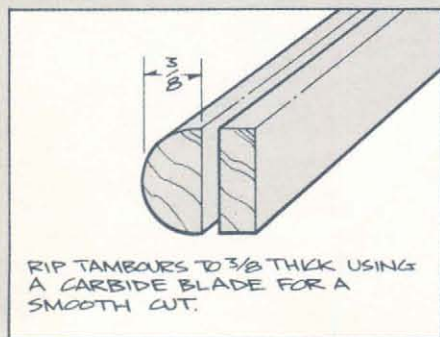
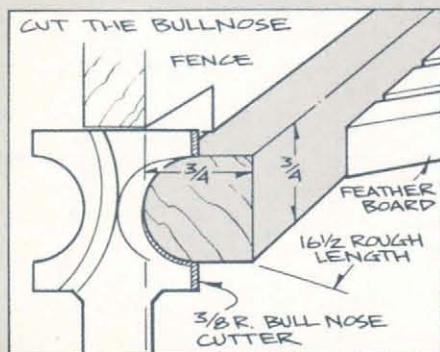
linseed oil diluted with paint thinner, following that up with two coats of polyurethane. In the 21 years that he's used this finish, Herrmann notes "I've never had a finish fail because of incompatibility between the oil and the polyurethane varnish." Take care not to get any finish on joint areas where glue will later be applied. For the tambour door, Herrmann uses Deft spray finish, rubbing out with 0000 steel wool between coats. Also, at this time, wax the tambour grooves (use paste wax) so the tambour door slides easily. Just be careful to not wax the ends of the grooves where the stops are glued.

Now make the final assembly. With the tambour door and false back in their respective grooves in the sides, glue and screw the top and bottom to the sides. Also add the front, which should help to square the assembly up. There should be a little clearance between the bottom edge of the front and the tambour door. Also, the bottom edge of the front is slightly rounded. Be sure the assembly is square and the tambour door can slide easily in its tracks, then set aside to dry.

Once dry, glue the two stopblocks in place. Then use a bearing-guided rabbeting bit in the router to cut a 1/8 in. by 3/8 in. rabbet for the back. Square the rabbet corners with a chisel, then cut the back to size and fasten it in place with brads. Apply a finish to the rest of the breadbox, mount the porcelain knob (K), and your project is complete. Allow time for the finish to thoroughly dry before using the breadbox.



Making the Tambour Door



Tabletop Napkin Holder

With angled bases, a leather "hinge," and a little help from gravity, the two sides of this napkin holder simply pinch together when it's placed on a flat surface. The clever design is from Brad and Sandy Smith, owners of Bradford Woodworking in Worcester, Pennsylvania, and they tell us it's popular at the many craft shows they attend.

Each base is attached to a side with box joints or, as they are sometimes called, finger joints. Readers who haven't tried this joint may think it's a bit difficult, but our step-by-step instructions include a jig that greatly simplifies the process.

Most box joints are made with a dado-head cutter, but you won't need one for this project, just a table saw blade that cuts a kerf about $\frac{1}{8}$ in. wide. And there is no need to worry about getting an exact number of "fingers" to fit across the width of the stock. We've avoided that by starting with wide stock and

then cutting the parts to final width after assembly.

The napkin holder shown is made from walnut, but feel free to use any wood that suits your fancy. You'll need $\frac{1}{4}$ in. thick stock for the sides and base. If you don't have a thickness planer, and can't find thin material locally, you can order a piece of walnut that measures $\frac{1}{4}$ in. thick by $3\frac{1}{2}$ in. wide by 20 in. long (enough for one Napkin Holder) from Garreson Lumber Company, 7201 Craig Road, Bath, NY 14810, tel. (607) 566-8558. The price is \$5.50, shipping included.

Just about any kind of leather will do for the hinge, as long as it's flexible enough to allow the sides to pinch together. If you don't have an old wallet or pocketbook to cut up, you can order a $2\frac{7}{8}$ in. wide by $5\frac{1}{2}$ in. long piece of leather from Aspen Kits, 6 Hilltop Drive, Old Saybrook, CT 06475; tel. (203) 388-6179. Send \$1 plus a self-addressed stamped envelope.

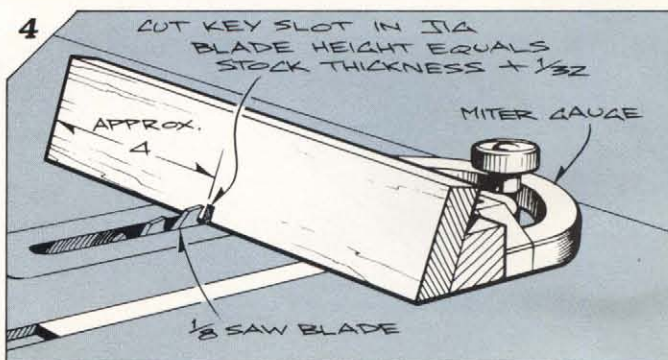
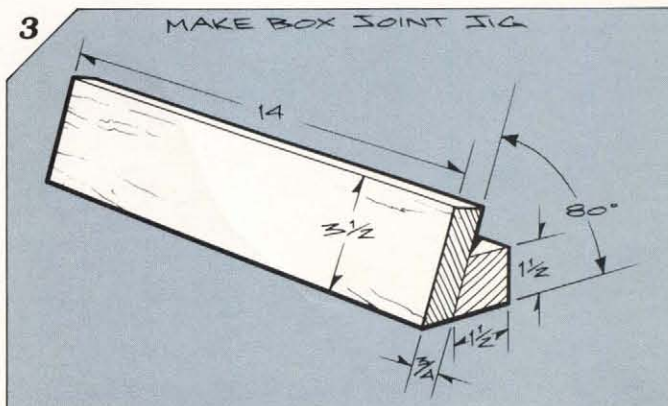
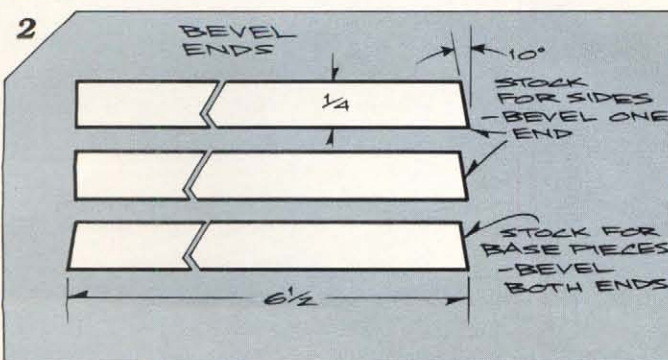
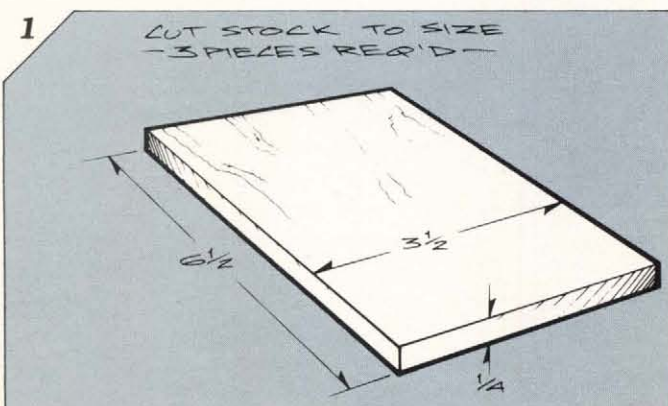
Step-by-Step

Step 1: Cut three pieces of $\frac{1}{4}$ in. thick stock to $3\frac{1}{2}$ in. wide by $6\frac{1}{2}$ in. long. Label two of the pieces "side" and the remaining piece "base."

Step 2: With the table saw set to a 10-degree angle, use the miter gauge to cut a bevel on one end of the two side pieces and both ends of the base piece.

Step 3: Make the box joint jig as shown. Use straight grain stock that's free from knots or other defects. You may need to vary the jig's length and width dimensions somewhat in order to fit your table saw.

Step 4: Install a table saw blade that cuts about a $\frac{1}{8}$ in. wide kerf, then set the blade height to equal the stock thickness plus about $\frac{1}{32}$ in. While firmly holding the jig against the miter fence, cut a slot approximately 4 in. from the end.

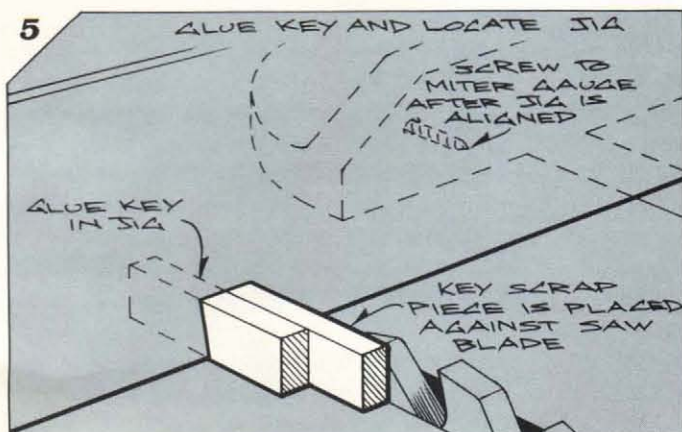




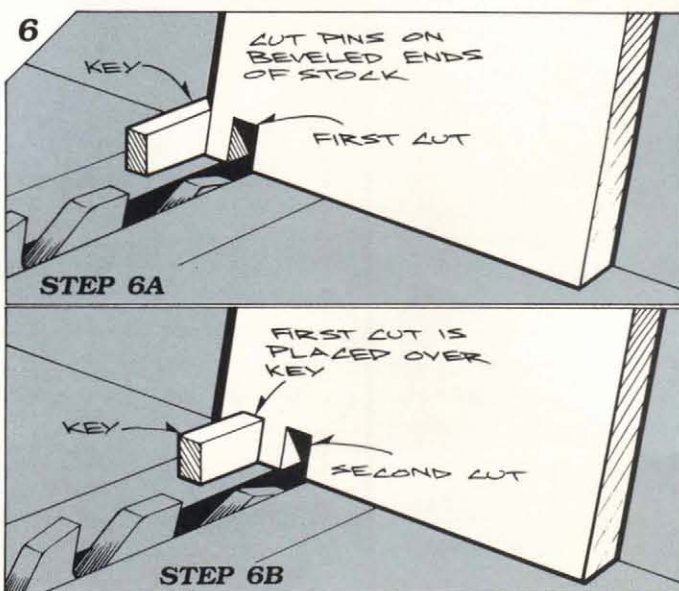
Step 5: Cut a key to fit in the jig slot. The key should exactly match the width and height of the slot, and it should be long enough to fit securely in the jig with about $\frac{3}{8}$ in. protruding. Once cut, glue it to the jig.

