

The Woodworker's Journal

Vol. 11, No. 6 \$3.00



Included in this issue:

- Corner Cupboard
- Three-drawer Jewelry Chest
- Rocking Horse
- Tapering Jig
- Rolling Toy
- Early American Wall Shelf
- Two Towel Racks
- Folk Art Silhouette
- Stacking Wine Racks



Curio Cabinet

November/December 1987

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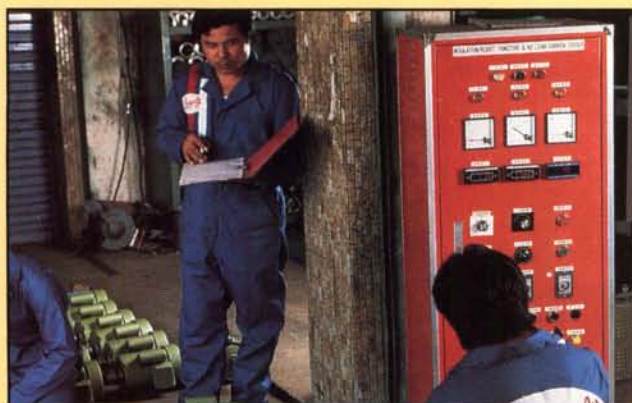
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The Woodworker's Journal

NOVEMBER/DECEMBER 1987 VOLUME 11, NUMBER 6

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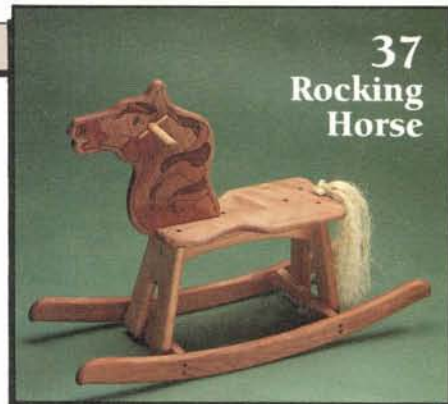
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Shoptalk

About This Issue

Woodworking is so interesting because there's always another approach to solving a problem or performing an operation. Too often most of us keep repeating the techniques of those who preceded us, but now and then some enterprising soul takes the time to work out a method that's a bit easier, safer or more accurate.

With the Curio Cabinet on page 32, we tried a different approach to making the bracket feet. It's always been difficult to clamp up the mitered halves of a molded bracket foot as there is little room or good purchase for the clamps.

Our solution was to make a deep mitered frame with the profile of the feet already cut and sanded. This frame was then more easily clamped and squared up with belt clamps. Later, the cove cuts were made around the frame to further shape the feet. The entire foot-frame assembly became the base of our cabinet, but for other cabinets or chests requiring separate bracket feet, the feet can be cut free from the upper frame (which becomes waste) and fastened in the usual way.

The tapering jig on page 44 represents another departure from the usual approach of using an adjustable arm hinged to another arm or box that slides along or straddles the rip fence. From the viewpoint of safety and accuracy, we prefer, if possible, to use jigs that ride in the miter gauge slots. Also, any device that can quickly and firmly clamp the workpiece is preferable to the use of fingers or hold-down sticks. Our jig offers both of these advantages.

In keeping with the holiday season, we've included a number of projects that will make great gifts. The rocking horse is almost a "must" gift for pre-schoolers and ours has lots of charm and is easy to build. If you don't want to get involved in the painted details of the horse's head, these extra touches can, of course, be omitted. It occurred to me, though, that this project would provide a good opportunity to use a woodburning tool to put in the details.

There's been some re-shuffling and additions to our staff lately. Dan Thornton has replaced Judy Robinson as Art Director. Judy left us for new challenges, but soon after, we were shocked and saddened to learn that she had died in an auto crash in Nevada. We owe much of our present image to Judy and our fond memories of her will always remain in the many issues which bear her artist's touch.

Maria Meleschnig recently joined our Art Department and Karen Roberts has replaced Linda Peet who left the relative peace and neatness of the reception area for the computerized clutter of the Circulation Department.

November is sometimes, as Herman Melville apparently felt, a gray, drizzly time. I'm thankful for the woodworking shop where time on a nasty day seems to glide by. If Melville had been a woodworker, he might have appreciated November; but then he might not have written *Moby Dick*. Few people are gifted enough to become grand masters of more than one craft.

Jim McQuillan



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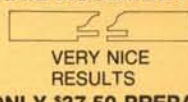
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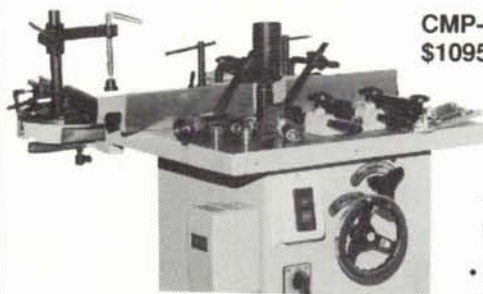
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Letters

Your jigsaw tool review (September/October 1987 issue, page 27) was excellent. Please do more of these, not fewer. It's just the type of information I want.

Robert O. Weisman
Ann Arbor, Mich.

Contrary to the resistance some readers have to periodic tool reviews, I find them enlightening. For me, you can put them in any time you want. I'm in the market for a jigsaw so your article and analysis fit my needs very well. You saved me time and were able to do a much better job than I could do.

Walter E. Eckel
Aiken, S.C.

Enclosed is a picture of our just finished "Riding Bi-Plane," using plans from the May/June 1987 issue of *The Woodworker's Journal*. The plane was made as part of the Vocational

Rehabilitation Therapy Program at the Veterans Administration Medical Center, Fort Howard, Maryland.

"Toys Through Therapy" was started in January 1984 as part of the Vocational Rehabilitation Therapy Program for disabled veterans, both hospitalized and those receiving outpatient therapy. The patients who are referred to this program make toys all year long to be donated at Christmas time to hospitalized children, thus continuing the therapy. Patients in the program are being rehabilitated for a variety of disabilities such as stroke, amputation, arthritis, and back pain.

This year, we decided to make one large project, in addition to the smaller toys. Looking through our library of magazines, we decided on your riding airplane, but added stars and stripes to dress it up!

Barbara Shane, Chief
Vocational Rehabilitation Therapy
Veterans Administration Medical
Center, Fort Howard, Md.



Veteran Joe Ewing, toymaker, with Miss Lauren Malecki, checking the flight pattern.

(continued on page 8)

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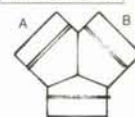
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Letters Continued

Your July/August 1987 issue had a list of hardwood suppliers (Cabinet-makers' Supplies, page 8). However, all of them are located in the eastern U.S. and shipping the lumber to California would be expensive. Can you provide a source of supply for your western subscribers?

R.K. Winkleblack
Arroyo Grande, Calif.

Here are a few sources you may find useful.

Arroyo Hardwoods
2585 Nina Street
Pasadena, CA 91107
(818) 304-0021

Bruce Bernson
2791 Painted Cave
Santa Barbara, CA 93105
(805) 964-5012

Cal Oak Lumber Co.
P.O. Box 689

Oroville, CA 95965
(916) 534-1426

Eureka Hardwood Supply
3346 D Street
Eureka, CA 95501
(701) 445-3371

Gilmer Wood Co.
2211 N.W. St. Helens Road
Portland, OR 97210
(503) 274-1271

I'm renewing my subscription for two years. I like your magazine because you have a good variety of subject matter in your departments, much of which has broad applicability and also because you give your readers a good, balanced range of projects from simple to rather complex. I'm not so interested in building the big projects, though I do look over the plans. Your "Gift Shop" designs in particular and some of the smaller projects

are more to my liking.

I hope you will continue that kind of coverage. I expect there are a good number of woodworkers who share my views and appreciate the range of subject matter in your informative and helpful articles.

Charles Ludke
Scotia, N.Y.

Can you tell me where I can get the carving knife shown in your Special Techniques article titled "Traditional Chip Carving" (September/October 1987 issue, page 23)? I've tried to purchase one locally without success.

W.W. Cooper
Evansville, Ind.

The knife is available from the Garrett Wade Co., 161 Avenue Of The Americas, New York, NY 10013. Order part no. 49D03.04. Their 1987 catalog shows it priced at \$6.95. Add \$2.60 for shipping and handling.

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Mr. E. L. Brendza
San Bernardino, CA

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C.M. Smeigh
Ft. Worth, TX

The Editor The Woodworker's Journal

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Events

We will be glad to list as many events of interest to woodworkers as space permits. Listings are free and may include shows, fairs, competitions, workshops and demonstrations. The issue closing date is the 1st of the 2nd month preceding the cover date (11/1 for January/February; 1/1 for March/April). Please address announcements to the Events Department.

New England:

A seminar, "Production Woodworking in the Small Shop," will be held Nov. 7-8, Brookfield Craft Center, Brookfield, Conn. (203) 775-4526.

The Brookfield Craft Center's Holiday Sale, Nov. 27 - Dec. 24, held at both the Brookfield and Norwalk, Conn. campuses.

Middle Atlantic:

Constantine's annual woodworking classes will be held at their headquarters, 2050 Eastchester Rd., Bronx, N.Y. through Dec. 12. Call (212) 792-1600 for registration information.

Woodworking World — The Central New York State Show, Nov. 6-8, New York State Fairgrounds, Syracuse, N.Y.

Woodworking World — The Philadelphia Area Show, Nov. 13-15, Hyatt Cherry Hill, Cherry Hill, N.J.

Inca Power Tool Demo, Nov. 7, Olde Mill Cabinet Shoppe, York, Penn.

Advanced Oak Drying Workshop, Dec. 1-3, Albany, N.Y. For information and enrollment

form, write to Paul Bois, 5118 Buffalo Trail, Madison, WI 53705 or call (608) 238-7097.

The 2nd Annual Fall Show of the South Jersey Woodcarvers, Nov. 21, Lenape High School, Medford, N.J.

East North Central:

Woodworking seminars held by Earl Richards will run through March, 1988. For information, write to Richards' Cabinetry & Mill Co., 410 W. Harrison St., Lewisburg, OH 45338.

West North Central:

The Midwest Woodworkers Association's 5th Annual Show and Sale, Nov. 7, National Guard Armory, Columbia, Mo. For info: Gary Straub, P.O. Box 7093, Columbia, Mo. 65201.

South Atlantic:

For information on woodworking classes at the Penland School and a copy of the Penland Journal, write to: Penland School, Penland, NC 28765 or call (704) 765-2359.

West South Central:

Application deadline for the 15th Annual "FestForAll" held in Baton Rouge, Louisiana

is Jan. 31, 1988. Send SASE to River City Festivals Assoc., 427 Laurel St., Baton Rouge, LA 70801.

Application deadline for the Houston International Festival's juried Crafts & Arts Exposition is Dec. 15, 1987. For prospectus and application, write to Barbara Metyko, Production Director, The Houston International Festival, 2 Houston Center, 909 Fannin, Suite 890, Houston, TX 77010.

Pacific:

National Working With Wood Show, Nov. 21-22, Anaheim Convention Center, Anaheim, Calif.

The Oregon Woodworking Show, Nov. 13-15, Convention Hall, Memorial Coliseum Complex, Portland, Ore.

The Western Washington Woodworking Show, Nov. 20-22, Seattle Center Exhibition Hall, Seattle, Wash.

For information and course listings for the Oregon School of Arts and Crafts, write to the school at 8245 S.W. Barnes Rd., Portland, OR 97225 or call (503) 297-5544.

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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 hopefully one of our readers will have an answer for you. Due to space limitations, we will be unable to list all requests, but we will include as many as we can.

Where can I obtain plans and parts for building a wood kaleidoscope?

Eli Eisenhard

RD #5 Box 630, Boyertown, PA 19512

I need a source of supply for swivels used in constructing bar stools.

Edwin F. Davis

Rt. 1 Box 4835, Rosedale, LA 70772

Does anyone know a source for plane irons for a Stanley No. 46 combination plane? I also need an owner's manual and parts list for a no. 55 wood lathe made by Tomlee Tool & Engineering.

E.R. Flower, 3215 Timberlark

Kingwood, TX 77339

I will be starting a wood shop that will have no electricity. I need information on building a hand-powered drill press or belt and pulley tools. I also need sources for woodworking tools built of wood and steel, and any

manuals, how-to books and plans.

Donald Baxter

3038 Hacienda Court

Marietta, GA 30066

I need to purchase parts for a B-24 band saw manufactured by Du-Er Tools, Minneapolis, Minn.

J.G. Rogers, Jr.

4795 Millbranch Rd.

Memphis, TN 38116

I'm looking for a supply source for cutter blades and an owner's manual for a Montgomery Ward 4 in. jointer. The model no. is either 93F8625A or 93F0525A.

Mark Lickers

325 Holiday Hill

Florissant, MO 63033

I need a dado cover, extension and owner's manual for a Sears 10 in. table saw, model no. 115.29992.

Bert Wayne

14 Fleetwood Ave.

Chestnut Ridge, NY 10977

Owner's Manuals & Parts Lists

Sears lathe, model no. 101.06242 *Al Perani, 5320 53rd Ave. E. Bradenton, FL 34203*

Craftsman 12 in. band saw, model no. 113.24290 *W. Bruce Wright 5509 Eagle Lake Dr., Charlotte, NC 28217*

Rockwell 10 in. wood lathe, model no. 46010 *Kurt Malmstrom 3746 Falcon Dr., Omaha, NE 68123*

Craftsman drill press, model no. 22214.103; Craftsman band saw, model no. 103.24260; Delta 6 in. jointer, model no. 37.5448 *Ron Holladay 2359 Jardin, Oxnard, CA 93030*

Sears tilting table saw, model no. 103.0214. A manual for any model would help. *J.W. Harrison, 2931 N. Edison St., Arlington, VA 22207*

Belsaw 12 in. surface planer, model no. 905 *Frank Foster, 45 E. Allen St. Fairhaven, MA 02719*

Parts list and supplier for 12 in. scroll saw, model no. 212A, made by Darra-James Power Tools, Toolkraft Corp., Springfield, Mass. *N.R. Haulman, 518 Locust St., Denver, PA 17517*

S.A. Woods Machine, model no. 808 *Ruth Pope Carolina Cabinet Designs, P.O. Box 284, Angier, NC 27501*

Toolkraft radial arm saw, model no. 910A (purchased 1960) *Len Hallman 333 Riverview Rd., Swarthmore, PA 19081*

Cabinetmaker's Supplies

Hardware Suppliers

As a service to our readers, *The Woodworker's Journal* periodically lists sources of supply for various woodworking products. In this issue we are listing companies that specialize in mail order sales of hardware.

Anglo-American Brass Co.

Box 9487, Dept. WJ
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975 S. Avocado St., Dept. WJ
Anaheim, CA 92805
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18th Century Hardware Co., Inc.

131 E. Third St., Dept. WJ1
Derry, PA 15627
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Horton Brasses

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Cromwell, CT 06416
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Imported European Hardware

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Las Vegas, NV 89118
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Rustic, and Modern

Lee Valley Tools Ltd.

2680 Queensview Drive, Dept. WJ
Antique Hardware Division
Ottawa, Ontario, Canada K2B 8H6
Catalog \$3.00
Original hardware from 1860
to present.

Meisel Hardware Specialties

P.O. Box 258J
Mound, MN 55364
Catalog \$1.00

Paxton Hardware Ltd.

7818 Bradshaw Road, WJ14
Upper Falls, MD 21156
Catalog \$4.00
Reproduction hardware (Chippendale,
Victorian, Federal, Queen Anne),
Miscellaneous hardware

Period Furniture Hardware Co.

123 Charles Street
Box 314 Charles St. Station
Boston, MA 02114
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The Wise Co.

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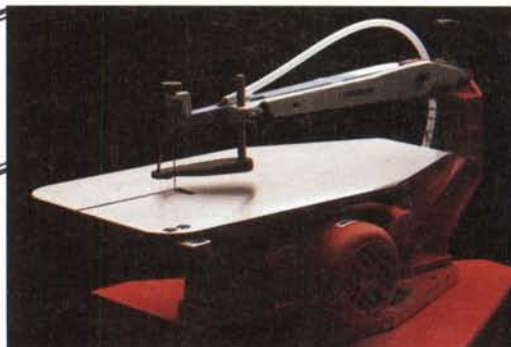
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Woodworking Basics

On Glues and Gluing



There is a generally accepted rule that any woodworking glue, when properly used in a good long grain-to-long grain application, will always be stronger than the wood itself. While this may be true, it is certainly not an indication that all glues are equal, or that they can be substituted one for the other. Factors such as work or assembly time, gap filling ability, resistance to moisture and chemicals, cure time, strength at temperature extremes, the types of woods being joined, and the function of the piece will all affect your choice of adhesive for the project at hand.

The most important aspect of using any adhesive is the proper preparation of the surfaces to be joined and the proper application of the glue. Surfaces to be joined must be planed or jointed flat so they will mate up accurately. The hand plane, or a sharp jointer or planer, will produce good surfaces for gluing. Avoid using machines or tools with dull knives, as dull cutters tend to pound or glaze the wood surface, making adhesion difficult. Since a clean surface is vital for proper adhesion, it is best to join surfaces as soon as possible after they have been milled.

The proper mixing and application of the glue is also an important part of any glue-up. No matter how perfectly a joint is cut, or how flat the stock is milled, the joint will only be as strong as the adhesive that is used. Follow the manufacturer's instructions to the letter. Things such as shelf life, moisture content of the wood, species of wood, grain orientation and proper application and clamping procedure can all affect the strength of the joint.

How Much Adhesive Should I Use?

In most glue-ups, with the obvious exception of situations where an adhesive is selected for its gap-filling property, the actual glue line should not exceed several thousands of an inch in thickness. The glue should cover the entire surface or edge of both parts to be joined with an even, uniform layer. A rubber roller, a popsicle stick or an old hacksaw blade all make good glue spreaders. When the correct amount of adhesive has been applied to a joint, there should be a small amount of glue squeeze-out all along the glue line. No glue squeeze-out is an indication that not enough adhesive was applied. Dripping, oozing, messy runout along the joint is a

sign that too much adhesive has been used. *Tip:* We recommend waxing surfaces where glue squeeze-out will present a finishing problem (remember, glue prevents adhesion of a stain or finish to the wood). The beads of glue will come off easily when dry, and the wax can be removed with acetone.

Clamping

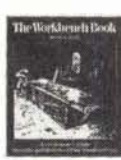
The types of clamps you will need and the amount of pressure that should be applied depends on many factors including the type of glue, the type of joint, and the glue surface area. For most common woodworking applications, the pounds per square inch (p.s.i.) of clamp pressure should range from 100 p.s.i. for softer woods such as pine, to 150 p.s.i. for medium density cabinet-grade hardwoods such as cherry and walnut, to 200 p.s.i. for denser hardwoods such as maple. Oily or resinous tropical hardwoods may require as much as 300 p.s.i. for optimum bonding.

There are exceptions to every rule, so be sure that you read the glue manufacturer's instructions. For example, when an epoxy adhesive is used, little or no clamp pressure should be applied, since a thick layer of epoxy

(continued on page 14)

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#W22520 2 1/4" \$7.30/20		\$22.00/100		\$4.77/100	
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#AP4 fits 2 1/4" - 2 3/4" \$1.60/20		\$8.00/500		#858 5/8" \$6.30/100	
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#705020 Front \$6.30/20		#1452 3/8" \$3.70/100		6" Brass & Porcelain Hooks	
#7050100 \$25.50/100		\$15.50/500		#6417 3 Prong \$5.85/ea	
(Order APA Peg for above)		#1454 1/2" \$3.80/100		#6416 2 Prong \$2.97/ea	
#705120 Dual Rear \$10.50/20		\$16.00/500		Black Hammer Hinge w/Screws	
#7051100 \$42.90/100		Birch Candle Cups		#1730 \$1.62/2	
#AP5 Axle Pegs for Dual Rear Wheel \$1.98/20		#7290 1" \$2.00/10		\$7.17/10	
\$9.00/100		#CC1 1 1/2" \$2.90/10		Brass Plated Hinges	
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#7280 2 1/2" \$1.90/10		#878 \$2.49/10		Screws for Above	
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Birch Country Pegs		#12C 12" \$5.99/ea		#81080 80gr \$11.50/50	
#1770 3 1/2" \$1.80/10		Clipboard Clips		#81060 60gr \$11.60/50	
\$13.00/100		#L5 3" \$5.55/ea		#81050 50gr \$11.70/50	
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#56 5 1/4" \$4.99/ea		Magnetic Strip		Sanding Belts 3" x 21"	
#585 9" \$8.85/ea		#120A 120" x 1/2" \$4.40/roll		#1700 120 gr \$12.20/10	
#S110 11" \$1.35/ea		Paper Towel Roller (spring loaded) #7238 \$1.19/ea		#1701 80 gr \$13.00/10	
Birch Dowel Pins		Toy Train Plans		#1702 50 gr \$13.50/10	
#1142 1/4" x 2" \$1.90/100		30" \$6.99/set		#1703 36 gr \$14.65/10	
\$8.50/500				3" x 24"	
#1382 3/8" x 2" \$2.00/100				#1704 120 gr \$13.10/10	
\$9.25/500				#1705 80 gr \$13.50/10	
				#1706 50 gr \$14.60/10	
				#1707 36 gr \$15.85/10	
				Sanding Belt Cleaner 8"	
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is required for a strong joint.

Since it is impossible to determine exactly how much pressure is being applied, our best advice here is experience. Be careful not to apply too much pressure, though, or you'll force all the glue out, which "starves" and weakens the joint. After a while you'll develop a feel for the amount of clamp pressure to apply.

The three most important things to remember with clamping are: first, use sufficient clamps; second, make certain that clamp pressure is distributed evenly over the entire glued surface; and third, use clamp blocks or boards to evenly distribute clamp pressure and to prevent the clamp jaws from marring your work.

Types of Adhesives

The science of how the molecular structure of adhesives works is a fascinating subject, but the bottom line on glues for the woodworker is not how they work, but that they do work. Keep in mind that most adhesives work best when they are applied to both mating surfaces of the work.

One-Part Ready-to-Use Adhesives

Aliphatic Resin: This is the traditional yellow woodworking glue. It produces a joint stronger than the wood itself, and requires only moderate clamp pressure for several hours or overnight at most. Because it has excellent "tack," parts can be hand held in place for certain applications. Aliphatic resin sands easily, does not clog the sandpaper, and tends to squeeze out and bead, rather than drip and run. The chief disadvantage is that it is not completely waterproof and its applications must be limited to interior woodworking.

Polyvinyl Resin Emulsions (Polyvinyl Acetate): Also called white glue, polyvinyl acetate is acceptable for most interior furniture (it has poor moisture resistance), but should not be used where the joint is subject to high stress. The fact that most brands require greater set time than the yellow glues, and the chance of failure if the joint is not otherwise supported (when under heavy sustained load), has meant that most woodworkers prefer aliphatic resin type adhesives. We

usually recommend yellow glue over white glue in applications where either would be acceptable.

Hide Glue (liquid): Modern liquid hide glues come in a ready-mix form, require no heating, and afford a much longer work time than flake type hide glue. Hide glues have good shear strength and minimal moisture resistance, if not subjected to repeated long-term exposure. Although hide glues had been the cabinetmaker's choice for centuries, modern synthetic adhesives offer superior strength, greater moisture resistance, and are not affected by most household chemicals, making them a more logical choice in most applications.

Water Mix Adhesives

Animal (also called "Hide"): Traditionally made from the hides, hooves, and tendons of animals, this was the strongest and best glue for woodworking until the development of the synthetic adhesives. Old-fashioned flake hide glue had to be mixed with water and heated in a glue pot. The joint then had to be assembled before the glue cooled and set up.

Plastic Resin (also called Ureaformaldehyde): Along with animal glue plastic resin is a water mix glue sold in a dry powder. The powder consists of a blended resin and hardener which are water activated. We use plastic resins for bent laminations and veneers, and they are ideal for any woodworking applications where work time, and resistance to water, solvents, and petroleum products is important. It has a moderate assembly time of about 15 minutes, and is non-staining. It also sands easily without clogging the sandpaper. But it is not a gap filler and therefore requires tight, even clamp pressure.

Two-Part Adhesives

Resorcinol: With one of the highest strength ratings of any adhesives, a moderate work time at room temperature, and a total resistance to water, petroleum products, alkalis, solvents, and temperature extremes, resorcinol is widely considered to be an ideal woodworking glue for articles that might be subject to such adverse conditions. With the accelerated set

time that is achieved when phenol type resorcinol is subjected to heat, it is a favorite for commercial applications and is most commonly used in the production of marine plywood. Use of resorcinol by the small shop cabinetmaker could be considered overkill, except where outdoor pieces are involved. Resorcinol is a two-part mix, with a powdered catalyst being added to a syrup-consistency resin.

Epoxy: There are almost as many varieties of epoxies as there are applications for them. Work time often varies from one type to the next, ranging from a few minutes up to an hour.

ADHESIVE	SAMPLE BRAND
Aliphatic Resin	Titebond Wood Glue Elmer's Carpenter's Glue
Polyvinyl Resin (Acetate)	Elmer's Glue-All
Hide Glue (Liquid)	Franklin's Hide Glue
Ureaformaldehyde Plastic Resin	Weldwood Plastic Resin
Hide Glue (Animal) Dry	Behlen's Ground Hide Glue
Resorcinol	Elmer's Waterproof Glue
Epoxy	Devcon (5 Min.) Elmer's (2 Hr.)
Contact Cement	Constantine's Veneer Glue, Formica Adhesive
Hot Melt	Sears
Cyanoacrylate	Elmer's Wonder Bond

Epoxy is comprised of a resin and a hardener which are usually mixed in equal parts. The advantages of epoxy are its waterproof quality, gap filling property, and sandability. Epoxy can be used to bond metal parts or practically anything else to wood, except teflon, polypropylene and polyethylene products. Given their relatively high cost, epoxies are most often used for small jobs.

Special Purpose Adhesives

Contact Cement: The primary use of contact cement in woodworking is the application of veneers or laminates over large surfaces where clamping

would be impractical. Because contact cements have less strength than other adhesives, they are not recommended for conventional joinery of any type. Gluing with contact cement involves the use of a "slip sheet" layer of waxed paper that is positioned between the two contact cemented surfaces. The paper is gradually withdrawn, permitting the surfaces to make contact and bond.

