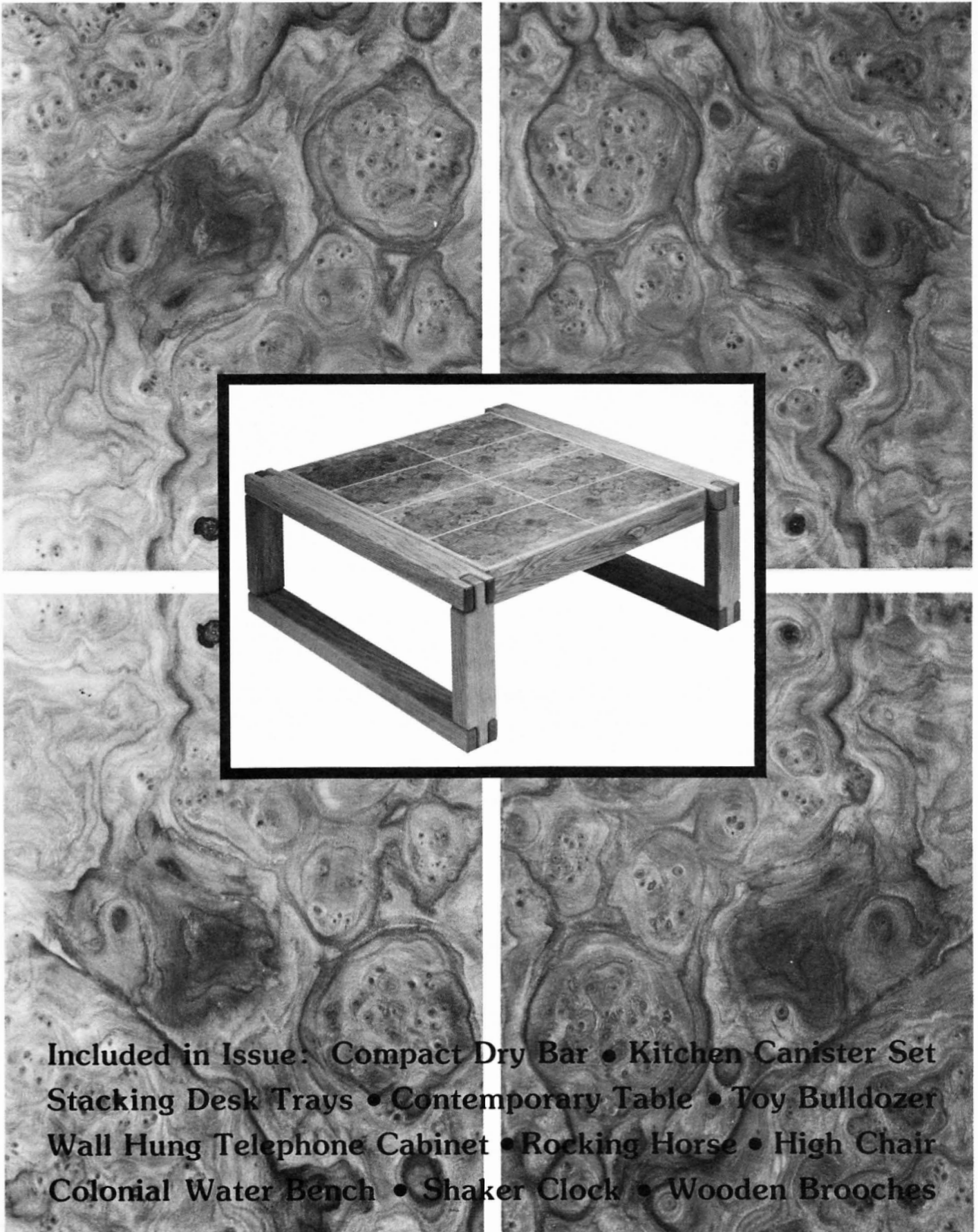


# The Woodworker's Journal

Vol. 8, No. 2

March/April 1984

\$2.50



**Included in Issue:** Compact Dry Bar • Kitchen Canister Set  
Stacking Desk Trays • Contemporary Table • Toy Bulldozer  
Wall Hung Telephone Cabinet • Rocking Horse • High Chair  
Colonial Water Bench • Shaker Clock • Wooden Brooches

# BACK ISSUES



**Vol. 4 No. 4 July-Aug '80:** Magazine Rack, Gothic Oak Stool, Whale Cribbage Board, Doll Cradle, Nut & Bolt Toy, Basket-weave Planters, Easy Wall Clock, Router Bit Box, Pine Cellarette, Lap Chessboard, Pine Wall Box.

**Vol. 4 No. 5 Sept-Oct '80:** Cabinetmaker's Workbench, Cobbler's Bench Coffee Table, 19th Cent. Cherry Table, Kitchen Utensils, Book Rack, Nuts & Bolts, Nutcracker, Walnut & Glass Bank, Schoolhouse Desk, Booster Seat.

**Vol. 4 No. 6 Nov-Dec '80:** 17th Cent. Mantle Clock, Toy Truck, Bud Vase, Grain Scoop, Letter Rack, Phone Memo Caddy, Toy Circus Wagons, Animal Puzzles, Library Stool, Quilt Rack, Ratchet Table/18th Cent. Trestle Table, Lathe Steady Rest.

**Vol. 5 No. 1 Jan-Feb '81:** 18th Cent. Wall Shelves, Hand Mirror, Cutting Boards, Tic-Tac-Toe Game, 18th Cent. Vanity, Shaker Pine Cupboard, Tenon Jig, Towel Ring, Matchbox, Corner Shelves, Contemporary Cabinet, Black Forest Clock, Shop Drawing Board.

**Vol. 5 No. 2 Mar-Apr '81:** Child's Rocker, Bandsaw Jig, Push-Pull Toy, Half-Round Table, Spoon Rack, Salt and Pepper Shakers, Calculator Stand, Anchor Thermometer, Plant Stand, Oak Writing Desk, 18th Cent. Chair Table, Shop-Built Handscrew.

**Vol. 5 No. 3 May-June '81:** 18th Cent. Sleigh Seat, Child's Step Stool, Kiddie Gym, Flying Duck, Dominoes, Trouser Hanger, Mug Rack, Folding Sun Seat, Ship's Wheel Table, Contemporary Buffet.

**Vol. 5 No. 4 July-Aug '81:** Longhorn Steer, Bike Rack, Miniature Chest, Doll House Bed, Curio Shelves, Belt Rack, Rocker Footrest, Early American Wall Shelf, Multipurpose Cabinet, Box Cutting Jig, Dish Rack.

**Vol. 5 No. 5 Sept-Oct '81:** 18th Cent. Rudder Table, Musical Jewelry Box, Colonial Candlestick, Deacon's Wall Shelf, Toy Hippo, Spalted Boxes, Woodbox, Sewing Cabinet with Tambour Doors, 18th Cent. Tavern Table, Router Jig for Stopped Dadoes.

**Vol. 5 No. 6 Nov-Dec '81:** Old-Time Ice Box, Victorian Sled, Tile Clock, Wine Glass Holder, Mahogany Wall Shelf, Inkwell, Bagel Slicer, Seal Push Toy, Wooden Combs, Antique Knife Tray, Memo Cube, Fireplace Bellows, Contemporary Shelving, Weather Station, Shop-Built Bar Clamp.

**Vol. 6 No. 1 Jan-Feb '82:** Contemporary Sofa Table, Artist's Easel, Candle Box, Laminated Box, Butcher Block Knife Rack, Frog Pull Toy, Infinity Mirror, Japanese Style Table Lamp, Empire Footstool, Desk Caddy, Stepped-Back Hutch, Buckboard Seat, Latticework Cutting Jig.

**Vol. 6 No. 2 Mar-Apr '82:** Early American Blanket Chest, 18th Cent. Corner Shelf, Pine Footstool, Cheese Cutting Board, Napkin Holder, Trivets, Coaster Set, Pierced Tin Cabinet, Hutch Clock, Oak File Cabinet, Mahogany Tripod Table, Wall Hung Plant Bracket.

**Vol. 6 No. 3 May-June '82:** Country Kitchen Cabinet, Rough-Sawn Cedar Clock, Swinging Cradle, Toy Helicopter, Casserole Dish Holder, Ship's Wheel Weather Station, Octagonal Planter, Tambour Desk, Band Saw Boxes, 19th Cent. Step-Chair, Sailing Ship Weather Vane.

**Vol. 6 No. 4 July-August '82:** Dovetailed Footstool, Toy Chest, Plant Stand, 18th Cent. Lawyer's Case, Frame and Panel Joint with Decorative Bevel, Collector's Plate Frame, Toy Jeep, Trestle Table and Bench, 19th Cent. Danish Washstand, Contemporary Wall Valet.

**Vol. 6 No. 5 Sept-Oct '82:** Early American Hanging Corner Cupboard, Breakfast Serving Tray, Veneered End Table, Chess Table, Chest of Drawers, Contemporary Writing Desk, Whale Toy, Laminated Shoehorn, Spaghetti Measure, Candle Holder, Horizontal Boring Jig, Cane Suppliers, Finishing Suppliers.

**Vol. 6 No. 6 Nov-Dec '82:** Lyre Clock, Geodesic Lighting Fixture, Sawhorse Dining Table, Oak Desk Clock, Shaker Wall Shelves, Old-Time Radio Case, Cider Press Lamp, Contemporary Hanging Light Fixture, Firewood Rack, Toy Tool Box, Christmas Tree Ornaments, Willie and Tuna Push Toy, Woodpile Trivet, Circle Cutting Jig, General Woodworking Suppliers.

**Vol. 7 No. 1 Jan-Feb '83:** Workshop Tote Box, Tinsel-Art Mirror, European Spinning Wheel, Key Holder, Dump Truck Toy, Bang-a-Peg Toy, Puzzle, Wall Cabinet with Reverse Glass Stencil, End Grain Table Lamp, Butler's Tray Table, Contemporary Clock, Pine Cabinet.

**Vol. 7 No. 2 Mar-Apr '83:** Porch Swing, Homemade Jig Saw, Cheval Mirror, Punched Tin Spice Cabinet, Television Stand, Nautical Table Lamp, Wooden Balance, Nesting Cube Tables, Steam Roller Toy, Back Massager, Mailbox, Wall Shelf, Chippendale Mirror, Clock Parts and Suppliers.

**Vol. 7 No. 3 May-June '83:** Oak Pedestal Table, Drafting Table, Early American Wall Unit, Folding Snack Table, Pine Corner Cupboard, Toy Car with Boat & Trailer, Letter Opener, Contemporary Serving Tray, Hanging Mirror with Shelf, Carved Eagle, Early American Portable Bookcase, Hardwood Suppliers.

**Vol. 7 No. 4 July-August '83:** Turned Lamp, Decoy Carving, Antique Sugar Chest, Record Album & Tape Cabinet, Chinese Tea Table, Old-World Weather Forecaster, Toy Tractor & Cart, Display Pedestal, Two Planter Projects, Collector's Plate Stand, Hardware Suppliers.

**Vol. 7 No. 5 Sept-Oct '83:** Shaker Writing Desk, Modelmaker's Bench, Canning Jar Storage Shelves, Turned Bowl, Oriental Table, Router Table, Band Saw Box, Toy Pumper Firetruck, Toy Airplane, Spoon Rack, Magazine Rack, Bootjack, Furniture Kits.

**Vol. 7 No. 6 Nov-Dec '83:** Lighted Wall Planter, Roller Stand, Early American Wall Secretary, Dressing Screen, Wine Rack, Shaker Chest of Drawers, Waterbed, Toy Train, Mitten Box, Hooded Doll Cradle, Coal Scuttle, Elephant Push Toy.

**Vol. 8 No. 1 Jan-Feb '84:** Shaker End Table, Medicine Cabinet, Tape Deck Rack, Captain's Clock, Stacking Storage Unit, Veneer Bracelets, Toy Car Carrier, Infant Bead Toy, French Bread Cutter, 19th Cent. Kitchen Clock, Early American Trestle Table & Benches, Table Saw Cut-Off Table, Coaster Set.

## Please Note

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*Kitchen Canister Set. See page 40.*

**Editor and Publisher**  
James J. McQuillan

**Associate Publisher**  
Margaret E. McQuillan

**Managing Editor**  
Thomas G. Begnal

**Contributing Editors**  
Paul Levine  
John W. Olson

**Office**  
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Kirsten Friberg, Paste-up

**Designer/Craftsman**  
Glenn E. Firmender

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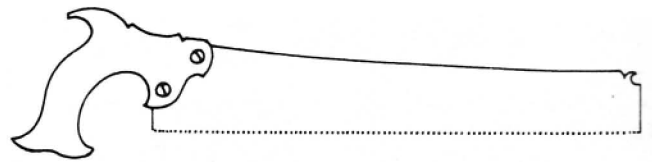
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**Contributions**

We welcome contributions in the form of manuscripts, drawings and photographs and will be glad to consider such for possible publication. Contributors should include a stamped, self-addressed envelope of suitable size with each submission. While we cannot assume responsibility for loss or damage, all materials will be treated with care while in our possession. Payment for the use of unsolicited material will be made upon acceptance. Address all contributions to: Editor, **The Woodworker's Journal**, P.O. Box 1629, New Milford, CT 06776.



# The Woodworker's Journal

VOLUME 8, NUMBER 2  
MARCH/APRIL 1984

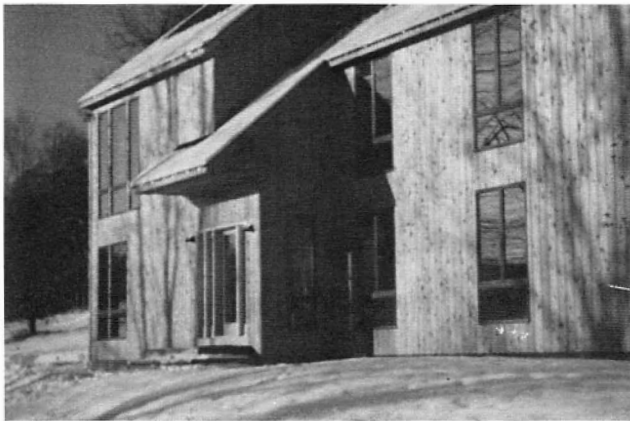
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# Shoptalk



## Our New Home

Finally!....nearly two years after we first saw the land, we have moved into our new offices. The building nestles against a heavily wooded and boulder-strewn hillside, down which a brook tumbles to join the East Aspetuck River across the road. It's a lovely place and a lovely feeling to have ample working space and sufficient land for future expansion.

The building is the result of many hours of discussion, debate, and seemingly endless changes in the elevation drawings before we finally came up with what we felt was the right blend of traditional and contemporary design elements.

Although the building is not strictly a solar design, we tried to incorporate as many energy-saving factors as possible into the construction. The high hills in back shield it from the cold prevailing northwest wind, while the low winter sun enters the large south windows to add considerable free solar heat. Also, all exterior framing is of two by sixes which allowed the use of double insulation in the walls. We've been here more than a month now and the savings in heating costs have exceeded our expectations.

Actually, this new building was a joint effort. We designed and built it, but the support of our subscribers made it possible. I think we should all take a bow.

## At The Masthead

Now that we've got the room, the next step is getting more help so that we can turn out even better issues. Since moving in, we've added two more people to the staff. Lynne Walton, who had the courage to relocate all the way from Birmingham, Alabama, has been appointed Circulation Manager, replacing Pat Friberg who is now Office Manager.

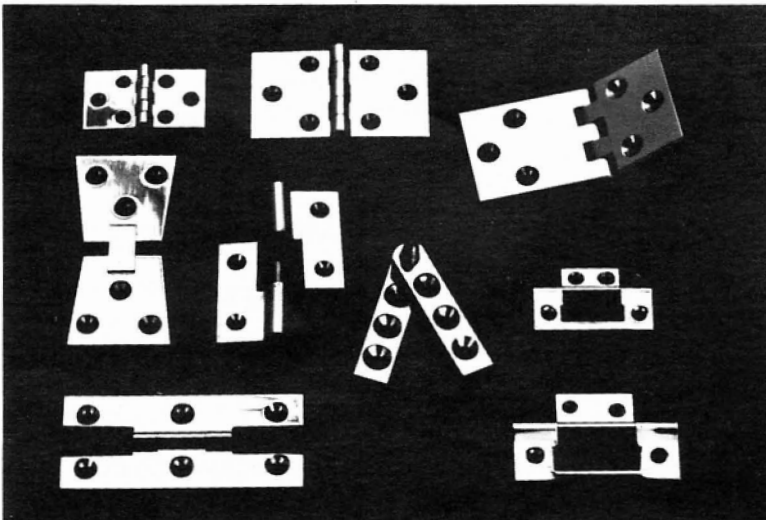
Since we now have a reception area, it seemed logical to hire a full-time receptionist and Pat Murphy is the charming gal whose voice you will first hear when you call us.

*Jim McQuillan*

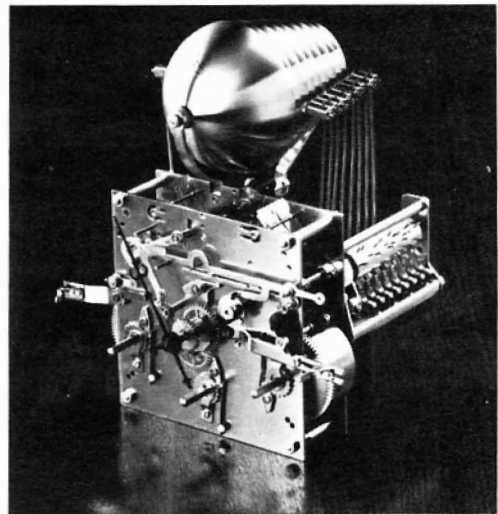
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# Letters

This is a short addendum to your article on doweling in the January/February 1984 issue. If your dowels are always slightly larger than the drilled holes, try using the following drill sizes to save yourself from sanding and frustration. For 1/4 in. dowels, use a 17/64 in. drill bit, for 3/8 in. use a 25/64 in. bit, and for 7/16 in. use a 15/32 in. bit. I have used this system for many years and always have a perfect dowel fit.

James Thomson, Lake Park, Fla.

I picked up a copy of your November/December 1982 issue and noticed the tip on driving rosan nuts with a stove bolt and screwdriver. Because of the torque requirements, I prefer to use a hex head bolt and drive it with a hex-socket and ratchet wrench. I also find it helpful to first lubricate the hole with Danish oil.

Richard C. Wollt, Andover, Minn.

After constructing several of the veneer bracelets featured in your January/February 1984 issue, I have found what I believe is a novel way to speed up the process. One of the longest steps in the construction is the drying of the wet veneer around the wood form (*Ed. note: Step 3 in the process shown on page 47*). I have speeded this step to about 15 min. by using the family microwave oven. After securing the veneer to the form with masking tape, I put the assembly into the microwave oven for 10 to 15 minutes. It comes out hot, but quite dry. Since the microwave oven heats the water in a material rather than the material itself, there is little danger of scorching or igniting the wood.

Since food is also prepared in the oven, care should be taken to never put in anything that would emit toxic fumes or leave behind toxic residues. Also, no metal should be used to secure the veneer to the form.

Tom Peters, Midland, Mich.