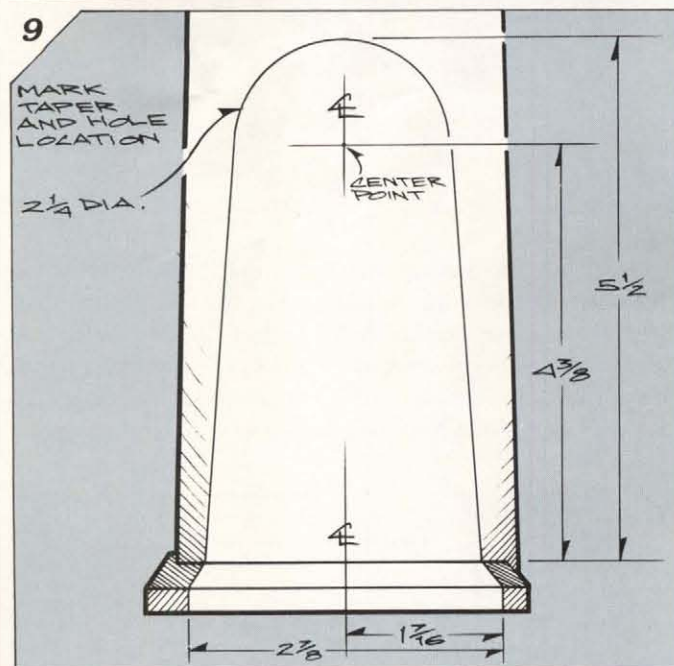
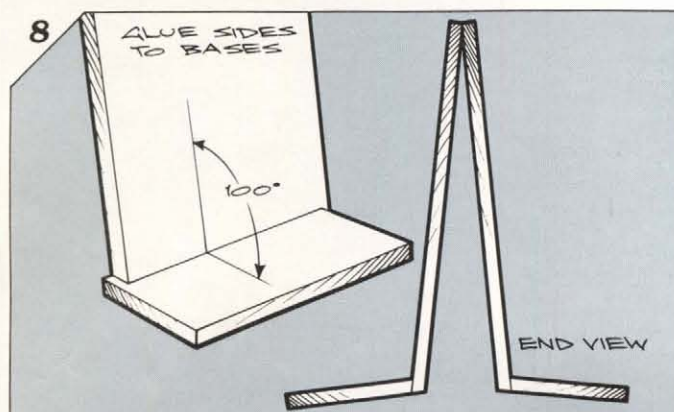
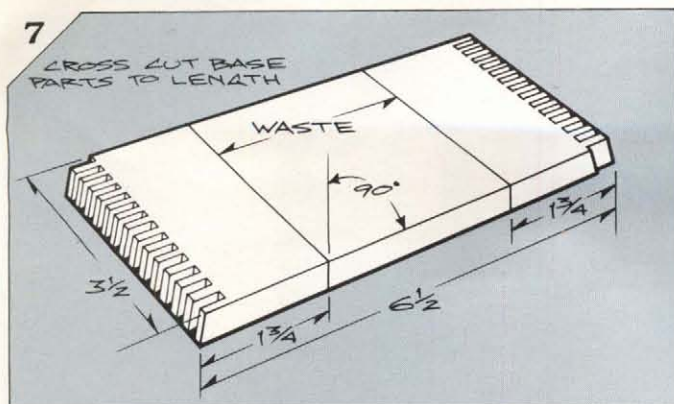
Use an extra piece of key stock as a spacer to establish the distance between the saw blade and the key. The spacer insures that this distance exactly equals the width of the slot. Once you are satisfied that the spacing is just right, attach the jig to the miter gauge with a pair of screws.

Step 6: Place the beveled end of a piece of stock in the jig, butting the edge up to the key. Make the first cut as shown (Step 6A).



Now, place the first cut over the key, and make a second cut (Step 6B). Continue this process across the width of the stock until all cuts are made, then do the same for all the beveled ends on the three pieces of stock. (Don't worry if the last cut results in a partial pin.) When the cuts are done, you'll have fingers on one end of each side piece and both ends of the base piece.

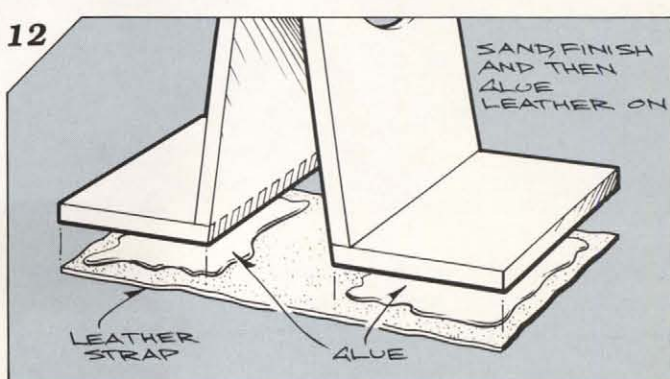
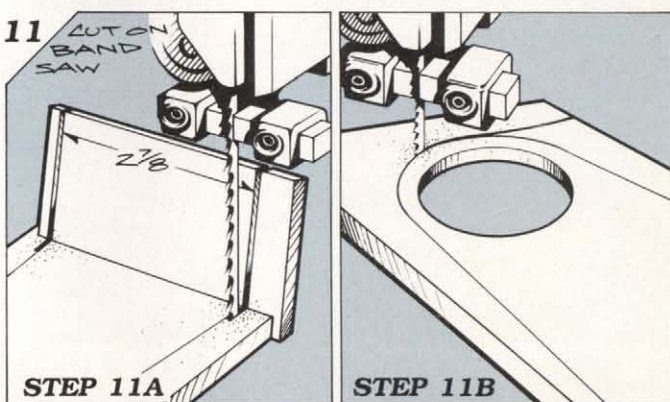
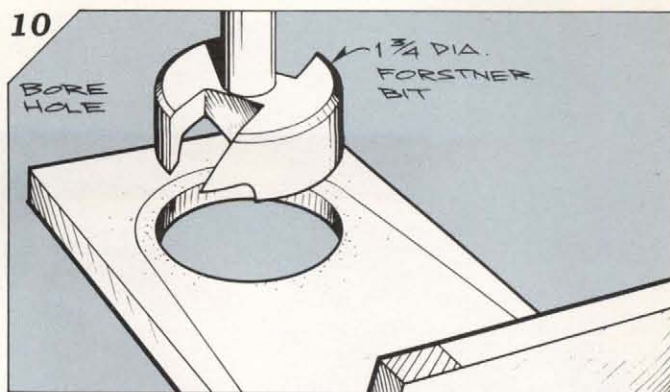




When properly cut, a box joint should fit together snugly, without the need for a mallet to drive the parts together. If the joint is tight, loosen the screws and relocate the jig to shorten (by less than $\frac{1}{64}$ in.) the distance between the saw blade and the key. It's a good idea, when using a jig like this, to first make some trial joints in scrap stock.

Step 7: Use the table saw (with the blade now at 90 degrees) and miter gauge to crosscut the base parts to a length of $1\frac{3}{4}$ in. Although the $6\frac{1}{2}$ in. length results in some waste, it makes for a safer crosscutting operation.

Step 8: Apply a thin coat of glue to the joints, then assemble the base parts to the sides. The edges are offset by one slot, but no need to worry as that will be corrected later on.



Step 9: Layout and mark the $2\frac{7}{8}$ in. base width, then mark a center point $4\frac{3}{8}$ from the base and scribe a $2\frac{1}{4}$ in. diameter circle for the upper curve. Scribe a pair of lines from the base to the circle to establish the taper as shown.

Step 10: Use the drill press to bore a $1\frac{3}{4}$ in. diameter hole at the marked centerpoint.

Step 11: Establish the width of the sides by using the band saw to make a pair of entry cuts. However, don't complete the cutout with the blade guard in this raised position. For safety's sake, make each entry cut only about $\frac{1}{2}$ in. long (Step 11A), then lower the blade guard and complete the cutout working from the other end (Step 11B).