Hot Melt: Hot melt glues, sold in cartridges that are inserted into an electric glue gun, are useful for temporary tacking. While they are waterproof and very fast setting (less than a

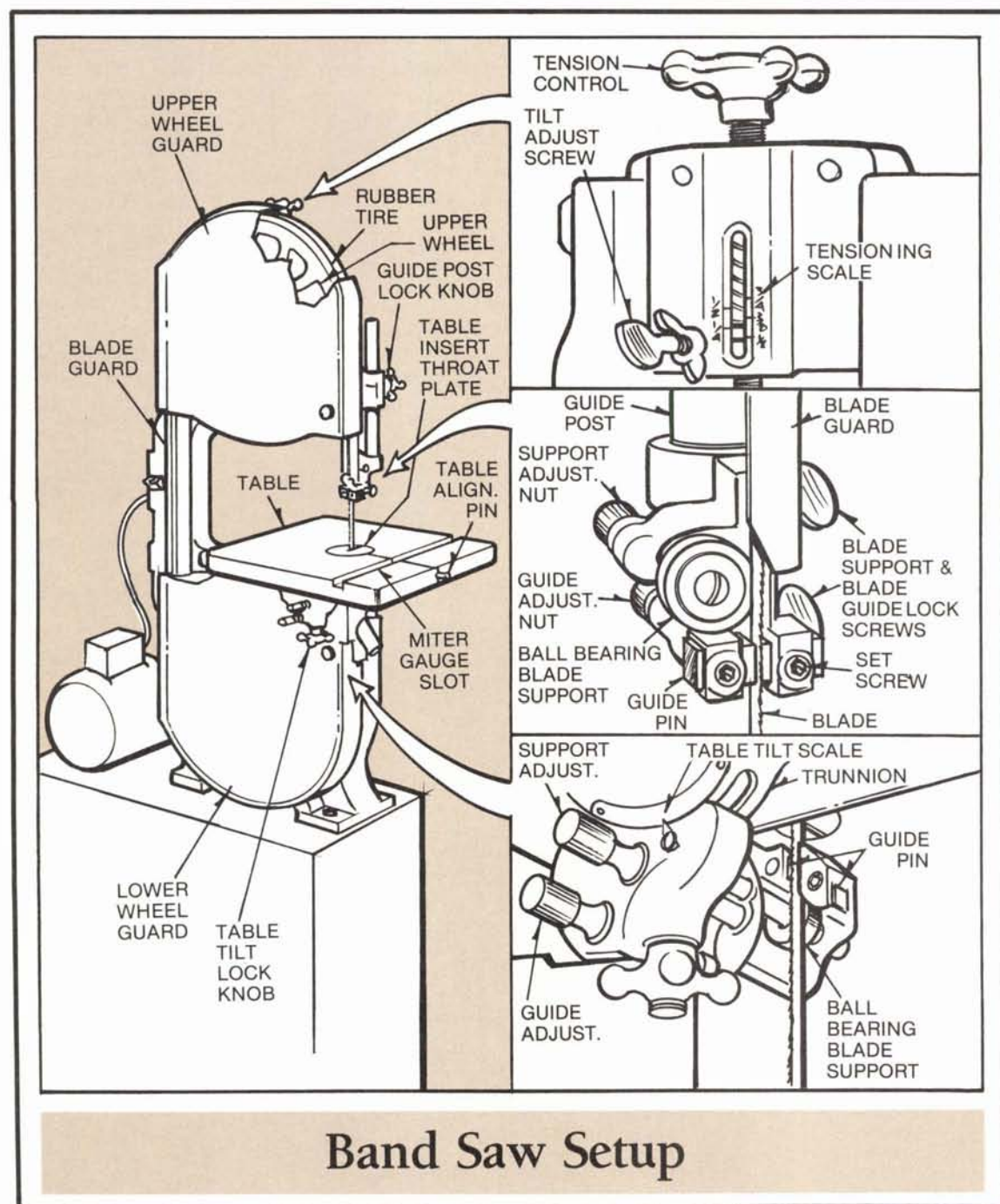
minute), the bond does not appear to have a good shock resistance, and can usually be broken off with a sharp blow from a hammer. We use hot glue primarily for making up temporary jigs and fixtures.

Cyanoacrylate: This is the so-called "super" glue that "bonds anything." It sets up in several seconds, and is ideal for applications where clamping would be difficult. It has no gap filling property and a low resistance to shock. We've used this adhesive in the assembly of a puzzle with many small parts, which were simply hand held in place for several seconds until the bond set.

Wwj

PREPARATION	WORK ASSEMBLY TIME, TEMPERATURE	CLAMP TIME AT 70°	ADVANTAGES (A), DISADVANTAGES (D)	COMMON USES
Ready to use	Less than 8 min. work time after application. Use above 45°.	1½ hr.	(A) Spreads easily, moderately sandable.	Interior woodworking
Ready to use	Less than 10 min. work time after application. Use above 60°.	1½ hr.	(A) Non-staining, Nontoxic; (D) Subject to creep, not water resistant.	Light duty interior work
Ready to use	20 min. work time. Use above 72°.	2-3 hrs.	(A) Long work time.	Authentic reproduction work; canvas-to-wood (tambours)
Mix with water as per instructions	Work time is less than 15 min. after application. Do not use below 70°. Pot life 2-5 hrs.	Minimum 14 hrs.	(A) Non-staining, sands easily, water resistant; (D) Moderately expensive.	Outdoor furniture, bent laminations
Mix with water, heat to 145° (requires glue pot)	20 min. work time after application. Pot life about 1 week (can be reheated).	2-3 hrs.	(A) Long work time.	Authentic reproduction work
Mix liquid resin with powdered hardener	Work time up to 30 min. at 70°. Do not use below 70°. Pot life 3-4 hrs. at 70°; 1 hr. at 90°.	Minimum 20 hrs.	(A) Long work time, insoluble to organic solvents, waterproof, sandable; (D) High cost.	Outdoor furniture, boat building, bent laminations
2 part liquid, mix 1:1 or 2:1 depending on formula	5 min. to 1 hr. work time, depending on formulation. Use at any temp. Pot life 5 min. to 1 hr. depending on formula.	Not usually clamped, light clamp pressure only if needed.	(A) Good gap filler; (D) May fail if heated.	Metal-to-wood, good for teak, exotics, acidic woods, sloppy joints
Ready to use	Apply to both surfaces, let dry to touch (about 20 min.) then mate together. Do not use below 65°.	Not clamped; pressed in place.	(special purpose)	Veneer, plastic laminates to substrate
Ready to use (requires glue gun)	Run bead with glue gun, immediately bond parts.	15-20 seconds	(special purpose)	Jigs & fixtures, temporary mock-ups, fabric to wood
Ready to use	Bond parts immediately.	Several sec. to 1 min., depending on product; clamps usually not req'd.	(A) Super fast or instant bond.	Small work that cannot be clamped

In The Shop



Band Saw Setup

The band saw is one of the most versatile stationary power tools available to the woodworker. It can straight cut (either freehand or with the fence), resaw, rip, miter, and bevel. It can make all varieties of curved cuts, compound cuts, circle cuts, and when employed with a pattern, can be used to make duplicate or multiple pieces.

For all its versatility, however, the band saw can be a frustrating tool to use if it is not set up properly. A blade that does not "track" correctly will not cut true, and is liable to be "thrown" or come off the wheels. While setting up the

band saw is not difficult, it is an often overlooked and sometimes confusing aspect of using this shop tool.

In the following step-by-step procedure, we'll guide you through the basic setup of the typical 14 in. band saw from start to finish. Keep in mind that the size of the band saw is usually determined by the diameter of its wheels, and that your band saw may differ somewhat from the saw illustrated in our diagrams. For example, some band saws may have ball bearing roller guides, rather than the guide pins shown in our illustration.

(continued on page 18)

RYOBI TOOLS

Model	List	Sale
S500A 3x5 1/2 Finish Sander	70	36
SU6200 Finishing Sand 1/2 Sheet	142	99
B7075 3x21" dustless Belt Sand	179	116
B7100 3x24" dustless Belt Sand	208	140
B7200A 4x24" dustless Belt Sand	269	165
TS380 14" Mite Box	629	385
W640 7 1/4" 13 amp circular saw	158	99
W740 8 1/4" 13 amp circular saw	171	125
J560 Jig Saw-Single Speed	172	99
J560 Jig Saw-electronic vsped	198	123
R150 1 H.P. Plunge Router	138	99
R331 2 H.P. Router	220	159
R500 3 H.P. Router	265	163
E3800 Drywall screwdriver 0-4000	126	79
L120U 3 1/4" Planer	142	99
801020ARK 1/2" 2-sp. Cordless Drill		
w/ free holster-Xtra special buy	148	95
TS251U 10" Mite Box	300	179
SG1000 4 1/2" H.D. Mini-Grinder	99	59

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MR 4445S Polypropylene Hdles.	44.40	27.00
MR 3735S Splitproof Hdles.	44.70	35.75
MR 3735S Boxwood Hdles.	56.50	45.00
MR 2705S Trad. Rd. Ash Hdles.	30.85	24.70

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DOWL-IT JIGS

Model	List	Sale
#1000 Self-Centering	33.95	23.95
#2000 Self-Centering w/Bushings	42.95	31.95
#04-059 Stanley Dowl Jig	49.95	28.95
Dowl Crafter Jig	44.95	34.00

LEIGH DOVETAIL JIGS

Model	List	Price
D1258-12	299	235
D1258-24	359	285
D1258-36	449	375
TD 514L	219	165

DELTA BENCH TOP TOOLS

Model	List	Sale
23-700 Wet/Dry Grinder	120	
23-680 6" Bench Grinder 1/2 H.P.	65	55
23-880 8" Bench Grinder 1/2 H.P.	104	89
11-950 8" Bench Drill Press	130	105
14-040 14" Bench Drill Press	262	220
40-500 15" Hobby Scroll Saw	110	90
28-160 10" Bench Band Saw	166	138
17-900 16 1/2" Drill Press	332	265
40-150 15" Scroll Saw 1.6 AMP	165	135
31-950 1" Belt Sander 2.0 AMP	69	65
31-460 4" Belt/6" Disc Sander		
1/2 H.P. 4 AMP	165	135

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LU82M010	Cut-Off	10"	60	86.40	44
LU84M011	Combination	10"	50	74.51	37
LU85M010	Super Cut-Off	10"	80	110.88	62
LM72M010	Ripping	10"	24	64.85	34
DS 306	6" Dado			139.00	92
DS 308	8" Dado			170.00	105
PS203	Gen'l Purp.	7 1/4"	24	27	17.50
PS303	Plywood	7 1/4"	40	33	20.50

MAKITA CORDLESS

Model	List	Sale
6002DWK 1/2" Drill Kit 2 Spd. Rev.		
7.2 v	178	91
60700W 1/2" Var. Spd. Rev. 7.2v	108	57
60710WK 1/2" Var. Spd. Rev.		
w/ removable batt.	180	102
4300DW Jig Saw	188	99
50810W 3 1/4" Saw Kit	212	95
5600DW 6 1/4" Circular Saw	284	125
90350W Finishing Sander	168	73
6010DWK 1/2" Cordless Drill Kit	174	88
90350W 1/2" Cordless Drill	94	45
84000W 1/2" Hammer Drill	224	105
DA3000W 1/2" Angle Drill	218	98
6010DL 1/2" Drill w/Flashlight	188	89
90320W 1/2" 2 spd Driver Drill		
w/Bat & Metal Case	208	98
DK1002 1/2" Drill w/Fluorint Lt.	176	90
67100W Cordless Screwdr Kit	176	84

Model	MAKITA BATTERIES	List	Sale
7.2 Volt		40	27
9.6 Volt		44	29
10.8 Volt		99	56

MAKITA TOOLS

Model	List	Sale
5007NBA 7 1/4" Saw w/Elec. Brake	186	114
5008NBA 8 1/4" Saw w/Elec. Brake	212	130
804510 Sander	92	43
9900B 3" x 21" belt sander	234	119
9924B 3" x 24" belt sander	222	130
9924DB 3" x 24" bisand. w/bag	248	130
9035 1/2" sheet finish sander	96	48
9045B 1/2" sheet finish sander	186	90
9045N 1/2" sht fin sand w/bag	190	105
4200N 1/4" circ. saw 7.5 amp	182	93
5219NA 10 1/4" circ. saw 12 amp	438	215
4300BVP vsp jig saw 3.5 amp	234	117
4318BVP orb vsp jig saw 3.5 amp	248	125
JR3000W 2 1/2" recip saw w/case	198	110
LS1000 New 10" Mite Box	396	198
9820-2 Blade Sharpener	288	159
410 Dust Collection Unit	410	269
3705 Offset Trimmer	218	115
1900B 3 1/4" planer w/case	198	93
1100B 3 1/4" planer w/case	328	166
92075PC 7" Sander-Polisher	250	140
3601B 1 1/2" hp router	218	115
3700B 1 1/2" hp trimmer	162	82
3705B 4" Grinder Kit	119	55
804530 6" Round Sander	98	48
DA3000R 1 1/2" angle drill	212	129
DP4700 1 1/2" angle drill 4.8 amp	178	92
JR3000W 1 1/2" v.s. hammer drill w/c	168	98
6300LR 1 1/2" angle drill w/c	288	152
9418B-2W 1 1/2" s.s. hammer w/c	268	150
2700W 5 1/4" Table Saw	348	209
GV5000 Disc Sander	108	53
6800DB 2500 rpm 3.5 amp	146	79
6800DBV 0-2500 rpm 3.5 amp	156	89
6801DB 4000 rpm 3.5 amp	146	79
6801DBV 0-4000 rpm 3.5	156	89
2030M 12" planer/jointer	2580	1475
2040 15 1/2" planer	280	1195
1805B 6 1/2" planer kit w/case	498	265
JP1600 var speed jig saw	178	89
JP2000 var speed orb. jig saw	198	100
5005BA 5 1/2" circular saw	192	98
5007NB 7 1/4" Circ. Saw	158	94
9503BH 4 1/2" sander-grinder kit	166	95
4014KV var/speed blower	166	79
DP3720 1 1/2" drill Rev. 0-1800 rpm	99	47
6510LVR 1 1/2" drill Rev. 0-1500 rpm	144	65
6013BR 1 1/2" Drill rev. 6 amp	208	100
5402A 16" Circular Saw - 12 amp	542	315
3612BR 3 HP Plunge Router	338	172
9401 4x24 belt Sander w/bag	288	160

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5625 (562) 6 1/2" Circ. Saw	164	108
5650 (563) 7 1/4" Circ. Saw	164	108
5665 (564) 8 1/4" Circ. Saw	185	118
5750 (807) 7 1/4" Circ. Drop Foot	175	115
5765 (808) 8 1/4" Circ. Drop Foot	204	130
5790 (810) 10 1/4" Circ. Drop Foot	350	225
5825 (367) 8 1/4" Worm Saw	252	135
5865 (826) 8 1/4" Worm Saw	277	149
3810 10" Mite Saw	349	169
7565 Palm Sander	69	37

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73-717	7-1/4"	18	11.72	6.45
73-737	7-1/4"	24	14.92	8.20
73-757	7-1/4"	40	27.40	15.10
73-758	8"	40	39.90	21.95
73-759	8-1/4"	40	40.66	22.35
73-739	9"	30	29.52	16.25
73-769	9"	60	64.40	35.40
73-740	10"	32	30.98	17.00
73-770	10"	60	64.90	35.75

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#40	5"	2 1/2"	12.45	8.10	43.75
#30	6"	3"	13.36	8.50	45.95
#20	7"	3 1/2"	14.36	8.95	48.35
#10	8"	4"	15.97	9.95	53.75
#2	12"	8 1/2"	20.94	13.60	72.95
#3	14"	10"	25.56	16.75	91.35
#4	16"	12"	34.55	23.75	128.25

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3548	48"	27.62	16.50
3560	60"	30.77	18.50
3572	72"	33.26	19.95

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MZ All Purpose	440	330
SN4 Const. Framing, etc.	635	485
LS2 Moulding & Trim	325	259
LS4 Moulding & Trim	330	265

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Model	Jaw Length	List	Sale	Lots of 6
#3708 6"		7.88	5.50	29.70
#3712 12"		8.73	5.95	32.13
#3718 18"		9.84	6.95	37.53
#3724 24"		10.54	7.35	39.69
#3730 30"		11.76	8.25	44.55
#3736 36"		12.85	8.95	48.33

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Model	Jaw Length	List	Sale	Lots of 12
#50 for 1/4" Black Pipe	11.23	7.15	79.00	
#52 for 1/2" Black Pipe	9.36	6.10	67.50	

★★ MAKITA NEW TOOLS ★★

Model		List	Sale
6092DW	Cordless Driver Drill Kit 2 Spd-var spd rev w/o clutch-complete w/case	208	106
6093DW	Cordless Driver Drill Kit 2 Spd-var spd rev and 6 stage torque setting complete w/case	224	119
6891DW	Cordless Drywall Screwdriver Kit 0-1400 R.P.M.-Lt. weight - 2.9# complete w/case	204	109
3620	1 1/4" H.P. Plunge Router 7.8 amp-24,000 R.P.M. complete w/case	166	89
4302C	Electronic Jig Saw orbital, var spd. 6 amp	256	139
5077B	7 1/4" Hypoid Saw (similar to worm drive) 13 amp-4,300 R.P.M.	250	

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	#02	3/8" R	3/8"	1 1/4"	9/16"	14.00
	#03	1/2" R	1/2"	1 1/2"	5/8"	15.00
	#04	ROUND OVER 1/4" R	1/4"	1"	1/2"	15.00
	#05	3/8" R	3/8"	1 1/4"	5/8"	16.00
	#06	1/2" R	1/2"	1 1/2"	3/4"	19.00
	#07	ROMAN OGEE 5/32" R	5/32"	1 1/4"	15/32"	18.00
	#08	1/4" R	1/4"	1 1/2"	3/4"	20.00
	#11	3/8" RABBETING	Deep 3/8"	1 1/4"	1/2"	14.00
	#09	1/8" (KERF) SLOT CUTTER		1 1/4"	1/8"	14.00
	#10	1/4" (KERF) SLOT CUTTER		1 1/4"	1/4"	14.00
	#12	45° CHAMFER	45° Angle	1 1/2"	5/8"	15.00
	#15	RAISED PANEL	20° Angle	1-5/8"	1/2"	25.00
	#35	1/4" V Groove 90°		1/4"	1/4"	8.00
	#36	3/8" V Groove 90°		3/8"	3/8"	9.00
	#37	1/2" V Groove 90°		1/2"	1/2"	11.00
	#16	3/8" Dovetail 9°		3/8"	3/8"	7.50
	#17	1/2" Dovetail 14°		1/2"	1/2"	8.50
	#18	3/4" Dovetail 14°		3/4"	7/8"	10.50
	#19	CORE BOX (ROUND NOSE) 3/8" Core Box	3/16"	3/8"	3/8"	11.00
	#20	1/2" Core Box	1/4"	1/2"	11/32"	14.00
	#21	3/4" Core Box	3/8"	3/4"	5/8"	18.00
	#22	GROOVE FORMING OGEE 1/2" Grooving Ogee		1/2"	3/8"	16.50
	#23	3/4" Grooving Ogee		3/4"	7/16"	21.00
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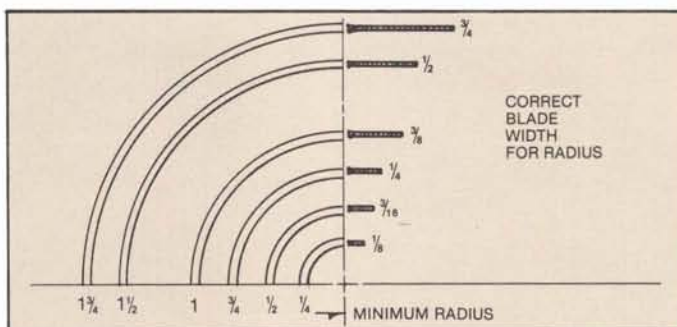
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In The Shop

Continued

Choosing The Right Blade

The right blade for the job at hand is important. For general band saw work, most woodworkers prefer to run either a 1/4 in. or 3/8 in. skip-tooth blade. The blade size refers to its width, and the width will limit the size radius that can be cut. Refer to the blade width illustration and radius cutting chart for proper selection of a blade for curved or circle cuts. Remember for resawing or ripping on the band saw, the wider the blade, the better.



Step-By-Step Setup

Refer to illustrations for part identification and location.

Step 1: Release the tension control knob, remove the table alignment pin and throat plate, and remove the old blade.

Step 2: Prior to installing a new or different blade, back both the upper and lower guide pin assemblies and ball bearing blade support mechanisms away from the blade. If you will be changing to a thicker blade, use the set screw to loosen the blade guide pins.

Step 3: Blow off all sawdust, including any on the upper and lower wheels.

Step 4: Mount the new blade. Gradually rotate the upper wheel by hand while tensioning the blade with the tension control knob. Make certain that the blade is positioned correctly between the guide pins. Adjust the tilt adjusting screw, if necessary, to correct a blade that refuses to track true and runs off the wheel. When the blade is tracking accurately — that is, running centered on the rubber tire — it should be fully tensioned. Any further adjustment of tension may affect tracking. Where an accurate tension scale or measurement device is not available, correct tension is usually a matter of feel. You should be able to deflect the blade slightly with moderate pressure, but keep in mind that wider blades will require more tension. Conversely, narrow blades will stand only light tension.

Step 5: Switch the saw on and off quickly several times to check tracking; then bring up to speed and let it run. Now turn the support adjusting nut to bring the ball bearing blade support to where it just grazes the back edge of the blade. Note that the bearing should not be turning (in constant contact with back of the blade) unless a cut is being made. This

(continued on page 20)

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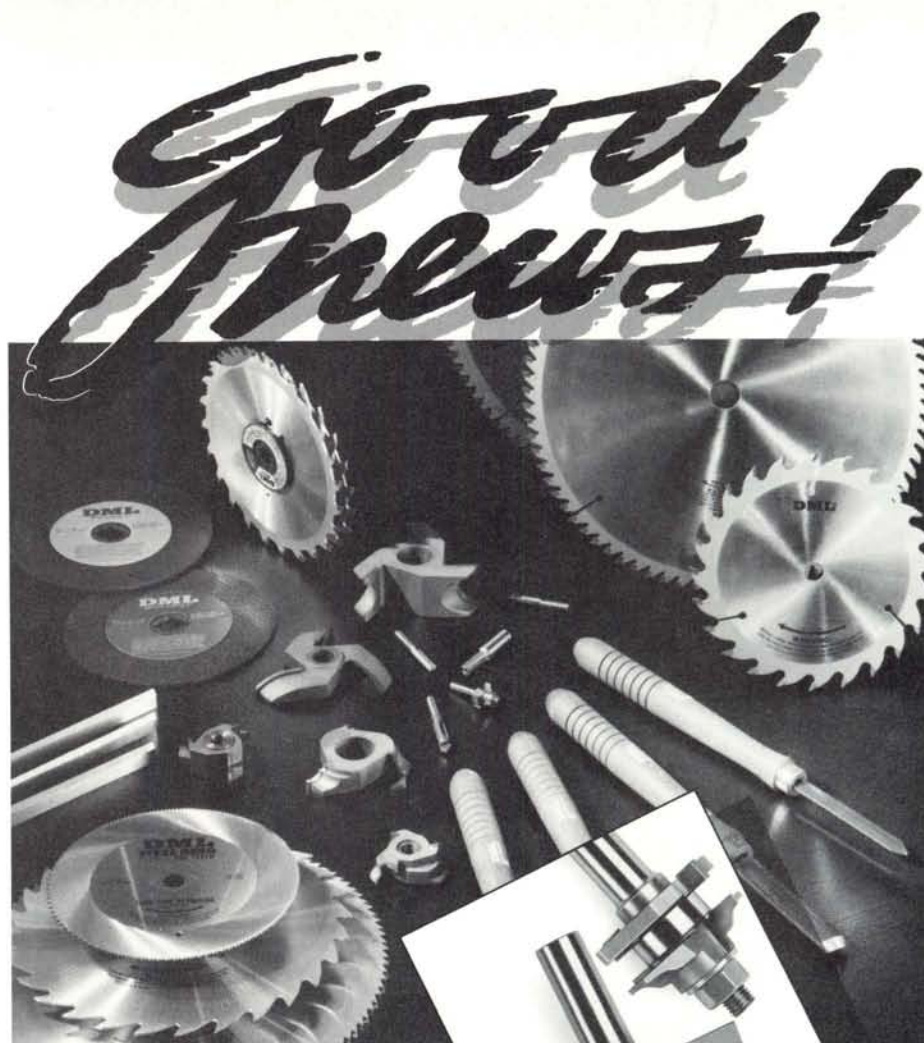
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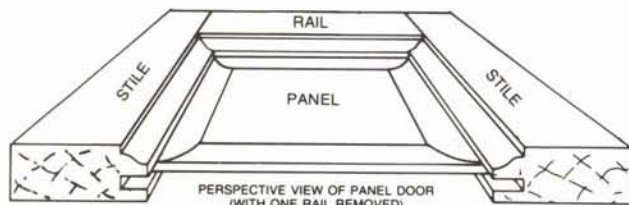
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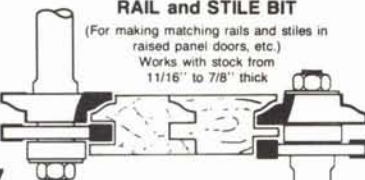
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In The Shop

Continued

bearing serves to support the blade when it is under load. Repeat with the lower ball bearing blade support, and lock both in place with their respective blade support lock screws.

Step 6: Turn the saw off. Now turn the guide pin assembly adjusting nut to bring the guide pin assembly forward until the guide pins are just shy of where the tooth set starts. Lock in place with the blade guide locking screw, and repeat with the lower guide pin assembly.

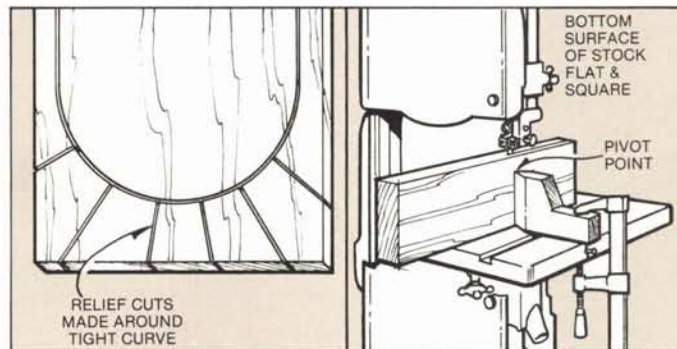
Step 7: Bring in the blade guide pins so they barely skin the sides of the blade. One common method is to use a slip of paper between the guide pins and blade, although we usually do this by eye. Repeat this adjustment with the lower blade guide pins, and lock in place (most saws use a set screw requiring an allen wrench).