My local Japanese motorcycle dealer has become a source for free mahogany plywood and square solid stock. The motorcycles come packed in crates made from this material, and the dealer in my area is happy to get rid of it. The 1/8 in. and 1/4 in. thick plywood is great for drawer bottoms or as backing for mirrors and pictures. I use the square stock for lathe-turning and for making all kinds of small projects.

Harry Moore, Mt. Dora, Fla.

I'm looking for the decorative screws used with cheval type (swivel) mirrors.

Howard C. Atkinson, Boulder, Colo.

*Swivel mirror screws are sold by The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. Current price is \$8.95 per pair.*

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One of the handiest "tools" in my shop is an artist's pallet knife, available at any store that sells art supplies. It is ideal for spreading glue along joint surfaces. I simply run a light bead of glue on both pieces and then use the knife to spread it out evenly. To keep the knife clean, I occasionally dip it into a small plastic water bowl that I keep handy. Those soft margarine containers make good water bowls.

When sizing end grain, I find it much easier to run the bead of glue, then dip the knife in the water. The small amount of water that clings to the blade will thin the glue as it is spread. More water is added as needed to control the glue thinness.

Because the blade is thin and flexible, with a rounded tip, I find it much better than a putty knife for applying filler to set nail holes and cracks.

Charles E. Carter, Trion, Ga.

When turning bowls and plates on a wood lathe, the traditional method of mounting the turning stock to the faceplate is to use wood glue with paper placed between the two pieces. The

major drawback to this method is the twenty-four hour drying time required before the work can be turned.

I have found that hot-melt glue guns now on the market can be very successfully used to mount faceplate turnings. This glue sets very rapidly and requires only hand pressure for clamping. I apply the glue in a spiral pattern to the scrap wood that is screwed to the faceplate and then immediately press this together with the turning stock. It is possible to turn the stock in fifteen seconds and, because the glue doesn't penetrate deeply into the wood, the two pieces can easily be separated with a chisel and mallet after turning is complete.

I have turned bowls and plates up to 12 in. in diameter and have never had any problems with separation during the turning process. The glue gun sells for approximately \$12.95 in most hardware stores.

Alan Mills, Oxford, Ohio

Do you know where I can buy cork for bulletin boards? Any help would be appreciated.

Fred Wolfe, Wentworth, New Hamp.

Cork sheet measuring 1/4 in. thick by 12 in. wide by 18 in. long can be purchased from Boycan's Craft and Art Supplies, P.O. Box 897, Sharon, PA 16146. The price is \$3.65 per sheet, twelve sheets for \$41.60. Minimum order is \$10.00 and the prices don't include shipping charges. A copy of their catalog is available for \$2.00.

In your January/February 1984 issue, you mentioned that you've had requests for some kind of binder to store back issues. What I do is punch holes to fit a three ring binder. It works quite well.

T. J. Lukas, Sparks, Nev.

*Editor's Note: The Captain's Clock project featured on pages 41, 42, and 43 of our January/February 1984 issue has two errors. On page 41, the angle shown in Step 1 should be 22½ degrees, not 30 degrees. On page 43, Figure 1 should show an octagonal (eight-sided) shape, not a hexagon (six-sided), and the angle shown should be 22½ degrees.*

(continued on next page)

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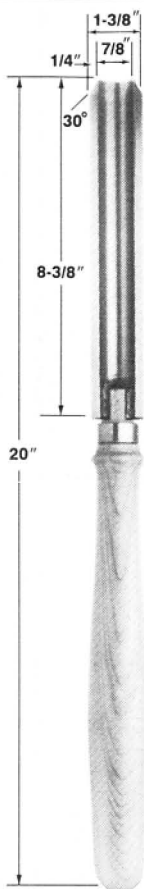
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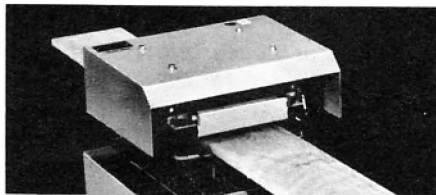
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**Letters, (Cont'd)**

Purpleheart wood oxidizes naturally to a purple, almost lavender, color. After turning and sanding smooth a 1 in. x 3/16 in. purpleheart wood steering wheel for a small truck, I increased the lathe speed and applied 000 steel wool under pressure to the edge of the wheel. The resulting friction produced rapid oxidization and a shiny, almost black, edge on the wheel. Using purpleheart and proper spindle speed, it should be possible to make a very realistic looking set of tires (1 1/2 to 2 in.) for wood toys. Use caution when applying the steel wool to the turning. I roll it up into a tight ball to prevent it from being wrapped around the spindle. Also, rapid oxidization (fire) produces smoke, so adequate ventilation is necessary.

Paul O'Brien, E. Weymouth, Mass.

*Editor's Note: In last issue's cabinet-makers' Supplies column, we included a listing of companies that sell woodworking tools and supplies via mail order. In it, we forgot to include Shopsmith's Better Woodworking Catalog and Guide. It's a 56 page catalog that includes hand tools, power tools, stationary equipment, and finishing supplies. For a copy of the catalog, send \$1.00 to Shopsmith, Inc., 6640 Poe Ave., Dayton, OH 45414-2591.*

The Wall Secretary in your November/December 1983 issue was a solution to the clutter that surrounds the kitchen wall phone. I made a significant departure in size and interior arrangement, but your article was the inspiration that got me going. All major pieces are of 3/4 in. alder. To get the correct height to accommodate standing telephone books (11 1/2 in.), it was necessary to butt join two pieces for the desk lid. The 7 1/2 in. depth of the unit is a function of sufficient angle to keep the lid closed without a catch and sufficient clearance at the top for the 3/8 in. thickness of the telephone book. This depth and angle will vary according to the size of the phone books to be stored in the secretary. Overall width of the unit is 20 in. and I used the utility drawer construction described in the same issue. Two round head screws in the frame, under the bottom of the drawer lip, catch the back of the drawer before it is pulled all the way out. A magnetic whiteboard is great for notes to the family, reminders of things to do or the

menu for the week. Imagination can be your guide. The magnets are from the bottom of an old shower curtain. Custom-cut whiteboard with celotex-like backing is available from TRI-ADCO, 5712 W. Maryland Ave., Glendale, AZ 85301. The support hinges are the same described in your article.

Norman T. Templeton, Phoenix, Ariz.

## Odds and Ends

Bowling Green State University and the DeVilbiss Co. will hold a *Spray Finishing Technology Workshop* on May 14 - 18, 1984. Featured will be sessions on equipment and material selection, and spray finishing techniques associated with automotive refinishing, furniture, and industrial spraying. Power coating, automatic spraying and plural components will be included. Each participant will have an opportunity for "hands on" practice. The workshop is under the direction of Dr. Richard A. Kruppa, Professor of Manufacturing Technology, School of Technology, Bowling Green State University, Bowling Green, Ohio 43403. For additional information, contact Ms. Judy Jennings, (419) 372-2436 or write to the above address.

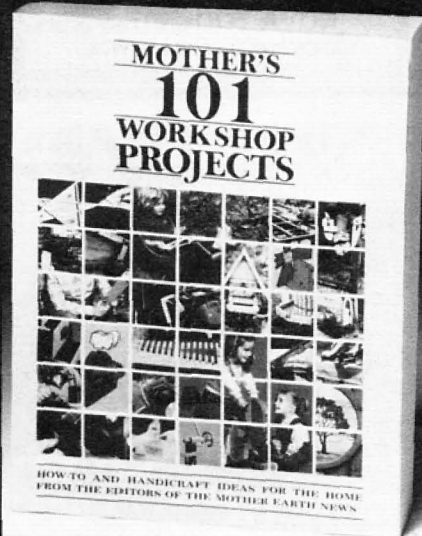
*Editor's Note: Apparently there are a lot of old woodworking machines still sitting in workshops, because we sure hear from a lot of readers who are looking for out-of-date owner's manuals and parts lists. With the current price and dubious quality of many of the woodworking machines made today, it certainly makes good sense to try and keep a veteran machine running. Each issue, we try to list some of these requests, and ask our readers if they can help. Here's our list for this issue:*

I would be grateful to any fellow woodworker who could send me a copy of the manual for a Sears table saw No. 103.22170. I'm willing to pay for the copy.

Lawrence Deems  
620 Welty St.  
Greensburg, PA 15601

I recently acquired a Craftsman 10 in. table saw No. 113.27520. I

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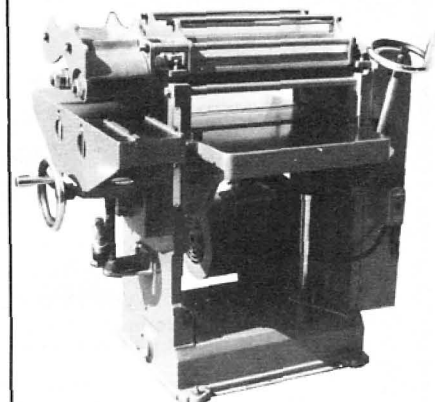
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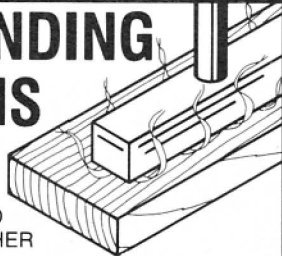
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## Letters, (Cont'd)

would appreciate hearing from a fellow woodworker who has a manual or any information regarding this saw.

David Beyerl  
507 E. Willow  
Wheaton, IL 60187

I recently acquired an older Rockwell Delta 13 in. by 15 in. planer, Model No. 22-101. It is complete except for the transmission gears and the throat bars for the cutter. I would be grateful for any help in locating and obtaining these parts.

Mike DeField  
1216 Camino Sol  
Farmington, NM 87401

Can any of your readers supply me with a manual for the following: a Tom Lee Tool & Engineering Co. (Minneapolis) 10 in. band saw, Model No. 45; and a Sears Roebuck jigsaw, Model No. 110.26320.

Leon A. Dombrowski  
530 Washington  
Ripon, WI 54971

Recently I received three hand-me-down Sears Craftsman tools: an 8 in. circular saw (model No. 103.22160), a band saw (model No. 103.24300), and a jigsaw (model No. 103.20720). I need a parts list and owner's manual and am willing to pay for a copy.

A. J. Catalano  
1957 Brentwood Ln. E.  
Wheaton, IL 60187

I recently acquired a used Sears Craftsman band saw (manufactured by King-Seeley Corp.), Model No. 103.24300 (uses 62 in. blades). If anyone has an owner's manual, I would pay for a copy.

Angelo M. Ruggeri  
6917 Blow St.  
St. Louis, MO 63109

I recently purchased a Walker-Turner 16 in. bandsaw, Model No. BN 1135 or MBN1105 and I'm looking for an instruction manual and parts list.

Joseph Donnarumma  
39 Lafayette Place  
Lyndhurst, NJ 07071

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
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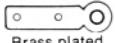
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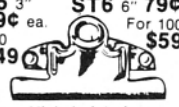


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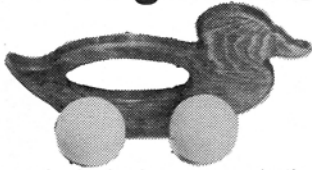
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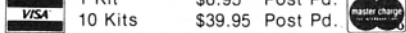
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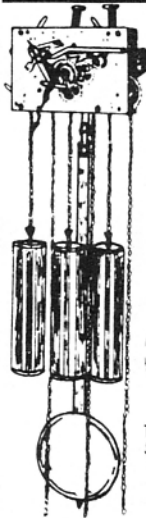
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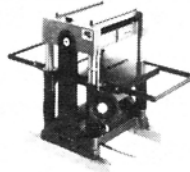
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# Workshop Income

## More Sources of Information

It takes good decisions to run a successful business. And it takes good information to make good business decisions. Each issue, in this column, we try to provide some of that needed information for readers who want to use their wood-working skills to earn money. In past columns, we've covered a wide variety of subjects, all related to the business aspects of woodworking. We've discussed accounting, taxes, marketing and insurance, to name a few, and in future issues we will continue to write about the business of woodworking.

If there's one thing we've learned from writing these columns, it's that a vast amount of published information is available, yet few of our readers know that it exists. So, with that in mind, we decided to devote a couple of columns to a listing of some of those worthwhile sources of information. Last issue, we listed quite a few of the publications put out by the Federal Government's Small Business Administration, many of them available for free. This issue, we are listing several books and magazines that we think might be of interest to a woodworker in business. Any of these books can be ordered from a bookstore but, before buying, check your library as they may already have a copy on hand.

### *How To Run A Small Business*

by the J.K. Lasser Tax Institute  
McGraw-Hill Book Co.  
298 pages, \$17.95

Good basic information on starting and running a small business. Covers financing, accounting, taxes and selling, among other things.

### *How To Sell Your Arts and Crafts*

by Loretta Holz  
Charles Scribner's Sons  
268 pages, \$4.95 soft cover.

Pricing, publicity, legal and financial aspects, and selling. Also a good resource section.

### *Selling Your Handcrafts*

by William E. Garrison  
Chilton Book Company  
139 pages, \$4.95 paperback.

Pricing, selling at home, in fairs, and on consignment; wholesale selling and more.

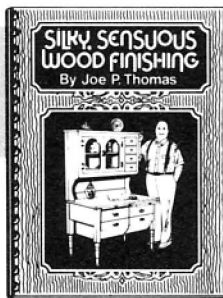
### *How To Start Your Own Crafts Business*

by Herb Genfan and Lyn Taetzsch  
Watson-Guptill Publishers  
208 pages, \$12.95

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(continued on page 15)

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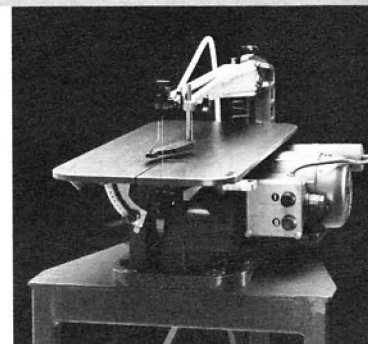
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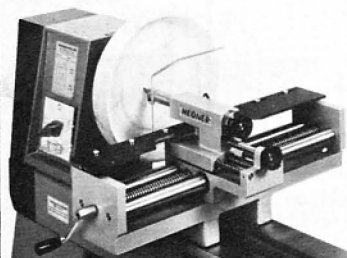
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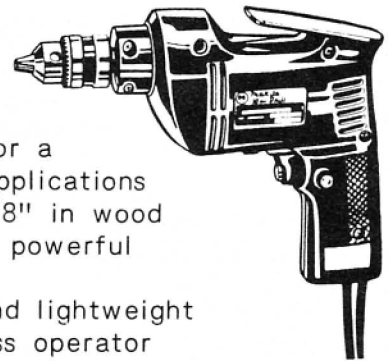
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# Restoring Antiques

by John W. Olson

## More Hope For The Hopeless Cases

Last issue, in this column, I talked about some of the techniques I use when restoring pieces that are in a serious state of disrepair. These are the so-called "hopeless cases" that are often considered beyond rehabilitation. Yet I've found many times, with patience and care, these pieces can be given new life. In this issue I continue with the discussion.

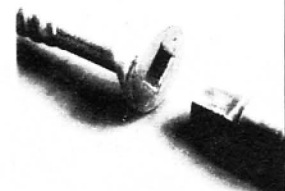
After reassembly, carefully inspect the piece for rough or splintered edges. A good sanding using 80 - 100 grit aluminum oxide paper should remove most of the serious problem areas. Carefully round the corners so that there is a uniformity that does not detract from the general appearance. Round all the corners to some degree, but unless splintered or battered, do not round to more than a 1/16 in. to 1/8 in. radius. Rough splintered and battered corners should be rounded as needed to remove the defects but, generally speaking, any defect that requires more than a 1/2 in. to 3/8 in. radius should be repaired. Rounding the corners will not only improve the general appearance but will also aid in the final finishing process. When paint, varnish and other clear finishes are applied, they tend to roll right off a clean, sharp corner so that the bare wood shows through.

Most unsightly scratches, shallow gouges and scars can be removed (or minimized) by sanding. On flat surfaces try to taper out the edges of the sanded areas that are below the level of the surrounding surfaces. If done right, the sanded area should blend nearly imperceptibly into the adjacent area.

To check, observe the surface first from one side and then the other. Place your eye above, and then on the opposite side from the light source. Tilt the surface from side-to-side to change the angle at which the light strikes the surface. Try to do this in sunlight, although electric light can also be used. Fluorescent works somewhat better than incandescent. Careful checking in this way will make it easier to find small defects and unevenness that is not easily seen on first glance. Resand until an acceptable surface is obtained.

Those really deep gouges and splintered areas will require patching. However, intermediate and many less battered areas can be lifted by steaming if no material is missing. A hot iron and a wet rag are the only tools needed. A piece of sandpaper will aid in those areas covered with paint or varnish, although hot steam is a very good paint remover. Let the iron get hot, then lay the wet rag over the dented area and apply the iron. As the steam penetrates the wood it causes the crushed wood fibers to swell and lift the surface of the dent so that it is level or above the surrounding areas. If the area being treated is covered with thick paint or other finish the steam will generally lift this finish. Some finishes are somewhat steam resistant and may have to be scraped off with a scraper, single edge razor blade or perhaps a knife blade. After the finish has been removed, the steam will penetrate and cause the wood fibers to swell.

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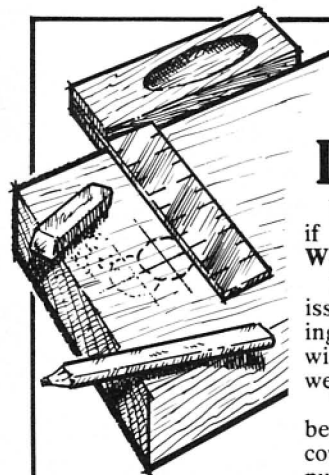
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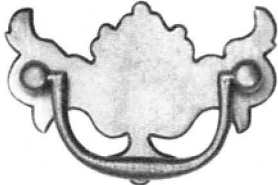
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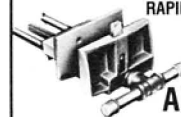
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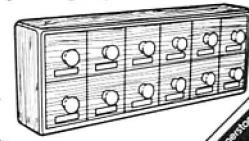
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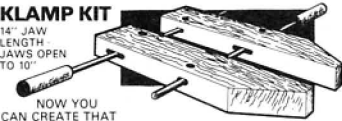
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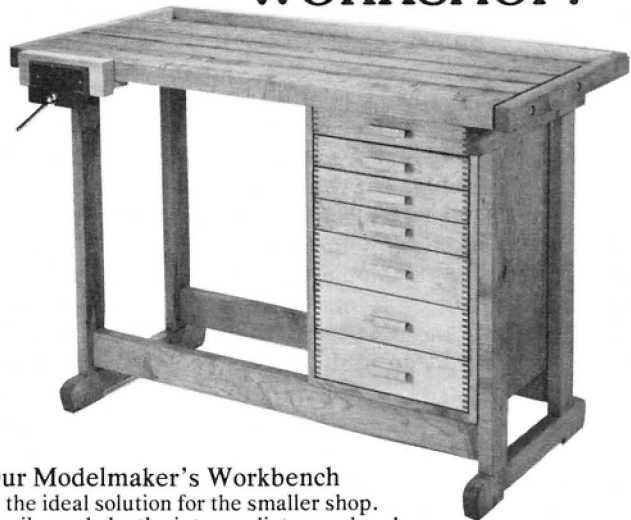
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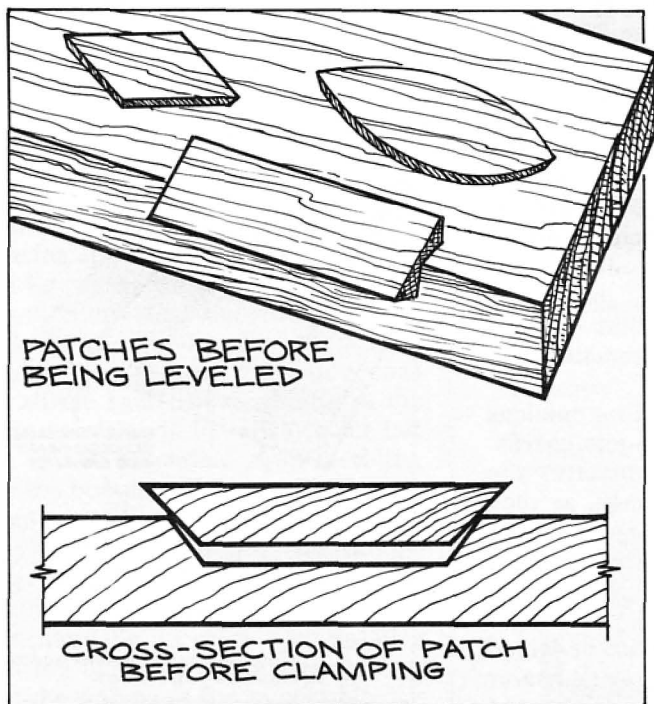
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## Restoring Antiques (Cont'd)

Some dents may have the fibers of the wood so badly crushed and broken that they will not respond to the steam treatment. Those really deep gouges, splintered areas and dents can be repaired by inlaying a similar species of wood. To save a lot of work and trouble during the final finishing phases, match the color of the bare woods as nearly as possible. If the colors match closely enough, the need for spot staining and color blending will be eliminated. Grain patterns should be matched as nearly as possible. The success of making an almost invisible inlay rests almost entirely on grain match. A patch whose grain runs against that of the general surrounding areas is immediately apparent under the final finish.