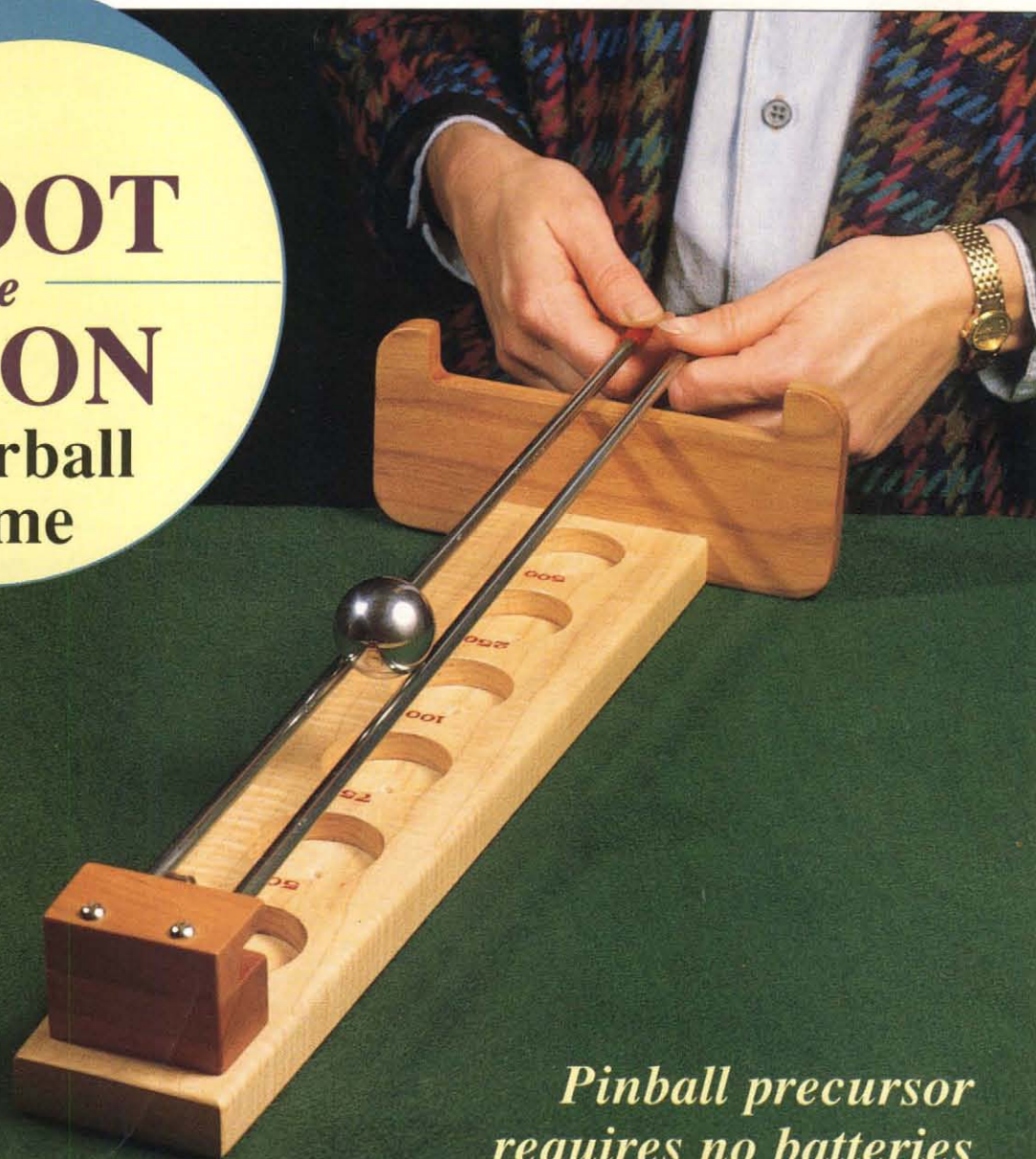
It's best to make the band saw cuts slightly on the waste side of the marked line. After completing the cuts, the edges can be sanded exactly to the line.

Step 12: Final sand each half of the napkin holder. Two coats of penetrating oil provide a good finish, but don't apply it to the bottom. If you do, the glue may not stick as well.

If necessary, use a sharp knife to trim the leather to the exact width of the base. Glue the leather to the base (white or yellow glue works fine) to complete the project.



SHOOT *the* MOON Rollerball Game



*Pinball precursor
requires no batteries*

This unassuming looking little game, by Connecticut woodworker David Moretti, has captivated just about all who try to master it. Although it's not readily apparent from the photo, when the game is placed on a flat surface, the two steel rods have a noticeable uphill slope, from the bent end to the capped end. As shown in the Shooting the Moon detail, the object of the game is to get the steel ball to roll up this slope, and then quickly spread the rods apart to drop the ball into the hole pocket with the highest possible score. Since some of the hardware parts may be

hard to find, we've arranged with a parts supplier to provide a kit (see Source) that includes all the hardware that you'll need, from the pre-bent rods (E) to the steel ball (F), the screws (G), and even the felt bumpers and feet (H).

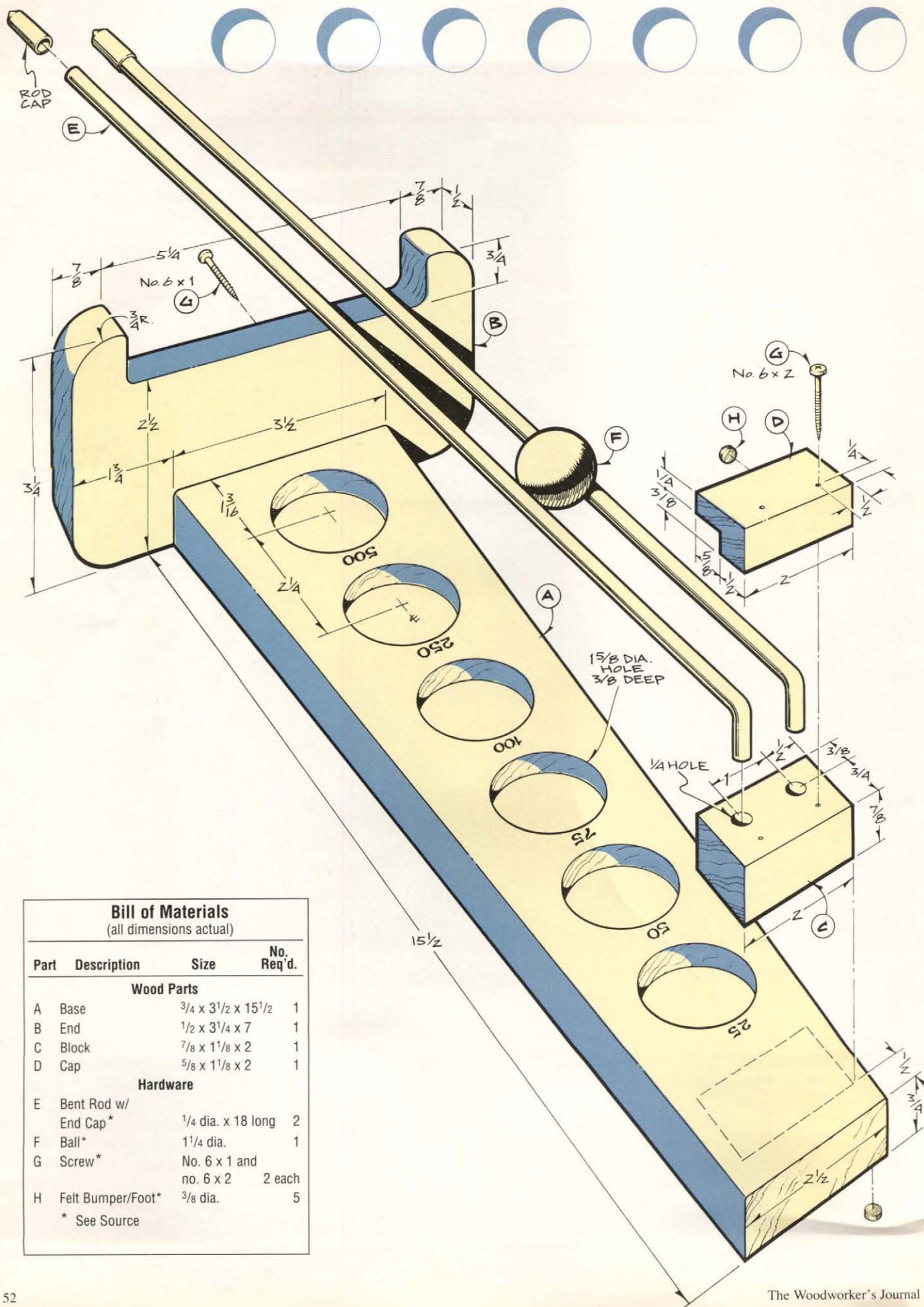
Making The Wood Parts

Cut the base (A), end (B), block (C) and cap (D) to the sizes shown on the exploded view and in the Bill of Materials. The game in the photo uses curly maple for the base and cherry for the remaining parts. Be sure to cut the parts (especially the end and block) to the

precise sizes shown, and locate the rod holes and notch exactly as indicated, for the game to operate properly.

The rabbet in the cap isn't really critical, and can be cut easily with a hand saw. Just clamp the block in your bench vise and make two intersecting cuts. Use a 1⁵/₈ in. diameter Forstner bit to bore the six hole pockets, spacing the pockets on-center 2¹/₄ in. apart. Then lay out and cut the two tapers on the base sides.

Drill the 1/4 in. diameter rod holes in the block. The holes are 3/8 in. from one edge and exactly 1 in. apart, and they go entirely through the 7/8 in. stock thick-



SHOOTING the MOON

The secret to getting the ball to roll up hill is to first spread the rods gradually apart, which for a short distance allows the ball to actually roll down a slope, gathering momentum (Step 1). Then, as the rods are squeezed back together, the combination of the ball's momentum and the wedging action of the two rods can be harnessed to propel the ball up a slope (Step 2). When the ball reaches the highest point (before it starts rolling back down) the rods are spread quickly apart to drop the ball into one of the numbered hole pockets (Step 3). Any number of players can play, with the winner being the first to achieve a predetermined total score, such as 5,000 or 10,000 total points.

The real trick with this game is finesse, much like it is with pinball. For a high score, you must build up the ball's momentum. The farther apart you spread the rods in Step 1, the greater the ball's momentum. But, too far apart, and you risk the ball falling through prematurely and settling in one of the low-scoring pockets. It takes a deft touch and lightening quick reflexes to achieve the highest score (the 500 pocket) consistently, and in going for that high score, you often risk failure.

STEP 1:
SPREAD RODS APART
TO GET THE BALL ROLLING

STEP 2:
SQUEEZE RODS BACK
TOGETHER. THE BALL'S
MOMENTUM PLUS THE
ROD'S WEDGING ACTION
PROPELS THE BALL
UP THE SLOPE.

STEP 3:
SPREAD RODS APART
QUICKLY TO DROP BALL
INTO POCKET FOR
MAXIMUM SCORE

Source

Hardware parts kit (pre-bent rods, ball, screws and felt bumpers) is available from Aspen Kits, 6 Hilltop Drive, Old Saybrook, CT 06475; tel. (203) 388-6179. Kit cost is \$10 postpaid (checks and money orders only, please).

ness. Next, lay out and cut the notch in the end (B). A coping saw will quickly cut the notch, but you'll need to use sandpaper to smooth the blade marks and leave the surface level. When done, the distance from the bottom of the notch to the bottom edge of the end should be exactly 2 1/2 in.