Step 8: Replace the blade insert, table alignment pin and the wheel and blade guards.

Common Operations

The two most common band saw operations are curved or circle cutting and resawing.

Curved or Circle Cutting: When making curved or circle cuts, be careful, don't rush, and follow the line. The selection of a blade that will accomplish the desired radius is the critical issue. Our chart should help here. With difficult, tight cuts, it is important to first make a series of relief cuts, as shown. Always make the shortest cuts first. Remember that backing out of cuts is tricky, and may pull the blade off the wheels. If you must back out of a difficult cut, shut the saw off and back the blade out by hand.



Resawing: Resawing can be accomplished using the fence if the blade tracks accurately (i.e. parallel to the fence), or using the pivot point (see illustration) if the blade wanders, or does not run true.

The important thing to remember when resawing is that the table must be square to the blade. Most band saws have a table leveling adjustment screw that can be used to bring the table in true.

The second critical element in resawing is that the bottom edge (the surface in contact with the table) of the stock being resawed is perfectly flat and square. If it is not, the resawed

(continued on page 22)

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0214-1 Cordless Drill - V.S.P. 7.2 Volts	195	119	6012 1/2 Sheet Sander 5 amp	179	115
0222-1 3/8" V.S.R. Drill	165	97	6014 1/2 Sheet Sander 5 amp	189	120
0228-1 3/8" V.S.R. Drill	145	78	6165 12" H.D. Chop Saw	329	209
0234-1 1/2" V.S.R. Drill	179	105	6170 14" H.D. Chop Saw	349	219
0244-1 1/2" V.S.P. Magnum Drill	179	115	6232 Band Saw 4 1/2" w/case	452	305
0375-1 3/8" Close Quarter Drill	195	125	6305 H.D. 6 1/4" Cordless Circular Saw 12 Volts - 3400 R.P.M.	239	169
1001-1 1/2" D-Hole Rev. Drill	207	125	6366 7 1/4" Circular Saw w/CT Blade and Rip Fence	187	105
1107-1 1/2" D-Hole V.S.R. Drill	222	145	6368 Same as above except includes case	216	125
3002-1 1/2" Rev. Electricians R.A.D. Kit	290	185	6377 7 1/4" Worm Drive Saw	275	165
3102-1 Plumbers Rt. Angle Drill Kit	295	165	6507 Sawsall V. Sp. Complete w/cs	219	129
3107-1 Plumbers Rt. Angle Kit V.S.R.	305	195	6539-1 Cordless Screwdriver 2.4 Volt - 190 R.P.M.	103	66
3300-1 Electrician Rt. Angle V.S.R.	279	185	6750-1 Drywall Gun 4.5 amp 0-4000 R.P.M.	141	90
1676-1 H.D. Hole Hawg w/cs 2-sp.	375	249	6753-1 Drywall Gun 3.5 amp 0-4000 R.P.M.	125	79
1660-1 H.D. Compact Hole Shooter	239	159	6747-1 Drywall Gun 4.5 amp 2500 R.P.M.	141	100
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5348 1 1/2" VS Rotary Hammer Kit	768	460	8977 Heat Gun - Var Temp.	108	73
5397-1 3/8" Hammer Drill Kit V.S.R.	227	155			
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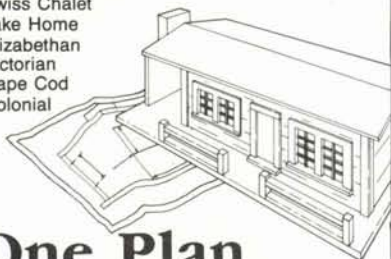
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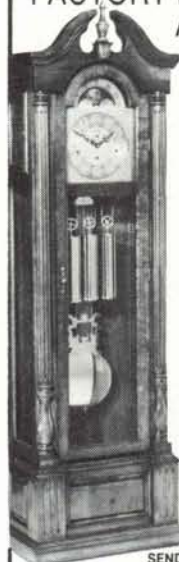
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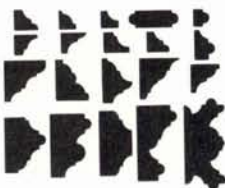
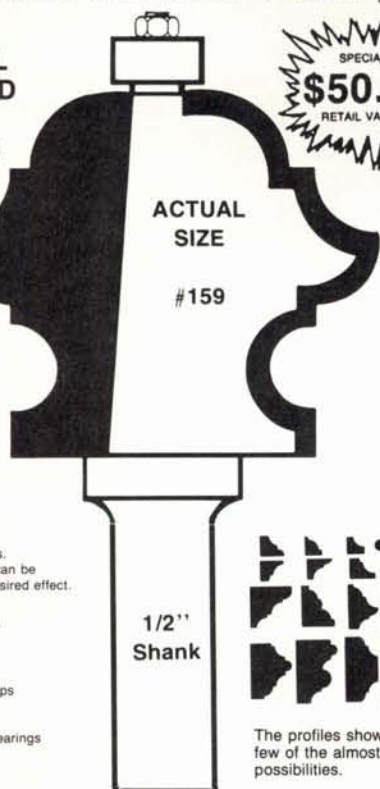
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In The Shop Continued

stock will not be square. We usually prepare this surface on the jointer to square and flatten it.

Note: One of the most common (and frustrating) problems with band saws is the inability to obtain a perfectly square-to-the-table, accurately tracking blade. Since the problem may be traced to poor castings, an out-of-alignment guide post, or any number of other possible causes, such problems usually require a thorough inspection of the saw, and may involve replacement of suspect parts.

Safety

Although the band saw is one of the safer stationary power tools, careful operation should be no less an important consideration than with other power tools. The following check list can be posted near the saw as a reminder. W&J

Safety Check List

1. Check blade tension and position (teeth face down) before starting the saw.
2. Do not attempt to cut with a worn throat plate. Small pieces may jam and cause the blade to break or be thrown.
3. Inspect stock for presence of nails, screws or other hardware or fasteners.
4. Position the guide post so that the guide pin assembly is approximately $\frac{1}{4}$ in. above the highest point of the stock being cut. A properly positioned post will produce more accurate cuts, since the blade will have maximum support.
5. Always maintain control of the stock being cut. Never remove both hands at once even for the briefest moment when the saw is running.
6. Keep your hands, arms, and fingers to the side of the blade and never directly in line with it.
7. Never stand to the right of the blade (or permit friends to do so). A broken blade can snake out in that direction.
8. Use an adjustable roller support or a helper when cutting long stock.
9. Do not snatch waste pieces out of the throat plate while the blade is in motion.
10. Immediately turn the saw off if the blade breaks or is thrown.
11. A regular ticking sound may indicate a cracked blade that is possibly about to break. Replace the blade.
12. Always use a V-block or other appropriate jig for cutting round stock. Without the proper support, round stock will catch on the blade teeth and rotate out of control.

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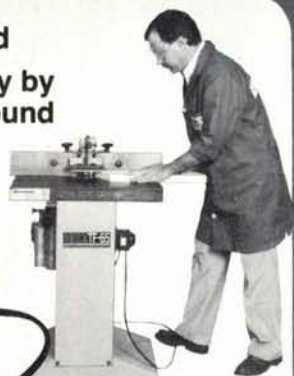
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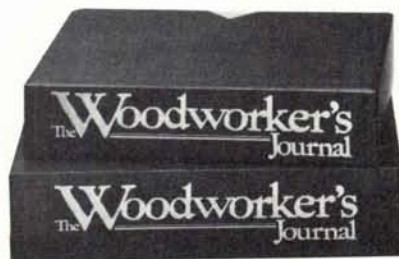
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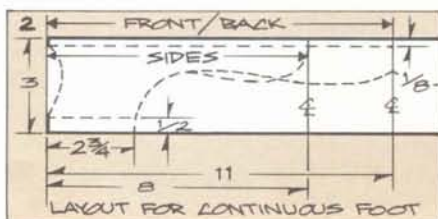
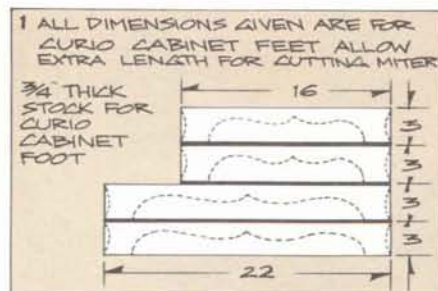


Making The Continuous Bracket Foot

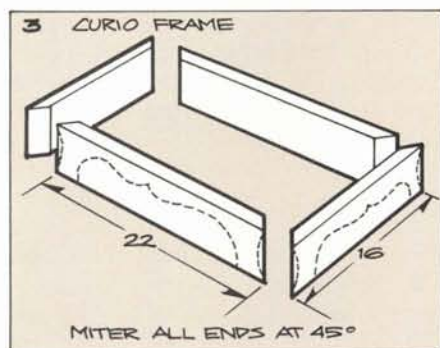
The traditional shaped and molded bracket foot had its origins in Renaissance Europe, and reached a culmination of refinement and design with Chippendale in the 1700's. Understandably, it is widely recognized as one of the loveliest details of classic furniture design.

The molded continuous bracket foot that we employ in the curio cabinet (pages 32-36) is derived from the traditional foot, but features a more contemporary flavor. In building the curio cabinet, we discovered that a unique step-by-step procedure, involving first cutting the bracket profile, and then making a frame and molding the cove shape vastly simplified the construction process. Taking this new procedure one step further, we found that with a few modifications the same concept could be applied to making the traditional shaped and molded in-

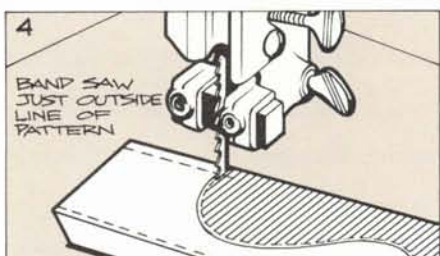
dividual bracket foot. In a future issue, we will show this procedure being used to create the traditional individual bracket foot.



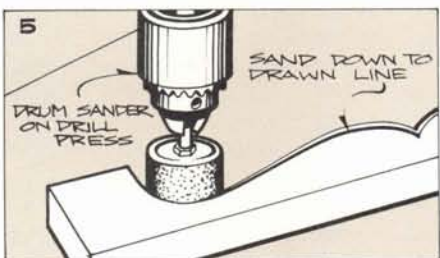
Steps 1 & 2: The continuous bracket foot base assembly is simply made to the size needed. The frame size will depend on the project and the size foot required, but for clarity, our illustrations use dimensions and settings as they apply to the curio cabinet.



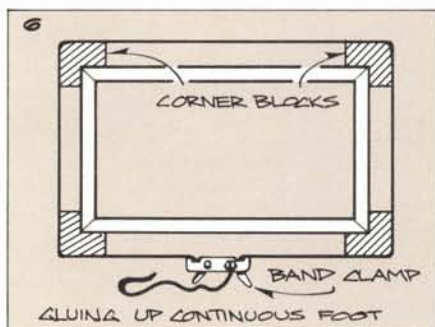
Step 3: Miter the ends of the frame stock at 45 degrees.



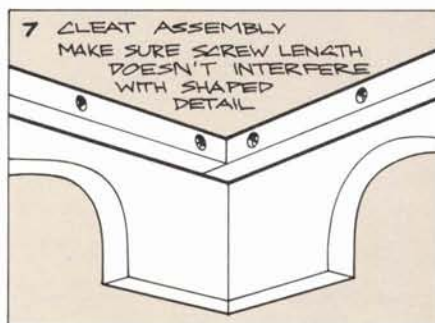
Step 4: Lay out the bracket foot profile, and band saw the inner profile. There is no need to either lay out or band saw a profile on the back frame piece, since this side will not be visible. However, the cove must be cut across the back, or the mitered corners will show end grain where the cove is supposed to be.



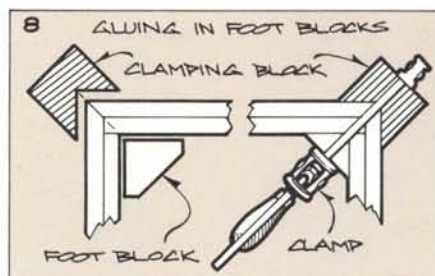
Step 5: Now use various size drum sanders in the drill press to smooth the profiles you have just cut.



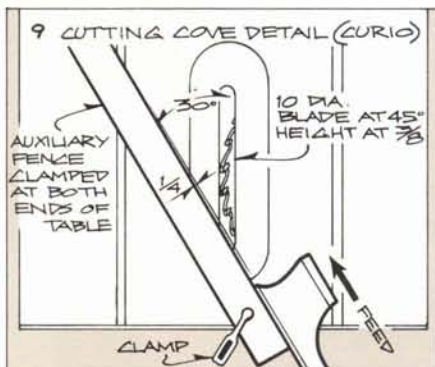
Step 6: Glue up the four pieces into a frame. Corner blocks and a band clamp should insure a square frame, as long as the miters were cut accurately.



Step 7: Now add cleats as shown, gluing and screwing them in place. The cleats are simply held flush with the top edge of the frame.



Step 8: Add corner blocks, which are tucked in flush under the cleats.



(continued on next page)

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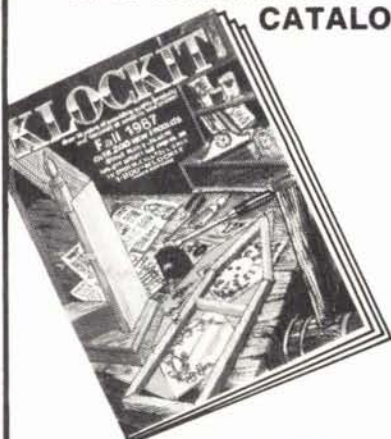
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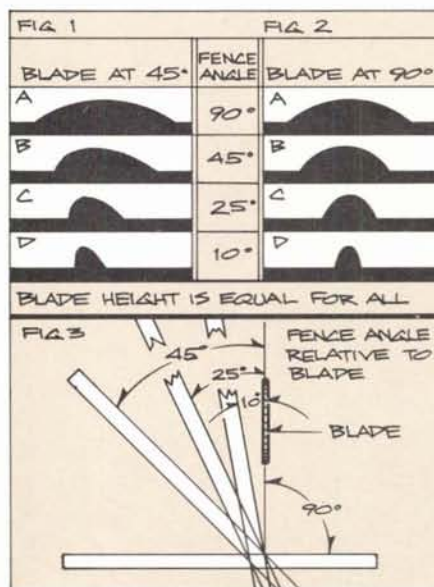
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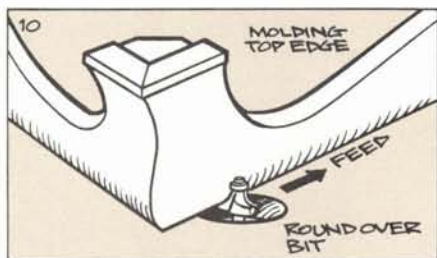
Special Techniques Continued

Step 9: Now move to the table saw to cut the bracket foot cove. The profile of the cove will depend on four factors: the saw blade height (depth of cut), the fence angle, whether the blade is at 90 degrees or inclined at an angle, and the degree of blade inclination. Fig. 2 shows the shapes that can be achieved with different fence settings when the blade is at 90 degrees. As shown in Fig. 2A, if the stock is passed directly across the blade at 90 degrees, the resulting cove would be a perfect radius equal to the radius of the saw blade. However, as the angle decreases from 90 degrees, the cove cut becomes an increasingly narrow parabolic shape, as illustrated by Figs. 2B and 2D. The blade height will control the depth of cut.

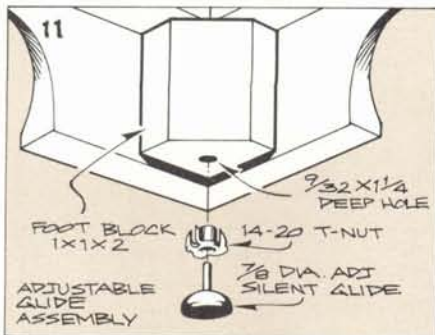


If we now introduce some degree of inclination (tilt) to the saw blade, and set the fence at any angle except 90 degrees, we will produce a curve with one end deeper than the other, similar to one-half of a teardrop. The side that the blade is tilted toward will always be the deeper end of the teardrop. It is important that you use *only a carbide rip blade* and no other type of blade for this operation. Figs. 1A-D show the various profiles, ranging from the flattened parabola to the exaggerated teardrop, that can be achieved when the blade is tilted.

For any of these cove-cutting table saw operations, we discovered that an 18-tooth carbide tipped ripping blade is most effective for quick removal of a maximum amount of stock. The number of passes needed will depend on the fence setting and the desired cove depth. It is always safer to remove a little stock ($\frac{1}{16}$ in.) with each pass and then increase the blade height, rather than attempt to hog all the stock out in a single pass. A final light pass will clean up the cut nicely prior to sanding. We suggest that you use scrap stock to experiment when making the bracket foot to insure that the profile is as desired.



Step 10: (Not required with Curio Cabinet foot). While most bracket feet have a rounded "return" at the top of the cove profile, we did not choose to incorporate this detail on the Curio Cabinet. If, with some other continuous bracket foot design, a round-over is required, simply use a ball bearing guided bit of an appropriate radius in the router table, as shown, to round the top edge of all four sides of the base.



Step 11: Finally, drill for and add adjustable glides, as shown. T-nuts and glides are available at most hardware stores.

W&J

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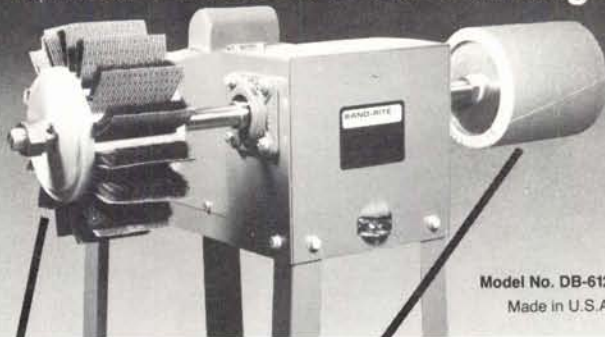
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Step-By-Step To A Flawless Finish On Pine (Or Any Other Wood)

The final step in woodworking is the application of the finish and, of course, prior to finishing the wood must be prepared to accept it. It hardly seems fair, but after meticulously milling, cutting, and fitting, many woodworkers tend to spend precious little time actually preparing the wood surface for finishing. Perhaps this is because almost any finish, even on a rough surface, will dramatically improve the appearance and insure some measure of satisfaction. Yet the discerning craftsman knows that finishing is the make-or-break step in woodworking, for it either justifies and applauds your efforts or condemns your work by revealing every nick, scratch, and defect — no matter how small — in the wood surface.

There is no magic formula for a flawless finish, but the heart and soul of a fine finish is a thorough sanding with successively finer grits. The following step-by-step method will assure a superior finish, both to the eye and to the touch.

Step 1: The old maxim that the first step is usually the most difficult is certainly true here. Many woodworkers who simply purchase coarse-medium-fine grit assortment packs of sandpaper, and start with the coarse grit paper, actually do more harm than good. An 80-grit coarse paper, especially when used across the grain, will produce deep scratches. These scratches are particularly troublesome, since even when you think they are out, they often become visible after the finish is applied.

We like to start sanding with 150-grit paper, using an oscillating sander on large surfaces. Inside corners will require hand sanding. As one other option, consider using a cabinet scraper instead of sandpaper for this first step. Whether you use sandpaper or the cabinet scraper *always* work *with* the grain.

Step 2: Move up to a 180- or 220-grit paper and, again, sand with the grain.

Step 3: Raise the grain. Using a sponge, lightly dampen the surface of the wood with water, but do not soak it. Then let the wood dry. The application of moisture will mimic the reaction on the wood surface when the finish is applied. Defects that would appear after finishing will be revealed by the grain raising. Technically, all the grain raising does is cause loose fibers of wood that were laying flat to raise up where they can be sanded off. You can feel these fibers with your hand; they have a slightly fuzzy texture. Grain raising is useless on end grain.

Step 4: Sand once more, with the grain, using 220 paper.

Step 5: Sand with a 360- or 400-grit silicon carbide paper. You are now ready for the stain and/or finish to be applied.

(continued on page 31)



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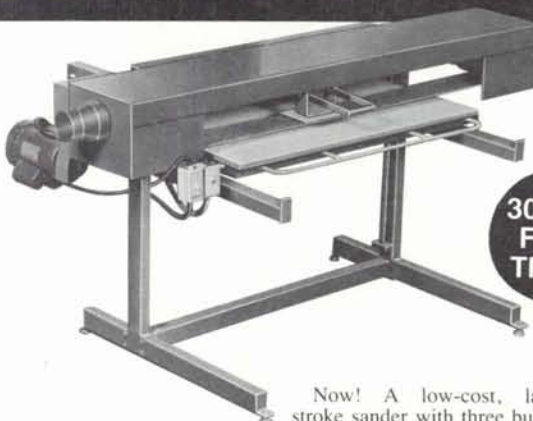
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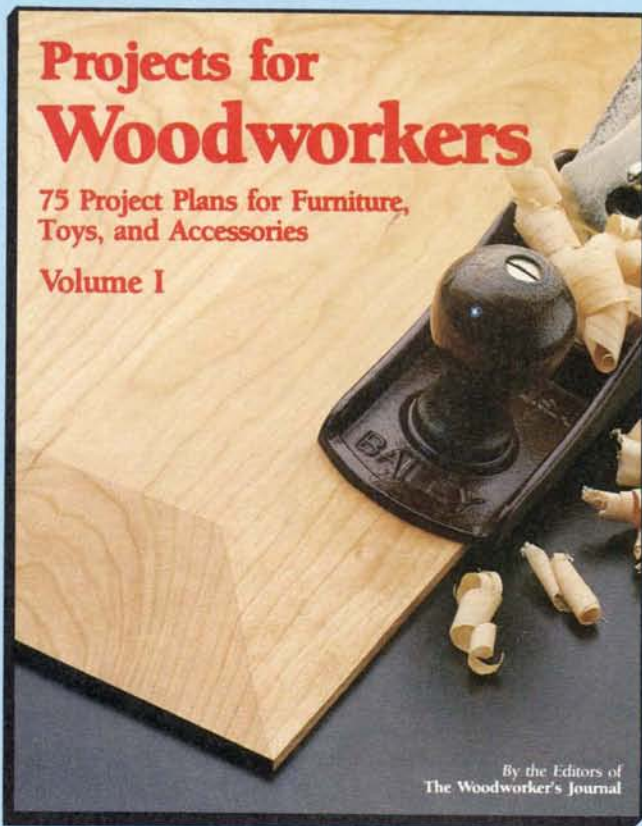


Trestle
Table

Projects for Woodworkers

75 Project Plans for Furniture,
Toys, and Accessories

Volume I



By the Editors of
The Woodworker's Journal

Finishing Continued

Tips:

- Always sand with the grain.
- Sand end grain thoroughly, but in *one* direction only (not back and forth).
- Brush clean all surfaces between grit changes.
- Discard sandpaper if it starts to disintegrate or small abrasive particles may become lodged in the wood surface.
- For a super-lustrous oil finish, flood the surface with oil, then sand with 360 wet-or-dry. Wipe excess oil off, then let the surface dry before a second application of oil. Rub out, wax and buff as desired.
- For surfaces too large to plane, such as tabletops, wet the grain to raise it after it has been sanded level, then use a cabinet scraper or 120-grit sandpaper to smooth any cross-grain scratches. Then follow steps 1 through 5.
- When following a procedure of stepping up from coarse grit to finer grit papers, no more than a few minutes of sanding should be required with each successive grit on a small area. Further sanding with the same grit will do little to improve the surface.

Have you ever wondered what the numerical and alphabetical designations on sandpaper refer to? Very simply, the numerical designation refers to the screen size that the abrasive particles must pass through when they are graded. For example, with an 80-grit paper, the abrasive particles must pass through a screen with 80 openings per square inch, while with a 600-grit sandpaper, the abrasive particles must pass through a screen with 600 openings per square inch. However, contrary to one popular theory, the numerical designation does *not* refer to the number of particles per square inch *on* the sandpaper. Industry Specialist Bill Beaty of Norton Abrasives points out that the actual number of particles per square inch will vary from paper to paper depending on the type of abrasive particle, type of paper, method of application, and the "coat" designation. An open coat paper, he pointed out, would typically have between 50-75 percent coverage, as compared to a closed-coat paper with 100 percent coverage.

The alphabetical designation, such as the letter "A" in 600A, refers to the weight of the paper backing. "A" designations are for finish sanding, while "C" and "D" designations refer to the more durable backings used for production or heavier work.

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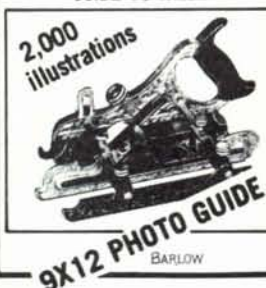
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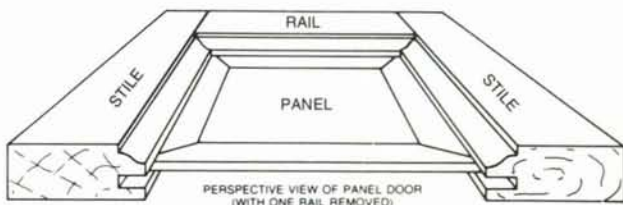
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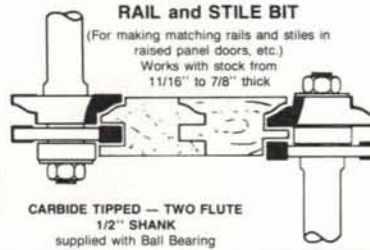
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Curio Cabinet

Over the years we've had a number of requests for curio cabinet plans. Well, good things take time to develop, so here finally is our full length curio cabinet. Since the design of this cabinet is neither traditional nor contemporary, falling somewhere in between, it should fit in well with most any room setting or style. Our cabinet is crafted of walnut, but oak, cherry, or mahogany will also look good. Use hardwood plywood parts that match the hardwood you select.