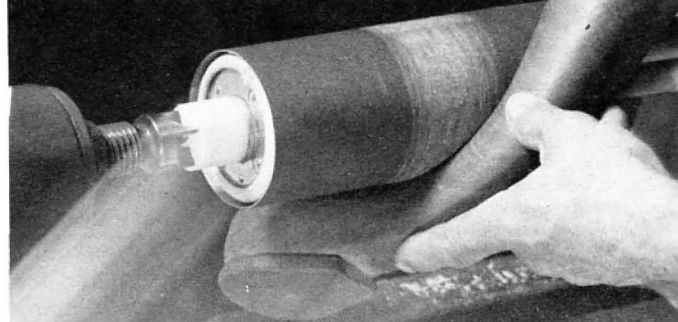
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Next issue we will continue with stripping and finishing techniques.

Wwj

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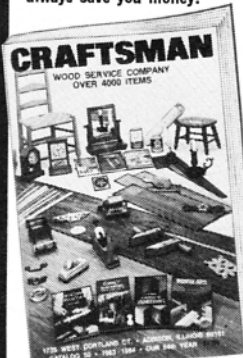
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# The Beginning Woodworker

## Edge-Joining Boards

Unless you spend all your time making small gift items or doll house furniture, a time will certainly come when you'll find it necessary to join two or more boards together to achieve the required width for a table top or other large flat surface. Edge-joining of boards is a basic woodworking operation that must be mastered if the novice hopes to build larger pieces.

Although the process of joining two or more boards along their edges seems simple enough, some preliminary planning and careful work is necessary in order to produce a flat slab with almost invisible joint lines. The trick is to do it so that the slab stays flat and the joints remain invisible.

There are some conflicting opinions as to the best way to edge-join boards. Most of the controversy involves the way the annual growth rings, as seen at the ends of the boards, should be arranged to minimize shrinkage and warping problems.

One traditional school of thought holds that the boards should be joined so that heartwood (old growth nearer the center of the log) and sapwood (new growth towards the outside) are alternately facing up. The logic behind this method is that any slight cupping of the individual boards will be equalized and the glued-up slab can later be planed flat with a minimum of wood removal (Fig. 1). However, this method assumes that the boards are plain or flat sawn from the log.

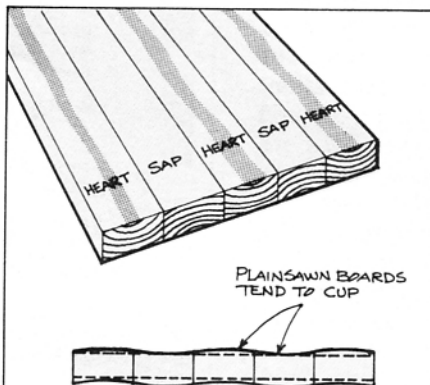


FIG. 1  
HEART AND SAP SIDES ARE  
ALTERNATED TO REDUCE  
STOCK WASTED IN SURFACING

Another opinion is that the boards should be arranged so that the heartwood joins only to heartwood. This is based on the fact that heartwood shrinks less than sapwood, and if heartwood is joined to sapwood, subsequent uneven shrinkage along the joint will leave a slight step (Fig. 2). This method assumes that the boards are quarter or rift sawn.

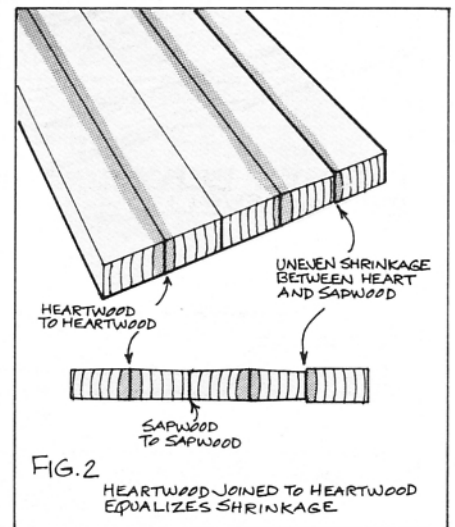


FIG. 2  
HEARTWOOD JOINED TO HEARTWOOD  
EQUALIZES SHRINKAGE

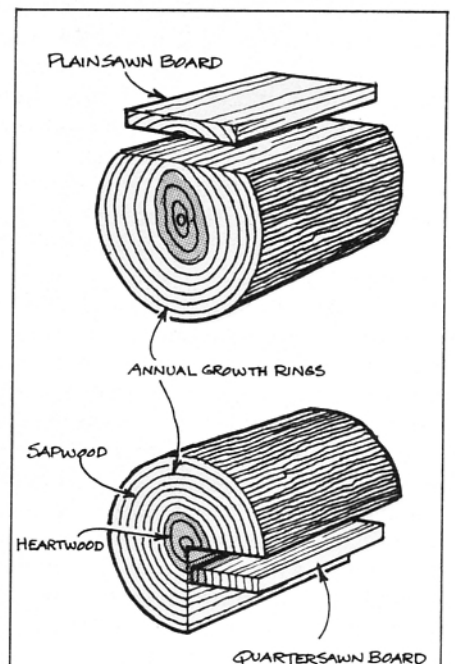


FIG. 3  
TWO WAYS BOARDS ARE  
CUT FROM A LOG

An examination of a log cross-section (Fig. 3) shows that plainsawn boards are cut at a tangent to the growth rings, while quartersawn boards are cut radially or perpendicular to the rings. Thus a plainsawn board will have heartwood along the face while a quartersawn board will have the heartwood along one edge. In Figs. 1 and 2, the heartwood is indicated by a grey tone. Obviously, the validity of each method depends mainly on how the boards were cut from the log.

From a realistic point of view, the novice may have difficulty in determining just how the boards are cut, especially since rough cut ends may all but obscure the grain. Probably the most practical approach then is to forget about how the boards were cut and simply arrange them so the face grain patterns present the most pleasing appearance.

A light pass with a plane will show in which direction the grain runs on each board. If the boards can be arranged so that the grain directions are all the same, final planing of the glued-up slab will be much easier but this is not essential. After deciding how the boards will be arranged, they should be clearly marked with numbers or letters on their face sides so the order does not get mixed up in the jointing operations.

Incidentally, in cases such as for a drawing board, where it is important that the slab be as flat as possible, it's best to use many narrow boards rather than a few wide ones. There will be more jointing work but a true surface will be easier to obtain.

Jointing the board edges consists of planing or machining them so that they will fit together as closely as possible along their entire length. This is one function of a stationary power tool called, appropriately enough, a jointer. When adjusted properly, it performs the job quickly and accurately but the hand plane leaves a superior surface for gluing. Every woodworker should develop the skill to joint boards with a hand plane.

It's not easy to plane the edge of a long board straight, while keeping that edge truly square to the board face. It requires a perfectly tuned plane and subtle muscular coordination; a combination that comes only after considerable experience. One way to make the operation a bit less demanding is to clamp the joining boards together in the vise with their edges

continued on page 22

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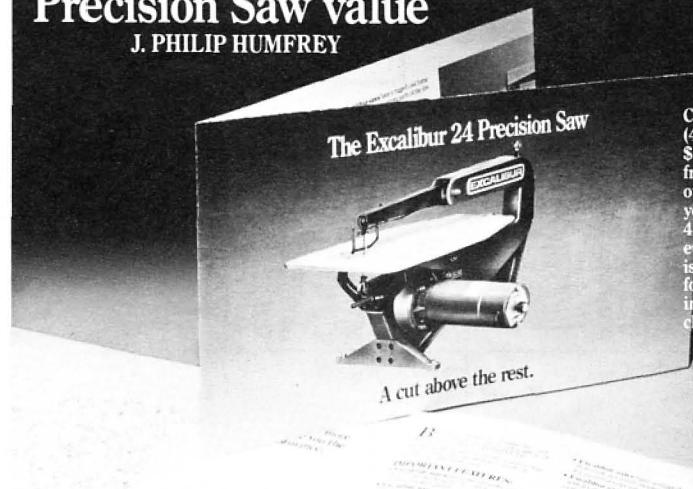
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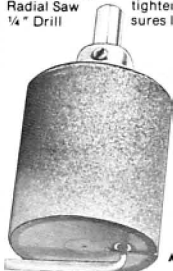
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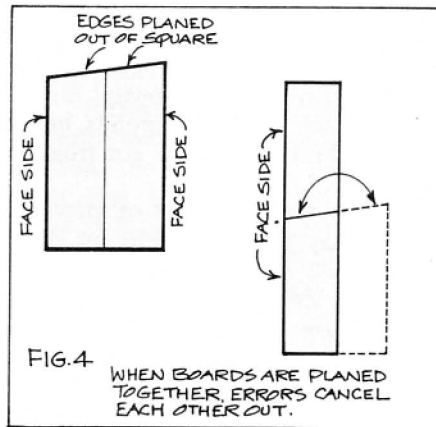
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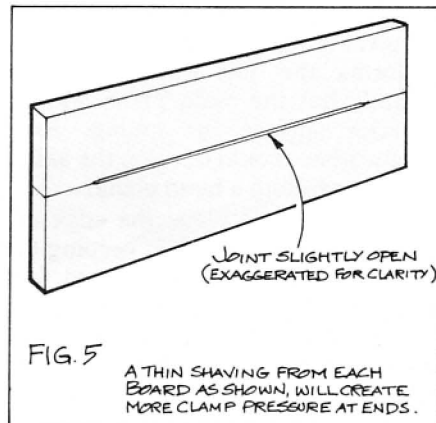
aligned, and plane both at once. Their face (marked) sides should be facing out. If the boards are planed slightly out of square, they will still fit together because the error on one edge will be offset by a corresponding error on the other (Fig. 4).



The preferred tool for this job is a 22 in. jointer plane. The long sole of this plane will span low spots along the edges and shave the high spots down. Even if you plan to get a stationary jointer, these long planes are excellent for surfacing large slabs.

If you don't have a jointer plane, an ordinary 14 in. jack plane will do the job if you sight along the edge of the board to see the high spots and cut them down first. Once the high spots are removed, you should be able to take thin, full length shavings with a smooth plane. If the boards are long, rest the plane at the end of a pass and, without breaking off the shaving, step forward and continue the stroke.

To test a pair of jointed boards, stand one edge on the other and press down on the end of the upper board. If the edges are crowned, the joint will open at the opposite end. If the edges are concave, you will see light through the joint.



If the joint appears to fit well along its entire length, take a very thin shaving off both boards starting about

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four inches from one end and ending four inches from the opposite end. When the boards are brought together, there should be just enough clearance to allow a thin thread of light to shine through. This old trick provides for extra clamp pressure at the ends and reduces the possibility of the joint opening at the ends where the most shrinkage occurs (Fig. 5).

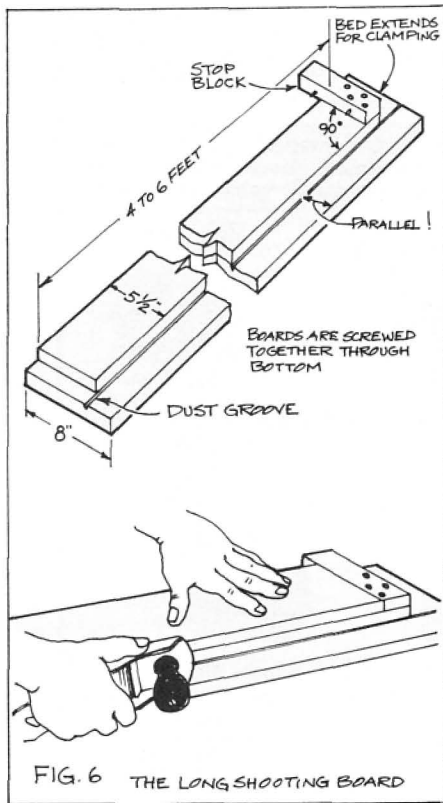


FIG. 6 THE LONG SHOOTING BOARD

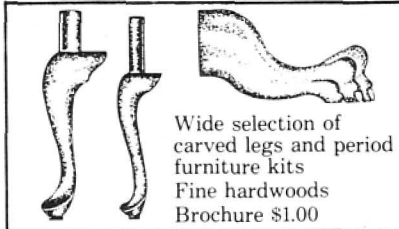
Another accurate way to joint boards up to six feet in length is with the aid of a shooting board. This handy jig is made from well-seasoned flat hardwood, such as maple, and is used as shown in Fig. 6, with the plane riding on its side.

When making a long shooting board, screw the squared bed boards together, parallel to each other, to form the rabbet for the plane. The stop block should be perfectly square to the upper bed and screwed without glue to the bed. A couple of screws driven into the stop block so their tips protrude slightly, will keep the workpiece from slipping. To minimize warping, all parts should be given several coats of shellac before assembly. In use, a bit of paraffin rubbed along the rabbet, will help the plane slide easily.

The shooting board is clamped along the bench top or held between bench stops so that the edge of the board to be jointed is away from you. Board

continued on page 25

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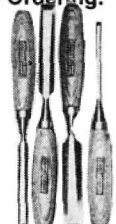
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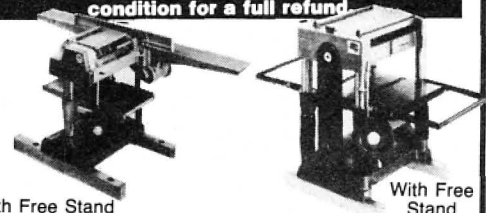
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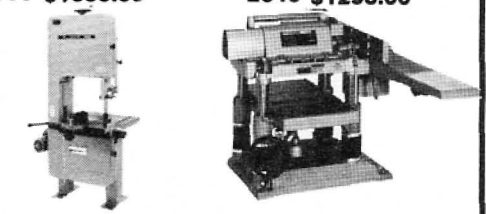


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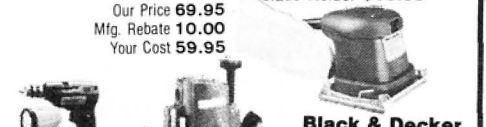
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6010DL	Cordless Drill w/charger light & case	99.50
6010DW	3/8" Cordless Drill w/Charger	84.95
6010DWK	Cordless Drill w/Charger & case	83.95
6012HDW	Cord. Drill Kit 2-Sp. w/leather holster	106.95
6013BR	1/2" Reversible Drill	119.00
6300LR	1/2" Angle Drill	149.30
6510LVR	3/8" Drill-Rev.	67.95
6710DW	Cord. Screwdriver	107.10
6800DBV	Drywall Screwdriver	97.50
9030	1-1/8"x21" Belt	120.50
9035	Finishing Sander	49.95
9045B	Finishing Sander	105.50
9045N	Dustless Sander	109.00
9207SPB	7" Sander Polisher	136.95
9401	4"x24" Belt Sander	169.95
9501BKIT	4" Sander-Grinder Kit	76.55
9900B	3"x21" Belt Sander	126.50
9924DB	3"x24" Belt Sander	135.95
B04510	Finishing Sander	46.95
DA3000	3/8" Angle Drill	116.50
DP3720	3/8" Reversible Drill	48.95
DP4700	Drill Reversible	94.80
GV5000	Disc Sander	49.95
HP1030	Hammer Drill	105.00
JG1600	Jig Saw Single Sp.	91.10
JR3000V	Recipro. Saw	134.75
JR3000W	2 Sp. Reciprosaw Kit	124.75

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B7075	3x21 Belt Sander	\$118.95
B7100	3x24 Belt Sander	148.50
B7200A	4x24 Belt Sander	167.90
D1010	3/8" Var. Sp. Drill	89.50
D1015A	3/8" Screwdriver/Drill	111.95
D1310	1/2" Drill	89.95
D1320R	2 Sp. 1/2" Rev. Drill	99.95
E3700A	Drywall Screwdriver	77.95
JS-60	Jig Saw	99.95
JSE-60	Electronic Jigsaw	125.90
L-120U	3-5/8" Planer	81.25
L-1323ALS	3 1/4" Planer	129.95
LS-35	Finishing Sander	46.95
L-580	6-1/8" Planer	189.00
R-150	1 H.P. Plunge Router	88.00
R-330	2 H.P. Router	139.70
R-500	3 H.P. Plunge Router	165.00
RA-2500	10" Radial Saw	449.95
S500A	3x5 1/2 Finishing Sander	43.95
SU-6200	Finishing Sander 1/2 Sheet	86.50
TR-30	Laminate Trimmer	74.90
TS-251U	10" Miter Saw	189.95
TS-251U	w/accessories	199.95
W630	7 1/4" circular Saw	99.50
W730	8 1/4" Circular Saw	109.75

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1165	3/8" Angle Drill	\$113.90
1169-10	3/8" Var. Sp. Drill	49.95
1172-10	3/8" VS Drill	79.95
1310-10	1/2" VSR Drill	94.50
1311-09	1/2" VSR Drill	115.75
1940	3/8" Cordless Drill w/charger	114.75
1975	3/8" Cordless Scrudrill No Charger	99.50
2034-10	Drywall Screwdriver	83.70
2054-09	VSR Screwdriver	147.75
2931	Cordless Screwdriver No Charger	128.95
3027-09	7/4" Circular Saw	67.50
3037-09	7/4" Circ. Saw	99.50
3038-09	8 1/4" Circular Saw	110.95
3051	7/4" Wormdrive Saw	144.50
3091	10" Miter Saw	189.95
3103-Q9	2 sp. Cut Saw Kit	79.95
3105-09	Var. Sp. Reciprocating Saw Kit w/case	109.50
3141	Cordless Jig Saw No Charger	114.95
3157-10	Var. Sp. Jig Saw	114.25
3265	Laminate Trimmer	145.65
3310	1 1/2 H.P. Router	139.50
3330	1 H.P. Router	99.95
3370-10	3/4" Planer	119.95
4010	Palm Sander	47.95
4018	1/2 Sheet Sander	87.95
4247	4 1/2" Disc Sander/Grinder	69.50
98060	115 V Charger	39.50
98065	12 V Charger	47.95