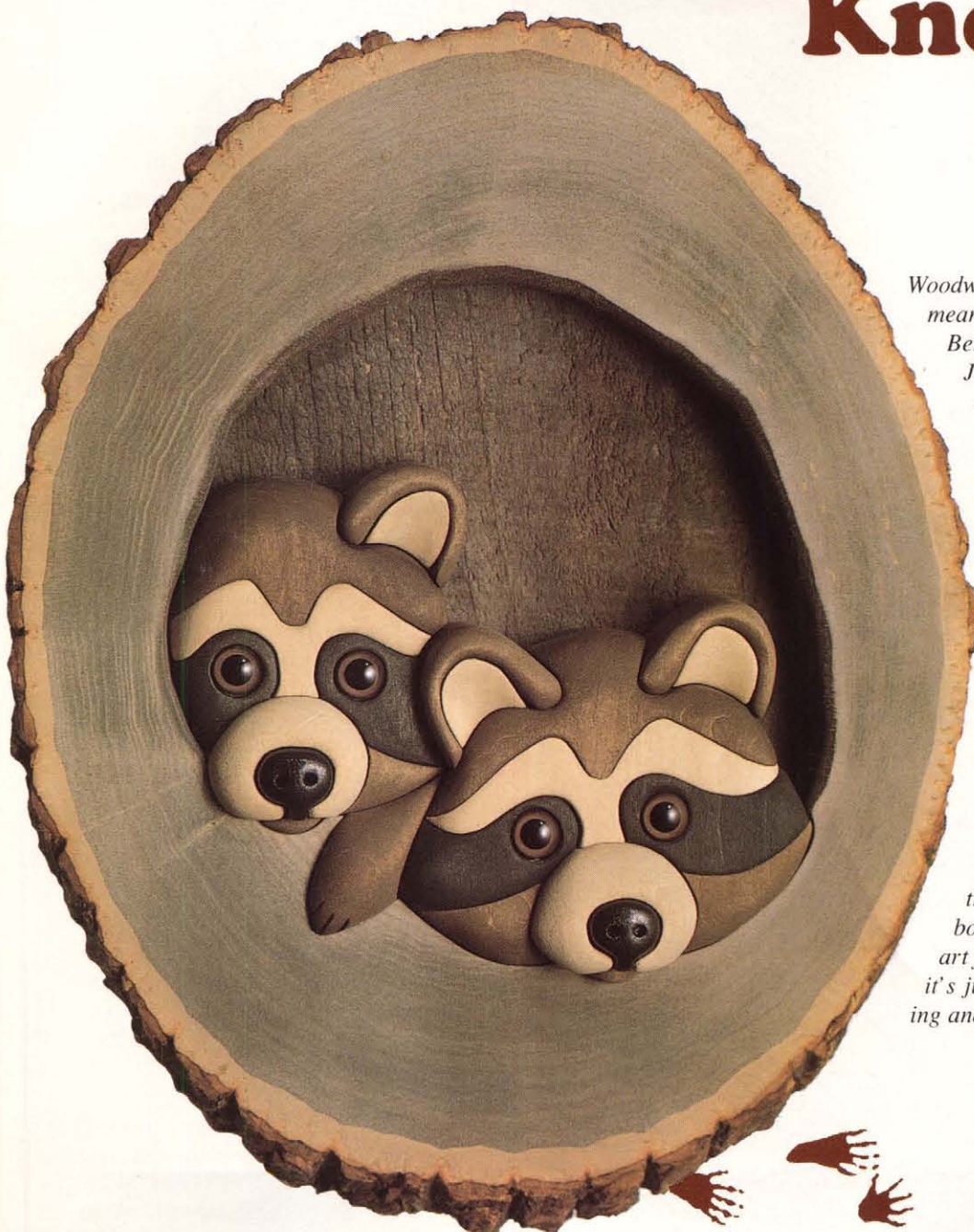
Finishing Up

The numbers on the hole pockets can be stenciled, burned in, impressed (if you have a set of numbered punches) or even

painted on. We show numbers purchased at a hobby shop and used for models such as cars, planes and trains. Once the pockets are all numbered, apply a lacquer finish (a spray can is perfect for a project this size). Then pre-drill for the screws and assemble the game (the rods must be in place when the cap is screwed in place). No glue is needed. Apply the five supplied felt bumpers (four on the base and one as a ball cushion on the cap), then start having fun!

intarsia project

The Knothole Gang



Woodworking doesn't always have to mean building furniture or toys. For Berwyn, Illinois, woodworker Robert J. Hlavacek, it means the creation of fanciful pictures in wood. Called intarsia, this craft form of woodworking uses different types of woods, or different paint colors over wood, to make three-dimensional "flat" sculptures that are assembled on a backboard.

The process is actually quite simple. Working either from a pattern or freehand, a design is laid out on the wood. A band saw or scroll saw is then used to cut out the design, after which the individual pieces are shaped, painted and then reassembled—something like the pieces of a puzzle—on the backboard. The process may seem like an art form, but once you have a pattern, it's just straightforward cutting, painting and assembling.

The Knothole Gang is made from just three boards, with a few scraps of plywood used as shims to raise some of the raccoon's facial parts. The frame is a $\frac{3}{4}$ in. thick by at least 9 in. wide by about 12 in. long slice of tree trunk, log or branch, with the bark still on. Instead of being cut exactly

across the grain, the cut is made at a slight angle, making a piece that's a little longer than it is wide. If you have a chainsaw, your woodpile might yield a multitude of slices for the frame (make sure the wood is well dried), but we've included a mail-order source (see Materials List) for a pre-cut, dried and sanded

basswood frame. You'll also need a 1 in. thick by $6\frac{1}{2}$ in. wide by $5\frac{1}{2}$ in. long piece of basswood for the raccoon faces, and a $\frac{3}{4}$ in. thick by 8 in. wide by 11 in. long piece of rough-sawn cedar for the backboard. The 12mm brown eyes are available at craft stores or by mail-order (see Materials List).

Prepare Log Section, Backboard & Shims

Once you've gathered together all the materials, transfer the opening in the log (the cutaway section out of which the raccoons are peering) from the full-size pattern to your log section. An easy way to do this is to just slip a piece of carbon paper between the page and the wood, and trace the profile. Then drill a starter hole for the saw blade and use the scroll saw to cut the profile.

Next, lay the log section on a piece of paper, trace all around the outside profile, then cut out the paper, staying about 1/2 in. to the inside of the scribed line. Use this paper template to scribe the profile onto the back board, then cut the shape with the scroll saw, band saw or hand-held jigsaw. Take four screws and screw the backboard (rough-sawn side facing forward) to the back of the log section.

Now is a good time to trace and cut the scrap plywood to make the shims. Trace the outside profile of the right side raccoon (including the paw of the left side raccoon) onto 1/4 in. stock, trace both raccoon's muzzles onto 3/8 in. stock, and trace the nose profiles of both raccoons onto 1/8 in. stock. Sand the upper edge of the 1/4 in. shim to establish a slight undercut, then paint this edge black. Once the paint is dry, glue the 1/4 in. shim in position on the backboard.

Cutting The Faces

Trace the raccoon profiles onto the 1 in. thick basswood, using the same system as before (slipping carbon paper between the page and the board). Drill the 12mm diameter by 1/8 in. deep eye holes (a 1/2 in. diameter drill can be used if you don't have metric sizes), and also drill the pair of 1/8 in. diameter by 1/8 in. deep holes that serve as the nostrils on each nose.

Using a scroll saw, or a band saw equipped with a 1/16 in. blade (you'll need to use phenolic guide blocks with so narrow a blade in the band saw), cut out the raccoon faces. A 1/16 in. blade and the phenolic guideblocks are available from Garrett Wade (1-800-221-2942). Cut the smaller parts first (chins, noses and ears), then the larger parts.

Materials List

Wood

- 1 cross-sectional log slice (3/4 in. x 9 in. x 12 in.) yields frame*
- 1 pc. basswood (1 in. x 6 1/2 in. x 5 1/2 in.) yields both raccoon faces
- 1 pc. rough-sawn cedar (3/4 in. x 8 in. x 11 in.) yields backboard
- Scraps of 1/8 in., 1/4 in., and 3/8 in. plywood for shims

Hardware

- 2 pair glass eyes (type 1, 12mm, brown, no wire)**
- 1 sawtooth hanger*****
- 4 screws (no. 6 or no. 8 x 1 1/4 in. long)

Paint/Finish

Acrylic paints, used as follows:

Outer ears, foreheads, cheeks, chins and paw:
walnut, no. 2024 Ceramcoat by Delta***

Eye surrounds, noses, log and backing board:
black, no. 02506 Ceramcoat by Delta***

Inner ears, eyebrows and muzzles:
wicker, no. 2453 Accent Country Colors****

Log and backing board:
burnt umber, no. 2437 Accent Country Colors****

Krylon Matte Finish no. 1311*****

* Basswood log slice is available from Walnut Hollow Farm, Route 2, Dodgeville, WI 53533; tel. 1-800-243-2089. Order their Basswood Country Round, part no. 5509.

** Glass raccoon eyes are available from Van Dyke's, 4th Ave. & 6th St., P.O. Box 278, Woonsocket, SD 57385; tel. (605) 796-4425. Specify type 1 eye, 12mm, brown, no wire.

*** For a dealer near you, contact Delta Technical Coatings, 2550 Pellissier Place, Whittier, CA 90601; tel. (213) 686-0678.

**** For a dealer near you, contact Accent Country Colors, Accent Products Division, HPPG, Borden, Inc., Columbus, OH 43215; tel. 1-800-848-9400.

***** Available at most hardware stores.

Once the face parts are all cut, glue the 1/8 in. thick shims to the back of the noses and the 3/8 in. thick shims to the back of the muzzles.

Shaping & Sanding

Test assemble the raccoon faces in position on the backboard. Since the 1/4 in. thick shim is already in place on the

backboard, and the 3/8 in. and 1/8 in. thick shims are already glued to the muzzles and noses, respectively, everything should be set at its proper final level. Now take a sharp pencil, and using the front of the log cutout as a guide, scribe a line across the facial parts that protrude higher than the surface of the log. This line serves as a guide showing you what

point to shape and round the facial parts up to.

Now go to work sanding and shaping. Most of the sanding is done with a 2½ in. by 3 in. sanding drum in the drill press, using 80 grit paper with the drill press speed set at 2300 rpm. A ½ in. diameter drum is used to shape the curve on the insides of the ears. However, other size drums and different grits can also be used, or you can even shape with rasps and hand sanding.

Start by shaping the top of the head of the raccoon on the left. Then add the ears, and finally the muzzle and nose. Always shape the lowest parts first, then use a pencil to mark the terminus point of the rounding on the higher pieces, and shape these raised sections (mainly the muzzles) in a gentle curve down to meet the height of the surrounding face. Where the ears and head meet, just put the ears in position next to the already shaped head, and mark the depth of the curve from the head to the ears. Study the photo closely as you proceed, and then compare regularly with your own work.