Start by milling sufficient stock for all parts. Note that all hardwood parts are $\frac{3}{4}$ in. thick. Keep in mind that because some plywoods are measured in millimeters, the edging (J,K) must be milled equal to the actual thickness of the plywood.

Be sure to joint and surface all stock. Select the clearest, straightest grain for the stiles (A, B, and E), since it's important that these parts remain stable and do not bow, twist, cup, or warp.

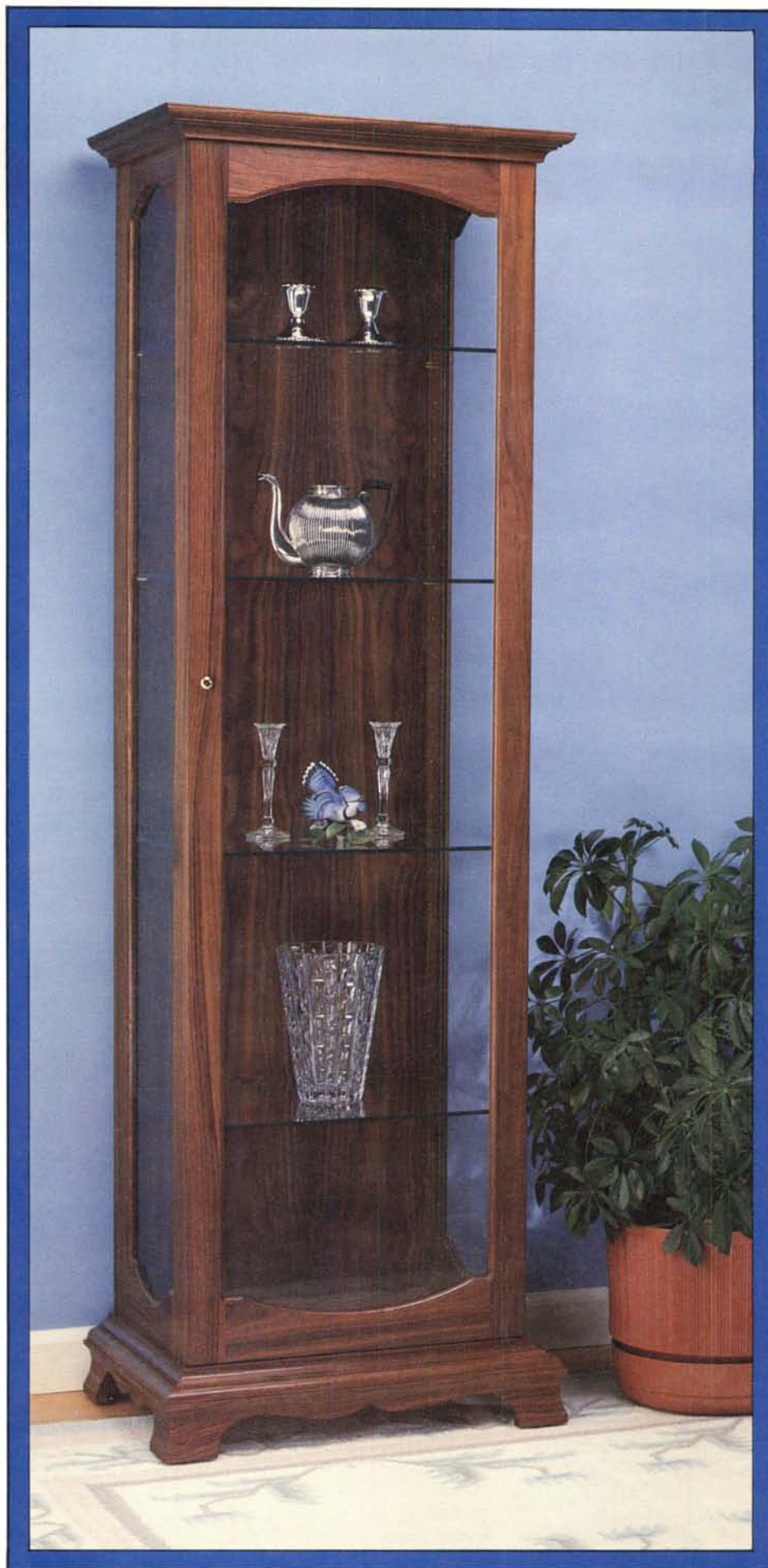
Now rip stock for all parts to approximate width. Our system is to rip the stock to the final width plus $\frac{1}{32}$ of an inch. We then move to the jointer and take a single $\frac{1}{32}$ in. pass to clean up the sawn edge and bring to final width. Of course, with each piece you must have one jointed edge to work off of.

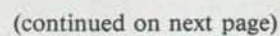
These parts can now be cut to length. Mitered parts are left long since they will be cut to final length when the miters are cut. Use stops when cutting similar length pieces, such as the side and door rails, to maintain squareness when the side and door frames are glued up.

Next, cut all the spline mortises. We used spline construction in this project because it provided maximum strength while simplifying the assembly. Mortise and tenon construction could be substituted if you prefer; simply add the tenon length to both ends of the various rails.

Now cut out the rail profiles. Note that the side rails have a $5\frac{1}{16}$ in. radius, while the door rails have a $21\frac{1}{2}$ in. radius. We use trammel points on a stick to scribe the radii. Also take note that the radii are centered on the rails, and start 1 in. from either end.

Assemble and glue up the side and door frames. We left the mortises





rounded on the ends, and rounded the splines to match, since this saves considerable labor. For a detailed review of how we drill out the mortises, you may want to refer to our Woodworking Basics feature on the mortise and tenon, pages 20-23 in our March/April 1987 issue. The splines would be rounded in the same manner that the tenons are. Always size the spline length slightly less than the combined depth of the two mortises to avoid bot-toming and hydraulic back pressure from the glue, which might prevent the pieces being joined from butting up tight. As shown in the front elevation view of the curio cabinet, both the up-per and lower splines are 1 7/8 in. long, allowing about 1/6 in. on either end given the 2 in. deep mortises.

When dry, rout the beaded detail all around the inner perimeter of both the side and the door frames. Note that we use a 3/16 in. bearing-guided beading bit, as illustrated in the routing detail. Next, apply the 3/8 in. by 3/8 in. rabbet on the inside face of the door and side frames to accommodate the glass and keeper strip. You'll need to chisel the corners square where the router bit doesn't reach. Next, rabbet the back inside edges of both side frame assemblies to accept the plywood back panel. Be sure that you have designated right and left hand and top and bottom for the side frame assemblies.

You may now lay out and drill the holes for the brass shelf pin sleeves (U). After drilling these holes, and cutting the 1/4 in. brass tube into 1/2 in. lengths, epoxy the sleeves in place. We actually cut these sleeves about 1 1/2 in. long and then sanded the brass flush with the wood after they have been epoxied in place. A countersink is used to apply the chamfer to the inside diameter of these sleeves. You can also cut the 1 in. brass shelf pins (V) to length from 3/16 in. diameter brass rod at this time. If the pins are too tight a fit, they may require some sanding to slightly reduce their diameter.

Now cut hardwood plywood parts (H and I) to length and width. The lower part I does not show, so we simply used 3/4 in. thick birch plywood here. If you have enough hardwood plywood, however, there is no harm in using it. Apply the 3/4 in. by 1 in. edging (J, K) to parts H and I, mitering the corners. About 18 feet of 3/4 in. by 1 in. edging must be ripped in total. We cut and applied the front and side edging, letting the back ends of the side edgings overhang. They can later be trimmed



Bill of Materials (all dimensions actual)			
Part	Description	Size	No. Req'd.
A	Stile (front)	3/4 x 2 x 62	2
B	Stile (rear)	3/4 x 2 3/4 x 62	2
C	Rail (lower)	3/4 x 3 1/2 x 8 3/4	2
D	Rail (upper)	3/4 x 3 x 8 3/4	2
E	Door Stile	3/4 x 2 x 62	2
F	Door Rail (lower)	3/4 x 3 1/2 x 14 1/2	1
G	Door Rail (upper)	3/4 x 3 x 14 1/2	1
H	Inner Top/Bottom	3/4 x 14 1/8 x 18 1/4	2
I	Top/Bottom*	3/4 x 14 7/8 x 19 3/4	2
J	Edging (cove)**	3/4 x 1 stock	102 in.
K	Edging (bead)**	3/4 x 1 stock	108 in.
L	Back	3/4 x 18 x 63	1
M	Base Front/Back	3/4 x 3 x 22	2
N	Base Side	3/4 x 3 x 16	2
O	Cleat	3/4 x 3/4 stock	72 in.
P	Corner Block	1 x 1 x 2	4
Q	Side Glass	size to fit	2
R	Door Glass	size to fit	1
S	Keeper Strip***	1/4 in. round	35 ft.
T	Shelf Glass	13 x 17	as req'd.
U	Shelf Pin Sleeve****	1/4 in. brass tube x 1/2 long	4 ft.
V	Shelf Pin****	3/8 brass rod x 1 long	as req'd.
W	Hinge***	1 1/2 x 2 brass	3
X	Double Ball Catch***	brass	1
Y	Knob***	5/8 dia. brass	1
Z	Leveler		4

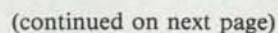
*Bottom can be plain 3/4 plywood.
 **These edgings are plain 3/4 in. x 1 in. stock. The molded details are not cut until after the edging has been applied.
 ***All these parts included as a kit from: Mason & Sullivan, Dept 3998, 586 Higgins Crowell Road, West Yarmouth, Cape Cod, MA 02673. Order part no. H2344X. Cost for the kit is \$29.95 plus \$3.50 shipping.
 ****Available from: Allcraft Tool & Supply Co., 100 Frank Rd., Hicksville, NY 11801. 3/8 in. brass rod is 80¢ a foot, 1/4 in. brass tubing is 90¢ a foot. Telephone: 1-800-645-7124 (Exc. New York State).

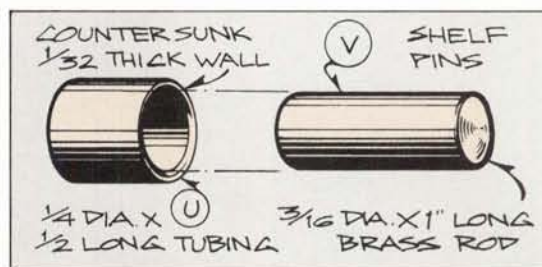
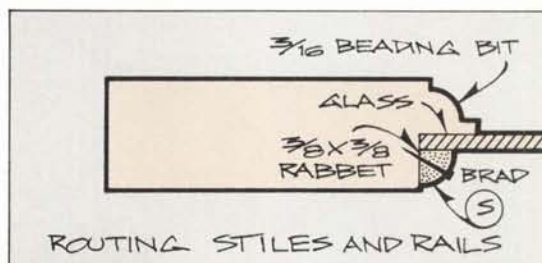
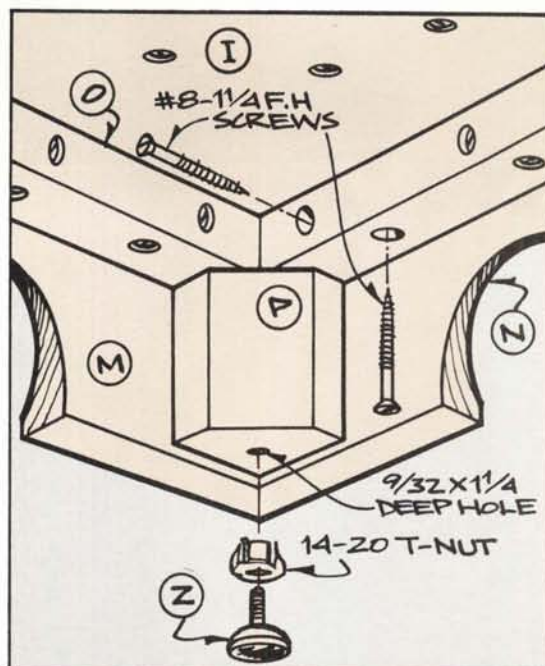
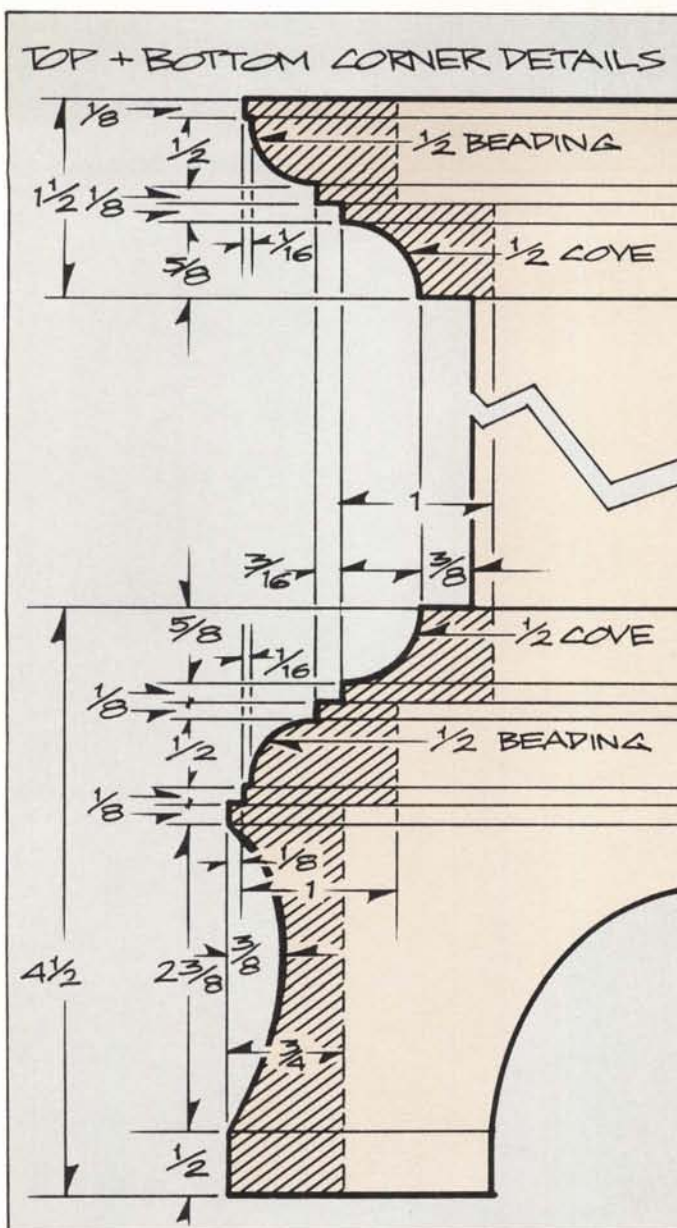
off flush after the routed profiles have been applied. Be sure to use waxed clamp blocks to flush the edging with the plywood. Now apply the various routed details as illustrated. Note that the inner top, the top, and the inner bottom and the bottom profiles are perfect mirror images.

The continuous bracket foot base assembly, consisting of parts M, N, D, and L is made by following the step-by-step instructions provided in the Special Techniques feature on pages 24-27. The base back piece cannot be left square, since a small section of end grain would be visible. However, there is no need to band saw the cutout bracket profile.

All parts and subassemblies (the top, bottom, inner top, inner bottom, side frames, door frame and base) should now be final sanded. We next applied the final finish to all these parts, except the door frame. We used aerosol spray Deft clear lacquer to obtain a nearly flawless finish with no brush marks. Apply two coats, rubbing out with 0000 steel wool after the second coat. Then buff with a soft cloth to bring up the shine. Note that the back (L), which has not yet been cut, and the door frame are not finished until after they have been final sized and fit.

You are now ready to assemble the case. Start the assembly by screwing the inner top and bottom to the side frames. Be sure to allow the 3/8 in. lip at the sides (see trim cross section), and keep the back edges flush. Now add the top and bottom. The top is glued, but not screwed, using indexing dowels to prevent slippage as clamp pressure is applied. The bottom can simply be screwed in place, after which the base assembly is screwed in position on the bottom, through the cleats as shown.





Cut the $\frac{1}{4}$ in. by $\frac{1}{2}$ in. rabbet into the back edge of the inner top and bottom to accept the plywood back. The corners of these rabbets can be squared with a chisel, or you may leave them as a radius and round the corners of the plywood back to match.

Now size the plywood back. It is vital that the back be perfectly parallel and square, since it is the back that, when applied, will ultimately determine how square the cabinet is. Temporarily install the walnut plywood back with four screws, then final size the door. We allowed $\frac{1}{8}$ in. top and bottom on the door to permit a clear, free swing. To trim the top and bottom edges of the door, clamp a board as a straightedge across the door, and use the router with a bearing-guided trim-

ming bit to trim the $\frac{1}{8}$ in. off each end.

Now lay out and mortise for the hinges (W). Temporarily install the hinges, locate for the double ball catch (X) and mortise for it as required. Also locate and drill for the pull knob (Y). The catch and pull knob are not installed yet, however.

Next, remove the back and door, and finish them as you finished the other assemblies before installing the door and side glass (Q, R). We used a quarter-round flexible rubber keeper strip (S) that is supplied with small brass brads (see bill of materials for source).

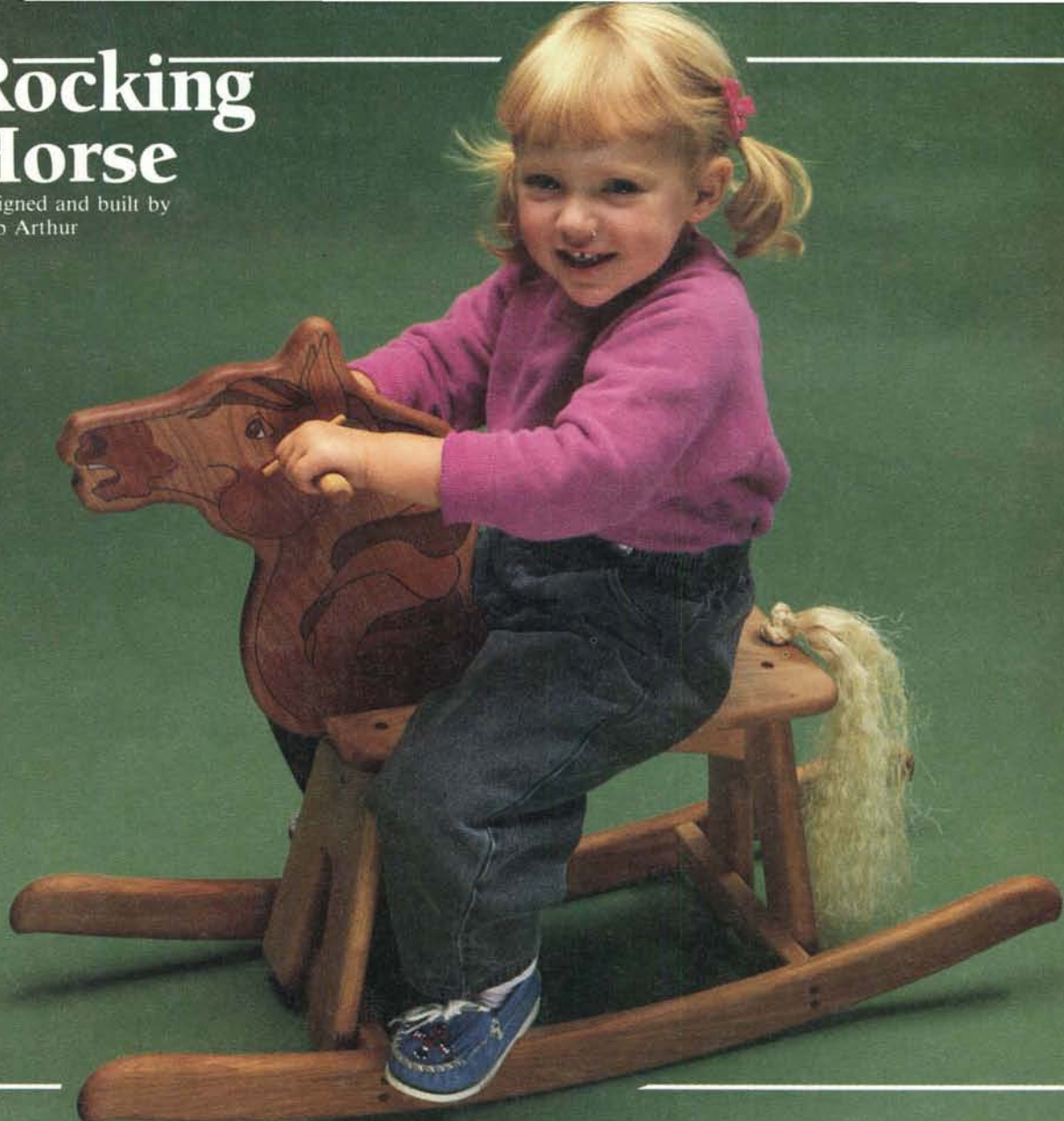
Use a utility knife to miter the keeper strip ends for a professional look. We started the brads with a pair of needle-nosed pliers, then used a large nail set

with a cupped end to set the brads. The cupped end prevented the nail set from slipping off the brads.

Finally, reinstall the back and mount the door and all hardware. We purchased the door and side glass and the $\frac{1}{4}$ in. thick shelf glass from a local glass shop. The door and side glass cost about \$50, while the shelves were approximately \$7 each. For accuracy we traced out paper templates to insure that the door and side glass would fit our frames. We recommend that you use the levelers (Z) to level the cabinet since a firm four-point stance is important, especially when the cabinet is filled. The levelers can be obtained locally from a hardware store. Wwj

Rocking Horse

Designed and built by
Skip Arthur



This cute version of a traditional rocking horse makes a delightful gift for a child. A toy like this must be plenty sturdy though, so it should be made from maple or birch.

To start, you'll first need a piece of tracing paper that measures at least 14 in. square. If necessary, tape two smaller pieces together to get the needed size. With a pencil and ruler, divide the tracing paper into 1 in. squares. Now, referring to the grid pattern of the head (A), transfer the profiles to the tracing paper. You'll need to transfer all the profiles including the eyes, ears, nose, mouth, and mane.

Next, from $\frac{3}{4}$ in. thick stock, cut stock for the head to $11\frac{1}{4}$ in. wide by 18 in. long. Final sand both sides of the board, then tape a piece of carbon paper, carbon surface down, to one side of the board, making sure that all the surface is covered. Two pieces may

be needed for complete coverage.

Note, as shown on the drawing, how the grain of the wood runs in relation to the profile of the head. Place the tracing paper on the carbon so that the grain is properly orientated before securing it with a few pieces of tape.

Carefully trace all the lines (including the notched bottom edge) on the tracing paper, taking care to bear hard enough with your pencil so the lines will transfer from the carbon paper to the stock. Once all the lines have been traced, remove the carbon and tracing papers and set them aside.

The band saw or jigsaw is now used to cut out the outside profile of the head. Make the cut just outside the marked line, then sand the edge.

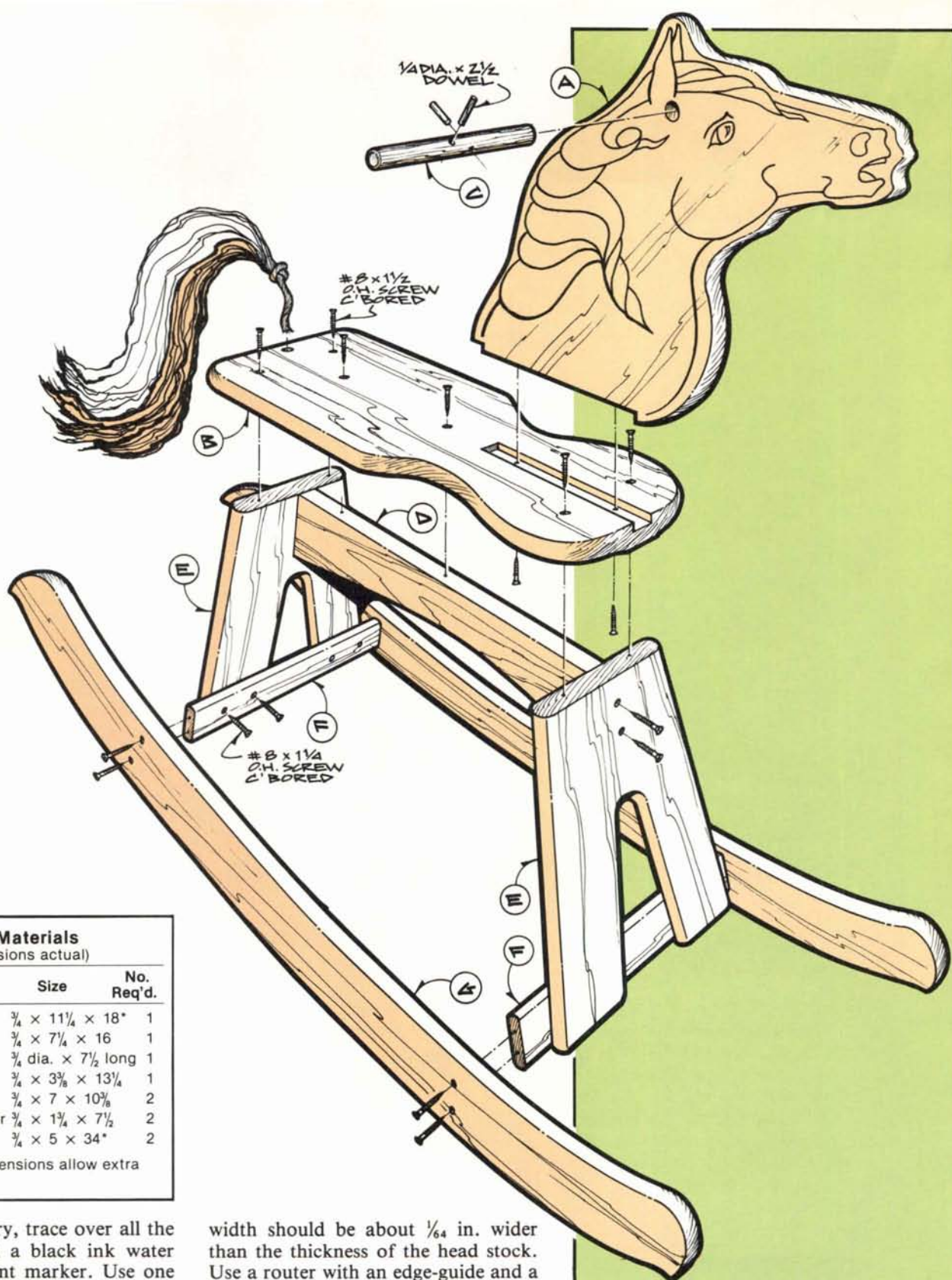
Now place the carbon and tracing paper on the unmarked face of the stock, taking care to align the outside profile on the paper with the outside

profile of the stock. When aligned, tape both papers in place and trace all the lines.