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8x3	3.35	30.25

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8x1 1/2	2.50	16.95
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8x2 1/2	2.95	25.10
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LU73M12	12"	72 Cut-Off	67.00
LU78M10	10"	80 Plastic	79.95
LU82M10	10"	60 Cut-Off	50.00
LU82M12	12"	72 Cut-Off	81.50
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LU84M11	10"	50 Comb.	45.50
LU85M10	10"	80 Cut-Off	73.95
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W6V	Screwdriver	94.50

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Size	Grit	10	50
3"x21"	120,100	\$ .98 ea	\$ .84 ea
	80	1.00 ea	.86 ea
	60	1.05 ea	.92 ea
	50	1.07 ea	.94 ea
	40	1.10 ea	.97 ea
3"x24"	120,100	1.20 ea	.93 ea
	80	1.22 ea	.97 ea
	60	1.26 ea	1.12 ea
	50	1.31 ea	1.15 ea
	40	1.34 ea	1.18 ea
4"x24"	120,100	1.68 ea	1.46 ea
	80	1.73 ea	1.51 ea
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No. 7456	Clamp Pads	2.50	2.25 ea

### JORGENSEN BAR CLAMPS (Heavy Duty)

Each	Pkg. 6		
No. 7224	24"	16.50	14.95 ea
No. 7230	30"	17.25	15.65 ea
No. 7236	36"	17.85	16.15 ea
No. 7248	48"	19.75	17.90 ea
No. 7260	60"	21.55	19.55 ea
No. 7272	72"	23.40	21.20 ea
No. 7284	84"	25.30	22.95 ea

\* (No. 7284-3 per pack)

### JORGENSEN CLAMPS (Med. Duty)

Each	Pkg. 6		
No. 3712	12"	\$5.85	\$5.30 ea
No. 3724	24"	7.20	6.50 ea
No. 3736	36"	8.80	7.95 ea

### JORGENSEN HAND SCREWS

Each	Pkg. 6		
No. 3/0	3"	\$8.85	\$8.00 ea
No. 0	4 1/2"	10.40	9.40 ea
No. 1	6"	11.80	10.65 ea
No. 2	8 1/2"	14.10	12.70 ea

### JORGENSEN BAR CLAMPS (5" reach)

Each	Pkg. 6		
No. 4512	12" Open	16.25	14.65 ea
No. 4524	24" Open	18.15	16.35 ea
No. 4536	36" Open	20.20	18.25 ea

### JORGENSEN CLAMPS

No. 3325	3 Way Edging	\$5.15	\$4.65 ea
No. 1623	3" Hold Down	6.85	6.17 ea
No. 3202HT	2" Spring	2.15	1.95 ea

## Beginning Woodworker (cont'd)

number one is dressed with the numbered face side up. Board number two is dressed with the face side down; then if the other edge needs jointing, it is turned over so the face side is up.

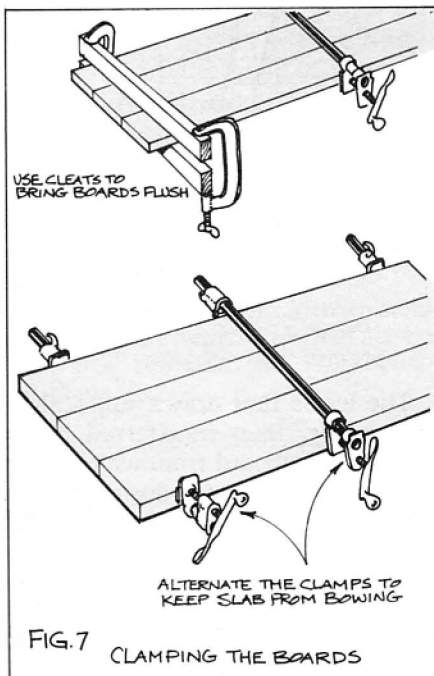
If the plane body or iron are out of square, this method insures that the error will be matched with a corresponding error on the other board. This process is repeated with as many boards as necessary to achieve the desired width slab.

After jointing, the boards are ready to be glued together. With this type of long grain to long grain joint, the glue bond is more than sufficient to hold the boards together. There is no reason to add dowel pins or splines which do nothing to improve the strength of the joint and sometimes cause more problems than they prevent.

Lay the boards in order across a set of horses and put glue on the mating edges in an even thin coat. A thin strip of pine makes a good glue spreader or you can simply use your finger. Let the glue set for a short while until it becomes slightly tacky. With soft pines, some of the glue may be absorbed in which case another thin coat is applied.

Next, bring the boards together and place a pipe clamp across the assembly near the center. Use scrap blocks under the clamp jaws to prevent denting and keep the pipe slightly above the wood so it doesn't contact squeezed out glue which might stain the wood.

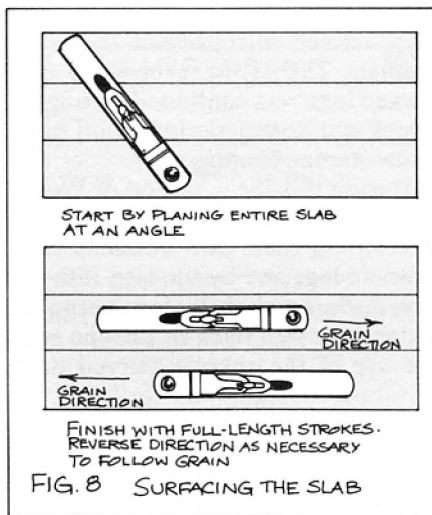
As you tighten the clamp, get the



boards flush by tapping with a block and hammer where necessary. If you cannot get the boards flush near the ends, clamp stout cleats across the ends of the boards on both sides to force them flush. When they are aligned, add pipe clamps on the undersides at each end and remove the cleats (Fig. 7).

It should not be necessary to apply great clamp pressure to close the joints. Too much pressure will only force the glue from the joint causing later failure. There should be some glue squeezed out along both sides, but not much. After the clamps are tightened, wipe excess glue drippings from the joints and set the assembly aside with the pipe clamps at each end resting squarely against a wall. Drying time varies with the glue and the shop temperature, but the safest bet is to let the glue cure for about eight hours before removing the clamps.

The glued-up slab must now be planed flat. Use a jointer plane at an angle across the grain to quickly remove any slight joint irregularities (Fig. 8). If you don't have a jointer, a jack plane will do but the jointer will span the low spots and do a better job of leveling.



After working diagonally across the grain, set the plane iron for a light cut and work with the grain. If one or more boards have grain going in opposite directions, you will have to be careful and reverse the plane directions to avoid grain tear-out.

When the face side is done, use a marking gauge to scribe the final thickness line around all edges; then repeat the planing process on the other side down to the thickness line. The slab can now be trimmed to its finish length and width.

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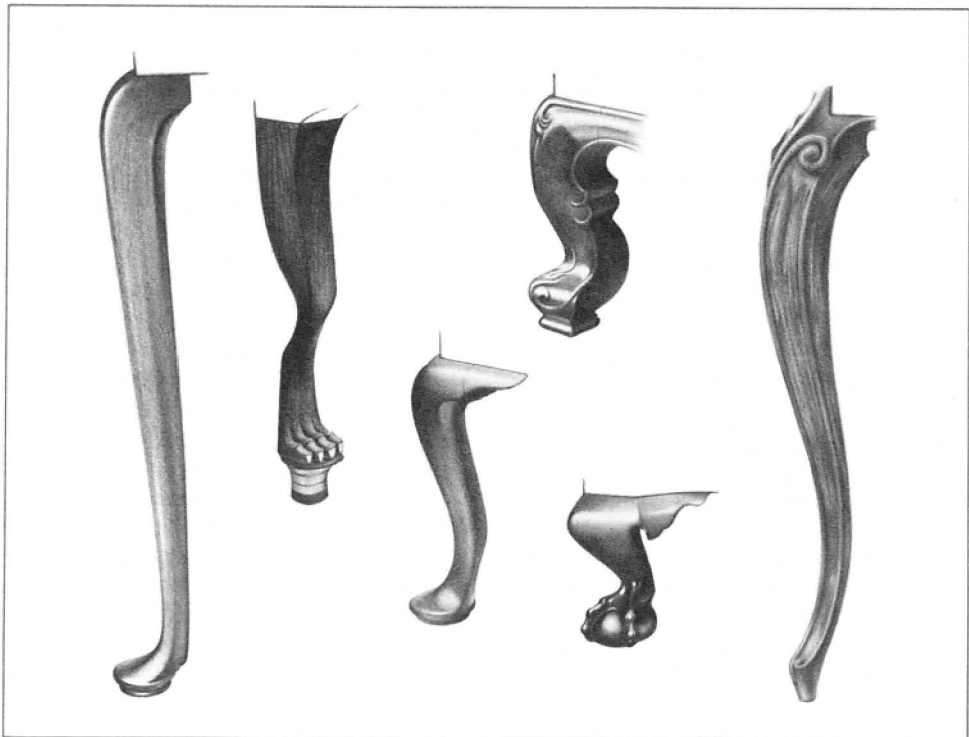
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# Special Techniques

## Cutting Cabriole Legs



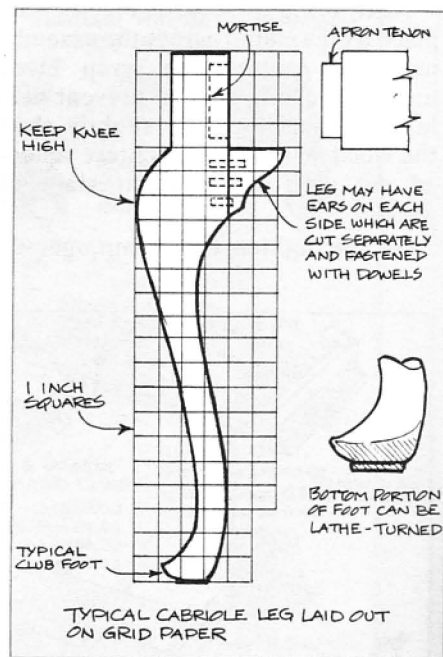
The cabriole leg, which is so often associated with the Queen Ann style of the 18th century, actually dates back to early Egypt where chair and table legs were carved to represent the legs of animals. The use of reversed or cyma-curved legs was continued through the Greek and Roman periods until the fall of the Roman Empire.

During this bleak period of Western cultural decline, the Chinese were developing their own versions of the cabriole leg, and by the late 15th century, traders were bringing examples of Chinese design back to Europe where the use of the reverse curved line in furniture design was revived, particularly in France where it reached its most extreme serpentine form.

During its period of popularity, the cabriole leg underwent considerable modification. Variations included drake, Dutch or club-foot, pad foot and later, the ball and claw. Knees were left plain or ornamented with shell carvings, acanthus leaves and later, the grotesque satyr masks and lion faces.

The above illustration shows only a few of the many styles of cabriole legs, from long, almost straight table legs to the squat, bent legs used on chests and desks. There are clearly identifiable differences in the leg styles of France, Holland, England and America during the 18th century, as well as

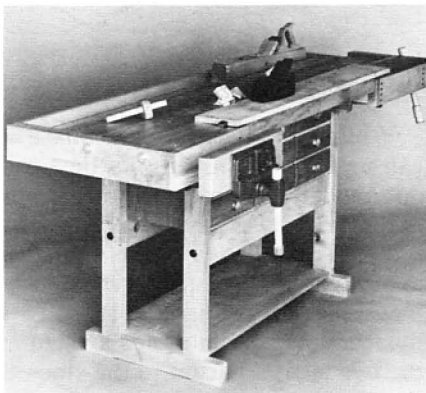
regional differences within these countries, particularly in America.



The leg is first drawn full scale on grid paper, then transferred to plywood or hardboard from which a template is cut. If you are designing a leg without a specific model, furniture catalogs will give you a good sense of the proportions to strive for. Generally the knee looks best when it is well defined and flares immediately below the

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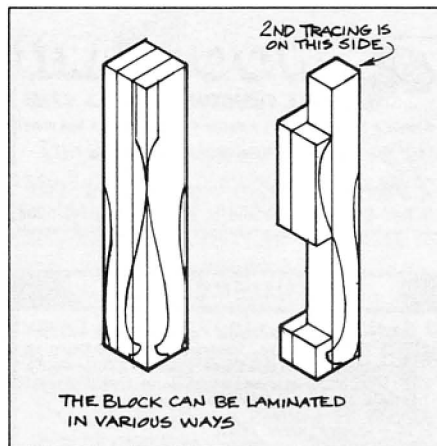
## Special Techniques, (Cont'd)

apron line. The sides of the uppermost part of the leg are kept flat so that the aprons can be joined to them.

Many cabriole legs have ears which continue the curve of the leg to the apron. These are cut separately and attached with glue and staggered dowels. When the leg blank is cut, the ears are joined and shaped along with the leg.

After cutting the template from thin stock, sight along the curves to spot any dips or bumps and use a cabinet file to fair these out into smoothly flowing lines. The shape of the foot should also be carefully filed. If the foot or knee is to be embellished with carving, the template should allow for extra thickness at these points.

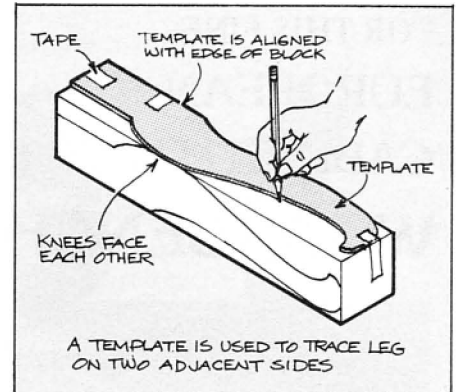
Because of the cabriole shape, it's usually difficult to secure a piece of wood large enough from which to cut a leg. For this reason, legs are often cut



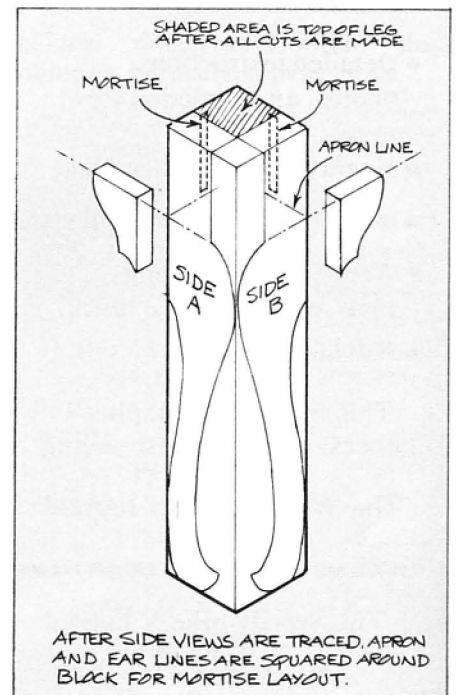
from blocks laminated from two or more boards. Smaller blocks can be glued at the top and bottom to allow for the flared knees and feet, in which case, the patterns are traced on the two adjacent sides that are flat, with the knees facing away from each other.

Although cutting these legs is not difficult, it's a good idea to try one first with a piece of scrap stock so you can familiarize yourself with the process. Before tracing the template on the block, be sure that the faces of the block are square to each other. The template is placed on one face as shown, so the upper flat (where the apron will join) is aligned with the edge of the block. The template should be slightly narrower than the block so that the cutting lines do not run off the edge at the knee or ankle. After tracing on one side, transfer the template to an adjacent side, producing a mirror image of the leg (the illus-

tration shows the knees facing each other but they can also face away).



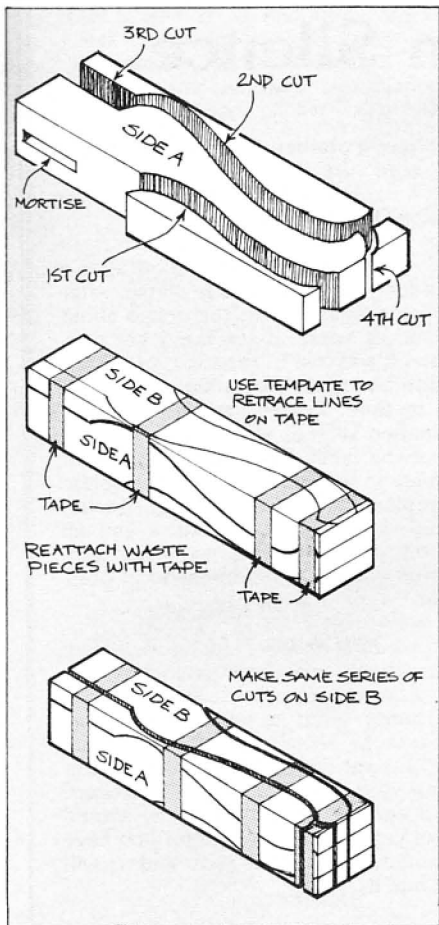
While the block is still square and can be easily clamped, it's best to lay out and cut the mortises for the apron tenons. Mortise layout can be tricky unless a trial leg is made so that you can visualize from what part of the block the upper leg emerges. In the illustrations, the mortises are cut into the two faces adjacent to the sides that are marked.



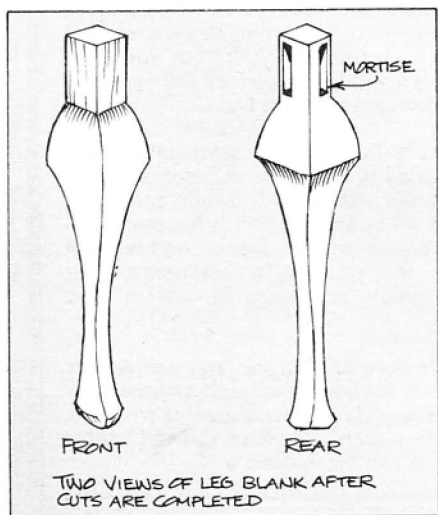
The bandsaw with a 1/4 or 3/8 inch blade, or a bowsaw is then used to cut away the waste portions from the tracing on one side. These waste pieces are then taped back in place on the block and the template is used to retrace the lines where necessary on the uncut side.

The second series of cuts are then made on the adjacent side and after the waste portions are removed, the leg blank is completed. It's always a

somewhat pleasant surprise to finish the cuts and see the rough leg blank emerge.



If the leg is to have a club or ball foot, the blank can now be mounted on the lathe for the initial shaping. Except for carving details, the rest of the leg is best shaped with cabinet files. These are better than the spokeshave for safely removing wood with irregular grain around compound curves. Final smoothing can be done with a curved cabinet scraper, followed by finish-sanding.