Once all the rough shaping and sanding is complete, hand sand to remove grit marks from the drum sander. A knife or a woodburning pen is used to indicate the toes on the raccoon's paw.

Painting

The paints are common acrylic paints thinned with just enough water to allow the wood grain to show through. Have a jar of water handy to keep the brush wet, and be sure to use a brush that's at least ½ in. wide, so you can apply the paint quickly. Working slowly or with a too-small brush allows some of the paint to dry before an entire piece is painted, which can produce a blotchy finish.

The parts are all painted individually, and allowed to dry before final assembly. Refer to the color photo and the Materials List for what colors to use on what parts. Colors look darker when wet, so allow the paints to dry before judging whether to add subsequent coats. The noses are painted with unthinned black. The backboard, the log

Back view showing screws and hanger attachment.



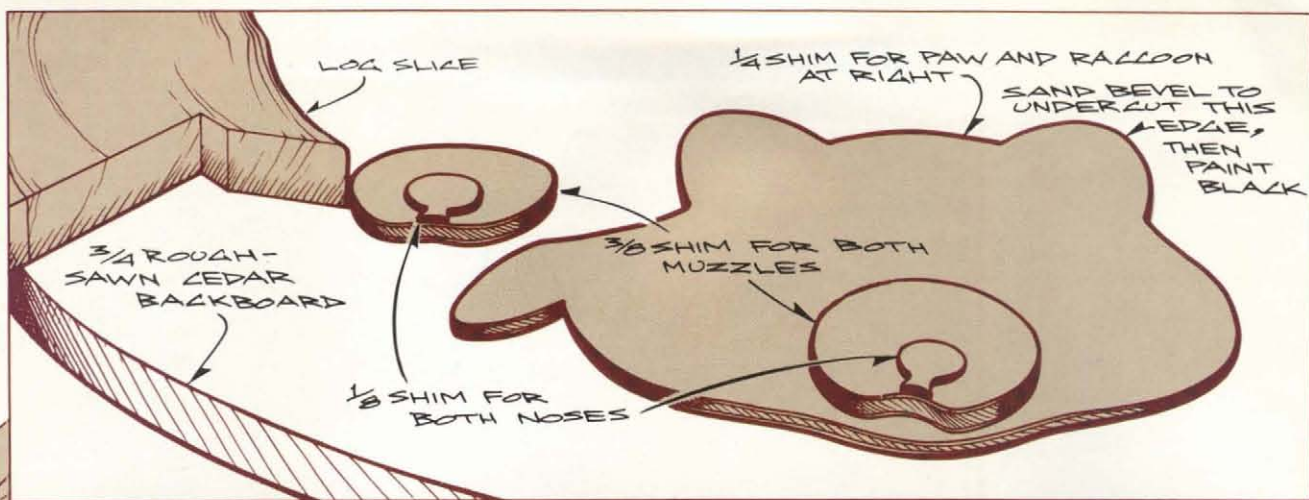
face and the edge of the cutout in the log are both painted black, followed with a light coat of burnt umber. When dry, the face of the log is sanded, which produces the light grey look contrasting with the darker cutout area.

Once the colors have all dried thoroughly, spray on several very light coats of a clear matte finish, like Krylon no. 1311. A little high-gloss clear finish on the noses give them their shine.

Final Details

When dry, glue the pieces in place. Any wood glue is fine. As you work, adjust the spaces between the individual pieces so any gaps caused by the saw kerfs are even. Use a little epoxy to glue the glass eyes in place. A sawtooth hanger attached to the backboard (see photo above) provides a handy way to hang the Knothole Gang on an oblique wall.



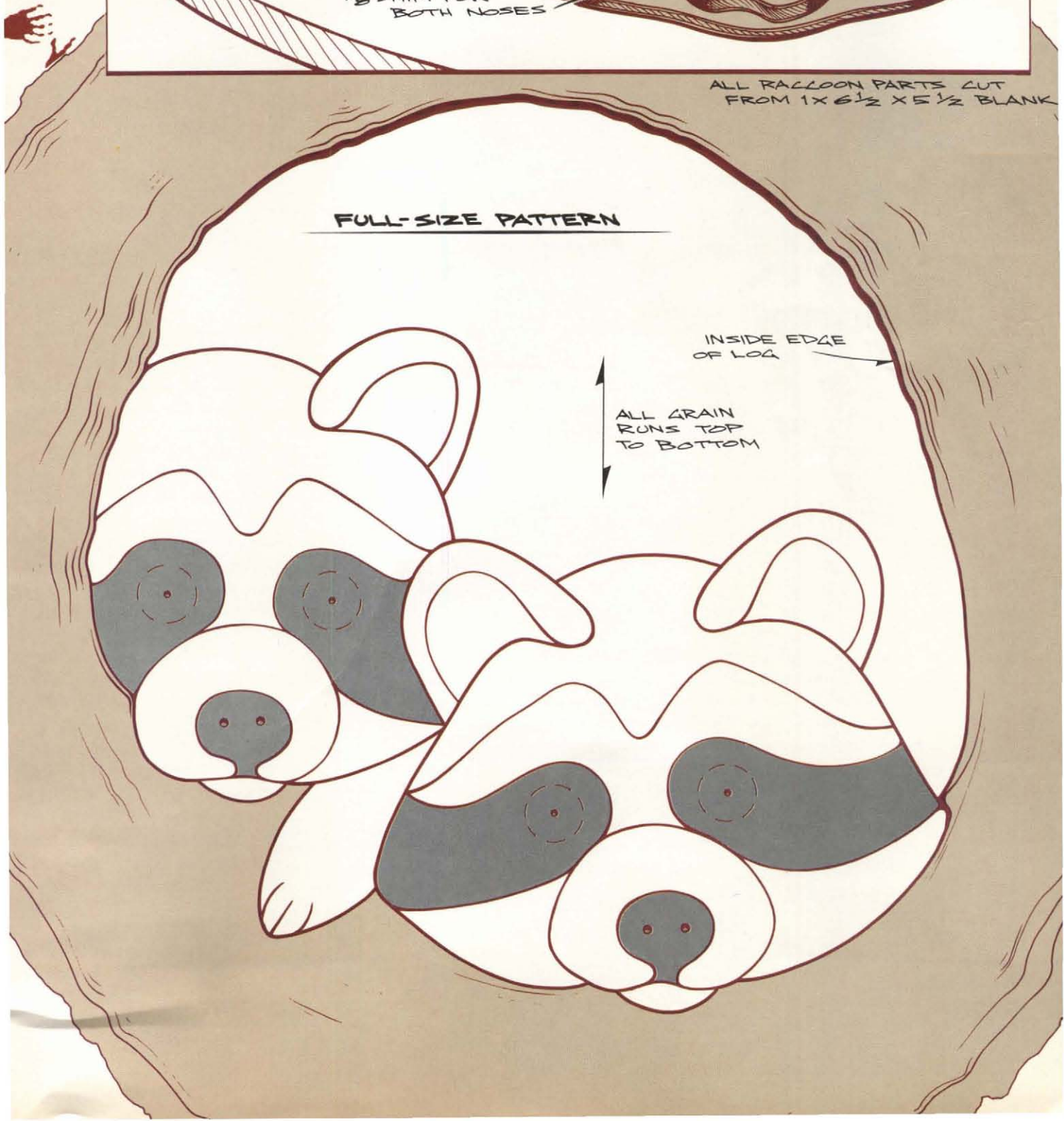


ALL RACCOON PARTS CUT FROM $1 \times 6\frac{1}{2} \times 5\frac{1}{2}$ BLANK

FULL-SIZE PATTERN

INSIDE EDGE OF LOG

ALL GRAIN RUNS TOP TO BOTTOM

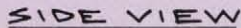


A photograph of a wooden drill press organizer. The organizer is a light-colored wooden box with a hinged lid, filled with various sizes of metal drill bits. In the background, a metal drill press is visible, with a black handle and a silver-colored body. The text "Swing-Away DRILL PRESS ORGANIZER" is overlaid in the top right, and "A Clever Scrapbox Shop Project" is overlaid in the bottom left.

Swing-Away **DRILL PRESS ORGANIZER**

*A Clever
Scrapbox Shop Project*

Now cut the shelf parts to size, and assemble them with glue and finishing nails. No clamps are needed. Add the $\frac{1}{4}$ in. by $\frac{1}{4}$ in. lip (H) at the shelf front to keep the bit blocks from sliding out. The two brackets at the shelf back are also fastened in place with glue and finishing nails, as are the remaining two brackets and the bracket mount. An easy way to get the two brackets to line up is to sandwich them around the arm, and then hold the assembly together by adding the bolt and tightening the wing nut (J). Of course, if you have a long enough drill bit you can also just assemble everything first and then drill the bolt



holes through the brackets and arm.

The two beveled cleats (C) serve to center the assembly on the drill press column. Drill through the bracket mount for the U-bolt (K), then glue the cleats in position. A coat of spray lacquer, or just about any other finish, will add a little protection to the organizer and make dusting easier.

As photographed, we're using two blocks of wood to hold the various drill bits. The back block is higher, which

eases access to the bits in back. The most used bits—in this case the brad-points—are at the front. However, depending on your bit collection, and any drill indexes you may already own, you'll probably want to customize these blocks to best suit your own needs. If your drill press doesn't have a handy place to keep the chuck key, just drill a hole into one of the blocks, as shown in the photo, to place the chuck key within arm's reach.