Except for the bottom notch, all edges on the head are rounded-over. This can be done by hand using a file and sandpaper, but you can also use a router with a $\frac{1}{4}$ in. bearing-guided round-over bit. Use 220 grit sandpaper to final sand the rounded edges. Also, at this time, mark the location of the handle hole and bore it out.

Artist's acrylic paint (available at art supply stores) is used to paint the head. Refer to the grid pattern and the color key for the location of the colors. Note that the tongue is painted red while the eyes and teeth are white. The burnt umber, raw sienna, and burnt sienna are thinned a bit with water.

Allow the paint to dry thoroughly, then apply a wash coat of shellac to all (continued on next page)



Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Head	$\frac{3}{4}$ x $11\frac{1}{4}$ x 18"	1
B	Seat	$\frac{3}{4}$ x $7\frac{1}{4}$ x 16	1
C	Handle	$\frac{3}{4}$ dia. x $7\frac{1}{2}$ long	1
D	Leg Stretcher	$\frac{3}{4}$ x $3\frac{3}{8}$ x $13\frac{3}{4}$	1
E	Leg	$\frac{3}{4}$ x 7 x $10\frac{3}{8}$	2
F	Rocker Stretcher	$\frac{3}{4}$ x $1\frac{3}{4}$ x $7\frac{1}{2}$	2
G	Rocker	$\frac{3}{4}$ x 5 x 34"	2

*Length & width dimensions allow extra stock.

surfaces. When dry, trace over all the carbon lines with a black ink water resistant permanent marker. Use one with a round tip that will make a line about $\frac{1}{8}$ in. wide. The wash coat of shellac serves to keep the marker ink from bleeding into the wood fibers, which results in a fuzzy line.

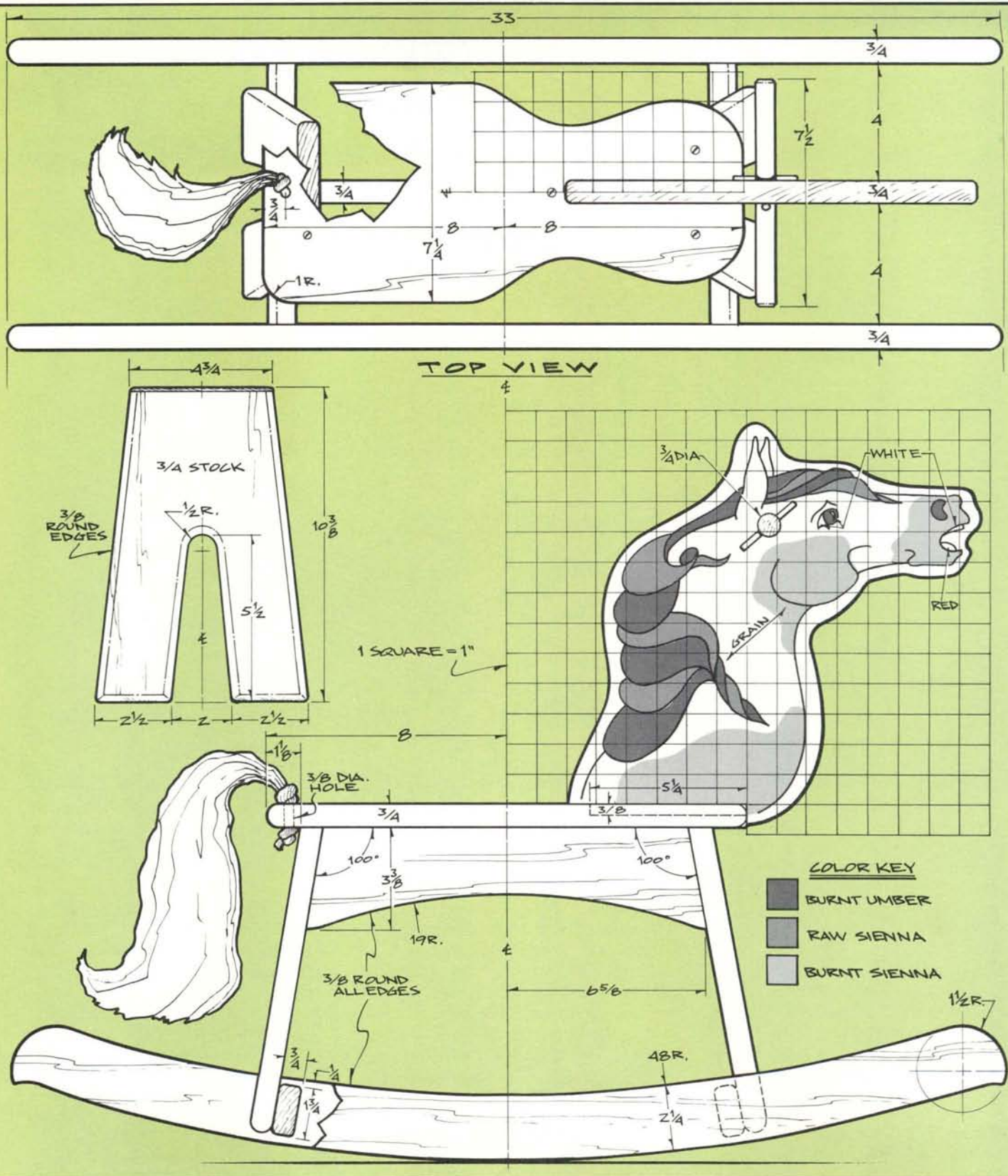
Now, cut the seat (B) to length and width from $\frac{3}{4}$ in. stock. Lay out and mark the location of the $\frac{3}{8}$ in. deep by $5\frac{1}{4}$ in. long groove that accepts the head. For a proper fit, the groove

width should be about $\frac{1}{4}$ in. wider than the thickness of the head stock. Use a router with an edge-guide and a $\frac{3}{8}$ in. diameter straight bit to cut the groove.

Transfer the profile of the seat from the grid pattern to the stock. Cut out with the band or jigsaw and smooth the edges. Next, use the router and a $\frac{1}{4}$ in. bearing-guided round-over bit to round all the edges, both top and bottom. On the top, though, stop the bit just short of the groove.

Bore the $\frac{3}{8}$ in. diameter tail hole, then final sand all surfaces of the seat to 220 grit. The head can now be joined to the seat with glue and a pair of countersunk no. 8 by $1\frac{1}{2}$ in. long ovalhead wood screws.

Next, cut out the leg stretcher (D), the legs (E), the rocker stretcher (F) and the rockers (G). Refer to the draw-



ing for all the various dimensions. Note that the top edge of each leg is beveled at 10 degrees. You'll need a homemade compass to scribe the rocker radii. To make the compass, rip a 5 foot length of $\frac{3}{4}$ in. stock to about $\frac{1}{4}$ in. wide. Bore a hole in one end to accept a pencil point, then measure the needed radius and drive a brad for the

pivot point.

After parts D, E, F, and G are cut out, use your router and the $\frac{1}{4}$ in. bearing-guided round-over bit to round the edges that will be exposed after the project is assembled. Once rounded, sand smooth with 220 grit.

Use glue and screws to assemble parts E to F. When dry add part D,

making sure the top edges of both parts are flush. Join parts G, then complete the assembly by adding the seat and head unit. The handle (C) is held in place with $\frac{1}{4}$ in. by $2\frac{1}{2}$ in. long dowels.

For a durable final finish, apply two coats of polyurethane to the entire project. The tail, made from hemp rope, completes the project.

Wwj
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Three-drawer Jewelry Chest by Tony Lydgate

Editor's Note: California craftsman Tony Lydgate excels at developing functional pieces that are beautiful, yet surprisingly simple in construction. This jewelry chest is proof positive that good designs need not be complex or feature elaborate joinery.

The light chest in the photo is of birdseye maple, with edge facings of curly western maple and fronts of quilted western maple. The darker chest is of Hawaiian koa, with a spectacular curly figure featured on the edge facings.

The top (A) and the two sides (B) are cut from a single length of stock. Start with a board about 8 in. by 32 in., which should be jointed perfectly straight and smooth. If you have a thickness sander, it will produce a nice flat, smooth surface. Crosscut the board into the two sides and top in this order: side, top, side. This layout helps create a nice effect of visual continuity in the grain of the wood.

Next, rip each piece to 7 $\frac{3}{4}$ in. wide. I prefer using the 7 $\frac{3}{4}$ in. width since I

have an 8 in. jointer. By crosscutting before ripping I am able to achieve greater accuracy in the final width.

Now, use the dado head blade to cut the rabbet on the top inside end of each side to make the edge that the top piece will sit on. If you do not have a dado head, this rabbet can be made on the table saw with two cuts. Make the first cut across the grain, and the second cut with the stock standing on end. Whichever method you use, make the depth of the rabbet a hair deeper than the thickness of the top, so you'll have some extra to sand off flush.

Next, rabbet the rear edges of the top and sides to accept the plywood back (C). While you can use any $\frac{1}{4}$ in. plywood or even solid stock for the back, I prefer to use a light colored hardwood plywood such as ash for the maple carcass, and a darker plywood such as walnut for the koa carcass. Because some $\frac{1}{4}$ in. thick plywoods are actually measured in millimeters, and may not be the exact equivalent of $\frac{1}{4}$ in. thick, it is important to make the depth of the rabbet equal to the actual

thickness of the plywood. Remember, when assembled, the front and back edges of the sides and top must be perfectly flush to accept the facing strips that will be glued over them. Therefore, you don't want any ridges here. Don't forget to cut a $\frac{1}{8}$ in. by $\frac{1}{4}$ in. dado in the back as shown, to accept the bottom (D).

Finally, cut the dadoes in the sides for the bottom (D) and drawer guides (E). Be careful when cutting the bottom dado, so as to not chip out the $\frac{1}{8}$ in. remaining. This $\frac{1}{8}$ in. thick lip is rather fragile until the bottom is in place. Next, set up the drill press and drill holes for the screws and plugs that hold the sides to the top.

I began woodworking as a boat-builder, and later made harpsichords. In both, screws are used extensively, both for their long-lasting holding power, and because a screw-and-glue joint has the best possible clamping power. Of course, you can use finger joints or dovetails to make this side-to-top joint as well as the screw, glue and plug technique I use.

If you elect my method, first counterbore a shallow hole (about $\frac{1}{4}$ in. deep) with a $\frac{3}{8}$ in. drill bit. Then drill a through hole of the same diameter as the shank of whatever screw you're using. I use a no. 6 by 1 in. long screw.

To make the plugs, buy $\frac{3}{8}$ and $\frac{1}{4}$ in. plug cutters — under \$10 at most hardware stores. If you prefer you can turn a dowel on a lathe, or even start with square stock and hand-shape a dowel on your stationary sander. I take rosewood stock, then drill $\frac{1}{4}$ in. holes spaced about 1 in. apart. Then I make $\frac{1}{4}$ in. plugs of vermilion, pop them out, glue them into the holes in the rosewood and go home. It takes the glue a long time to dry — at least overnight — because no air can directly get to the glue. Fig. 1 shows the procedure for creating this plug detail.

Now you've got two sides and a top, all dadoed and rabbeted appropriately, with the plugs made and the screw holes through the sides. You also have a back and a bottom, lovingly crafted and carefully milled and fitted to fairly rigorous tolerances.

Now, assemble the carcass, using either white or yellow glue. While I use a staple gun to fasten the back into the side rabbets, small screws or brads will also work well. Whatever fasteners you use, keep them close to the edge so they will later be covered by the edge facings. I prefer to drill the pilot screw holes in the ends of part A after the carcass has been assembled, using a pilot bit about one half the diameter of the screw, and then an electric screwdriver to drive the screws home. It is particularly satisfactory to watch the little beads of glue squeeze out between the sides and top, telling you that you've got a good tight joint.

Once the carcass is together, you need to mill the edge facing strips (F). You can use the same stock (as in the koa chest) or different stock (as in the maple one) for the facing. I strongly recommend something with some figure in it. I start with standard surfaced 4/4 lumber, rip it a tad wider than the edges I'm facing, sand it to width, then cut the miters. Then I rip off the strips, about $\frac{3}{16}$ in. thick. I find it easier to miter the stock first, then rip it, though I suppose you could do it the other way around. I make the facing for the back about $\frac{7}{8}$ in. wide to give me more material for covering my staple heads and glue joint.

Use masking tape or duct tape to tape the facings onto the carcass after they're glued. Put glue in the screw

countersink holes and hammer the plugs in. Leave them proud of the surface, so you can sand them flush.

Take note of the two $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by $\frac{3}{8}$ in. filler blocks (G) glued in place at the front end of the bottom dado in the sides. These are needed to fill the ends of these dados. The $\frac{1}{8}$ in. space left between the filler blocks and the plywood bottom allows for any contraction that might take place across the width of the sides. The bottom should be glued in place along the back edge and along the sides for several inches starting at the back.

Now you have the carcass with the facings and plugs. At this point, mill and screw in the drawer guides (E). You can use just about any wood here; it doesn't have to be fancy. Note that I have sized these parts $\frac{1}{8}$ in. less than the dado length, and placed a slotted

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Top	$\frac{3}{4} \times 7\frac{3}{4} \times 15\frac{1}{4}$	1
B	Side	$\frac{3}{4} \times 7\frac{3}{4} \times 7\frac{5}{8}$	2
C	Back	$\frac{1}{4} \times 7\frac{1}{8} \times 15\frac{1}{4}$	1
D	Bottom	$\frac{1}{4} \times 6\frac{7}{8} \times 15\frac{1}{4}$	1
E	Drawer Guide	$\frac{1}{2} \times \frac{3}{4} \times 7\frac{3}{8}$	4
F	Edge Facing	$\frac{3}{16} \times \frac{3}{4}$ stock* as req'd.	
G	Filler Block	$\frac{1}{4} \times \frac{1}{4} \times \frac{5}{8}$	2
H	Drawer Front	$\frac{3}{4} \times 2\frac{1}{4} \times 14\frac{3}{4}$	3
I	Drawer Side	$\frac{5}{8} \times 2 \times 7\frac{1}{16}$	6
J	Drawer Back	$\frac{5}{8} \times 2 \times 14$	3
K	Drawer Bottom	$\frac{1}{4} \times 6\frac{1}{16} \times 14$	3
L	Pull	$\frac{3}{8} \times \frac{5}{8} \times 11$	3
M	Cardboard	$6\frac{1}{4} \times 13\frac{7}{16}$	3
N	Velvet	9×17	3
O	Divider (long)	$\frac{3}{8} \times \frac{3}{4}$	as req'd.
P	Divider (short)	$\frac{1}{8} \times \frac{3}{8}$	as req'd.

*Edge facing at back can be $\frac{7}{8}$ in. wide.

screw hole at one end to allow for movement in the sides. The cutting detail (Fig. 2) shows how the drawer guides are milled. Since this is a fussy operation, be especially careful. Bring the dado-head up through a fresh table saw insert, so there will be no gaps. Use a push stick and maintain firm control at all times. The spacer is chamfered on the end so the drawer guide will not catch. If you prefer, you can use the same basic setup on the router table. The advantage with the router table is elimination of the potential for kickback. Screw the drawer guides in place with $\frac{1}{2}$ in. long screws.

While you can use a shaper or router table to establish the $\frac{3}{8}$ in. radius round-over on the top shoulders, it can

also be done by eye on a stationary belt sander. If you do intend to use the shaper or router to make this round-over, you'll need to do so prior to gluing on the facing strips, lest you risk the danger of bad chip-out.

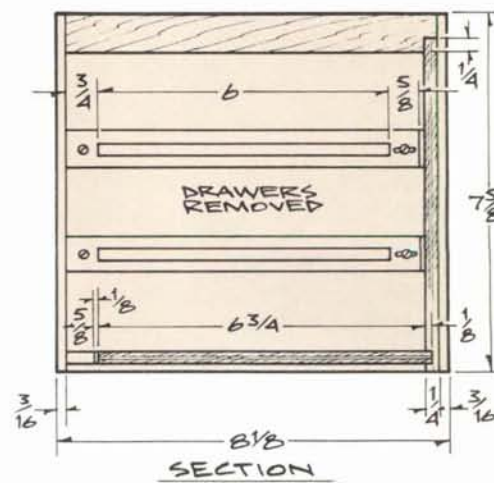
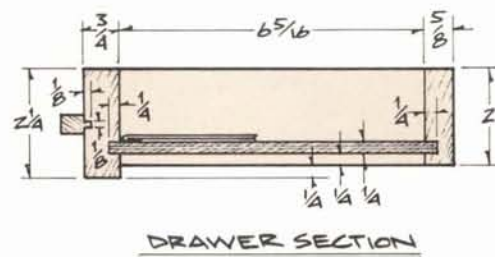
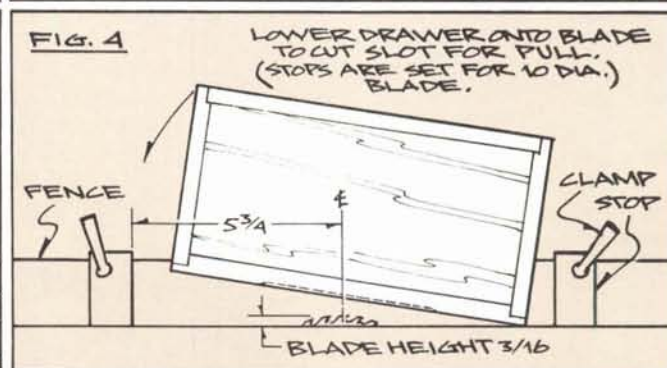
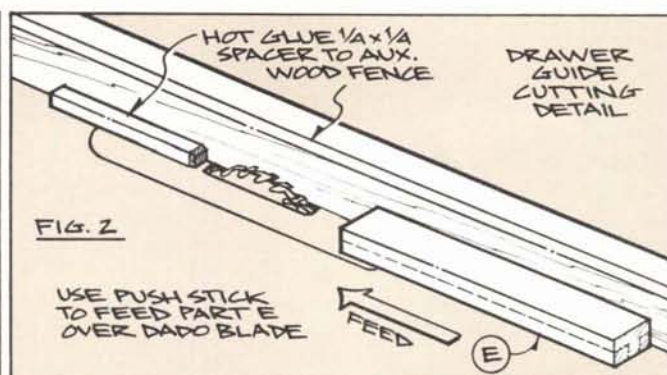
The drawers are of a conventional construction, as you can see from the exploded and sectional views, although you might consider dovetailing rather than rabbeting the drawer cases. Take note that the bottom of the drawer front must overhang $\frac{1}{4}$ in. to conceal the butt ends of the drawer guides and the space between. Make the drawers so they just fit into the carcass. Later, when final sanded, the drawers should have the right amount of "play." Mill the drawer fronts to fit the drawer sides and back. The drawer front when unsanded should be a tad beyond flush with the carcass, so that when you're done it will be just flush. If you don't quite get it right you can always glue something to the back of the drawer to bring it out flush.

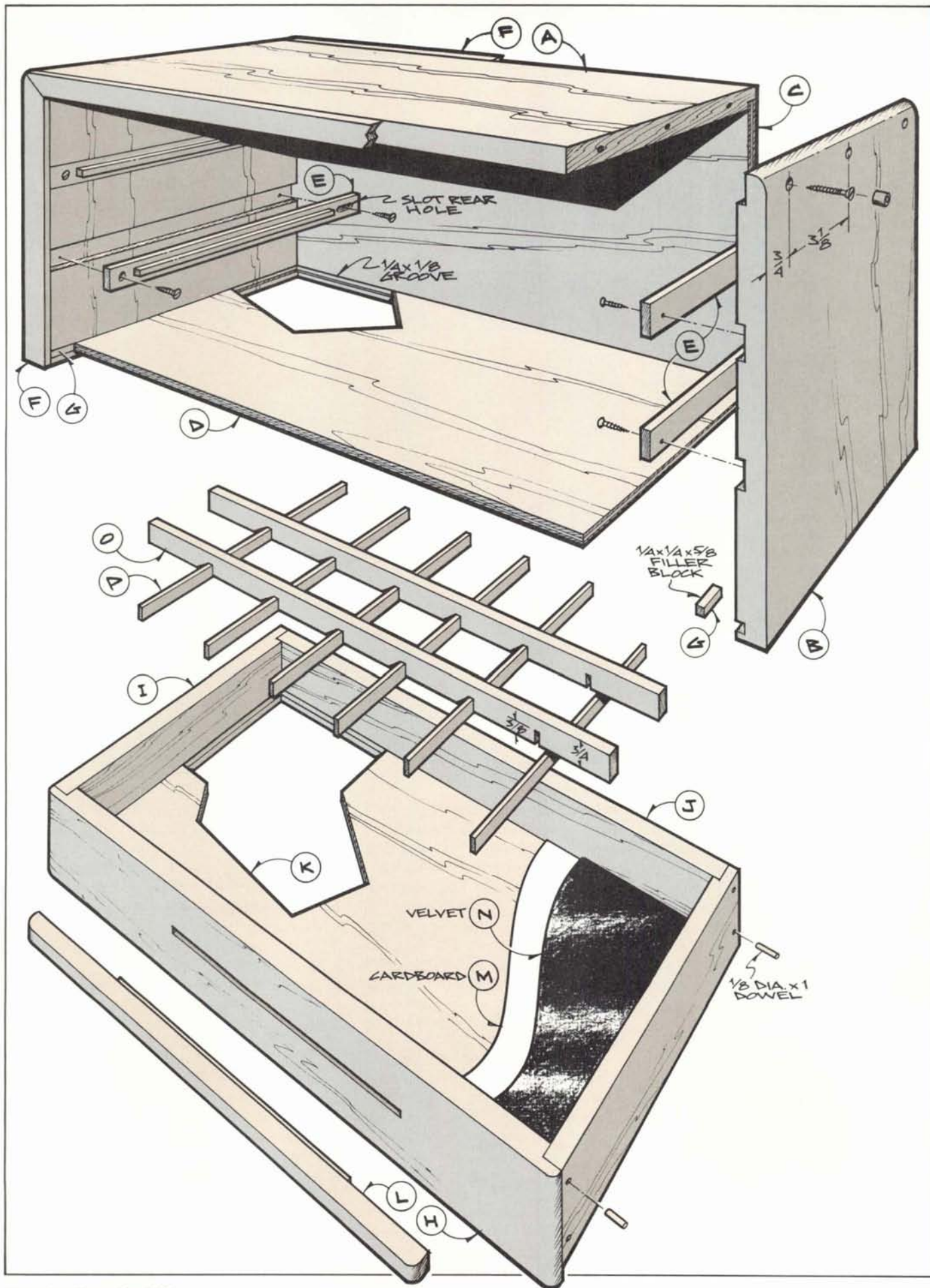
The drawer pulls (L) are Indian rosewood (as is the black in the plugs). Mill $\frac{3}{8}$ in. by $\frac{3}{8}$ in. thick stock, then cut a tongue on one edge as shown in the Fig. 3 detail. Be sure to use a push stick for this operation. This tongue, which fits into a corresponding groove cut into the drawer fronts, makes it a simple matter to get the pulls aligned properly for glue up, using only spring clamps. The slot in the drawer front is cut on the table saw, using a pair of stop blocks, one in front of and the other behind the blade, as shown in the Fig. 4 detail. Note that the width of the tongue should be a hair less than the depth of the slot milled to accept it.

Now, flood the carcass and the drawers with Watco oil. Thoroughly saturate the surface, but only with a single application. Then use 00 steel wool and plenty of elbow grease to work the oil into the surface, wiping off with paper towels. Let the piece dry for at least 48 hours at 70 degrees. Use 00 steel wool again to remove the Watco crust, and wax well with any good quality furniture paste wax.

Velvet is wrapped over stiff mat cardboard, and taped on the underside to create the drawer bottom liners. The drawer dividers are made as shown from $\frac{1}{8}$ and $\frac{3}{8}$ in. thick stock. These are optional items and could be made for only one drawer, or sized to compartmentalize the drawers for a particular type of jewelry collection.

(continued on next page)





This jig has several advantages over most conventional leg tapering jig designs. We like the fact that toggle clamps are used to hold the stock firmly in place — so there is no need for fingers to be anywhere near the blade. Also, since the jig runs in the miter gauge slot, you don't struggle with push sticks in order to keep the jig bearing against the rip fence.

Our jig can be adjusted to accept stock up to 2½ in. thick, ½ in. to 4 in. wide, and from 4 in. to 31 in. long. For thin stock (less than ⅝ in.), you'll need to add a shim between the clamp's rubber pad and the stock. For stock that's between 1¼ in. and 1⅝ in. thick, you'll need to add an auxiliary spacer block under each clamp. Stock that measures between 1⅝ in. and 2½ in. thick will require a pair of auxiliary spacer blocks under each clamp.

The base must be rigid, so make it from solid maple stock or baltic birch plywood. Use solid maple stock for all the remaining wood parts.

Begin by cutting the bottom (A) to the overall length and width shown in the bill of materials. Lay out and mark the location of the ⅜ in. wide by 4⅜ in. long slots on each end, then cut them out using a router equipped with an edge-guide and a ⅜ in. diameter straight bit. Make the ⅜ in. slot depth in several passes, with each pass removing no more than ⅛ in. of stock.

To cut the ¼ in. deep counterbored slot on the underside of the bottom (see bottom view), use the edge-guided router and a ¾ in. diameter straight bit. Make the cut in two passes, each pass removing ⅛ in. of stock.

Next, rip stock for the guide (E). Note that the thickness and width of the guide will be determined by the depth and width of your right-side miter gauge slot. To determine the thickness, measure the depth of the miter gauge slot and add ⅛ in. (As shown in the bottom view, this ⅛ in. dimension is added to account for the ⅛ in. deep slot cut in the underside of the bottom.) To determine the width of the guide, measure the width of the miter gauge slot and subtract about ¼ in. Once cut to thickness and width, check the fit of the guide in your miter gauge. It should be snug, yet slide smoothly in the groove.