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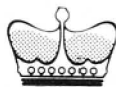
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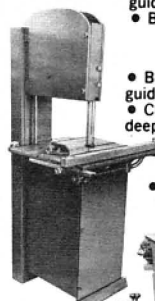


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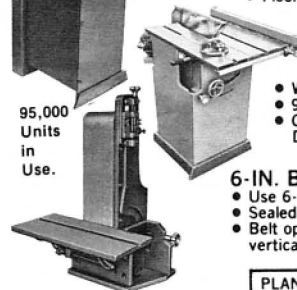
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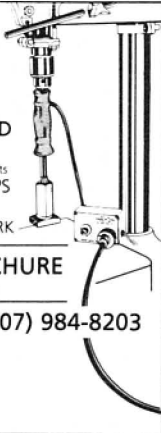
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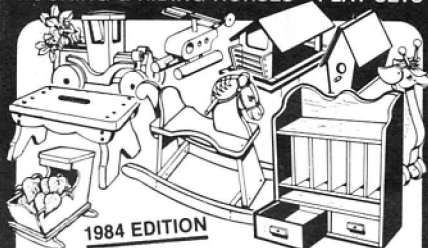
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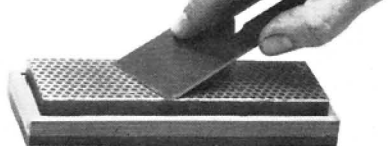
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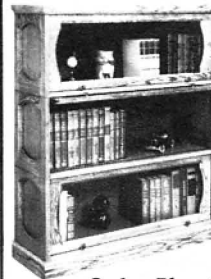


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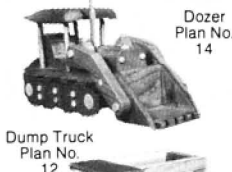
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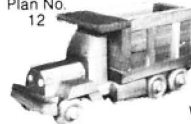


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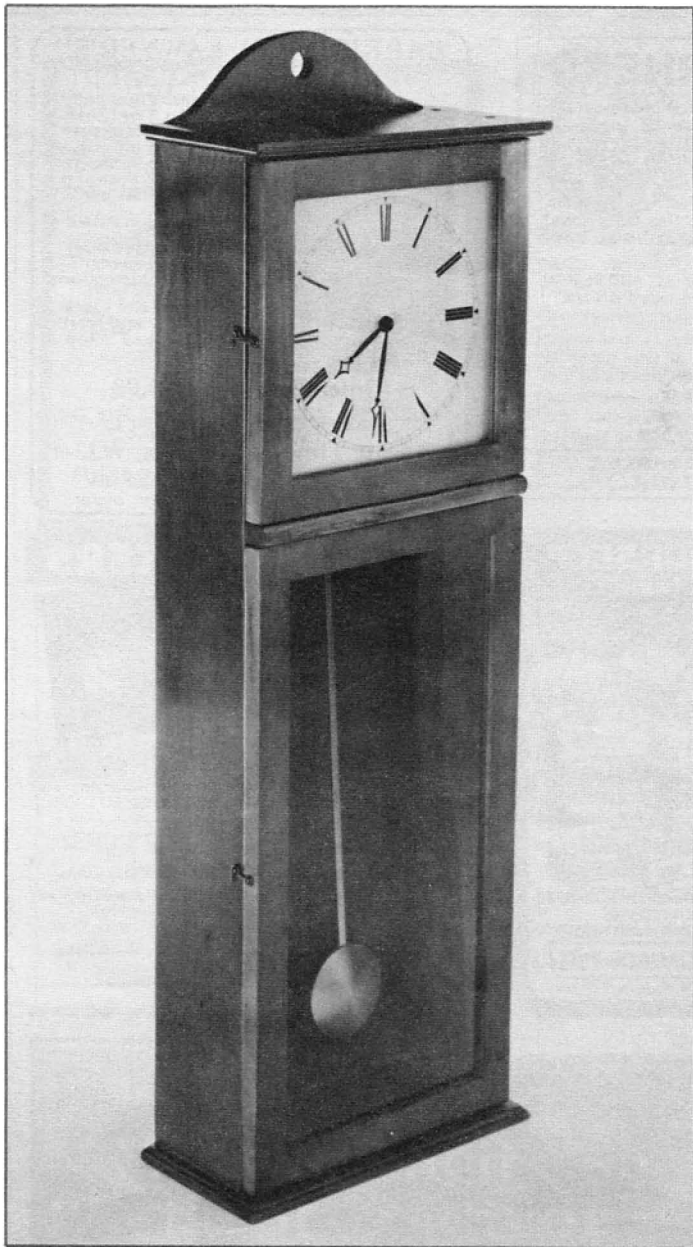
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The top and bottom (parts A) can be made first. Cut  $\frac{3}{4}$  in. stock to a width of  $5\frac{3}{4}$  in. and a length of 12 in. Note that the ends and front of each part A consist of a beaded rabbet. The rabbet, which measures  $\frac{1}{4}$  in. deep by  $1\frac{1}{4}$  in. wide, is best cut using the dado-head cutter in conjunction with a table or radial arm saw, although the same results can be obtained by making repeated passes with a regular sawblade.

Once the rabbets are cut, the beading is added. This can be done with a router equipped with a piloted  $\frac{1}{4}$  in. rounding-over bit, although a shaper or router table, if you have one, will make the job even easier. To use the router, clamp the stock firmly to the workbench, then set the bit to form a  $\frac{1}{16}$  in. lip as shown in the detail. Some readers may find that the length of the pilot is such that the end of the pilot cuts into the workbench. If this is the case with your bit, it will be necessary to include a piece of scrap stock under the

workpiece to raise it slightly off the workbench.

To complete work on parts A, a  $\frac{1}{2}$  in. deep by  $10\frac{1}{2}$  in. long notch is cut along the back edge to accept the back (part T). It can be done using a sharp chisel, or a saber saw or band saw, but the table saw equipped with a dado-head cutter will probably do the job as quickly and accurately as any other way. Set the dado-head to make a  $\frac{1}{2}$  in. deep cut, then use the miter gauge to support the stock (on edge) while making a series of cross cuts to form the notch.

The two sides (parts B) are made next. Cut  $\frac{3}{4}$  in. thick stock to a width of  $4\frac{1}{2}$  in. and a length of  $32\frac{1}{2}$  in. Make the cuts carefully to insure that the ends are square, then use the table saw with a dado-head to cut the  $\frac{1}{2}$  in. deep by  $\frac{1}{2}$  in. wide rabbet along the inside back edge. The back (part T) will fit in this rabbet when the case is assembled later on.

Parts A and B can now be assembled, but before starting give all four parts a thorough sanding, finishing with 220 grit sandpaper. Add glue to the mating surfaces, then apply light pressure with bar or pipe clamps. Check for squareness and make adjustments as necessary. When dry, remove all clamps and bore  $\frac{1}{4}$  in. diameter holes for the pegs (parts C). Cut the pegs slightly longer than necessary, then add glue and drive into the holes, allowing about  $\frac{1}{16}$  in. to protrude. When dry, sand flush with the surface.

Next, from  $\frac{3}{4}$  in. thick stock, cut the stretcher (part D) to a width of  $1\frac{1}{2}$  in. and a length of  $10\frac{1}{2}$  in. Use a ruler and sharp pencil to carefully lay out and mark the dovetail on each end as shown in the detail. Once marked, a dovetail saw or fine-toothed back saw will do a nice job of cutting out the waste stock.

Now that part D is completed, work can continue on parts B. Referring to the front view drawing, note the location of part D on the front edges of parts B. With part D temporarily clamped in its proper position, use a sharp hard pencil to trace the profile of each dovetail. A sharp chisel can then be used to chop out the sockets as shown. Following this, part D can be glued and clamped in place.

To keep weight to a minimum,  $\frac{1}{2}$  in. thick stock is used for the back. Most lumber yards don't carry  $\frac{1}{2}$  in. thick material, so you'll need to start with thicker stock and reduce it. Many lumber yards have thickness planers, and they are usually willing to plane stock to any thickness for a nominal charge. If your lumber yard doesn't do this, check the telephone book yellow pages for the names of local mill-work shops as they also offer this service.

If you have a band saw you can resaw five-quarter stock (which measures about  $1\frac{1}{8}$  in. thick) to get enough material for the back. Select a piece that measures  $5\frac{1}{2}$  in. wide by about 37 in. long, then use a marking gauge to scribe a line along the centerline of the edge. With this as a guideline, the band saw is used to cut the stock in half; each piece now  $5\frac{1}{2}$  in. wide, 37 in. long, and slightly more than  $\frac{1}{2}$  in. thick.

Of course, there's still another way to reduce the thickness of a board. A sharp smooth or jack plane, and a little hard work, will produce a thinner board in short order. Before you start though, use the marking gauge to scribe the  $\frac{1}{2}$  in. thickness all around the stock. This guideline will make it easier to maintain the same thickness throughout.

The  $\frac{1}{2}$  in. thick stock can now be edge-glued to get the  $10\frac{1}{2}$  in. width that's needed. Apply glue to both mating surfaces and clamp with bar or pipe clamps. When edge-gluing, it's best to allow a little extra length and width of stock. After the clamps are removed, it can then be trimmed to final length and width on the table or radial-arm saw.

Next, mark the centerline of the 1 in. diameter hole as shown. When boring the hole, be sure to clamp a piece of scrap stock on the back side to keep the stock from splintering out. Now, transfer the curved profile of part T to the

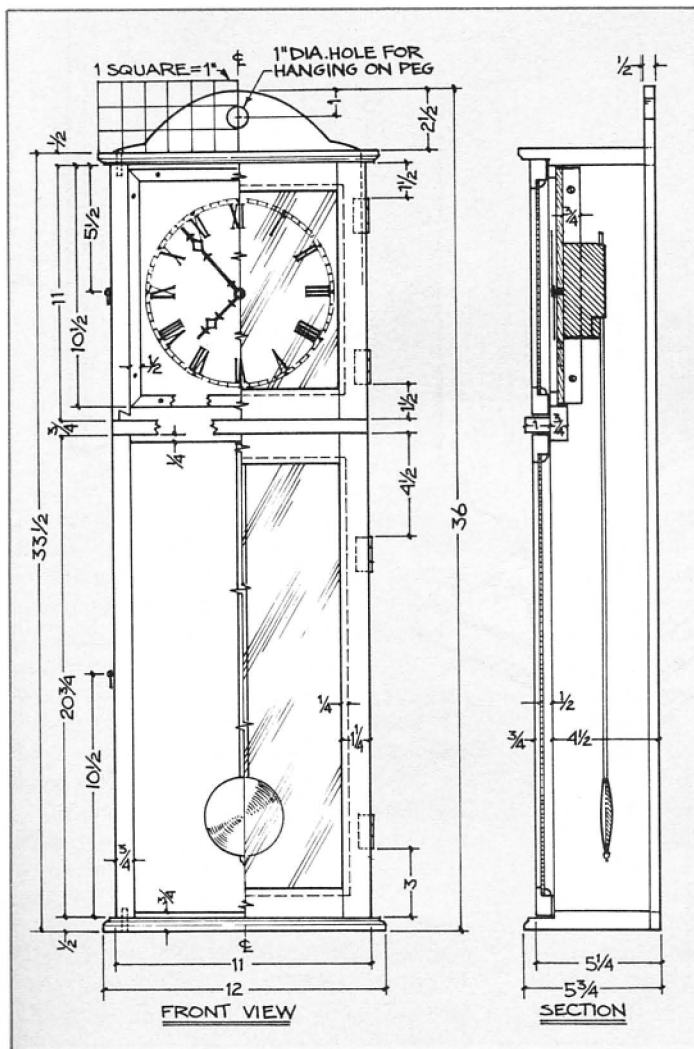
stock, then cut out with a band or saber saw.

The top and bottom door frames (parts L, M, P, and Q) can now be made. Cut each part to the dimensions shown in the bill of materials, then lay out the location of the mortises on parts M and Q. Most of the waste stock can be removed by making a series of holes using a  $\frac{3}{8}$  in. diameter drill bit. When drilling though, be sure to keep the bit both square to the edge and parallel to the  $1\frac{1}{4}$  in. wide face surface. And drill the holes slightly deeper (about  $\frac{1}{16}$  in.) than the 1 in. tenon length. Later, when the joint is assembled, this extra depth will allow room for any excess glue or wood chips that would otherwise prevent the joint from closing tightly.

The tenons on each end of parts L and P are made next. You can hand cut the tenons using a dovetail saw or fine-toothed back saw, but we find it easiest to use the table saw with the dado-head cutter. Set the dado-head to make a  $\frac{3}{16}$  in. deep cut, then use the miter gauge to pass the stock through the cutter. Since the shoulder depth is the same all around, the cutter height need not be changed.

Once the mortises and tenons are cut, both the top and bottom frames can be assembled. Apply glue to each mortise and tenon, then assemble and clamp firmly. Check for squareness and make adjustments as necessary, then set aside to dry.

A  $\frac{1}{4}$  in. wide by  $\frac{1}{2}$  in. deep rabbet is now cut into the back of both the top and bottom frames. This rabbet, which serves to accept the glass (parts N and R) and the molding (parts O and S), is cut using a router equipped with a pilot-ed  $\frac{1}{4}$  in. rabbeting bit. Clamp the frame to your workbench (front side down) then rest the router on the back surface of the frame with the bit set for a  $\frac{1}{2}$  in. deep cut. Make the cut while moving the router in a counterclockwise direction.



Bill of Materials  
(All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Top & Bottom	$\frac{3}{4}$ x $5\frac{3}{4}$ x 12	2
B	Side	$\frac{3}{4}$ x $4\frac{1}{2}$ x $32\frac{1}{2}$	2
C	Peg	$\frac{1}{4}$ Dia. x 1 Long	8
D	Stretcher	$\frac{3}{4}$ x $1\frac{1}{2}$ x $10\frac{1}{2}$	1
E	Cleat	$\frac{3}{4}$ x $\frac{3}{4}$ x $10\frac{1}{4}$	2
F	Divider	$\frac{3}{4}$ x 1 x 11	1
G	Dial Board	$\frac{1}{4}$ x $9\frac{1}{2}$ x $10\frac{1}{4}$	1
H	Movement (w/ Pendulum)	Klockit	1
I	Paper Dial	Mason & Sullivan	1
J	Side Retainer	$\frac{1}{4}$ x $\frac{1}{2}$ x $10\frac{1}{4}$	2
K	Top & Bottom Retainer	$\frac{1}{4}$ x $\frac{1}{2}$ x $9\frac{1}{2}$	2
L	Top Door Rail	$\frac{3}{4}$ x $1\frac{1}{4}$ x $10\frac{1}{2}$ (inc. tenons)	2
M	Top Door Stile	$\frac{3}{4}$ x $1\frac{1}{4}$ x 11	2
N	Top Door Glass	$\frac{1}{8}$ x 9 x 9	1
O	Top Glass Molding	$\frac{1}{4}$ quarter-round	As req'd
P	Bottom Door Rail	$\frac{3}{4}$ x $1\frac{1}{4}$ x $10\frac{1}{2}$ (inc. tenons)	2
Q	Bottom Door Stile	$\frac{3}{4}$ x $1\frac{1}{4}$ x $20\frac{3}{4}$	2
R	Bottom Door Glass	$\frac{1}{8}$ x 9 x $18\frac{3}{4}$	1
S	Bottom Glass Molding	$\frac{1}{4}$ quarter round	As req'd
T	Back	$\frac{1}{2}$ x $10\frac{1}{2}$ x 36	1
U	Hinge	Mason & Sullivan	4
V	Hasp		2

The two cleats (parts E) are now cut to size and screwed in place. Note that they are located  $\frac{3}{4}$  in. from the front edge of parts B as shown in the exploded view. Also, at this time, the divider (part F) can be cut to size and glued and clamped in place.

If you plan to stain the piece, this is a good time to do it. Sand all parts to 220 grit, then stain to suit. When the stain is dry, apply two coats of a good penetrating oil.

To make the dial board (part G), cut  $\frac{1}{4}$  in. thick plywood to a width of  $9\frac{1}{2}$  in. and a length of  $10\frac{1}{4}$  in. At a point  $5\frac{1}{4}$  in. from the top edge (and centered along the width), drill a  $\frac{3}{8}$  in. diameter hole for the movement (part H) shaft.

The paper dial (part I) is available from the Mason and Sullivan Co., 586 Higgins Crowell Road, West Yarmouth, MA 02673. Order part number 2820P (specify an 8 in. dia. time ring). The current price is \$2.10 each plus shipping.

Next, glue the paper dial to the front face of part G. Make sure that the centerline of the paper dial lines up with the centerline of the movement shaft hole. Part G can then be secured to parts E with four small wood screws.

Parts J and K, which serve as a frame around the dial face, can now be cut and secured to part G with small brass wood screws as shown.

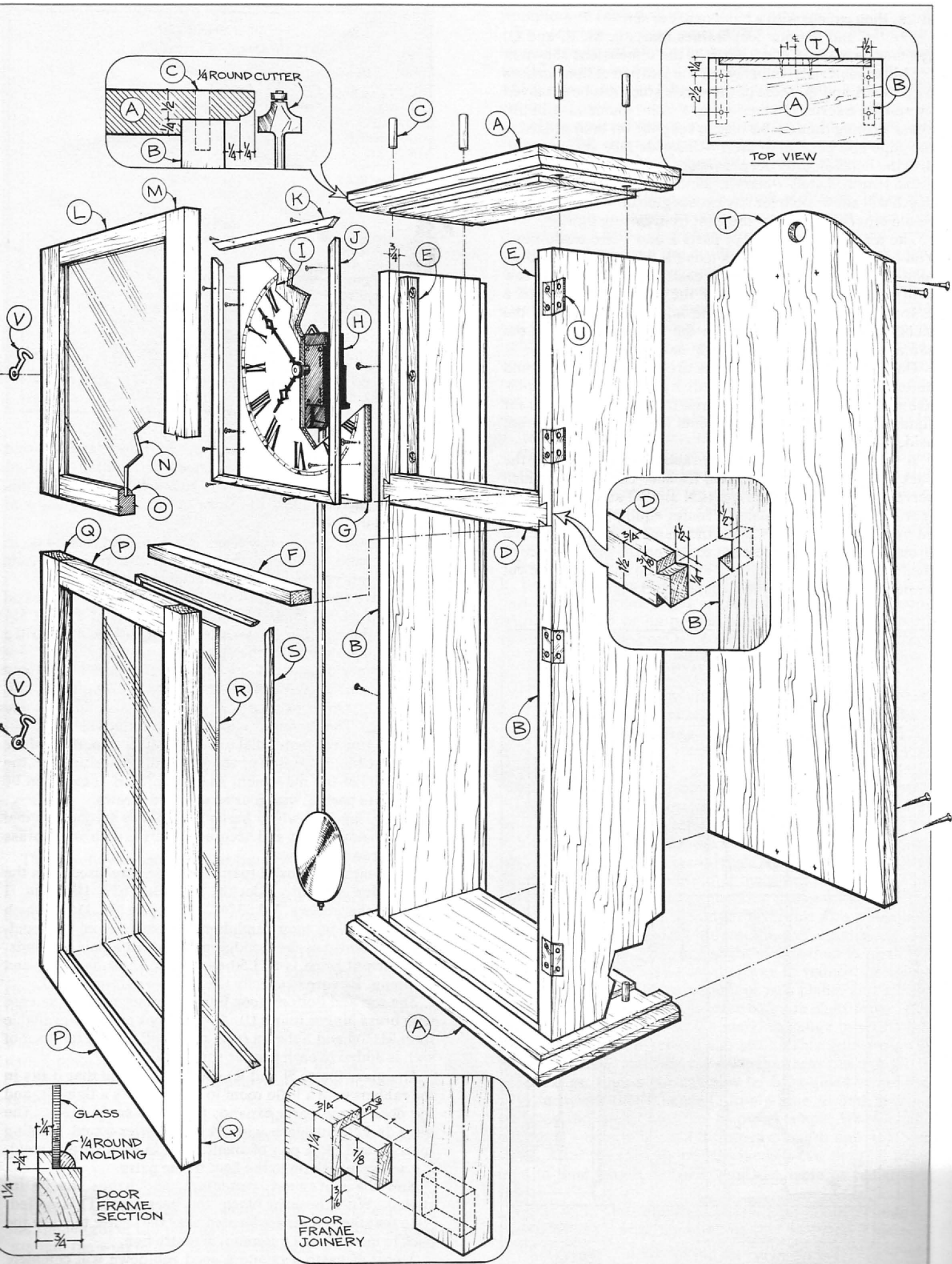
The quartz movement (part H) can be purchased from the mail order company, Klockit, P.O. Box 629, Highway H North, Lake Geneva, WI 53147. Order part No. 11051 which includes a 24 in. long pendulum (measured from the hand-shaft to the tip of the pendulum bob) and a pair of hands. The current price is \$23.50 each plus \$2.40 handling and shipping. Be sure to specify the hands—part no. 66977.