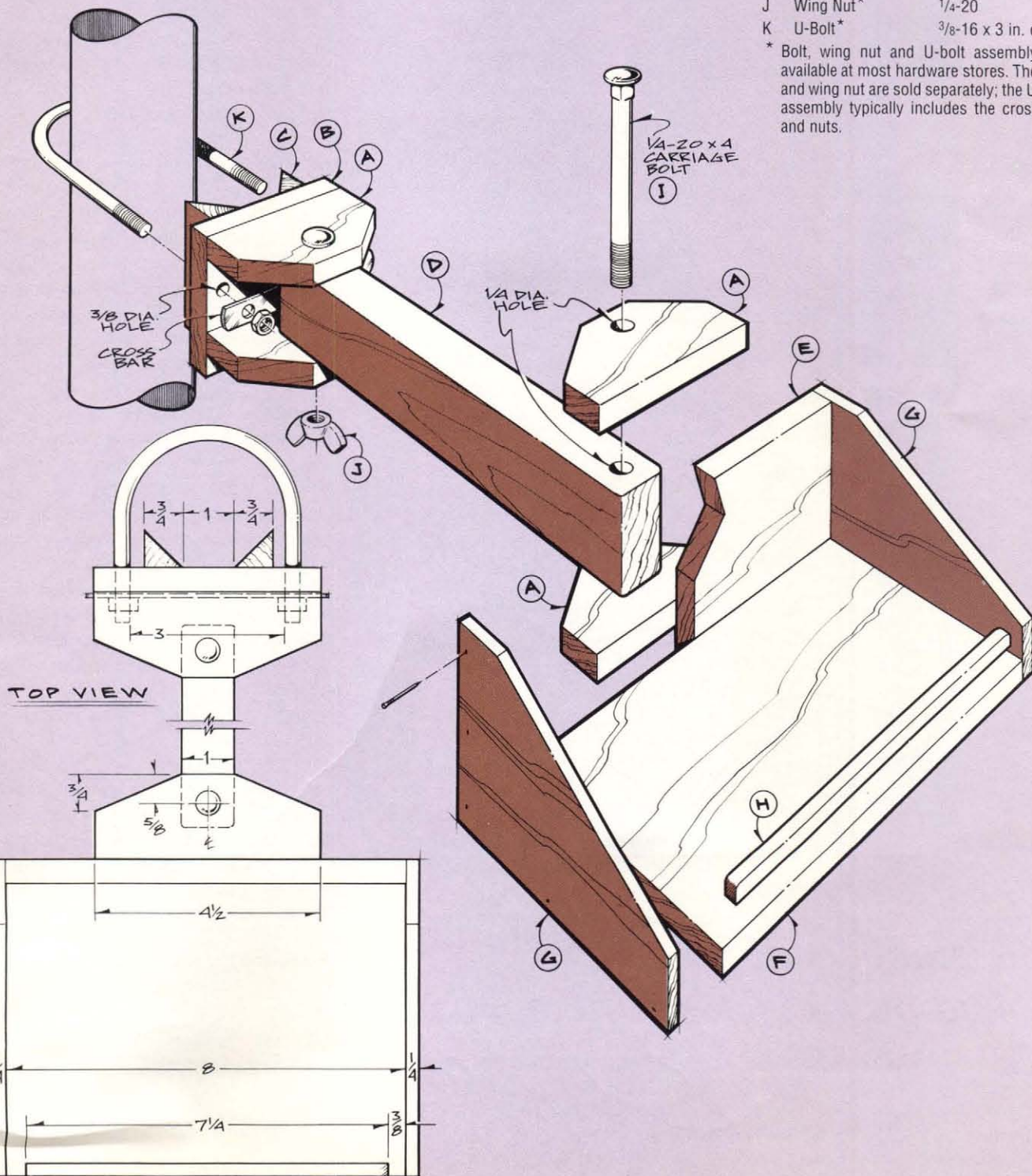


Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Bracket	1/2 x 1 3/4 x 4 1/2	4
B	Bracket Mount	1/2 x 4 x 4 1/2	1
C	Beveled Cleat	3/4 x 3/4 x 4	2
D	Arm	1 x 2 1/2 x 8	1
E	Shelf Back	1/2 x 4 x 8	1
F	Shelf Bottom	1/2 x 6 x 8	1
G	Shelf Side	1/4 x 4 x 6 1/2	1
H	Lip	1/4 x 1/4 x 7 1/4	1
I	Bolt*	1/4-20 x 4 in. long	2
J	Wing Nut*	1/4-20	2
K	U-Bolt*	3/8-16 x 3 in. dia.	1

* Bolt, wing nut and U-bolt assembly are available at most hardware stores. The bolt and wing nut are sold separately; the U-bolt assembly typically includes the cross bar and nuts.



Country Curio Clock



Time stands still for our painted pine clock/shelf combo

This good looking clock not only reminds you of the time, it also provides a couple of shelves to display favorite curios. There's no fancy joinery needed here, just butt joints secured with countersunk screws. Al-

though the joinery may be simple, it's plenty sturdy for a small wall clock like this. We hope you enjoy building and using it.

We used pine for all parts except the birch plywood dial board. The molding

can be purchased at most any lumberyard. The hand screened enameled metal dial and battery operated quartz movement are likely to be harder to find, so we've listed a source that will provide both parts as a kit (see Bill of Materials).

Cut Stock to Size

As shown in the cutting diagram, you can get most of the stock for this project from a 52 in. length of 1 by 8 lumberyard pine (keep in mind that 1 by 8 stock will actually measure $\frac{3}{4}$ in. thick by $7\frac{1}{4}$ in. wide). Avoid using a board that's cupped or twisted. If it has any knots, they should be small and tightly in place. Referring to the cutting diagram, cross-cut and rip the stock as needed to get the dimensions shown in the Bill of Materials. You'll want the crosscuts to be square, so make sure your miter gauge is set at exactly 90 degrees.

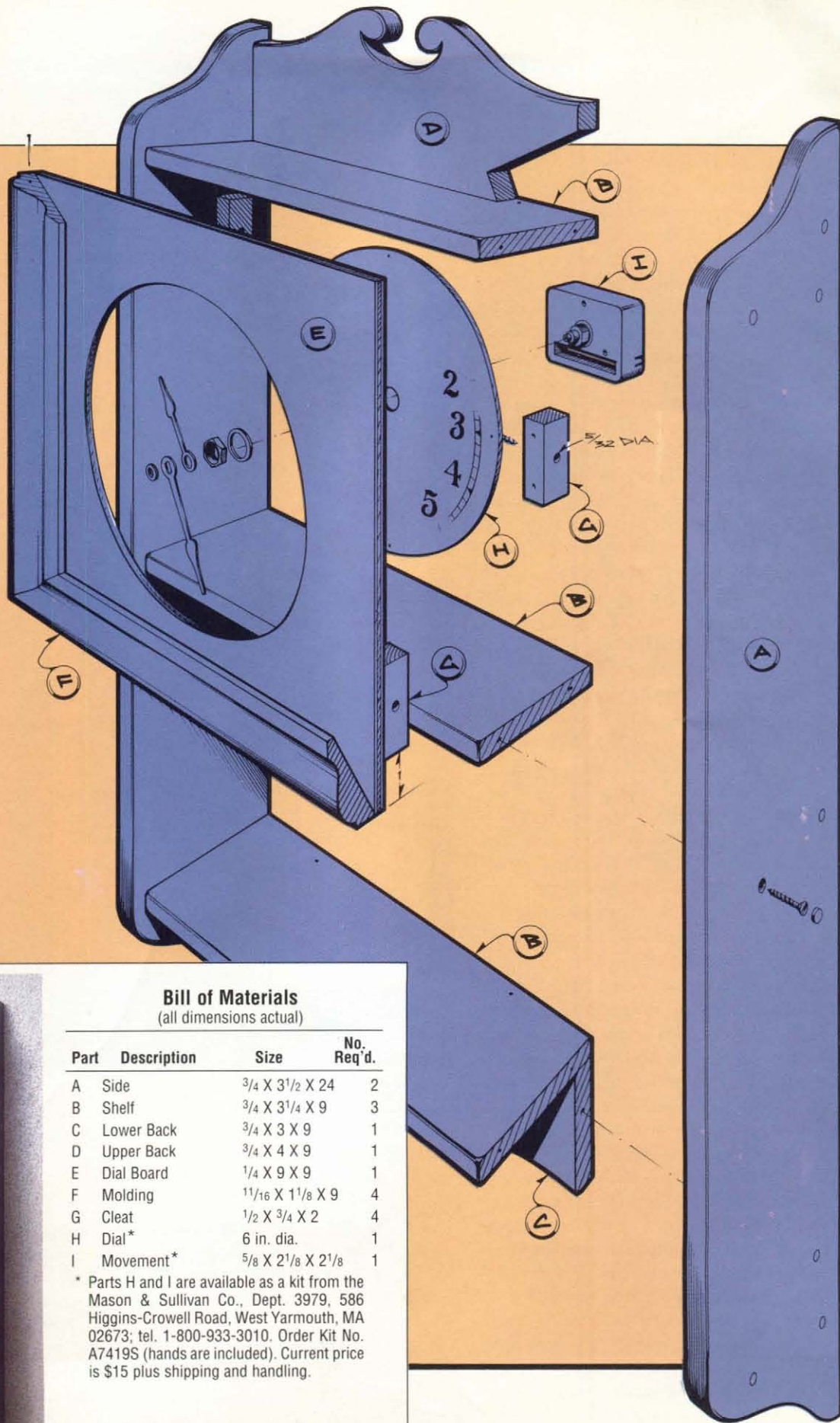
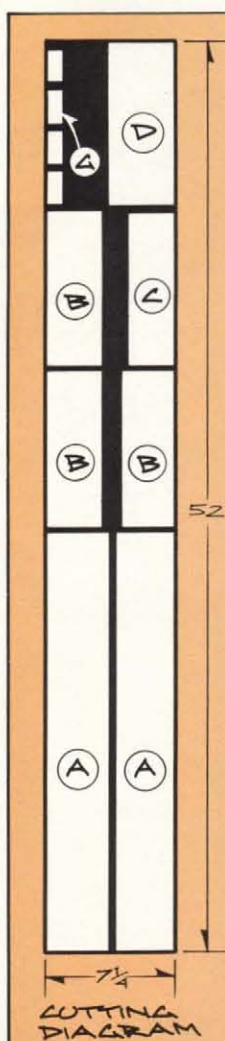
Shape the Case Parts

The clock case is made up of the two sides (A), the three shelves (B), the lower back (C) and the upper back (D). Using the grid patterns provided, lay out and mark the side curves, along with the curve on the lower back and the upper back. Cut out the curves with a band saw or hand-held jig saw, then use a file and sandpaper to smooth the sawn edges.

Next, the router table and a $\frac{1}{4}$ in. radius roundover bit are used to round several of the edges. You'll need to round the front edges of the sides, the front edges of the three shelves, the bottom front edge of the lower back, and the top front edge of the upper back. The router bit won't be able to get into the sharp corners on the upper back curve, so some work with a file and sandpaper will be needed there.