Now cut the slot in the underside of the bottom (see bottom view) to accept the guide. To do this, measure the distance from the table saw's right-hand miter gauge slot to the saw blade (see end view). Lay out this dimension on the underside of the bottom, stop-

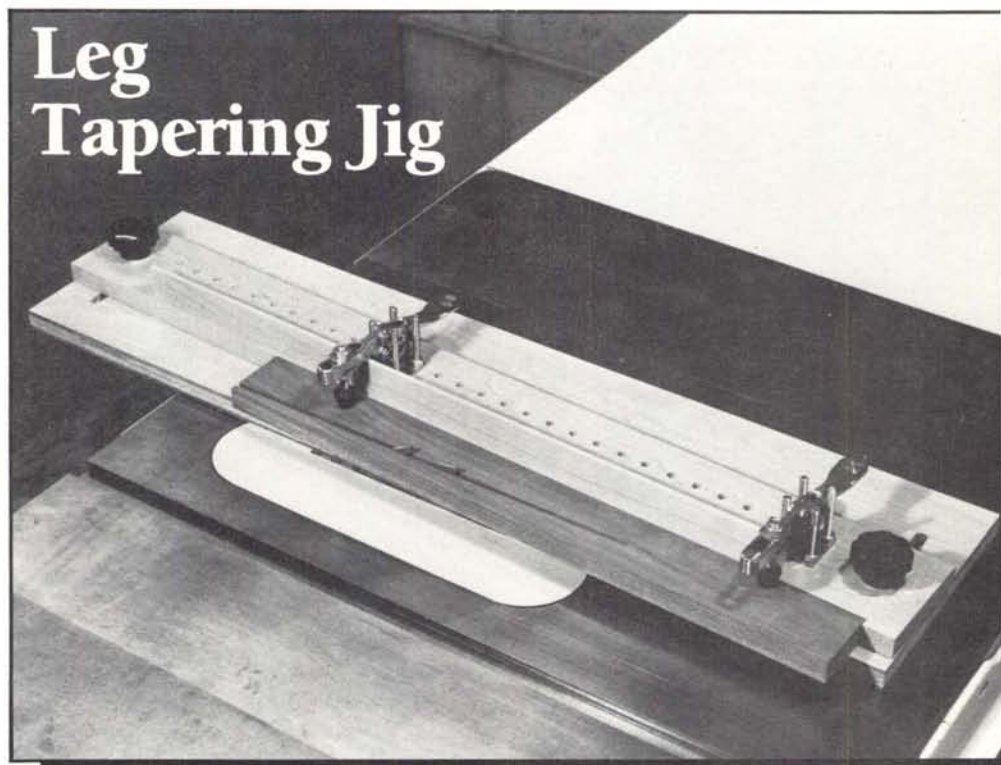
ping it short of the ends as shown. Use the router with an edge-guide and ⅜ in. dia. straight bit to cut the ⅜ in. deep slot. Make the first cut to establish the distance from the saw blade to the slot, then readjust the edge-guide to create a slot width that will accept the guide. The bit leaves rounded corners so you'll need to square them with a chisel.

Cut the base (B) to length and width from ¾ in. thick stock, then lay out and mark the location of the 60 toggle

at 45 degrees to apply the bevel along the back edge. Secure the stiffener to the base with glue and counterbored flathead wood screws.

Industrial supply shops often sell toggle clamps, however if not available locally, they can be ordered from Woodworker's Supply of New Mexico, 5604 Alameda Place N.E., Albuquerque, NM 87113.

The knobs (G) are available from the United States Plastic Corporation, 1390 Neubrecht Road, Lima, OH



clamp bolt holes, the ⅝ in. by ¾ in. slotted hole on the front end, and the ⅝ in. diameter hole on back end. Note, as shown in the bottom view, that each toggle clamp bolt hole has a ⅝ in. diameter by ⅝ in. deep counterbore on the underside of the base. Counterbore first, then drill the ¼ in. diameter through hole. We used the router to cut the slotted hole, but it can also be done by boring a pair of adjacent ⅝ in. diameter holes, then cleaning up the waste with a small file.

The stop (C) can now be added. Rip ¾ in. solid stock to a width of ¼ in., then cross cut it to a length of 1 in. Glue and clamp it in place making sure its top, bottom and end surfaces are flush with the base.

Part D, the stiffener, adds rigidity to the base, eliminating any tendency for the base to bend when pressure is applied by the toggle clamps. Cut it to overall length and width from ¾ in. thick stock, then use the table saw set

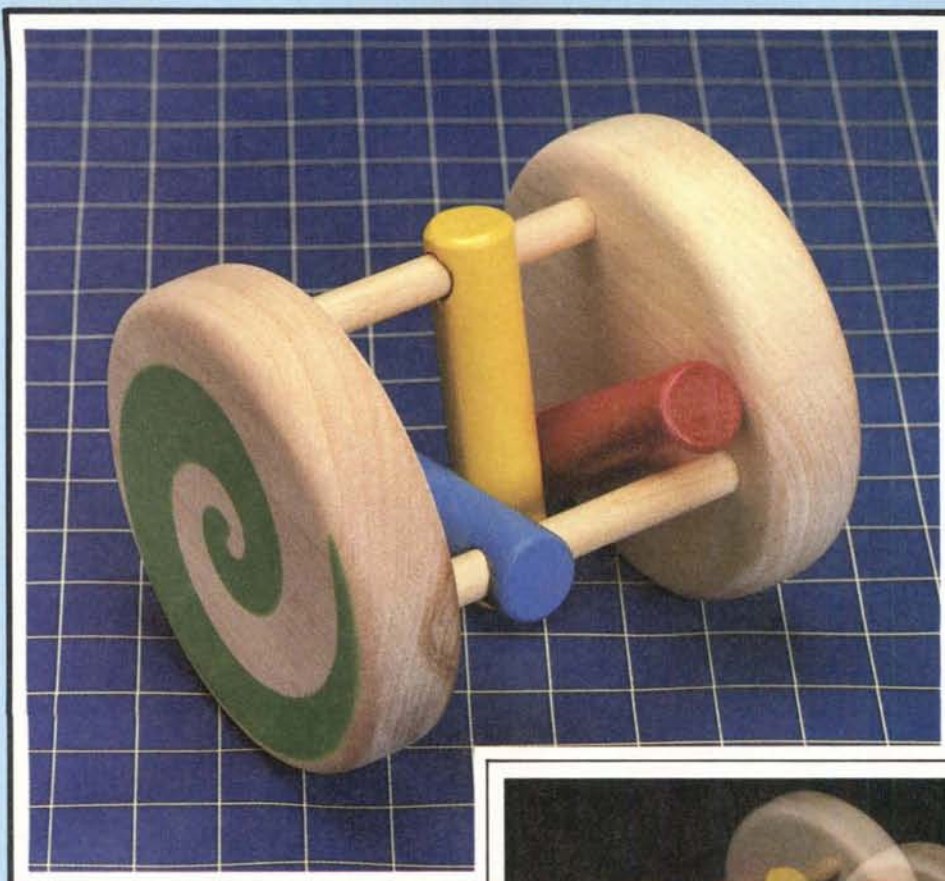
45801. If you prefer, a wing nut, available at just about any hardware store, can be substituted.

The location of the toggle clamps will depend upon the length of the workpiece. Always use both clamps to insure the stock is held securely.

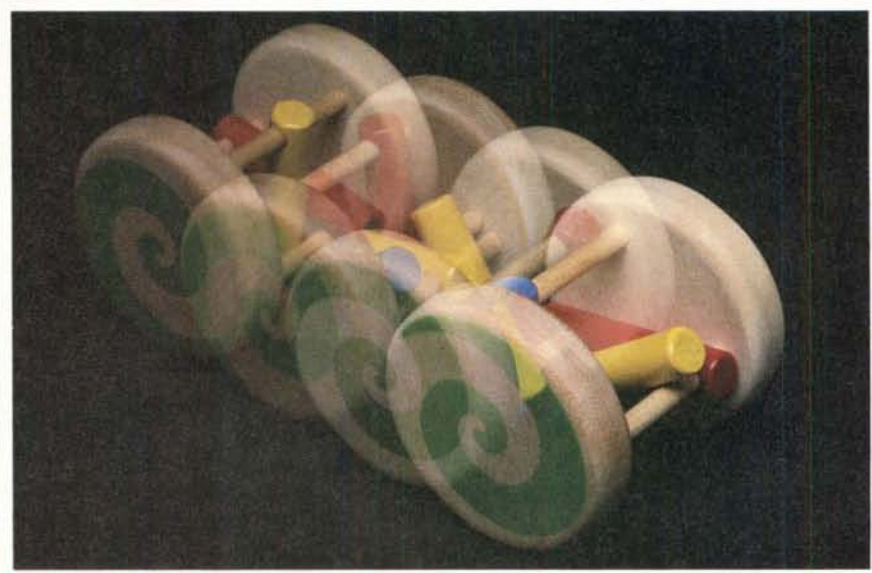
The jig is relatively easy to set up because the left edge of the bottom represents the cut line of the saw blade. This means that any stock overhanging the edge will get cut off as waste.

To use the jig, first cut your stock to final thickness, width, and length, then lay out the taper cuts on the stock. Butt the tapered end of the stock against the stop and adjust the base so that the cut line is aligned with the edge of the bottom. Clamp securely and make the cut. To cut a taper on an adjacent face, simply rotate the stock 90 degrees, then reclamp and cut. To cut a taper on a face that's opposite a previously cut taper, you'll need to readjust the base to compensate for the new angle. WwJ

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Rolling Toy



There's an old axiom that the toys children love the most are often those of the simplest design. Compared to the plastic-fantastic superhero toys at the local toy store, our rolling toy might assume a certain understated elegance. Yet we assure you that there is absolutely nothing understated about the youngsters' (ages 10 months to 3 years) reaction to it. Toy builder Skip Arthur, who provided us with the rolling toy, points out that the clicking action of the dowels, combined with the fascinating spiral action as the toy rolls along, is a sure attention grabber for the small fry.

To make the rolling toy you'll need about 10 in. of $\frac{1}{8}$ in. diameter dowel stock, about 10 in. of $\frac{3}{8}$ in. diameter dowel stock, and enough $\frac{1}{4}$ in. thick hardwood (we used birch) to make the two $3\frac{3}{8}$ in. diameter wheels. Cut the

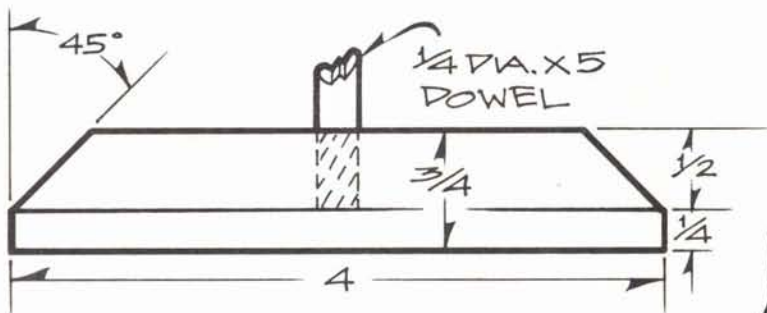
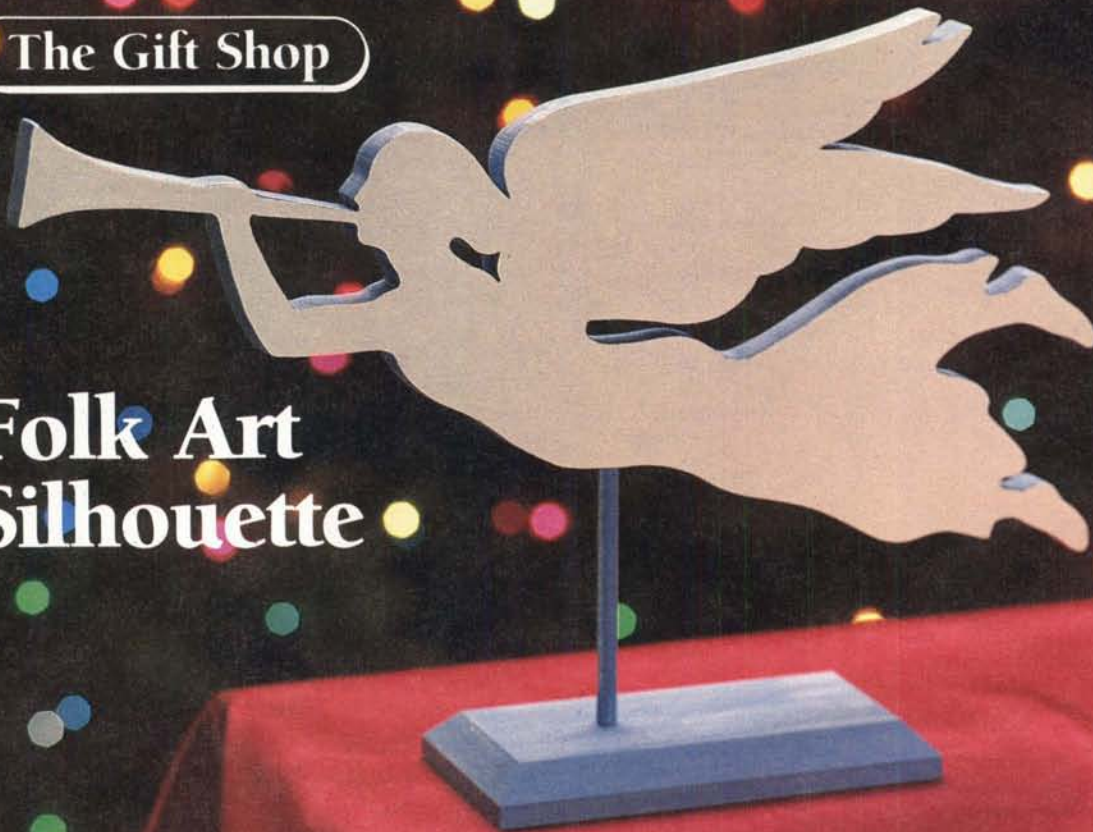
wheels (A) out with a band saw, staying just outside the marked line; then sand to the line using the disk sander, and round the wheel edges. Refer to the full-size pattern for the $\frac{1}{8}$ in. diameter dowel locations on the wheels, and drill to $\frac{1}{4}$ in. depth. Also mark out and hand paint the spiral pattern on the outside faces of both wheels. After cutting the pivoting dowels (B) and the connecting dowels (C) to their 3 in. lengths, use a V-block,

a $\frac{3}{8}$ in. brad-point drill bit, and the drill press as shown in the detail to drill through the ends of the pivoting dowels. Paint the pivoting dowels as shown and assemble, mounting them on the connecting dowels before adding both wheels. No finish is needed.

Wwj

The Gift Shop

Folk Art Silhouette



FULL SIZE PATTERN

Seventeenth and eighteenth century weathervanes were made in a wide variety of shapes and styles. Many of the folk-art silhouettes that have been enjoying considerable popularity of late owe their origins to those old-time weathervane designs. This one, the angel Gabriel, dates from that early period and it is one of our favorites.

Gabriel, an angel of Christian, Jewish, and Muslim tradition, is identified in some stories as one of the seven unnamed angels that trumpet to announce judgments on the world. And, according to the Old Testament, it is Gabriel who announces the birth of Jesus to Mary. With the month of December soon to be here, it seems appropriate to offer this traditional design, particularly since it is often associated with the Christmas season.

Begin by cutting a piece of 1 x 8 pine (which will actually measure $\frac{3}{4}$ in. thick by $7\frac{1}{4}$ in. wide) to a length of 16 in. A

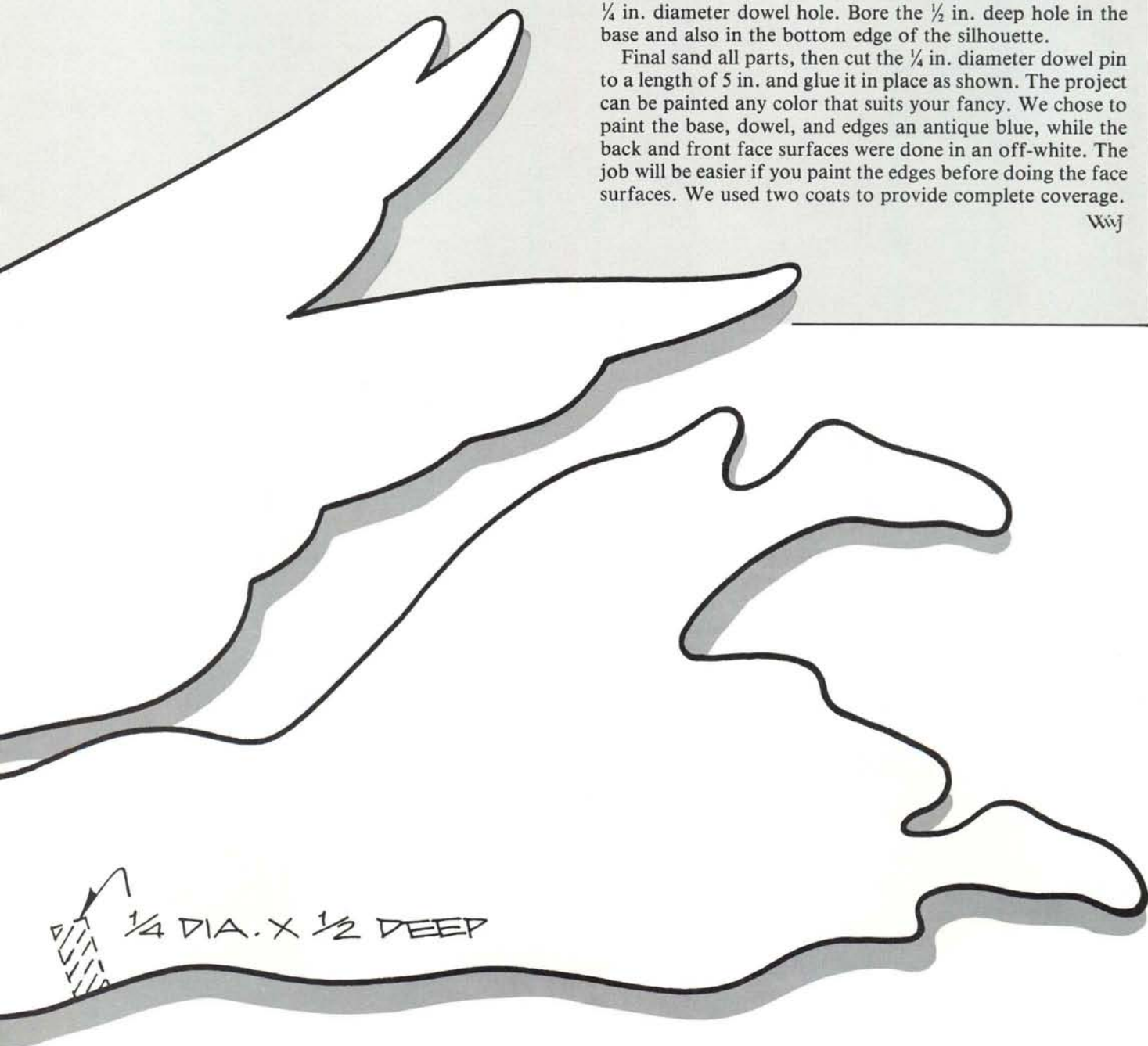
sharp smooth plane will reduce the $\frac{3}{4}$ in. stock to a thickness of $\frac{1}{2}$ in. in short order. Try to avoid using a board with knots though, as they tend to reduce strength and to make planing difficult. Also, unless the knots are treated with a wash coat of shellac, their resin often bleeds into a painted surface.

Once the stock has been planed, transfer the full-sized pattern as shown. The entire outside profile can be cut out using a band saw with a narrow blade or a scroll saw. When cutting, stay just slightly on the waste side of the marked line, then sand the edge exactly to the line. To make the two inside profiles, first drill a small hole within each one before using a scroll or jigsaw to cut out. If you have them, a few small files (half-round, rattail, and triangular) will help to smooth the edges here.

The base is made from $\frac{3}{4}$ in. thick pine stock cut to 4 in. wide and 6 in. long. The table saw, with the blade set at 45 degrees, can be used to cut the bevel on all four edges. At a point 2 in. from one end, lay out and mark the location of the $\frac{1}{4}$ in. diameter dowel hole. Bore the $\frac{1}{2}$ in. deep hole in the base and also in the bottom edge of the silhouette.

Final sand all parts, then cut the $\frac{1}{4}$ in. diameter dowel pin to a length of 5 in. and glue it in place as shown. The project can be painted any color that suits your fancy. We chose to paint the base, dowel, and edges an antique blue, while the back and front face surfaces were done in an off-white. The job will be easier if you paint the edges before doing the face surfaces. We used two coats to provide complete coverage.

Wvj

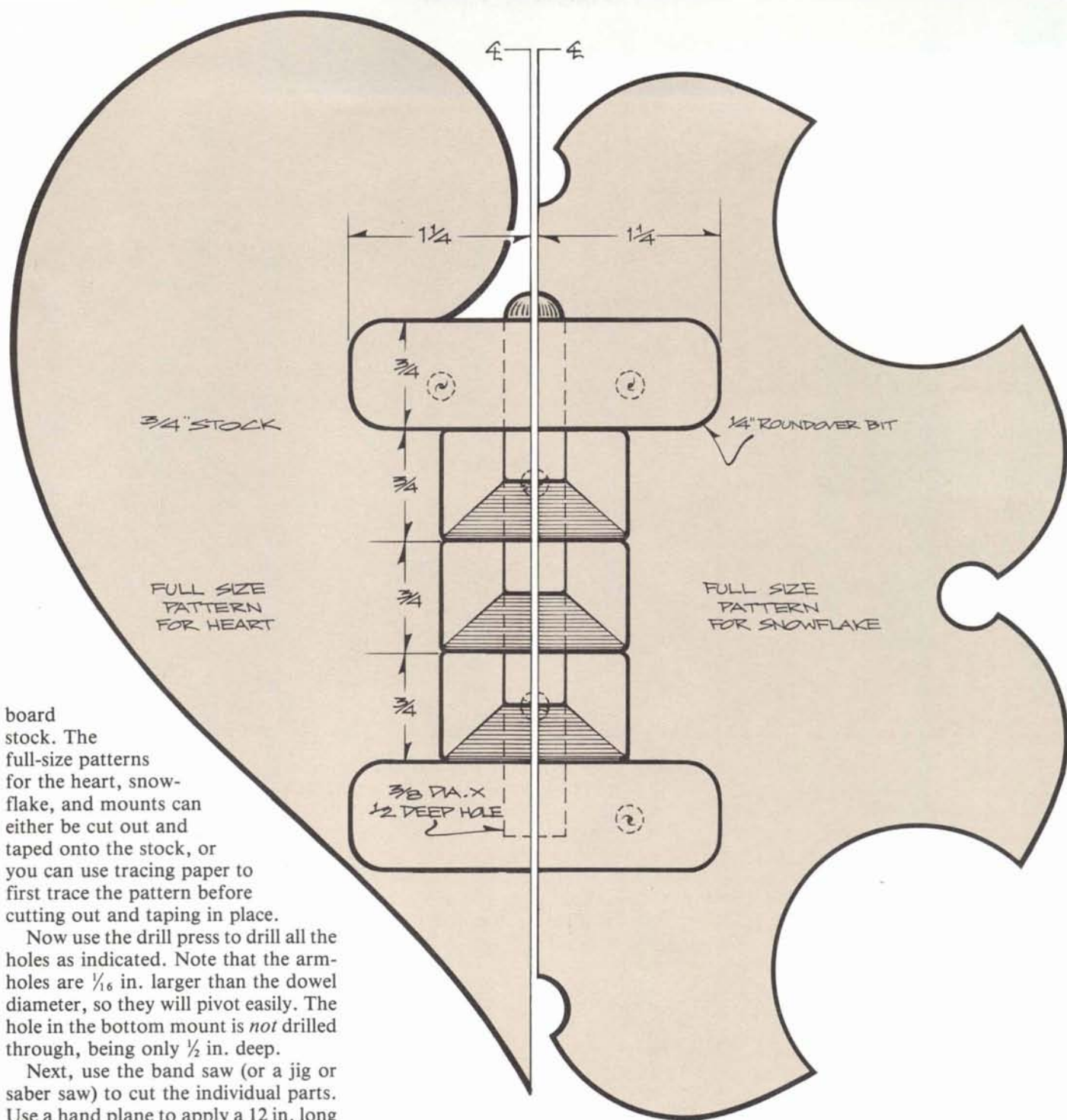


A black and white photograph of a wooden heart-shaped rack mounted on a wall. The rack is made of dark wood and has a heart shape with a small circular hole in the center. Several long, thin wooden sticks are placed horizontally across the rack, passing through the heart shape. A piece of fabric with vertical stripes is draped over the sticks, hanging down from the rack.

All parts are $\frac{3}{4}$ in. thick pine. Keep in mind that it's important to select clear, knot-free stock for maximum strength. The parts for two racks can be obtained from a $\frac{3}{4}$ in. by 8 in. by 38 in. board, as shown.

Begin by laying out the parts on your





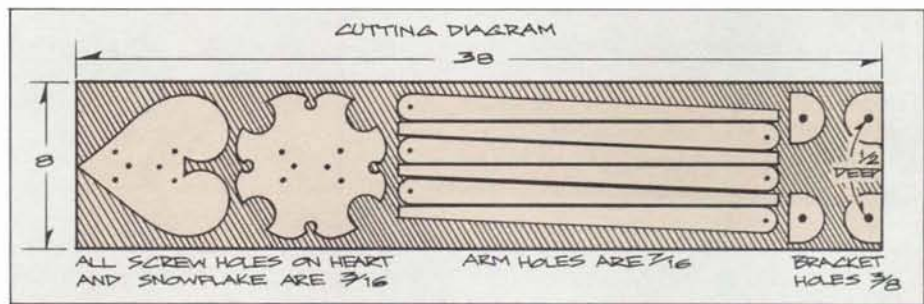
board stock. The full-size patterns for the heart, snowflake, and mounts can either be cut out and taped onto the stock, or you can use tracing paper to first trace the pattern before cutting out and taping in place.

Now use the drill press to drill all the holes as indicated. Note that the arm-holes are $\frac{1}{16}$ in. larger than the dowel diameter, so they will pivot easily. The hole in the bottom mount is *not* drilled through, being only $\frac{1}{2}$ in. deep.

Next, use the band saw (or a jig or saber saw) to cut the individual parts. Use a hand plane to apply a 12 in. long taper on the bottom edge of the arms, then use the router table to radius the edges of the mounts. Final sand all parts and assemble the mounts to the base with four $1\frac{1}{2}$ in. long screws driven through the back.

Stain and finish to suit. We used Minwax Special Walnut stain, followed by a spray coat of Zip-Guard Gloss Polyurethane.