The top and bottom door frames are secured to the case with brass hinges (parts U). A brass hook and eye, available from Mason and Sullivan (part no. 2548B), \$2.10 for a set of six, is added to each door as shown.

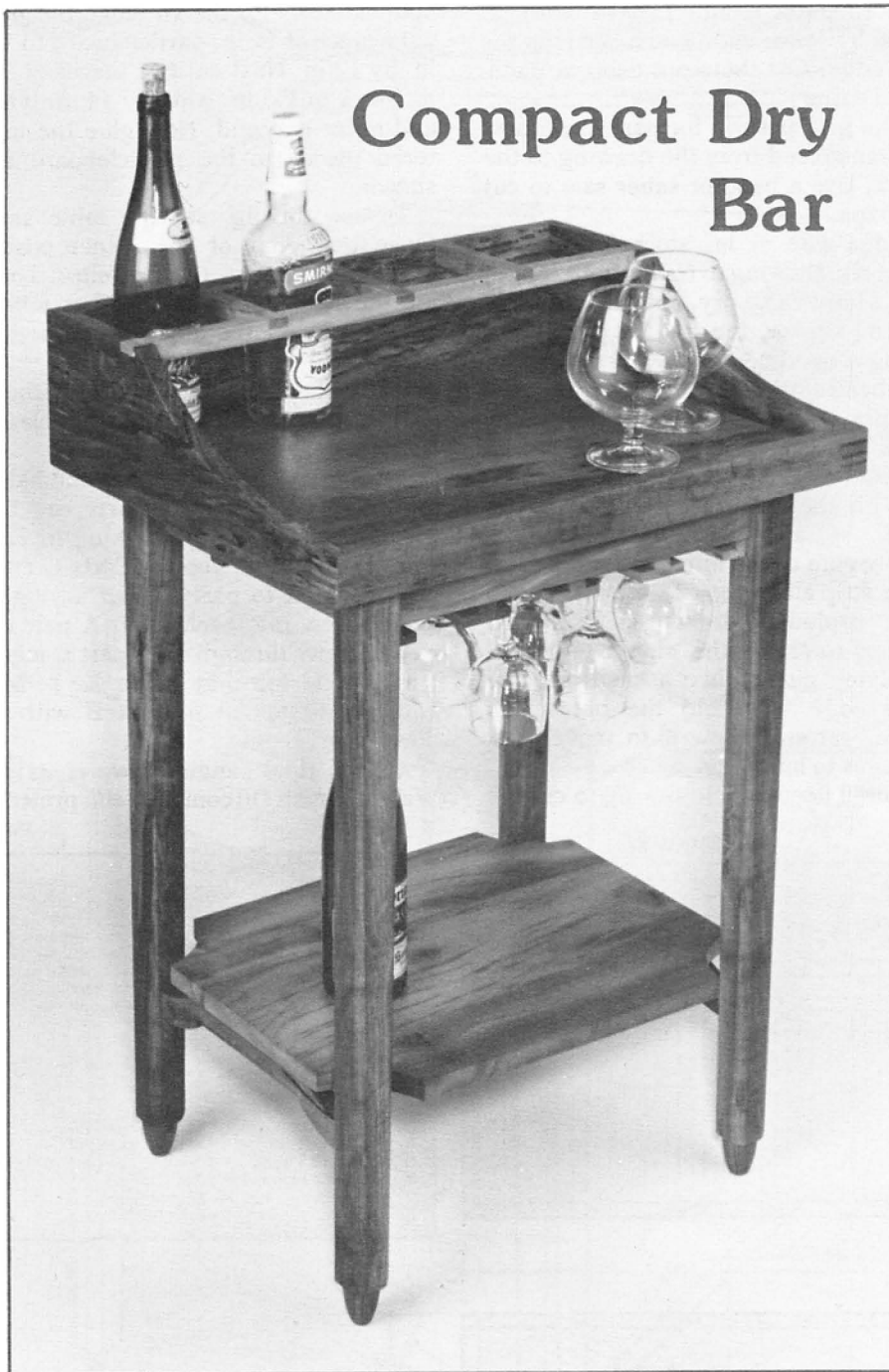
The glass (parts N and R) should be cut so that it fits in the rabbets with a little room to spare. If it's a tight fit, and the door frame parts expand, the glass could break. The glass is held in place with  $\frac{1}{4}$  in. quarter-round molding (parts O and S). A pair of small brads in each strip of molding will secure them to the door frame parts.

Now the movement, pendulum, and hands can be installed. With these in place, the back (part T) is added. Note that the screws are located near the center to allow the back to move with a minimum of restriction.

A coat of paste wax and a good rub-down will complete the project. (continued on next page) W&J



# Compact Dry Bar



A small bar like this is ideal in a room where space is at a premium. It holds several bottles on top, while stemware stores nicely hung upside down on the underside.

Ours was made from Imbuaya—sometimes called Brazilian Walnut—a wood that ranges in color from yellowish to chocolate brown. The stock we had was beautifully figured, and looks very striking in the finished state.

Of course, there's no hard and fast rule that dictates what wood is best for a particular project. That choice is yours.

The four legs (parts A) are made first. From 2 in. nominal stock (which measures 1¾ in. thick), cut each leg to 1½ in. square by 24¾ in. long. Lay out

and mark the location of the three mortises for each leg; one for the side apron (part B) tenon, one for the front or back apron (part C) tenon, and one for the side stretcher (part D) tenon. Note that each mortise is centered along the width of the leg. Once marked, use a sharp chisel to chop out the mortises.

To give the legs a lighter look, a tapered bevel is applied to the entire length of each corner. At the top, the bevel measures ⅝ in. wide, while at the bottom it measures ⅜ in. wide. Mark the bevel on each corner with a yardstick or long straight edge, then use a hand plane to remove the stock.

Next, the two side aprons (parts B) and the front and back aprons (parts C)

can be made. Note that, except length, both pieces are identical (see Fig. 1). From ¾ in. thick stock, each piece to 2¼ in. wide and to length shown in the bill of materials. To cut the tenon on each end, we use the table saw equipped with a dado-head cutter. Mark the 1½ in. tenon length on each end, then adjust the dado-head to make a ⅝ in. deep cut. With the stock held against the mitre gauge, face side down, run the stock through the cutter to establish the 1½ in. length, then make additional passes to clean up the waste stock. Repeat this process for the other face side and also the bottom edge. The top edge is cut with the dado-head adjusted to make a 1½ in. deep cut. The bevel on each tenon end is made with the regular saw blade set at 45 degrees. Now, transfer the curved profile (shown in Fig. 1) from the grid pattern to the stock, then cut out with a band or saber saw. On part B, lay out and mark the location of the mortise for the back cleat (part F). See Fig. 4.

The two side stretchers (parts D) are now made. Cut ¾ in. thick stock to a width of 2 in. and a length of 13¾ in. (see Fig. 2). Once again, the table saw and dado-head are used to cut the tenon. Mark the 1½ in. tenon length on each end, then adjust the dado-head to make a ⅝ in. deep cut. Cut each tenon following the same procedure that was used to make parts B and C. The curved profile is also cut in the same manner. Next, lay out and mark the location of the mortises for the two cross-stretchers (parts E), then chop out the mortises with sharp chisel.

To make the cross-stretchers (part E), cut ¾ in. thick stock to a width of 1 in. and a length of 17½ in. Lay out and mark the ⅝ in. long tenon (see Fig. 3), then set up the dado-head cutter to make the ⅝ in. shoulder around as shown.

The back cleat (part F) can now be cut from ¾ in. thick stock to a width of 1¾ in. and a length of 17½ in. Lay out the ⅝ in. long tenon (see Fig. 4), then cut out with the dado-head cutter.

Next, the two outside glass holders (parts G) can be cut from 1 in. thick stock to a width of 1½ in. and a length of 9¼ in. Use the table saw to cut a ⅝ in. by 1½ in. rabbet (see Fig. 5).

The inside glass holders (parts H) are now cut from 1½ in. thick stock to a width of 1⅝ in. and a length of 9¼ in. The ⅝ in. by 1½ in. rabbet (see Fig. 6) are cut with the table saw.

Note that each of parts G and H has a notch cut on one end. The dado-head cutter, set to a height of ¾ in., will cut these notches in short order.

(continued on next page)

The 14½ in. wide by 18 in. long shelf (part J) can now be made from ¾ in. thick stock. To get enough width it will be necessary to edge glue two or more narrower boards. Cut the boards to allow extra on both width and length, then glue and clamp with bar or pipe clamps. When dry, trim to the final dimensions before scribing the 5½ in. radius at each corner. Once scribed, cut out with a band or saber saw.

The four 1⅜ in. long feet (parts Q) are turned on the lathe from 1½ in. square stock. Note that the foot tapers from 1¼ in. diameter at the top to ⅝ in. diameter at the bottom. Once turned, sand smooth, then drill a ½ in. diameter by ¾ in. deep hole at the center as shown. Drill a matching hole in the bottom of each leg (parts A), then join parts A to Q with ½ in. diameter by 1-7/16 in. long dowel pins. Use glue and clamp along the length with a bar or pipe clamp.

Now, the upper back (part K), the two upper ends (parts L), and the upper front (part M) can be cut. All four parts are made from ¾ in. thick stock measuring 5⅝ in. wide. Cut each part to approximately 1 in. longer than the length shown in the bill of materials, then miter each end to 45 degrees while cutting the parts to final length. Once cut to length, a ¼ in. deep by ¼ in. wide groove is cut on the inside of each piece to accept the bottom (part N). Note that the groove is cut at a point ⅝ in. from the bottom edge of the stock.

Both parts K and L have 5/16 in. deep by ¾ in. wide notches cut in the top edge. Cut them out using a dado-head cutter.

The grid pattern for part L can now be transferred from the drawing to the stock. Use a band or saber saw to cut to shape.

Edge-glue ¾ in. stock for the top (part N), allowing extra for both length and width. Once dry, cut to length and width. The edging for the top is cut using a dado-head cutter and a molding-head cutter (see Fig. 7). Since both cutters will just touch the fence, an auxiliary wood fence must be used as shown.

With the bottom completed, parts K, L, M, and N can be assembled. Apply glue to the miters and to a 2 in. wide strip along the edge of the bottom (see exploded drawing). Use web clamps to clamp the miters together. Applying glue to just a small area of each edge will hold the bottom in place, yet still allow it to move with changes in humidity.

You'll need a table saw jig to cut the

splines (see Fig. 8). To make the jig, cut a piece of ¾ in. particleboard to 10 in. by 12 in. Next cut two pieces of ¾ in. stock to 1½ in. wide by 14 in. long and miter one end. Now glue the mitered pieces to the particleboard as shown.

To use the jig, set the table saw fence to a height of ⅞ in., then position the jig against the rip fence. Locate the fence to make the first miter cut, then pass the stock through the blade.

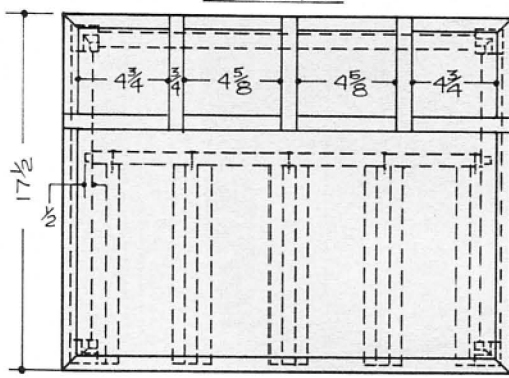
Cut splines to fit the grooves, then glue in place. Once dry, hand plane the excess spline and sand flush.

After parts O and P are cut and half-lapped at each end, all parts can be given a final sanding, working to 220 grit. Assemble as shown. Parts G and H are joined to part F with a single wood screw into each joint. A pair of wood screws through each part D joins part J. The top unit (parts K, L, M, and N) are joined to part B with a dowel (part I) pin as shown.

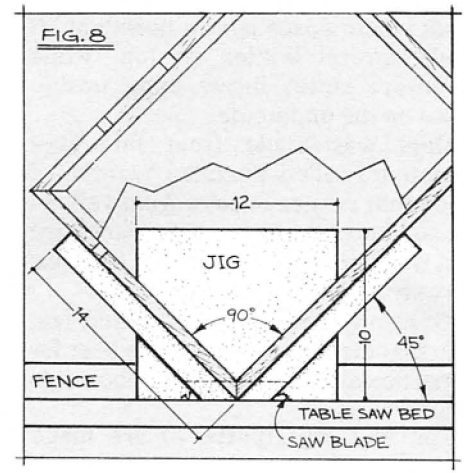
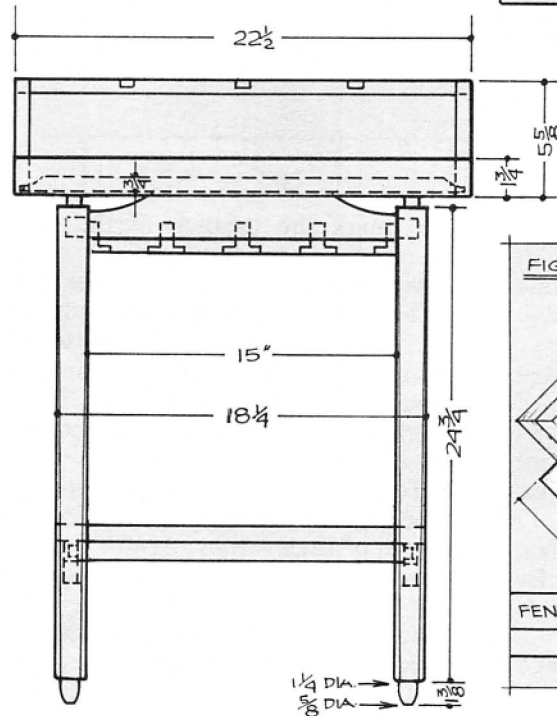
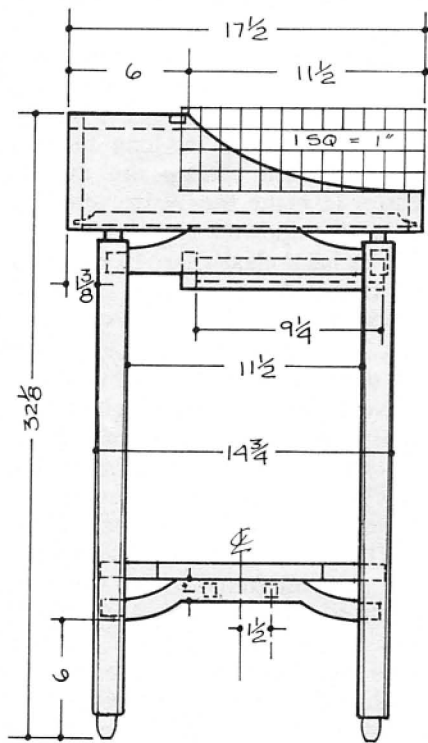
After a final sanding, two coats of Watco Danish Oil complete the project.