Assemble the Case Parts

Lay out and mark the shelf locations on the two sides, then assemble as shown with $\frac{1}{4}$ in. by no. 8 flathead wood screws, countersunk to a depth of $\frac{1}{4}$ in. Add the lower and upper backs in the same manner. Cut the plugs just slightly long, then glue them in the countersunk holes. When dry, sand the plugs flush with the surface.



Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	3/4 X 3 1/2 X 24	2
B	Shelf	3/4 X 3 1/4 X 9	3
C	Lower Back	3/4 X 3 X 9	1
D	Upper Back	3/4 X 4 X 9	1
E	Dial Board	1/4 X 9 X 9	1
F	Molding	1 1/16 X 1 1/8 X 9	4
G	Cleat	1/2 X 3/4 X 2	4
H	Dial*	6 in. dia.	1
I	Movement*	5/8 X 2 1/8 X 2 1/8	1

* Parts H and I are available as a kit from the Mason & Sullivan Co., Dept. 3979, 586 Higgins-Crowell Road, West Yarmouth, MA 02673; tel. 1-800-933-3010. Order Kit No. A7419S (hands are included). Current price is \$15 plus shipping and handling.

Our clock also looks good with blue as a primary color and a stained dial board.

Make the Dial Board and Frame

The dial board (E) is made from $\frac{1}{4}$ in. thick plywood. Measure the opening in the case and cut the plywood to fit. Use the drill press and a circle cutter to bore the $5\frac{1}{4}$ in. diameter center hole. Once the hole is bored, give the dial board a thorough sanding. While sanding, take care to slightly round the front edge of the center hole.

Next, the front of the dial board is painted. We used two coats of Stulb's Old Village Soldier Blue Paint, although any soft blue will look good. If you want to use Stulb's, and can't find it locally, it can be ordered from Shaker Workshops, P.O. Box 1028, Concord, MA 01742. Order part no. A954. The price for a pint is \$7.15 plus \$2.65 shipping and handling. When painting, leave about 1 in. exposed all around the edge. An unpainted area is needed for a good glue joint when the molding (F) is attached.

The molding we used is sold at just about any lumberyard. Ask for $1\frac{1}{16}$ in. by $1\frac{1}{8}$ in. "base cap molding"—you'll need about a 40 in. length.

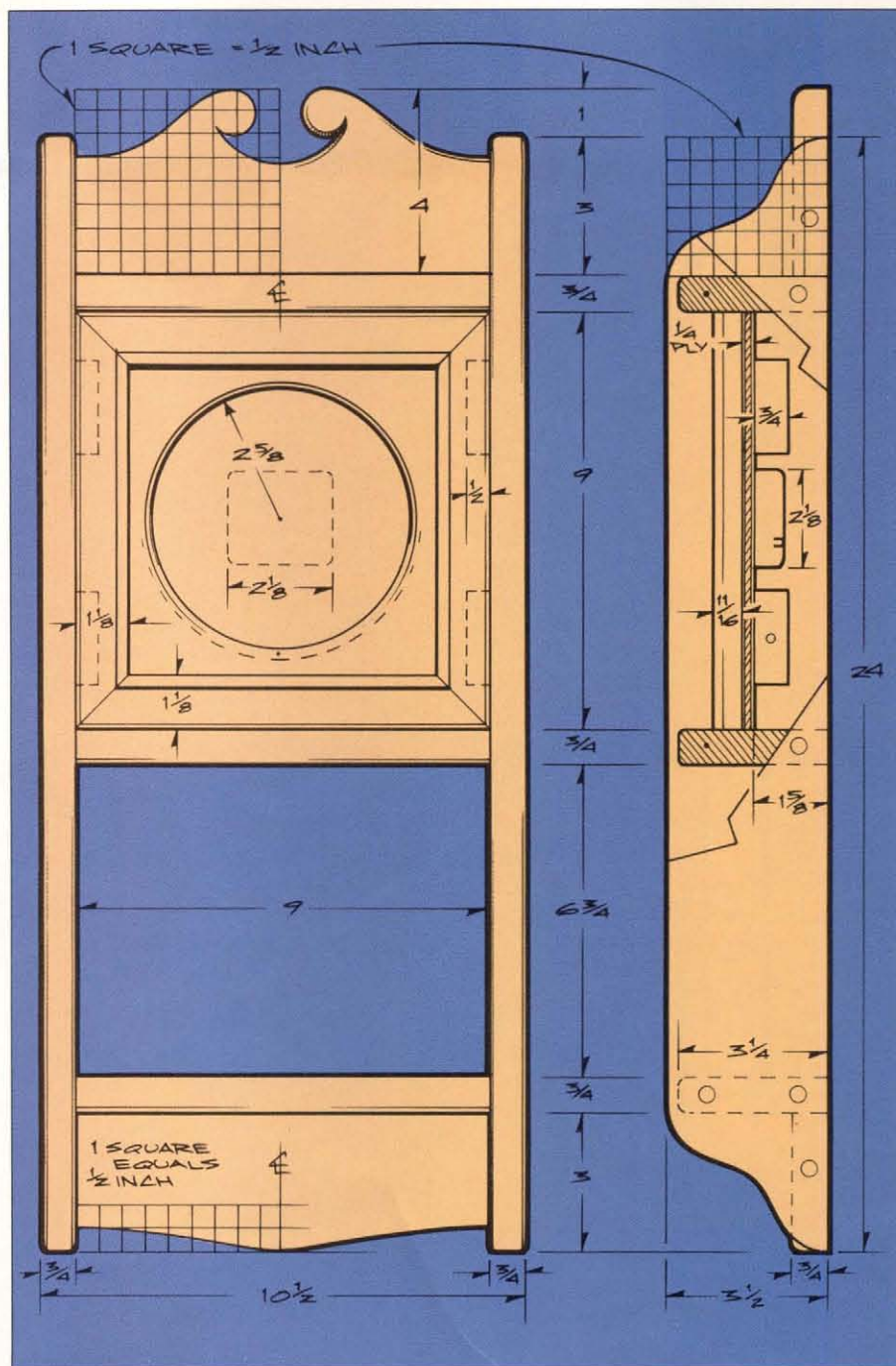
Sand the molding thoroughly, then cut it to length, mitering the ends to 45 degrees. (You'll want the molding to fit flush with the outside edges of the dial board.) After adding a thin coat of glue to the miters, assemble the four pieces of molding into a frame by driving a brad into each mitered corner. When dry, give the frame a final sanding, then apply a couple of coats of Minwax Jacobean Stain followed by two coats of shellac. The completed frame can then be glued and clamped to the dial board.

Before setting aside to dry, make sure the outside edges of the frame are flush with the outside edges of the dial board.

Now, cut the four mounting cleats (G) to size and bore a $\frac{5}{32}$ in. diameter center hole in each one. Glue the cleats to the back of the dial board. Locate them so they are flush with the side edges of the dial board and about 1 in. from the top and bottom edges.

Apply the Case Finish

Final sand all the case parts, finishing with 220-grit sandpaper. Apply two coats of Minwax Puritan Pine and, when



dry, add two coats of orange shellac. Don't forget to shellac the back of the dial board.

If you prefer the colors we used on the clock shown on page 61, follow the same finishing procedures as above, but use the Puritan Pine and shellac on the dial board, Jacobean stain on the molding and Stulb's Soldier Blue on the case.

Mount the Dial and Movement

Mount the dial (H) to the back of the dial board with three $\frac{3}{16}$ in. long brads or escutcheon pins. When mounting the dial, take care to make sure the time ring is centered in the dial board hole.

As shown in the side view, the dial board is located $1\frac{5}{8}$ in. from the back edge of the case. Mark this distance, then hold the dial board in place while driving a 1 in. long by no. 6 wood screw through the prebored hole in each cleat and into the case. It's best not to use glue here, since you may want to remove the dial board at some point in the future.

Now install the movement (I) and add the hands. If the minute hand extends beyond the time ring, use a snip to shorten it as needed.

A pair of picture hangers attached to the upper back will provide a convenient means to hang the clock.

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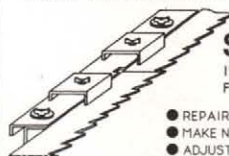
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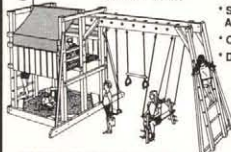
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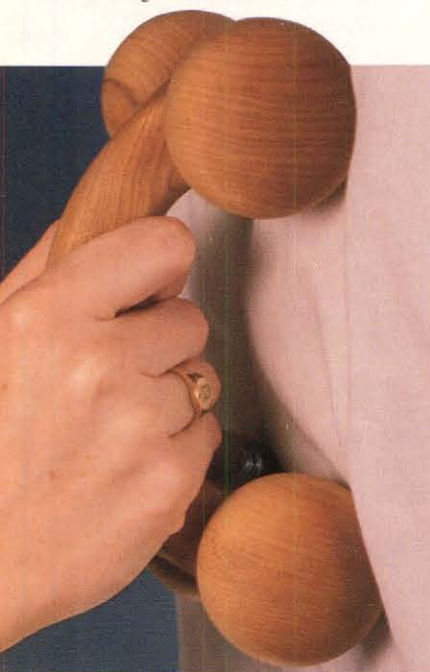
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Vol. 9 No. 6 Nov-Dec '85 Dulcimer, Dining Table, Shaker Washstand, Marking Gauge, Veneered Wall Clock, 4 x 4 Off-Roader, Teddy Bear Puzzle, Duck Pull-Toy, Landscape Cutting Boards, Early American Tall Clock, Desk Organizer, Moravian Chair; *Articles:* Weaving a Rush Seat, Part I; Table Saw Ripping Problems and Their Solutions; 4-Piece Book Match Veneering; Running a Profitable Business.



Back Massager M/J '89

Vol. 10 No. 4 July-Aug '86 Wall-Hung Display Cabinet, Latticework Planter, Country Bucket Bench, Adirondack Chair, Coffee Mill, Clamdigger's Basket, Box of Shapes Toy, Disk Clock, Tenon Jig, Dictionary Stand, Shaker Slat-Back Side Chair; *Articles:* Selecting the Right Project for Production; More About Warped Boards; All About Router Bits; Sliding Dovetail Joints.