The arms cannot be mounted until the base has been screwed to the wall. Be sure to use long enough screws to penetrate through both the back and the sheetrock and into a stud. A $2\frac{1}{2}$ in. long screw is recommended.



Early American Style Wall Shelf



A small wall shelf such as this can make a useful addition to just about any room in the house. We used pine for all parts, although it would also look good in cherry, oak or walnut.

The sides (A) can be made first. Cut two pieces of $\frac{3}{4}$ in. thick stock to 8 in. wide by 12 in. long (the width and length dimensions allow extra stock), then transfer the curved profile from the grid pattern. Mark the profile on just one of the sides before using a band saw or jigsaw to make the cut. Stay slightly on the waste side of the line and, after completing the cut, sand the edge smooth. The completed profile can be used as a template to trace the contour on the remaining side.

Next, lay out and mark the location of the $\frac{3}{8}$ in. deep by 2 in. long notches that are cut to accept the stretcher (B) and the pegboard (C). We used a fine-toothed backsaw to hand-cut the stretcher notch, although it can also be made using the table saw in conjunction with a dado-head and miter gauge. For the table saw method, set the dado-head to make a $\frac{3}{8}$ in. deep cut, then use the miter gauge to pass the stock, on edge, through the cutter. You'll need to make three or four passes to

establish the 2 in. length. The pegboard notch is best cut by hand using a chisel and mallet.

Cut the stretcher (B) to length and width before using the table saw and dado-head to cut the $\frac{3}{8}$ in. deep by $\frac{3}{4}$ in. wide rabbets on each end. Bore $\frac{3}{16}$ in. diameter shank holes at each rabbet and also at a point $5\frac{1}{4}$ in. (see front view) from each end, then countersink the holes to accept the flathead wood screws.

Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side	$\frac{3}{4} \times 7\frac{1}{2} \times 11$	2
B	Stretcher	$\frac{3}{4} \times 2 \times 27\frac{1}{2}$	1
C	Pegboard	$\frac{3}{4} \times 2 \times 30$	1
D	Shelf	$\frac{3}{4} \times 9\frac{1}{4} \times 36$	1
E	Peg	See Detail	6

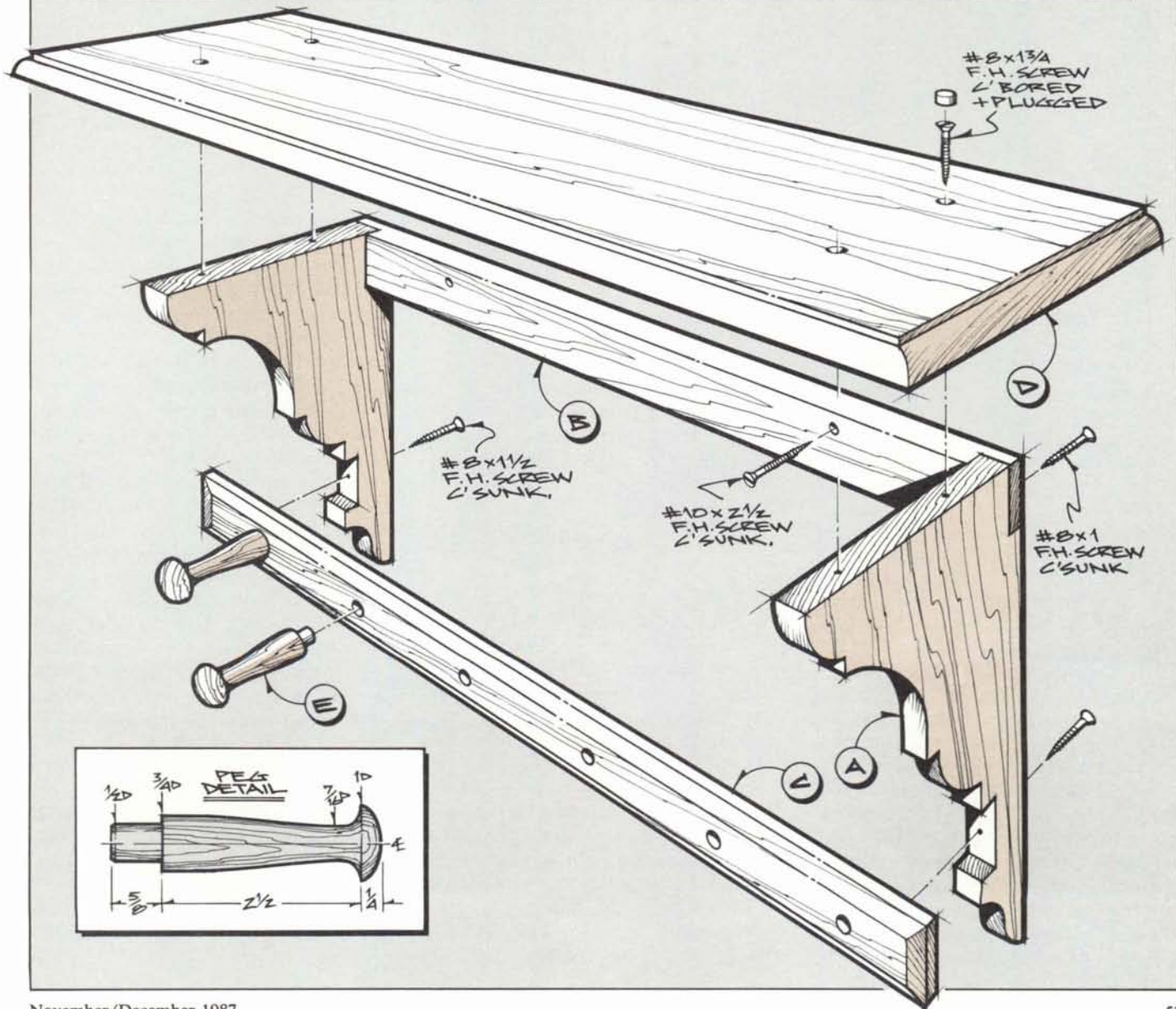
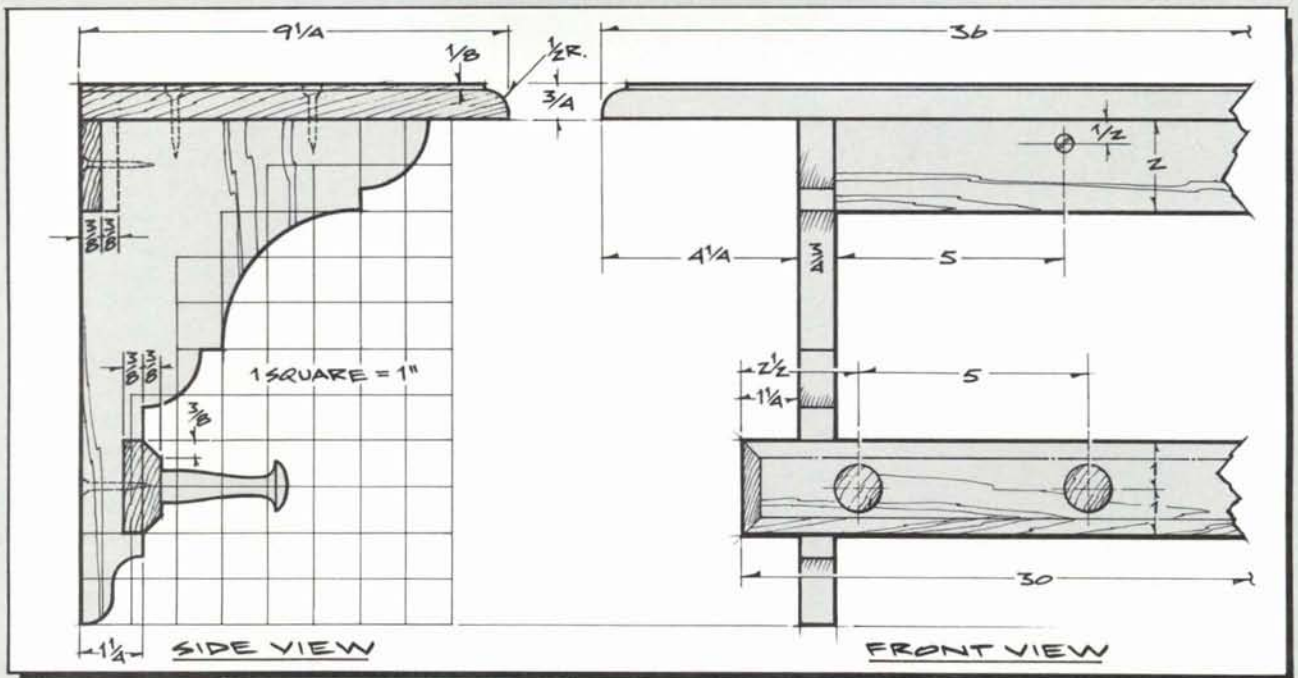
Rip the pegboard (C) to a width that will fit snugly in the notches before cutting it to a length of 30 in. The table saw, with the blade set at 45 degrees, can be used to cut the bevel on all four edges. Lay out and mark the location of the six peg holes and use a drill press to bore them out. The pegs (E) can be turned to the profile shown in the

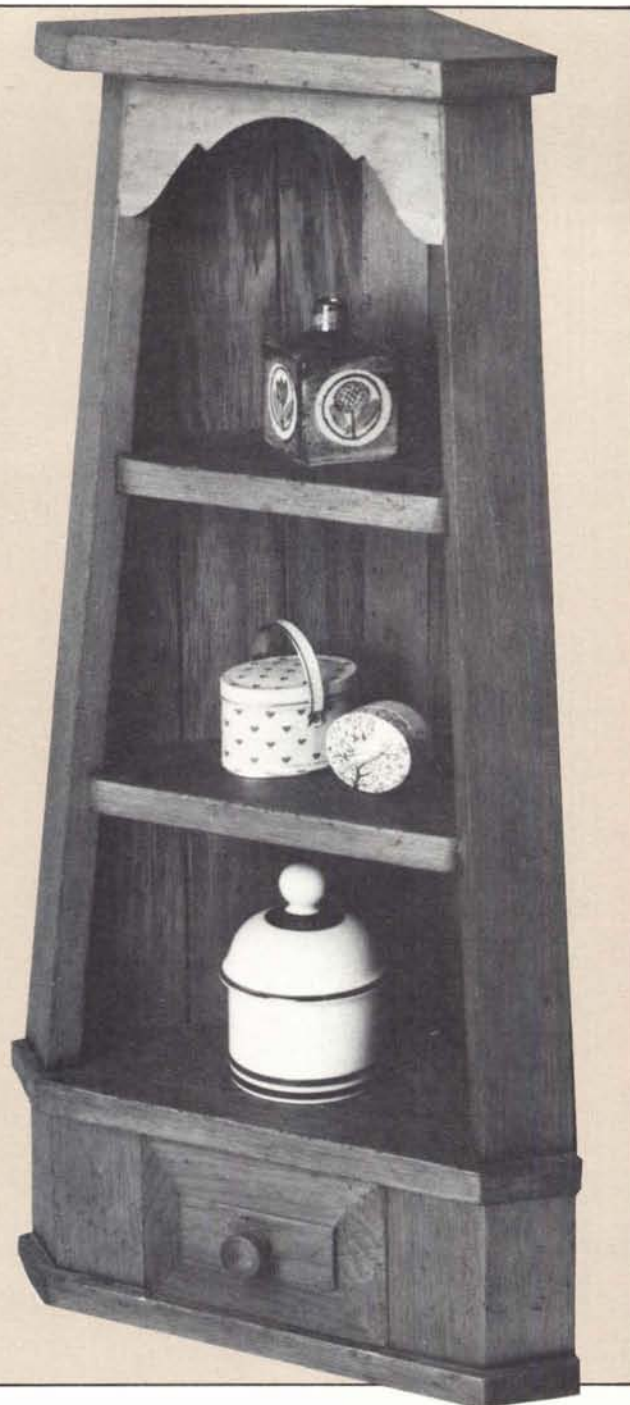
detail or, if you prefer, they can be ordered from Shaker Workshops, P.O. Box 1028, Concord, MA 01742-1028. A bag of 10 pegs is priced at \$3.50 postpaid. Order part number W501.

Glue and screw the stretcher and the pegboard in place as shown. Note that each screw is slightly countersunk so that the screwhead will be flush with the surface.

The shelf is made from a 36 in. length of 1×10 stock (which will measure $\frac{3}{4}$ in. thick by $9\frac{1}{4}$ in. wide). To cut the molded edge on the front and side edges, you'll need a router equipped with an edge-guide and a $\frac{1}{2}$ in. radius bearing-guided round-over bit. Once the molding is cut, assemble the shelf to the sides and stretcher with glue and four counterbored and plugged flathead wood screws as shown.

Final sand all parts, then glue the six pegs in place. To complete the project, apply two coats of Minwax's Colonial Maple followed by three applications of Watco Danish Oil. We spaced the no. 10 mounting screws 16 in. apart to permit the shelf to be secured to wall studs. The $2\frac{1}{2}$ in. screw length allows for the $\frac{3}{4}$ in. stretcher thickness plus $\frac{1}{2}$ in. thick dry wall. Wwj





Corner Cupboard

This corner whatnot shelf, constructed of pine, is a somewhat challenging piece to build, primarily because of several angles related to the cabinet's tapering profile. However, once you have an understanding of the construction, the pieces fit together much like the pieces of a puzzle.

The best way to start is with cutting the two sides (A). As shown in the detail of the layout for part A, you will need to cut both the shelf grooves and the ends at a 6-degree angle. Use the dado-head for cutting these grooves.

Also, establish a $\frac{1}{4}$ in. by $\frac{3}{8}$ in. rabbet along the back edges of parts A to accept the back pieces (B). The back pieces can be cut either from some scrap wall paneling, as ours were, or from $\frac{1}{4}$ in. thick plywood. It's a good idea to measure the actual thickness of the material you use and size the rabbet depth to match, since few $\frac{1}{4}$ in. plywoods measure exactly $\frac{1}{4}$ in. thick.

To cut the back support (C), start with a board about $2\frac{1}{2}$ in. wide. Lay out the dados and cut them using the dado-head. Then reset the dado-head

to equal the part B plywood thickness, incline the blade to 45 degrees, and establish the $\frac{1}{2}$ in. depth of cut to accept the back. Then with the blade again set at 45 degrees, rip the waste away. Fig. 1 shows the procedure for making these two part C cuts.

Now cut the various shelves (D, E, F and G) to the dimensions shown in the cutting chart. The lower shelf (G), must be notched to fit around the back parts.

The bottom (H) has the same front and side profile as the bottom shelf, but extends under the back support. Also, cut the lower sides (I) and front parts (J). As illustrated, the lower sides require a rabbet to accept the back. Both the lower sides and front parts are mitered at $22\frac{1}{2}$ degrees where they meet.

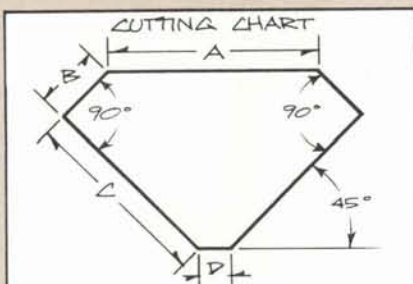
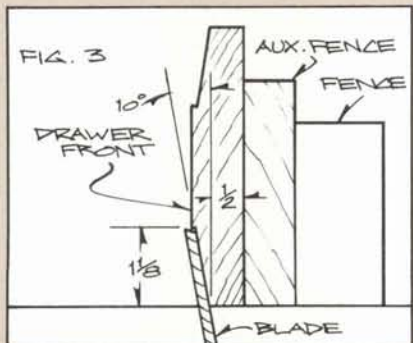
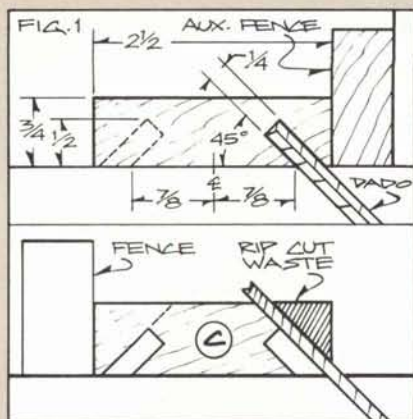
At this point you should test assemble the various parts that have been cut so far. If any of the parts do not fit properly, adjust them as needed. Use glue and brads to final assemble.

Now cut and fit the valance (K). Starting with a $\frac{3}{8}$ in. by $3\frac{1}{4}$ in. by 8 in. piece of stock, set the table saw blade at a 6-degree tilt, and rip along the top edge to create the final 3 in. width (see Fig. 2). Next, hold part K in place on the case and mark for the two side cuts. Because of the taper in the case sides, these side cuts must be made at 47 degrees as opposed to the 45-degree cut that would be required were the sides *not* inclined inward. Next, referring to the grid pattern given, lay out and band saw the valance profile. The quarter-round molding (L) is simply mitered as needed and applied with small brads. Because this quarter-round is small, it will comply with the taper without further adjustment.

The drawer, consisting of parts M, N, O, and P, should be made to fit the drawer opening. Use standard rabbeted drawer construction techniques, with a $\frac{1}{4}$ in. thick plywood bottom. The drawer front is beveled on the table saw, as shown in the Fig. 3 detail. Note that the blade height, at a 10-degree angle, is $1\frac{1}{8}$ in. The drawer is guided by three identical runners, two mounted to the drawer bottom, which then fit on either side of the third runner centered on the case bottom.

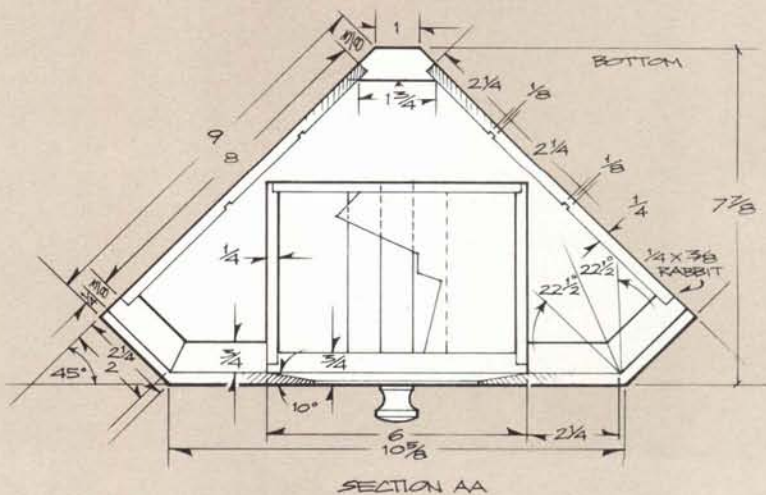
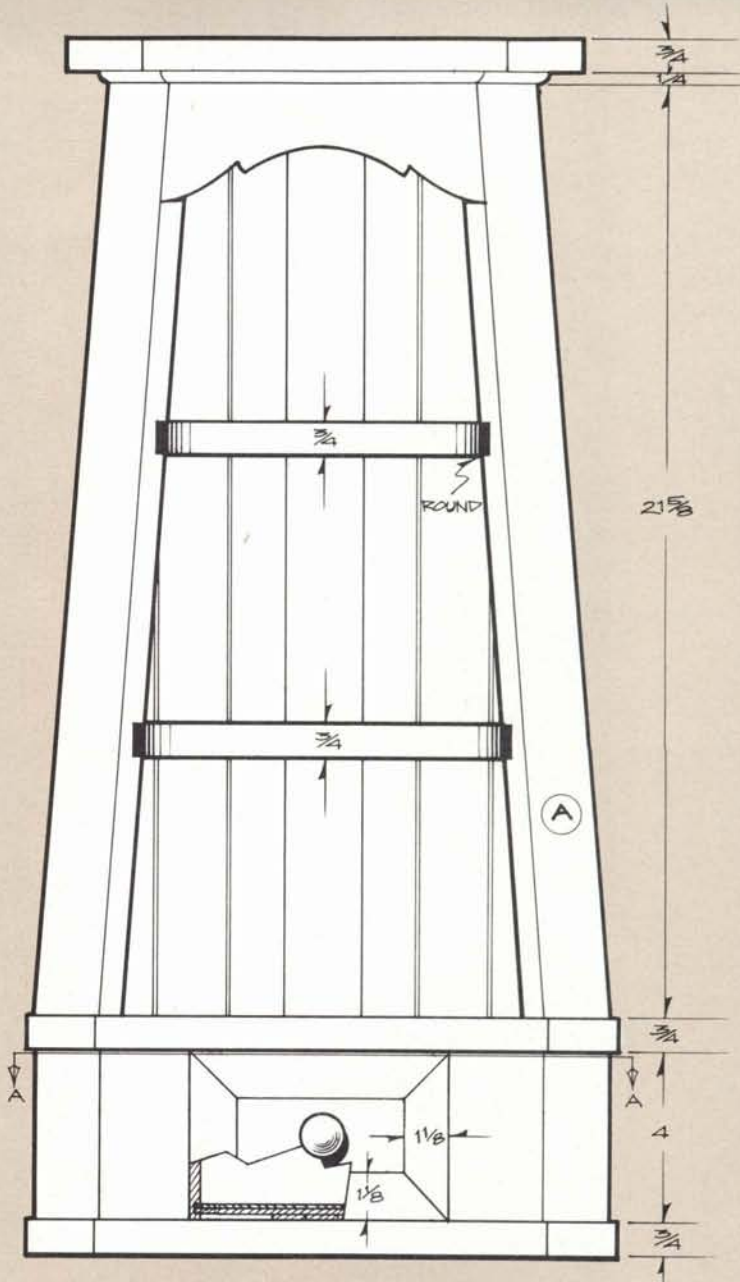
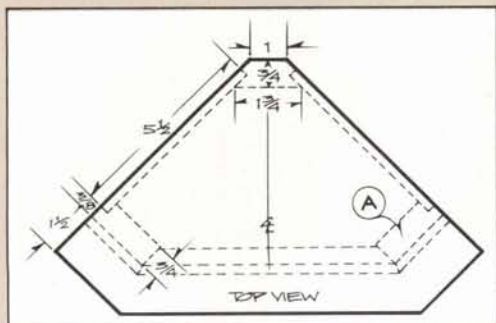
A turned knob (R) completes the project. You could substitute a 1 in. diameter porcelain knob for the turned knob, if you prefer. Stain and finish to suit.

WJ



	A	B	C	D
TOP (D)	8 1/2	2 1/2	7 3/4	1
TOP SHELF (E)	7 5/8	2	6 3/4	1 1/8
MIDDLE SHELF (F)	8 3/8	2	7 1/8	1 1/8
LOWER SHELF (G)	10 5/8	2 1/4	8 3/8	1 1/8
BOTTOM (H)	10 5/8	2 1/4	9	1

* BEFORE NOTCH FOR BACK IS CUT

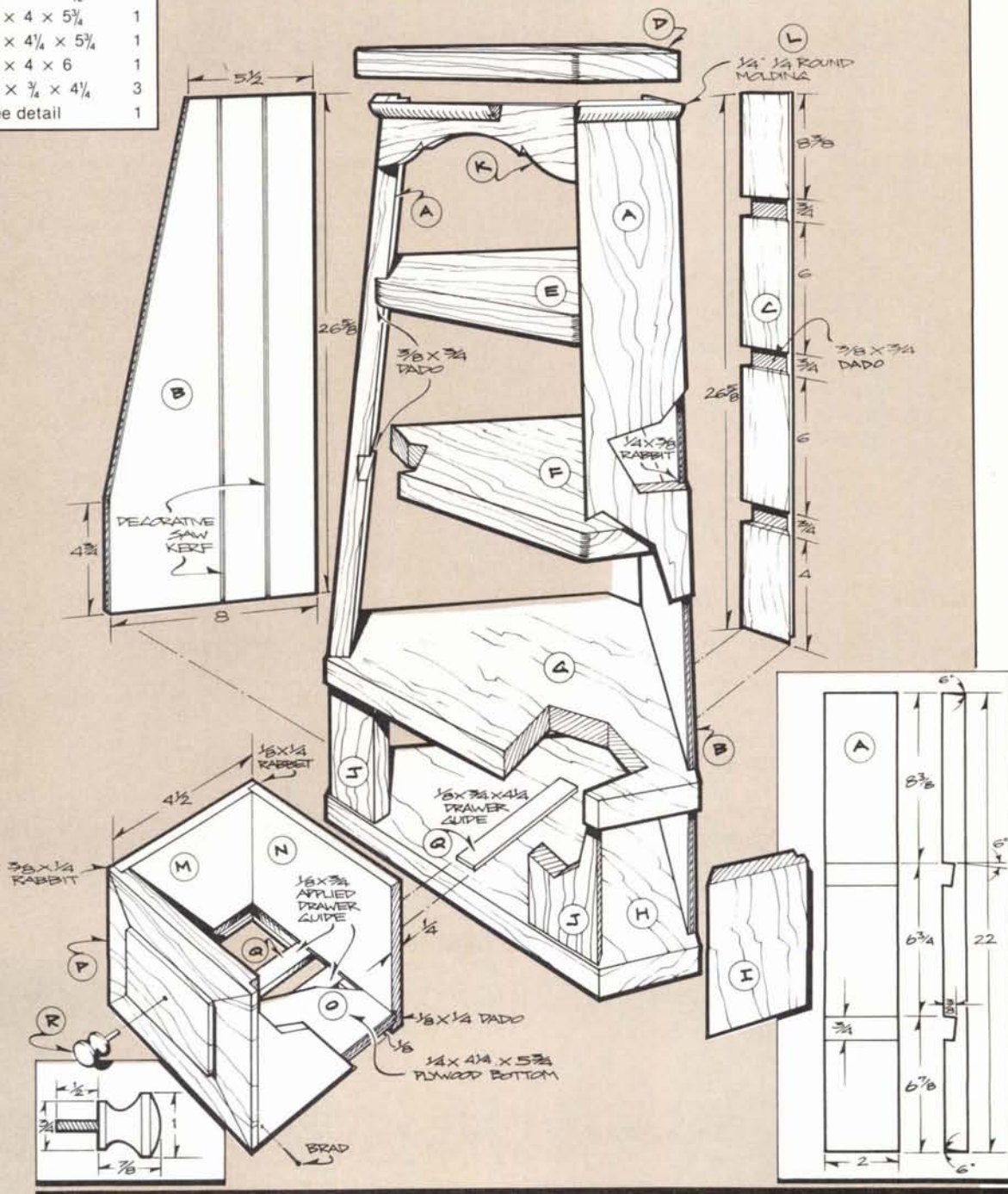
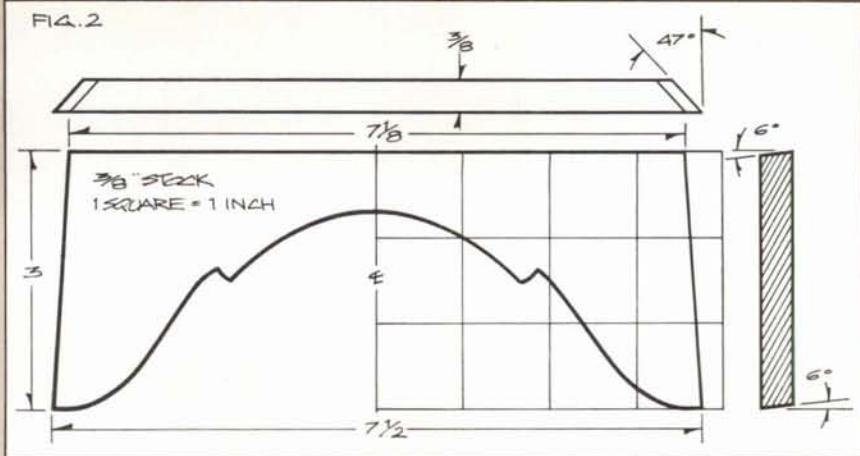


(continued on next page)

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Side (upper)	$\frac{3}{4} \times 2 \times 22$	2
B	Back	$\frac{1}{4} \times 8 \times 26\frac{5}{8}$	2
C	Back Support	$\frac{3}{4} \times 2\frac{1}{2} \times 26\frac{5}{8}$	1
D	Top	see chart	1
E	Top Shelf	see chart	1
F	Middle Shelf	see chart	1
G	Lower Shelf	see chart	1
H	Bottom	see chart	1
I	Side (lower)	$\frac{3}{4} \times 2 \times 4$	2
J	Front	$\frac{3}{4} \times 2\frac{1}{4} \times 4$	2
K	Valance	$\frac{3}{8} \times 3 \times 7\frac{1}{2}$	1
L	Molding	$\frac{1}{4} \times \frac{1}{4}$ round	12 in.
M	Drawer Side	$\frac{1}{4} \times 4 \times 4\frac{1}{2}$	2
N	Drawer Back	$\frac{1}{4} \times 4 \times 5\frac{3}{4}$	1
O	Drawer Bottom	$\frac{1}{4} \times 4\frac{1}{4} \times 5\frac{3}{4}$	1
P	Drawer Front	$\frac{3}{4} \times 4 \times 6$	1
Q	Drawer Guide	$\frac{1}{8} \times \frac{3}{4} \times 4\frac{1}{4}$	3
R	Knob	see detail	1

FIG. 2



Stacking Wine Rack



With the approach of the holiday season, many of us look forward to stocking up on some fine wines to complement those special occasion meals. There's no better place to store wine than in a wine rack. Not only does it eliminate fumbling around in a dark cabinet to find the right bottle, but it also holds the bottles at the correct angle with the cork end low so the cork remains moist.