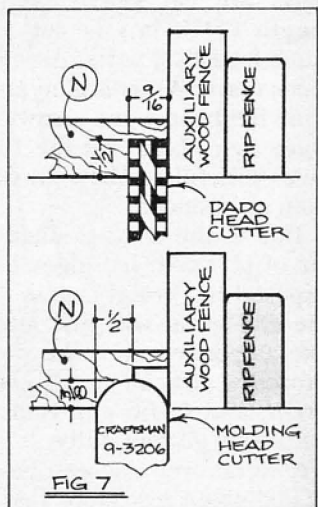
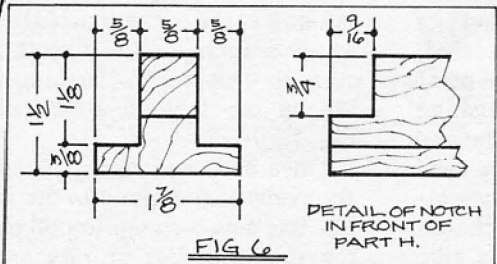
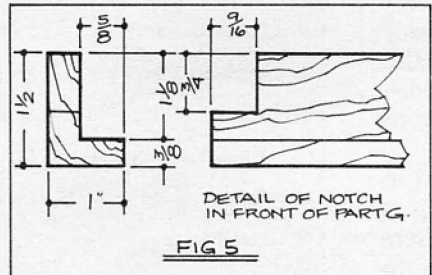
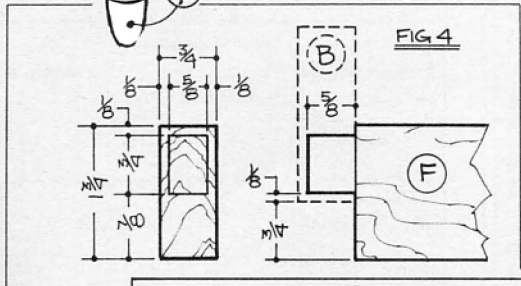
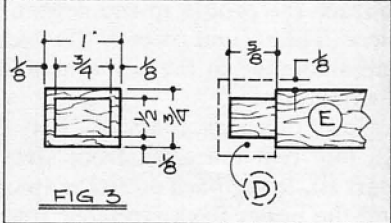
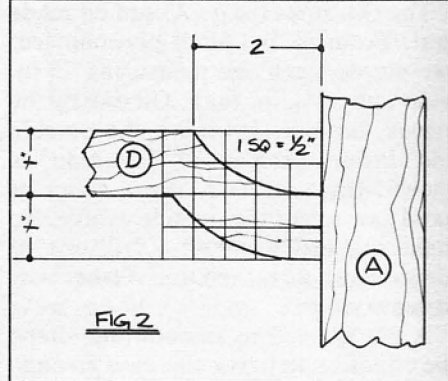
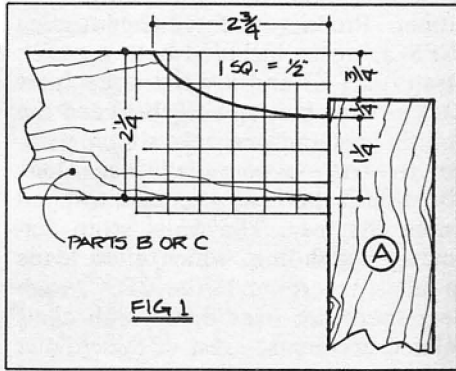
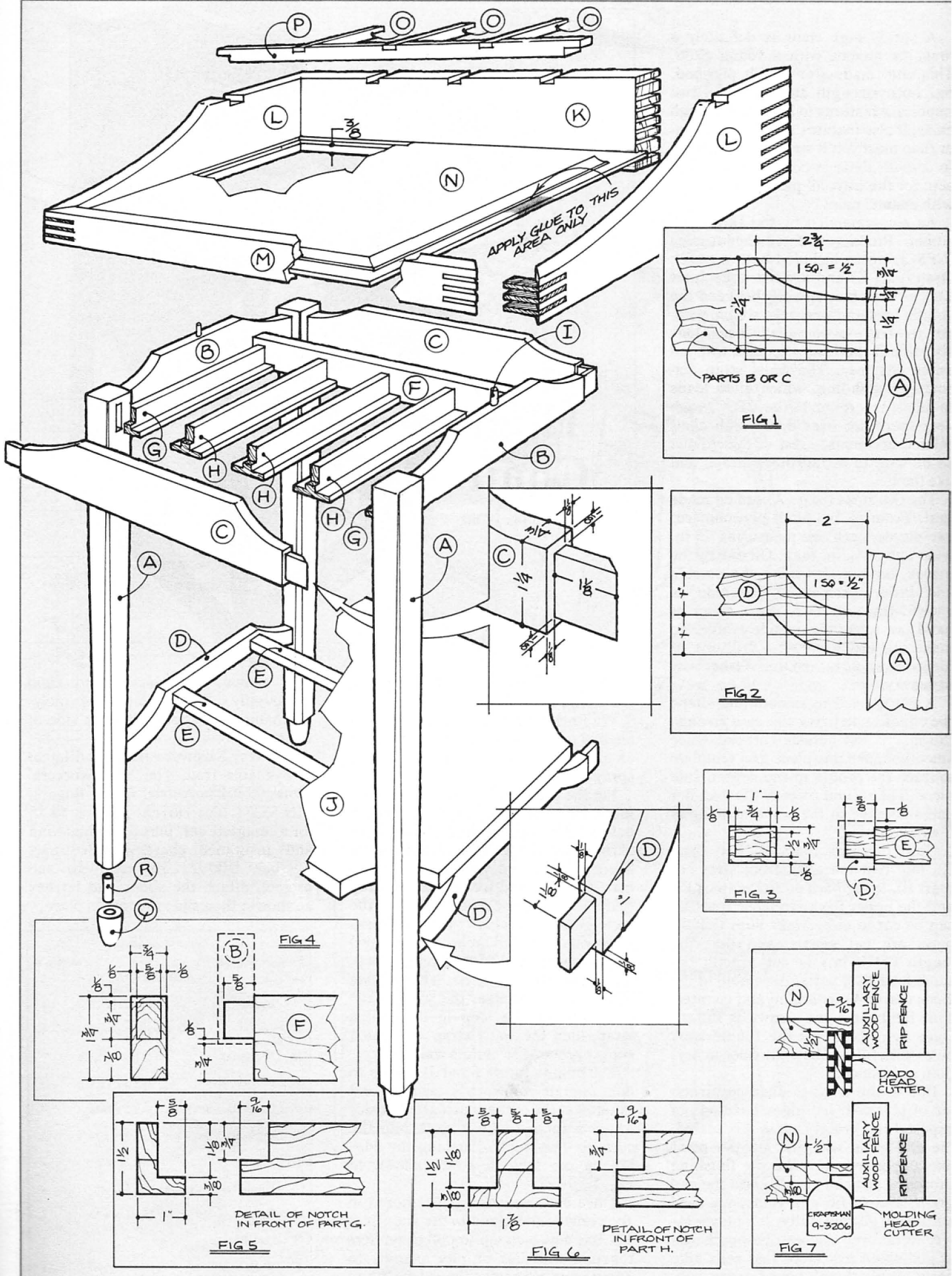
Wwj

DETAIL: TOP



Bill of Materials (All Dimensions Actual)			
Part	Description	Size	No. Req'd
A	Leg	1 1/2 x 1 1/2 x 24 1/2	4
B	Side Apron	3/4 x 2 1/4 x 13 3/4 (incl. tenons)	2
C	Front & Back Apron	3/4 x 2 1/4 x 17 1/4 (incl. tenons)	2
D	Side Stretcher	3/4 x 2 x 13 3/4 (incl. tenons)	2
E	Cross Stretcher	3/4 x 1 x 17 1/4 (incl. tenons)	2
F	Back Cleat	3/4 x 1 3/4 x 17 1/4 (incl. tenons)	1
G	Outside Glass Holder	1 x 1 1/2 x 9 1/4	2
H	Inside Glass Holder	1 1/2 x 1 1/2 x 9 1/4	3
I	Pin	1/2 dia. by 2 long	2
J	Shelf	3/4 x 14 1/2 x 18	1
K	Upper Back	3/4 x 5 3/4 x 22 1/2	1
L	Upper End	3/4 x 5 3/4 x 17 1/2	2
M	Upper Front	3/4 x 1 3/4 x 22 1/2	1
N	Bottom	3/4 x 16 1/2 x 21 3/4	1
O	Side Bottle Support	3/4 x 3/4 x 6	3
P	End Bottle Support	3/4 x 3/4 x 22 1/2	1
Q	Foot	1 1/2 dia. by 1 3/4 long	4
R	Pin	1/2 dia. by 1-7/16 long	4





A sturdy high chair is definitely a must for anyone with a young child. This one, made from birch plywood, has both strength and stability—two important features to look for in a high chair. It also features a tray that's larger than most you'll see, with an edging to contain those inevitable spills. Except for the tray, all parts are finished with enamel paint.

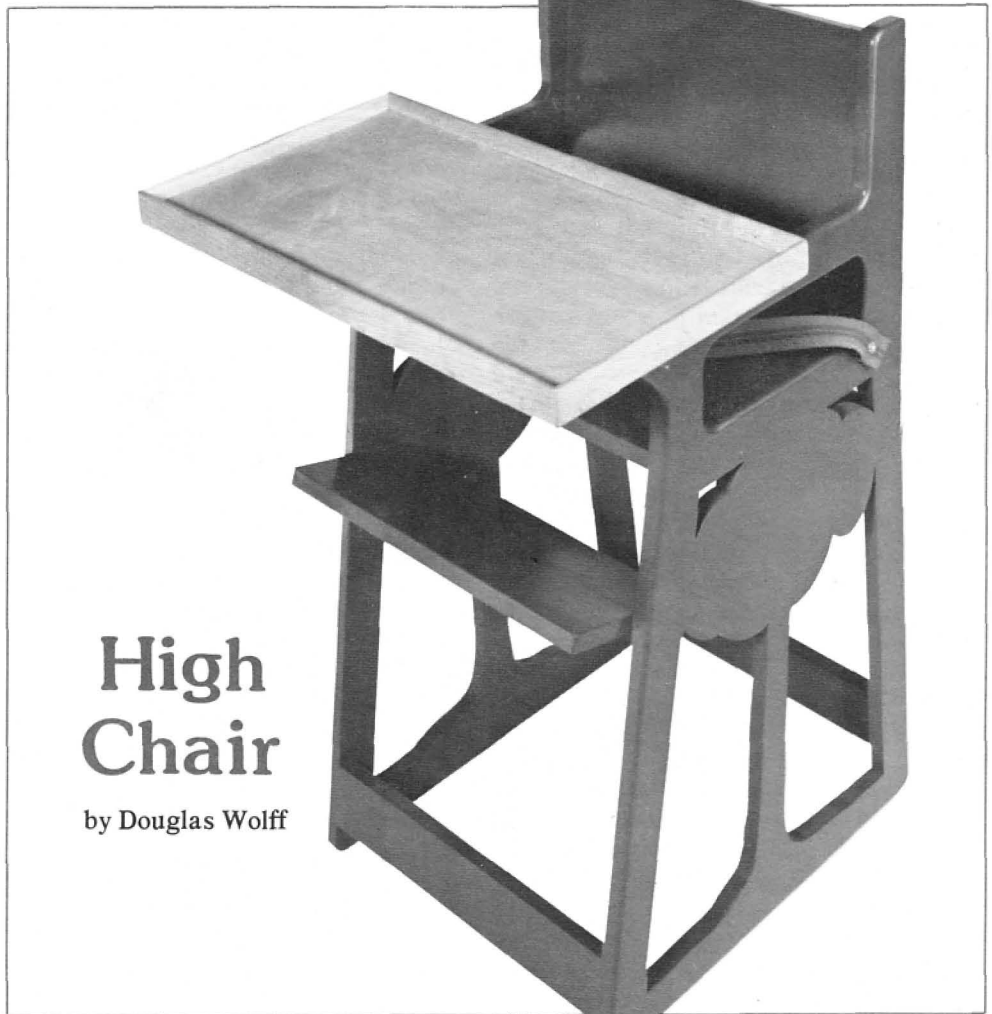
As recommended by the U.S. Consumer Product Safety Commission (CPSC), we've included both a crotch strap (part K) and a waist strap (part L). The crotch strap runs between the child's legs and prevents slipping under the tray—a potentially hazardous situation if the head becomes trapped under the tray. The waist strap discourages standing, which often leads to falls. According to the CPSC, each year there are over 9,000 high chair related accidents, most of them falls, so be sure to install these straps and use them.

The two sides (parts A) can be made first. From  $\frac{3}{4}$  in. birch plywood, cut two pieces, each one measuring 20 in. wide and  $37\frac{1}{4}$  in. long. On one of the pieces, lay out and mark the outside and inside profiles of the side as shown. Once marked, use a saber or band saw to cut the outside profile. To make the inside cutouts, drill one or more pilot holes, then use a saber saw to cut to shape.

A file is used to smooth and shape the edges, with particular care given to the inside and outside corners. Once smoothed, use this piece as a template to trace the profile to the second side piece. The second piece is then cut out and smoothed in the same manner as the first one.

Now, the back (part B), seat (part C), foot rest (part D), front stretcher (part E), lower back stretcher (part F), and the upper back stretcher (part G) can be cut to size. Make sure that all parts are cut square and that the length (14 $\frac{1}{8}$  in.) is cut exactly the same for all six parts. Assemble to the sides (parts A) with glue and countersunk flat head wood screws as shown. Once assembled, fill the countersunk holes with filler. Allow the filler to dry, then sand smooth.

Due to the cross-grained construction of plywood, its edges have lots of exposed end grain. Unless it is sealed, the end grain will soak up the paint like a sponge and make the finishing process a difficult one. To seal the end grain, and to fill any voids, we used auto body glazing putty. It's inexpensive, works well and can be purchased at just about any store that sells auto parts. Apply it with your fingers, rub-



## High Chair

by Douglas Wolff

bing it in thoroughly. Allow to dry, then sand smooth.

We finished our high chair with red enamel paint. Two coats were brushed on followed by one coat applied from a spray can.

For the waist strap (part L), a strong fabric belt was cut to length, then each belt section was secured to the sides of the chair with a stainless steel round headed screw and washer. The same material was used for the crotch strap (part K), with one end joined to the underside of the seat (with a stainless steel round headed screw and washer) and the other end formed into a loop. The loop was stitched with strong fabric thread. In use, the waist strap goes through the loop in the crotch strap, then the waist strap is buckled snugly around the child's waist.

The edging (parts I and J) serves to help contain spills. It's tapered and mitered at the corners to make it easier to get a sponge or wet cloth into the corners. The steps to making the edging on the table saw are shown in Fig. 1.

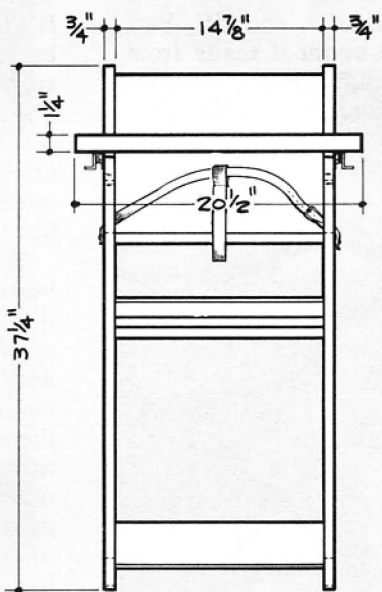
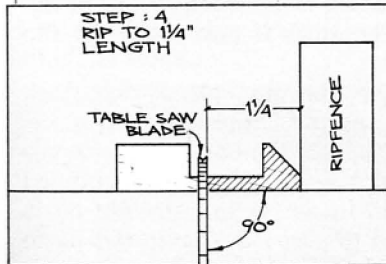
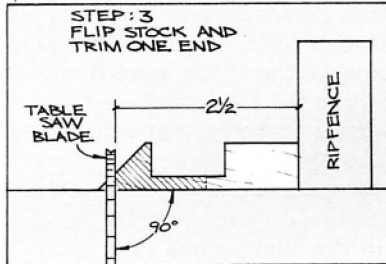
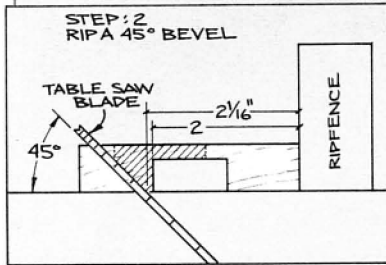
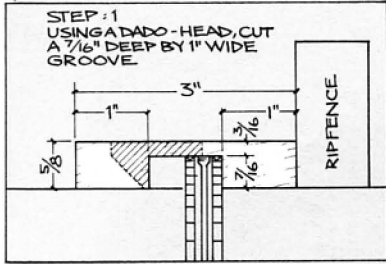
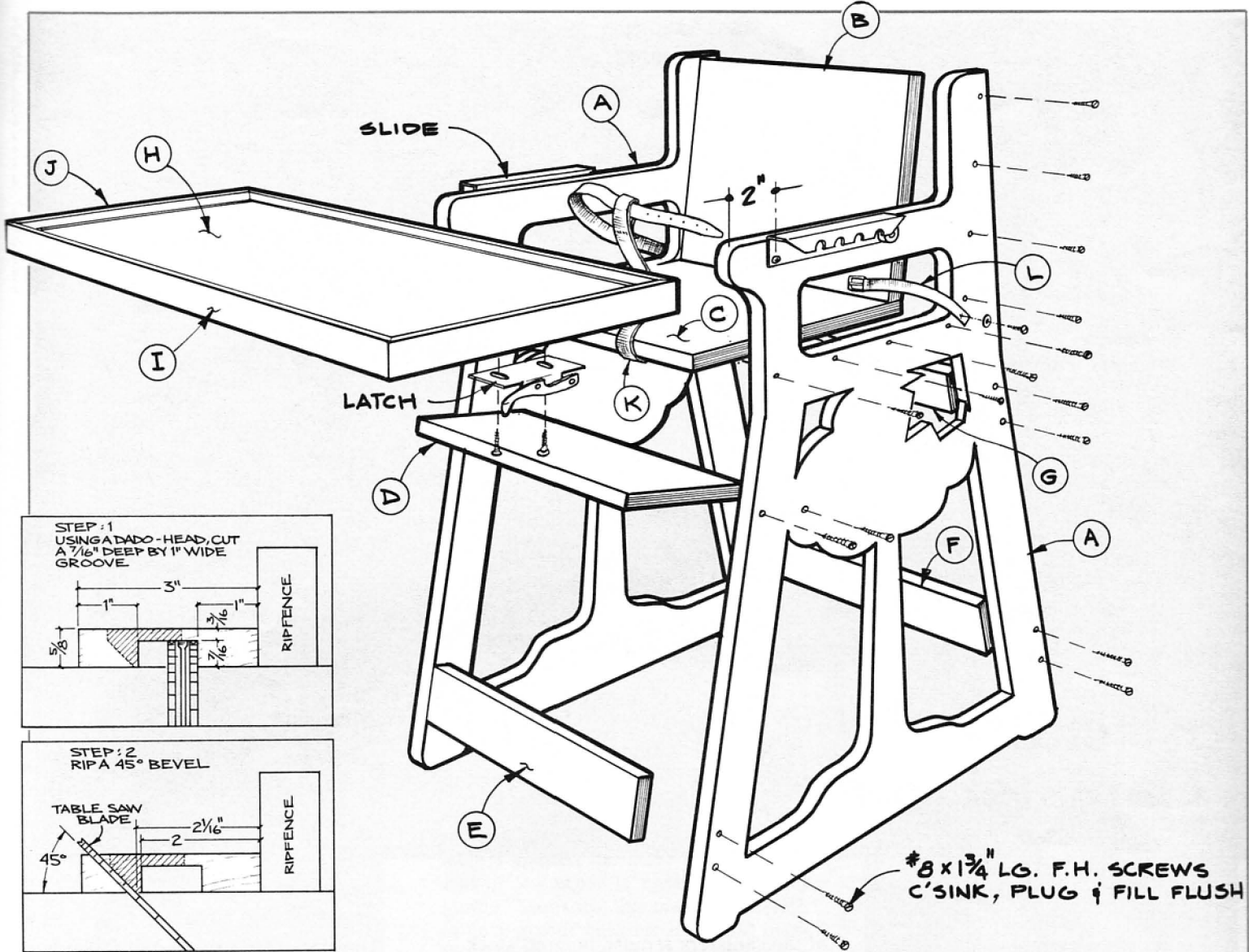
Once cut, the edging is mitered at the corners and glued to the tray (part H). Use a web clamp to pull the miters together and bar or pipe clamps to apply pressure across the sides. When

dry, remove the clamps and sand thoroughly. Three coats of polyurethane were applied to each side of the tray.

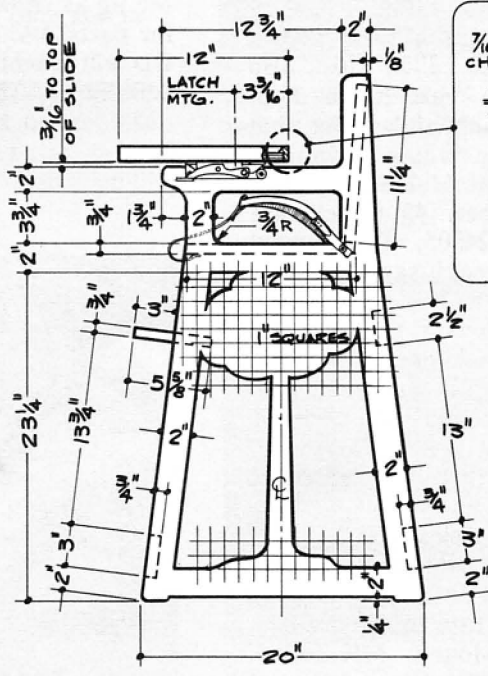
The tray hardware (slide and latch) is available from The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374. The current price is \$4.75 for a complete set, plus \$1.50 handling and insurance charge. Order part number DG302. To complete the project, attach the slides and latches as shown, then slide the tray in place.