Vol. 10 No. 5 Sept-Oct '86 Vanity Case, Stool, Coffee Table, Blanket Chest, Mortar and Pestle, Whale Folk Art Silhouette, Toy Wagon, Cranberry Rake, Router Bit Box, Shaker Drop-Leaf Table, Desk with Tambour Top; *Articles:* Are Your Prices Competitive?; Restoring a Rosewood Chair; Basic Router Operations; Making Tambour Doors.

Vol. 10 No. 6 Nov-Dec '86 Cube Table, Rabbit Pull Toy, Old-Time Sled Wall Shelf, Cassette Holder, Dog/Cat Bed, Vanity Mirror, Early American Washstand, Router Table, Victorian Sleigh, Early American Hamper; *Articles:* Wholesale and Discount Sources of Supply; Sandpaper Abrasives; Using the Router Table; The Mitered Bead Frame and Panel.

Vol. 11 No. 1 Jan-Feb '87 Glass-Top Dining Table, Dovetailed Stool, Jewelry Box, Door Harp, Toy Firetruck, Canada Goose Mobile, Balancing Sawyer Folk Toy, Early American End Table, Joiner Push Board, Shaker Blanket Chest; *Articles:* Defining the Market for Your Work; Old Wood; The Mortise and Tenon, Part I; Hand/Router Dovetailing.

Vol. 10 No. 1 Jan-Feb '86 Chippendale Bachelor's Chest, Oriental Serving Tray, Country Bench, Antique Knife Tray, Tape Dispenser, Valentine Box, Toy Tow Truck & Car, Shaker Drop-Leaf Table, Shop-Made Bow Saw, Child's Settle Bench, Plate Shelves, Freestanding Shelf System; *Articles:* On Getting Paid for Your Work; Weaving a Fiber Rush Seat, Part II; Table Saw Crosscutting; Router-Lathe Fluting; A Shop-Made Approach.

Vol. 10 No. 3 May-June '86 Contemporary Lamp, Early American Bench, Steam-Bent Clock, Pine Hutch, Goose Basket, Toy Crane, Condiment Holder, Shop Workstation, Parsons Table, Shaker Lap Desk, Victorian Whatnot Shelf; *Articles:* Toymaker Clare Maginley; Flattening Warped Boards; Choosing a Router; Supported Steam Bending.

Wooden Jewelry J/F '88



Vol. 11 No. 2 Mar-Apr '87 Garden Bench and Table, Mirrored Wall Shelf, Rhombohedron Puzzle, Wood Sawyer Whirligig, Folk Art Door Stop, Kangaroo Pull Toy, Colonial Wall Shelf, Contemporary Hall Table, Shaker Sewing Desk; *Articles:* How to Create a Direct Mail Promotion; Types of Finish; The Mortise and Tenon, Part II; Bevel-Edged Drawer Bottoms.

Vol. 11 No. 3 May-June '87 Kitchen Canister Set, Riding Biplane, Contemporary Serving Cart, Napkin Holder, Decorative Planter, Country Vegetable Bin, Medicine Cabinet, Shop Drum Sander, Vienna Regulator Clock, Display Pedestal; *Articles:* Penetrating Oils; The Joiner; Veneer, Part I; Dovetail Key Butt-Miter.

Vol. 11 No. 4 July-Aug '87 Early American Bookcase, Trash Container, Low-Cost Workbench, Country Basket, Desk Calendar with Pen & Pencil, Butterfly Pull Toy, Vanity Mirror with Drawer, Apothecary Chest, TV/VCR Cabinet; *Articles:* Shellac; The Hand Plane; Veneer, Part II; Incised Carving.

Vol. 11 No. 5 Sept-Oct '87 Contemporary Love Seat, Two-Drawer Platform Bed, Snail Pull Toy, Routed Trivets, Spice Rack with Chip Carving, Joiner's Tool Chest, Shaker-Style Step Stool, Turned Shop Mallets, Woodbox; *Articles:* French Polishing Made Easy; Plane Iron Sharpening; Making a Splayed Leg Drill Guideblock; Traditional Chip Carving; Shop-Tested: 12 Jigsaws; Making the Knuckle Joint.

Vol. 11 No. 6 Nov-Dec '87 Rocking Horse, Three-Drawer Jewelry Chest, Tapering Jig, Rolling Toy, Folk Art Silhouette, Two Towel Racks, Early American Style Wall Shelf, Corner Cupboard, Stacking Wine Racks, Curio Cabinet; *Articles:* Glues and Gluing; Band Saw Setup; Making the Continuous Bracket Foot; Step-By-Step To a Flawless Finish.

Vol. 12 No. 1 Jan-Feb '88 Contemporary Coffee Table, Puss 'n Books Bookends, Cookbook Holder, Wooden Jewelry, Child's Duck Puzzle, Shaker Wall Clock, Stereo Cabinet and Speakers, Country Occasional Table, Drill Press Jig, Early American Pierced Tin Cabinet; *Articles:* Edge-Gluing; The Drill Press; Pierced Tin; Four Shopmade Finishes.

Vol. 12 No. 2 Mar-Apr '88 Oak & Glass Tier Table, Crystal Regulator Clock, Early American Candlesticks, Arrow Wall Decoration, Three-Drawer Country Wall Box, Key Cabinet, Contemporary Box, Shaker Carrier, Folk Harp; *Articles:* Use and Sharpening of the Hand Scraper; The Lathe: Basic Setup; Quartered Turnings; Lacquer.

Vol. 12 No. 3 May-June '88 Loon Carving, Early American Dry Sink, Contemporary Dresser, Old-Time Pipe Box, Antique Knife & Fork Tray, Dutch Tulip Folk-Art Silhouette, Colonial Salt Box, Bud Vase, Miter Gauge Stop, Hunt Table; *Articles:* Spindle Turning; Selecting and Sharpening Lathe Tools; Recessed Finger Pull Step-by-Step; Coloring Wood; An Overview.

Vol. 12 No. 4 July-Aug '88 Magazine Rack, Occasional Table, Mitered-Corner Box, Heart Stool, Decorative Cutting Boards, Piggy Bank, Turned Bowl, Country Cupboard, Four-Drawer Lamp; *Articles:* Faceplate Turning; Workshop Layout; Cutting Dovetails on the Table Saw; Staining Basics.

Vol. 12 No. 5 Sept-Oct '88 Miter Cutting Jig, Captain's Clock, Country Coffee Table, Rooster Folk-Art Silhouette, Harvest Basket, Bird Push Toy, 18th-Century Pencil Post Bed and Nightstand, Bookcase Desk; *Articles:* Wood Movement; Joining Ring Segments; Drill Bits and Boring; Filling Open-Grained Woods.

Vol. 12 No. 6 Nov-Dec '88 Shaker High Chest, Table Saw Crosscut Box, Country Vegetable Bin, Whale Pull Toy, Colonial Wall Sconce, Treetop Christmas Ornament, Classic Pickup Truck, Contemporary Cradle, Child's Carousel Lamp; *Articles:* Flattening Wide Surfaces with the Hand Plane; Making a Cove-Edged Raised Panel; Core-Box Bit Method; Polyurethane; A Sander For Large Surfaces.

Vol. 13 No. 1 Jan-Feb '89 Shop-Built Disk Sander, Cherry Table, Wall Clock, Rock and Roll Toy, Contemporary Candlesticks, Merganser Decoy, Child's Table and Chairs, Shaker Wall Cabinet; *Articles:* Buying Hardwood Lumber; The Thickness Planer; Making Breadboard Ends; Ebonizing.

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Vol. 13 No. 5 Sept-Oct '89 Country Bake-Room Table, Chippendale Small Chest, Stacking Desk Trays, Pencil Box, Apple Doorstop, Space Shuttle Toy, Marquetry Coasters, Ice Chest with Marbleized Top, Globe Stand; *Articles:* Table Saw Basics; Cutting Full-Blind Dovetails; Marquetry: The Pad Method; Marbleizing; Mount Lebanon Shaker Village: A Museum in the Making; Tool Review: Four Portable Planers.

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Router Bits in the Drill Press; Finishing Outdoor Projects; Making Curved Instrument Sides; A Conversation with the Westovers.

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M/J '87

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Vol. 14 No. 6 Nov-Dec '90 Provincial 4-Poster Bed, Jewelry Box, Christmas Angel Folk Carving, Rocking Dolphin, Walnut Hand Mirror,

Perpetual Calendar, Hanging Bird Feeders, Country Pine Table, Shaker Chest of Drawers; *Articles:* The Shaper; Finishing Problem Woods; 20 Ways to Hang a Shelf; Inlaying Mother-of-Pearl.

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Vol. 15 No. 2 Mar-Apr '91 Redwood Potting Bench, Roadster, Early American Style Curio Shelf, Sink-Top Cutting Board, Pine Vanity, Window-Mounted Birdhouse, Octagonal Jewelry Box, Connecticut River Valley Highboy, Part 2; *Articles:* Spokeshaves; Tabletop Finishes; Wood Movement; An Easy-to-Make Wooden Hinge; Tool Review: Palm Sanders.



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Santa Fe Bench

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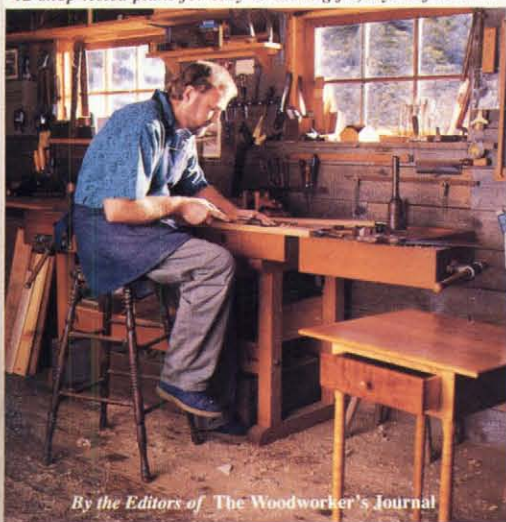
Vol. 15 No. 5 Sept-Oct '91 Colonial Bench, Shop-Built Mortising/Tenoning Table, Pine Wall Cabinet, Gun/Bookcase/Curio Cabinet, Tilt-Action Dump Truck, Four Easy-to-Make Kitchen Projects: Cooling Rack, Salad Tongs, Serving Board, Recipe Box; *Articles:* Secret Compartments; Making Dadoes: Simple Joints for Simple Casework; The New Safe Strippers: How Well Do They Work?; Tool Review: Scroll Saws for Under \$200.

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