The design of our wine rack was intended to create a modular look; hence the stacking feature. While our photo shows three units, as many as six may be safely stacked. Take note that while the units are keyed together with dowels, the base unit should not be drilled out on the bottom edge for dowels, and the top unit should remain clear along the top edge.

We used a router and template method to create a distinctive wine

glass motif on the rack ends. You may choose to substitute some other design or even leave the ends plain. Should you decide to eliminate the routed motif, we suggest a decorative plug using an attractive contrasting wood, such as padauk.

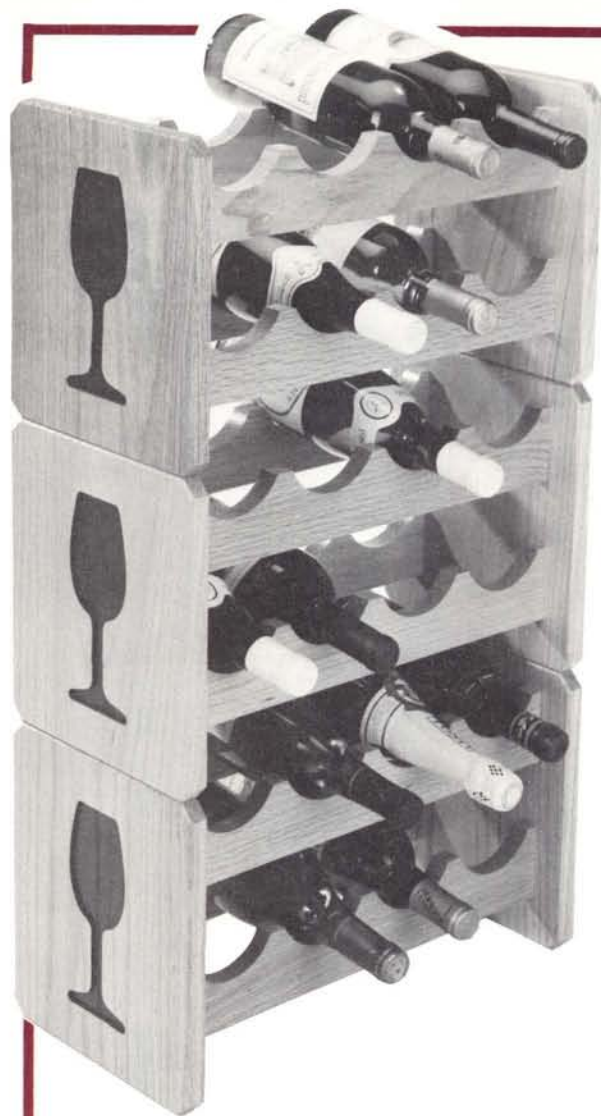
Another aspect of this wine rack that you'll appreciate is the simplicity of its construction. Start by milling $\frac{3}{4}$ in. thick stock for the ends and stretchers. As shown in the circle cutting detail, you will need two boards measuring $6\frac{1}{2}$ in. by $16\frac{1}{4}$ in. for the four stretchers in each rack. Note that two stretchers are obtained from each board. Lay out four $3\frac{1}{2}$ in. diameter circles on each board, $3\frac{3}{4}$ in. on center. As shown in the detail, this layout will leave $\frac{1}{4}$ in. between the circles and $\frac{3}{4}$ in. on each end. If you don't have a $3\frac{1}{2}$ in. diameter hole saw, use the fly cutter in the drill press to cut out the circles. The

fly cutter will leave a fairly clean cut, but the circles will require sanding with a drum sander mounted in the drill press.

Next, rip the stretcher board to create the two $2\frac{1}{2}$ in. wide stretcher parts, and tenon the ends.

Now cut the blanks for the ends. We made a simple fixture, as shown in the routing detail, to center each of the end pieces under the template for routing the wine glass detail. The fixture consists of two pieces of $\frac{3}{4}$ in. by 3 in. stock that are glued or screwed to the underside of the plywood template, with a notched block with slotted screw holes serving as a clamp to hold the end blank tightly. This fixture, with the blank in place, is then clamped to the workbench for routing. Take note that the actual template size (the outside profile of the wine glass) will depend

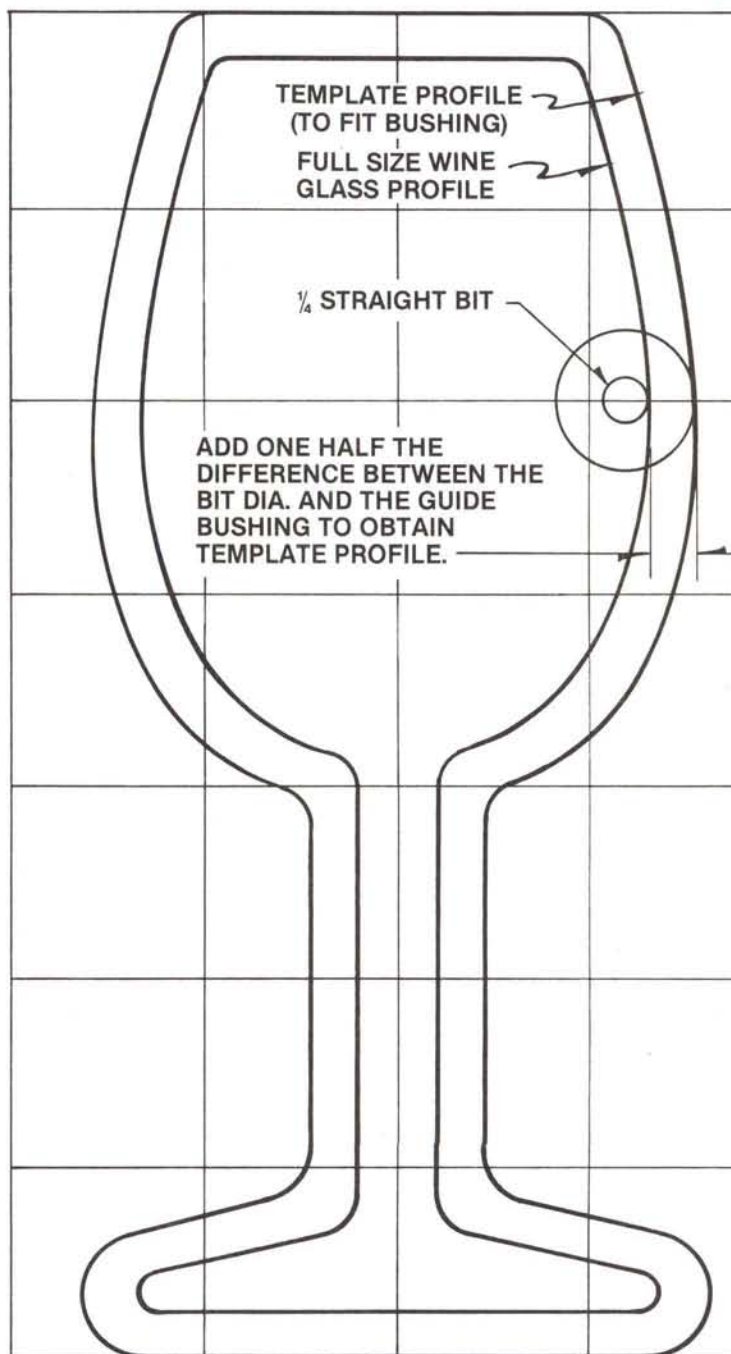
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Bill of Materials (all dimensions actual)

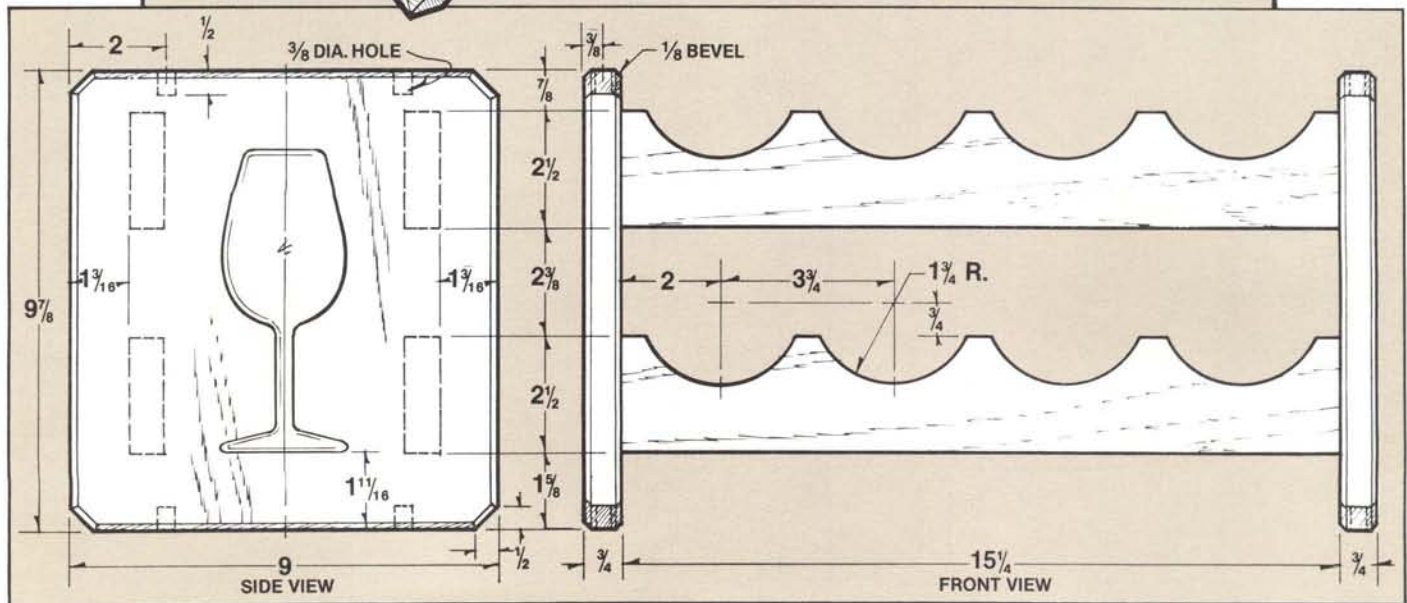
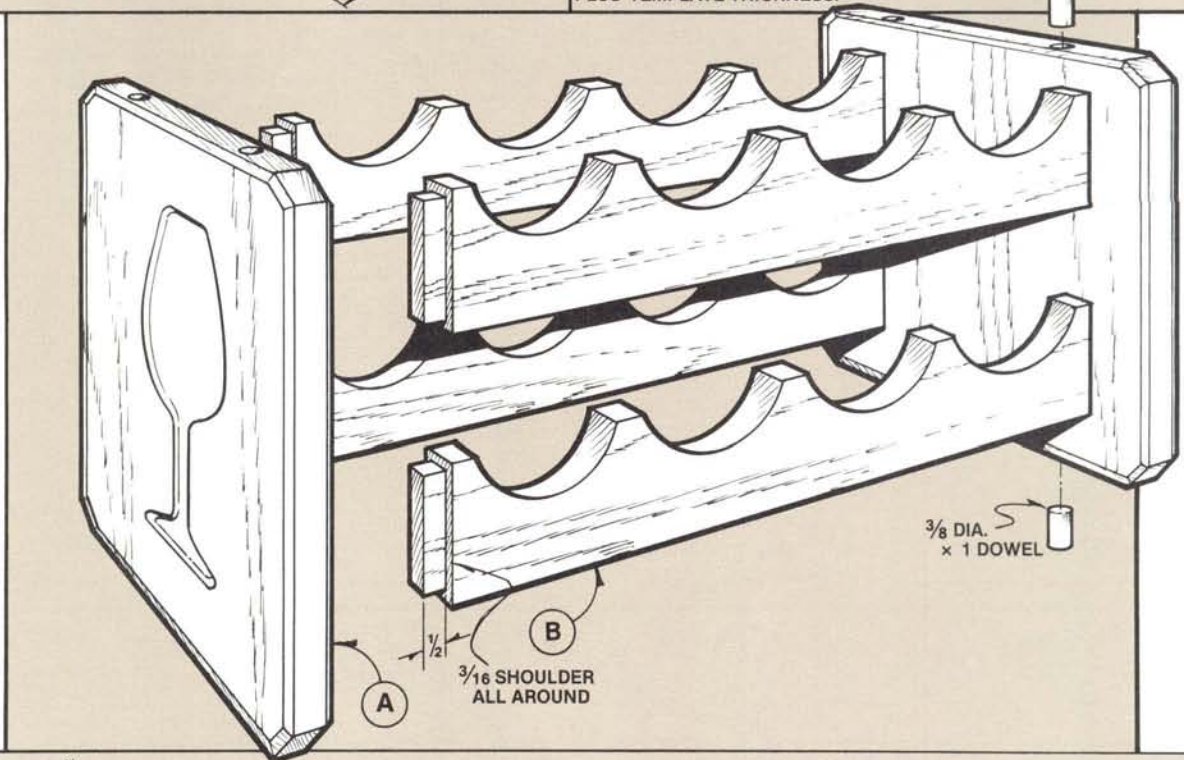
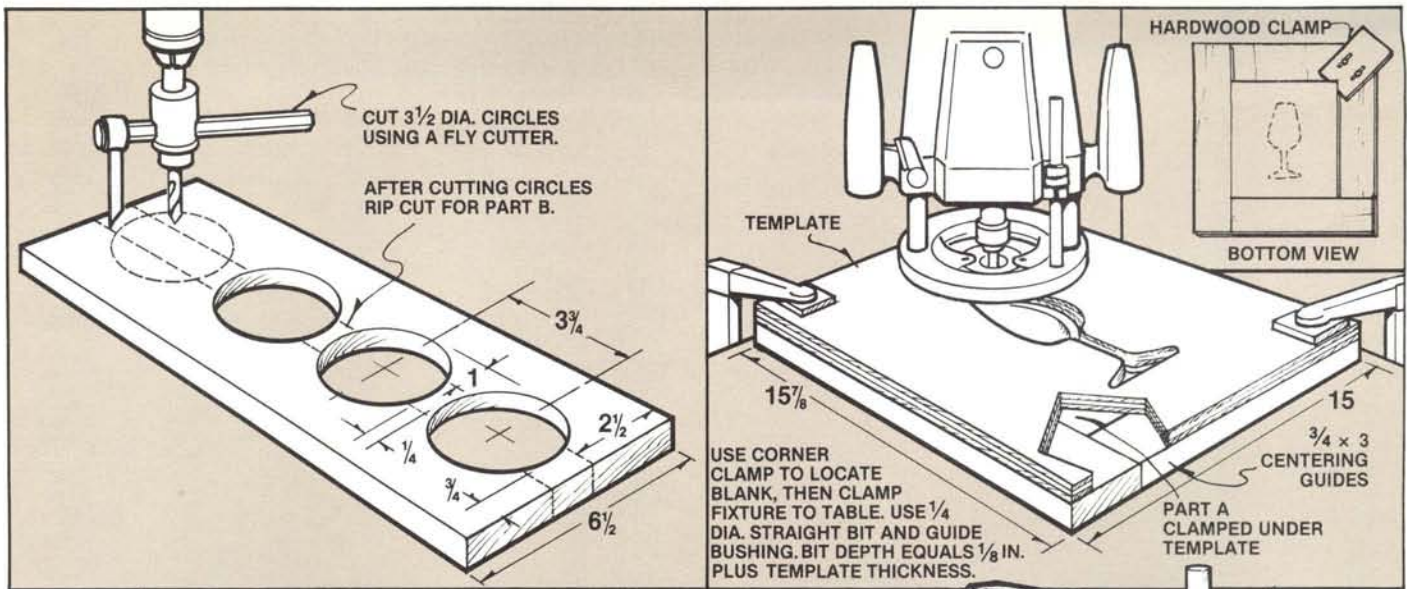
Part	Description	Size	No. Req'd.
A	End	$\frac{3}{4} \times 9 \times 9\frac{7}{8}$	2/Rack
B	Stretcher	$\frac{3}{4} \times 2\frac{1}{2} \times 16\frac{1}{4}$ *	4/Rack

*Width after ripping; length includes tenons.



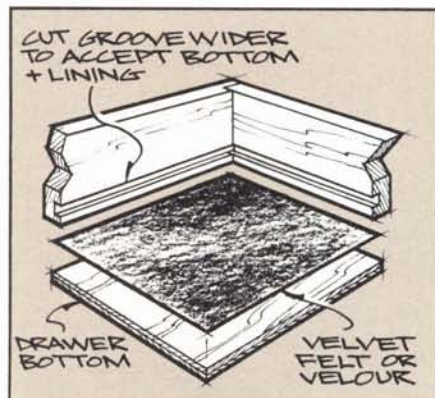
on the size guide bushing that you select. For example, if you use a $\frac{3}{4}$ in. diameter guide bushing with the $\frac{1}{4}$ in. straight bit, then the template would have to be sized $\frac{1}{4}$ in. larger all around. We found that it's best to use two depth settings with the router to make the $\frac{1}{8}$ in. deep relief, $\frac{1}{16}$ in. being removed each time.

Cut the mortises to accept the stretcher tenons, nip the end piece corners and apply a $\frac{1}{8}$ in. chamfer all around. Also drill the $\frac{3}{8}$ in. by $\frac{1}{2}$ in. holes to accept the short lengths of dowel that key the racks together, if you plan to make more than one rack. The wine glass relief was painted using a fine brush and an acrylic paint, and then allowed to dry. Final sand all parts before gluing and assembling. A coat of Deft Spray Lacquer will complete the project. Wwj



Shop Tips

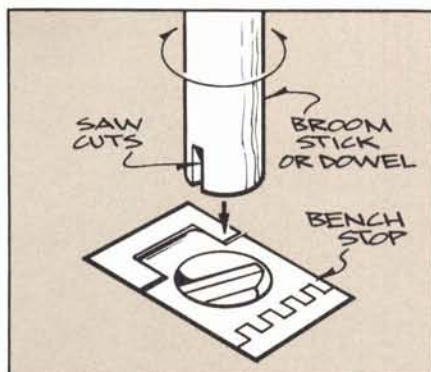
It can be difficult to get a good fit when cutting velvet, velour, or felt to use as a lining for the plywood bottom of a drawer. Here's a way to avoid the problem. First cut the drawer bottom



to final size, then glue the lining (cut slightly oversized) to the plywood. Use a light even film of yellow glue and smooth out any wrinkles or air pockets under the lining. When dry, trim the lining flush to the edges with a scissors. The grooves in the drawer front, back and sides are then cut slightly wider than normal to accept both the bottom and lining.

David Miller, Annville, Penn.

It's always been troublesome to raise or lower my flush mounted bench stop by turning the wing bolt by hand. I solved the problem by making a "screwdriver" from a piece of broomstick. Simply notch the end of



the broomstick so it fits over the wing bolt, then use it like a screwdriver.

Ronald L. Pirani, Worcester, Mass.

When hand sanding curved or intricately shaped pieces, apply a strip of duct tape to the back of your sandpaper. The sandpaper will remain flexible, but will not tear as easily.

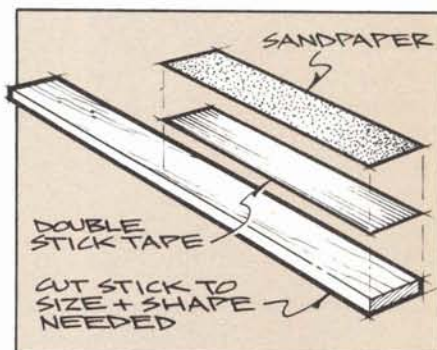
M.M. Savoie, Brady, Tex.

When carving, the palms of my hands tended to blister, especially when using palm-sized violin makers' gouges. To prevent this, I started using "fingerless" bicycle gloves. They pad the palms nicely and make it easier to

grip the tools. The gloves can be ordered at just about any bicycle shop.

Don Moser, Dallas, Tex.

For odd sanding jobs I use a piece of sandpaper secured to a thin piece of scrap stock with double-faced carpet tape. When the sandpaper wears, simply pull it off and replace it with a



new piece. The scrap stock can be cut to just about any size to accommodate a variety of sanding applications.

L.F. Stephan, Greenwood, Ind.

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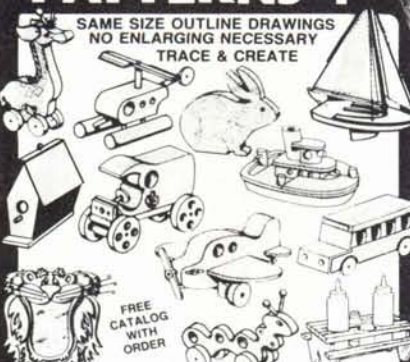
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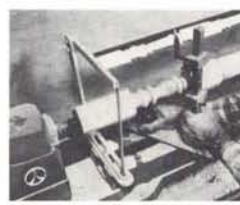
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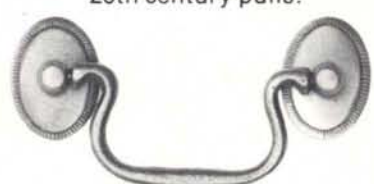
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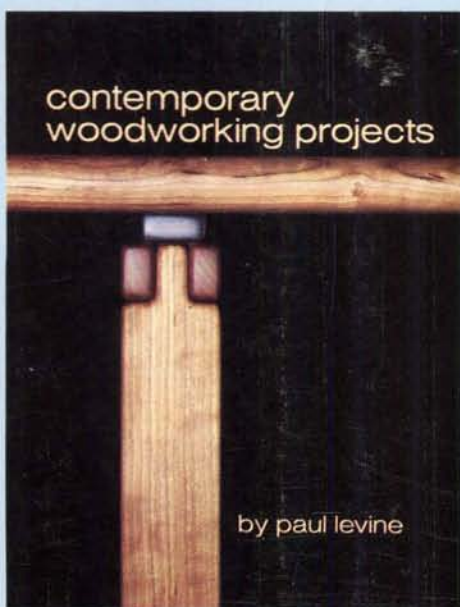
TV/VCR Cabinet, Early American Style Bookcase, Pine Trash Container, Sturdy Low-cost Workbench, Country Basket, Desk Calendar with Pen & Pencil, Butterfly Pull Toy, Vanity Mirror with Drawer, Apothecary Chest, *Articles*: Shellac; The Hand Plane; Veneer, Part II; Incised Carving; Hardwoods Suppliers.

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Toy Car & Trailer, May/June '84





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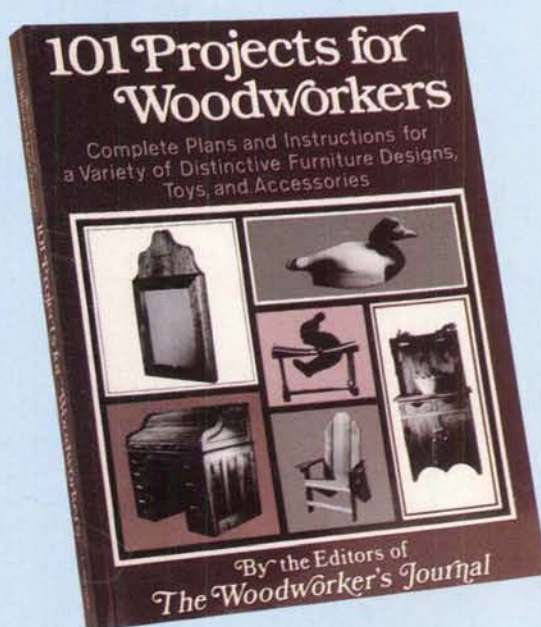
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