Wwj

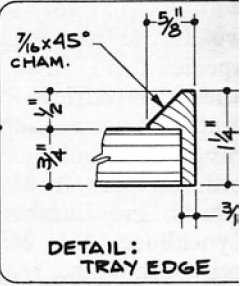
Bill of Materials			
Part	Description	Size	No. Req'd
A	Side	$\frac{3}{4}$ x 20 x $37\frac{1}{4}$	2
B	Back	$\frac{3}{4}$ x $11\frac{1}{4}$ x $14\frac{1}{8}$	1
C	Seat	$\frac{3}{4}$ x 12 x $14\frac{1}{8}$	1
D	Foot Rest	$\frac{3}{4}$ x $5\frac{5}{8}$ x $14\frac{1}{8}$	1
E	Front Stretcher	$\frac{3}{4}$ x 3 x $14\frac{1}{8}$	1
F	Lower Back Stretcher	$\frac{3}{4}$ x 3 x $14\frac{1}{8}$	1
G	Upper Back Stretcher	$\frac{3}{4}$ x $2\frac{1}{2}$ x $14\frac{1}{8}$	1
H	Tray	$\frac{3}{4}$ x $11\frac{1}{8}$ x $20\frac{1}{8}$	1
I	Front/Back Tray Edge	$\frac{5}{8}$ x $1\frac{1}{4}$ x $20\frac{1}{2}$	2
J	Side Tray Edge	$\frac{5}{8}$ x $1\frac{1}{4}$ x 12	2
K	Crotch Strap		1
L	Waist Strap		1

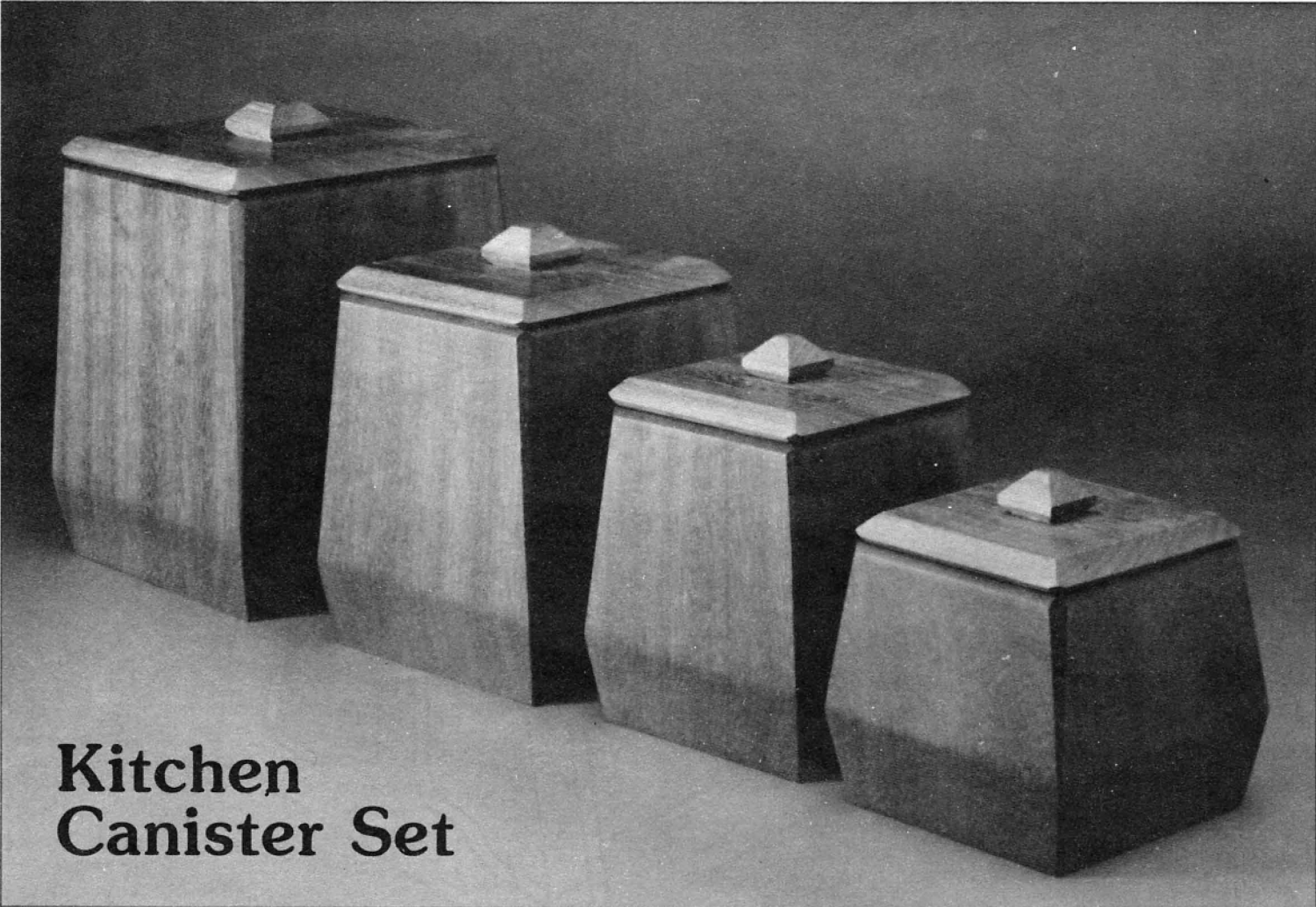


FRONT ELEVATION



RIGHT SIDE ELEVATION





## Kitchen Canister Set

There are many commercially made canister sets on the market, but few will look as attractive as these. We thought it would be fun to experiment with one of the so-called "exotic" woods, so we chose a little known species from Africa called iroko, also known as African teak. It's a moderately hard wood with a color that ranges from golden to dark brown. We ordered ours from McFeely's Hardwoods and Lumber, 43 Cabell St., Lynchburg, VA 24505. The current price for 1 in. rough-sawn stock is \$3.45 per board foot. You'll need about ten board feet (allowing for scrap), to make one set of canisters. If you want to keep the cost to a minimum, consider cherry (\$2.65/bd. ft.), red oak (\$2.50/bd. ft.), or maple (\$1.68/bd. ft.). Keep in mind that these prices are based on rough-sawn stock.

To make for easy cleaning, a plastic liner is placed in each canister. We sized our canisters to fit a set of liners sold by Meisel Hardware Specialties, P.O. Box 258, Mound, MN 55364. Order their canister liner set, part number 1558. Current price is \$7.50 plus \$2.75 postage.

You'll note that the sides (parts A)

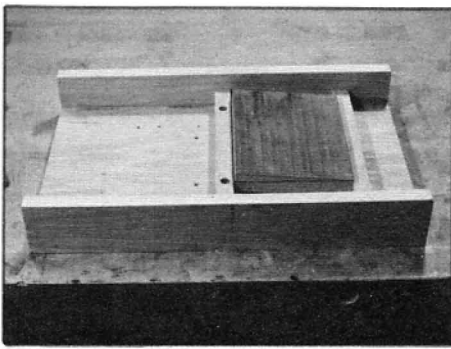
of the canisters require tapered stock. We came up with a simple router jig (page 43) that allows you to cut the tapers quickly and accurately. Make the jig as shown using  $\frac{3}{4}$  in. plywood for parts AA, BB, CC, and EE. Part DD will machine better if made from solid stock. The jig must accept four different stock lengths ( $9\frac{1}{4}$  in.,  $7\frac{1}{2}$  in.,  $6\frac{1}{4}$  in., and  $4\frac{7}{8}$  in.) so part DD will need to be relocated for each one.



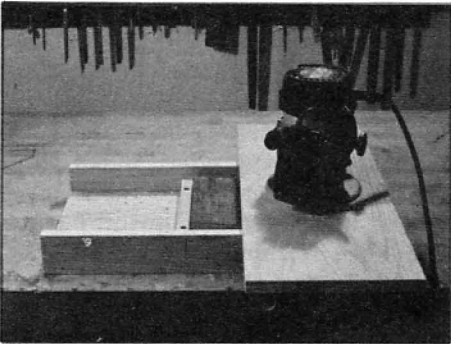
The stock that's needed to make the sides (parts A) for all four canisters is shown in the table. Begin by cutting  $1\frac{1}{4}$  in. stock to the rough-sawn dimension shown in the top half of the table. It's important that a side and an edge be both flat and square, so one side is surface planed and one edge is jointed. The stock is then cut to length which results in the dimensions (and quantities) shown in the bottom half of the table. The stock is now ready for the jig.

To use the jig, place the stock between parts CC and DD, then screw it in place from the bottom with a pair of wood screws. A router equipped with a  $\frac{1}{2}$  in. (or  $\frac{3}{4}$  in.) straight bit is mounted to part EE. Clamp the jig to the workbench, then set the router bit to make a  $\frac{1}{4}$  in. deep cut. With the motor running, place part EE on the jig, then move part EE back and forth to cut with the grain. Once all stock has been removed, lower the bit to make a  $\frac{1}{2}$  in. deep cut and repeat the process.

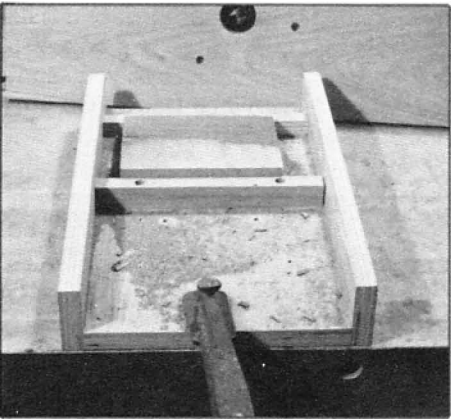
Steps 1 through 16 take you through the process of making one canister. The remaining three canisters are made following the same procedure.



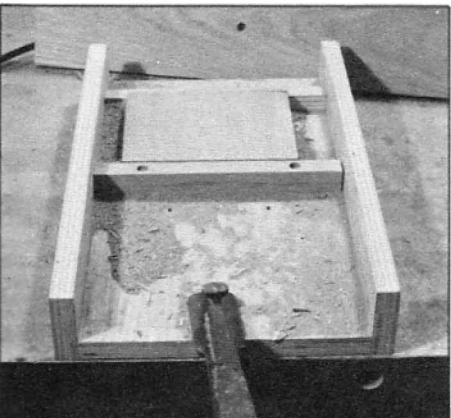
*Step 1:* With the planed side facing down, secure side stock to jig between parts CC and DD.



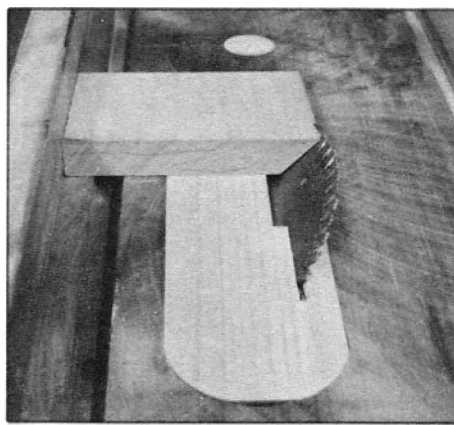
*Step 2:* Router is set for  $\frac{1}{4}$  in. depth of cut ( $\frac{1}{8}$  in. if a hard wood such as maple is used) and placed in position on jig.



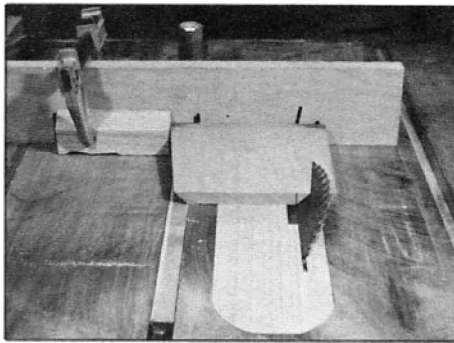
*Step 3:* Cutting with the router set for a  $\frac{1}{4}$  in. depth of cut removes about one-half of the stock.



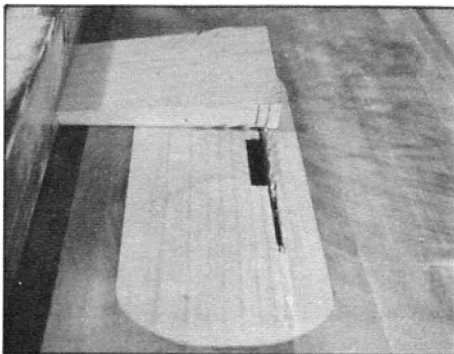
*Step 4:* With router set for  $\frac{1}{2}$  in. depth of cut, all remaining material is removed.



*Step 5:* Set the blade at 45 degrees to cut the miter on one edge of stock. Locate the rip fence so that only  $\frac{1}{8}$  in. of material is removed.

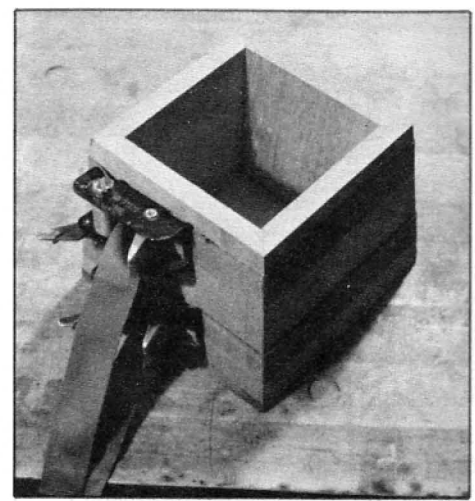


*Step 6:* The miter gauge (set at 90 degrees) is used to cut the second miter. Position the stock so that the planed side is against the table and the thick end of the taper is against the miter gauge. Measure the maximum width of your plastic canister liner and mark this dimension on the front end of the stock as shown. Cut exactly to this line. Since this cut must be made for all four sides, a stop block clamped to the miter gauge will save time and insure accuracy.

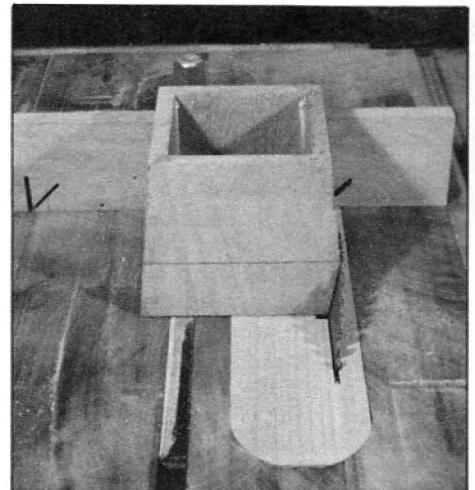


*Step 7:* Cut the  $\frac{1}{4}$  in. wide by  $\frac{3}{8}$  in. deep groove for the  $\frac{1}{4}$  in. plywood bottom (part B). Set the saw blade to a height of  $\frac{3}{8}$  in., then locate the rip fence to make a cut at a point  $\frac{1}{4}$  in. from the bottom edge (see drawing). Do this for all four sides, then relocate the rip fence so that a second cut will widen the groove to  $\frac{1}{4}$  in.

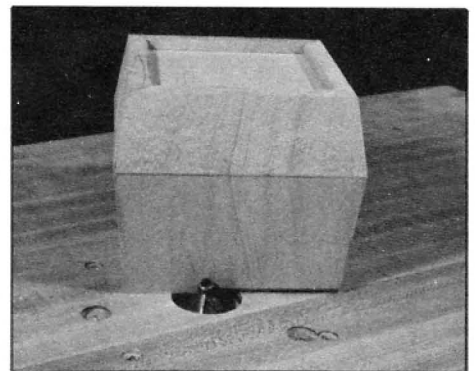
The bottom (part B) can now be cut to size and finish sanded.



*Step 8:* Dry assemble the box (including part B) and check for a good fit. If all looks o.k., apply a coat of wax to the inside corners (to keep glue from sticking) and label each joint. Reassemble with yellow glue and clamp with at least two (preferably three) web clamps. Check for squareness and make adjustments if necessary. Allow to dry at least two hours.

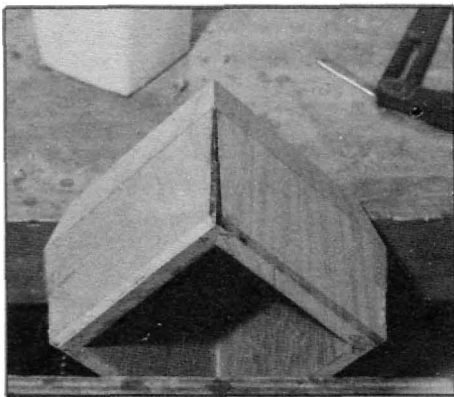


*Step 9:* At a point  $1\frac{3}{4}$  in. from the bottom, scribe a line all around the box. Set the table saw blade to 10 degrees then, with the box held firmly against the miter gauge, cut to the scribed line.

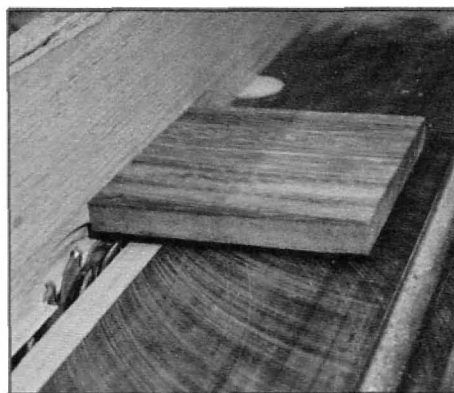


*Step 10:* A router table equipped with a piloted 45 degree chamfer bit is used to cut a  $\frac{1}{8}$  in. chamfer all around the top edge.

(continued on next page)



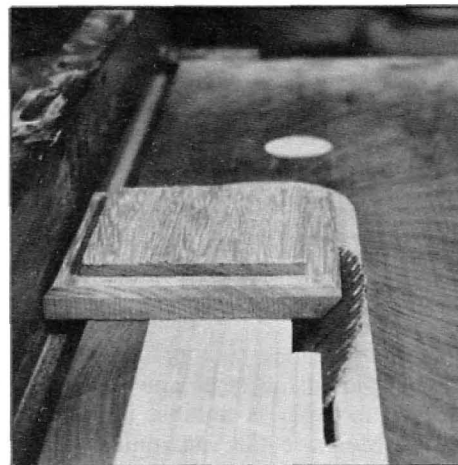
**Step 11:** Mark a tapered chamfer on all four corners. At the top edge the chamfer measures 3/16 in. wide. It gradually narrows until it disappears at the point it intersects with the 1 3/4 in. wide bevel. With the box secured in a vise, use a sharp block plane to cut the chamfer to the marked lines.



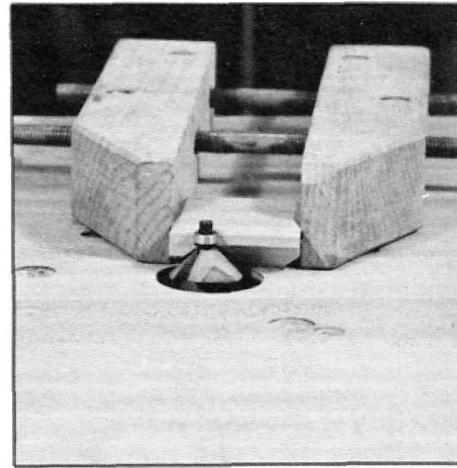
**Step 12:** Cut the top (part C) to length and width. Add an auxiliary wood fence as shown, then use the dado-head cutter to make a 1/4 in. by 9/16 in. rabbet on each edge.



**Step 13:** The router table equipped with a piloted 45 degree chamfer bit (same as in step 10) is used to cut a 1/8 in. chamfer all around the outside edge of the rabbet.



**Step 14:** The table saw, set at 45 degrees, cuts the 3/8 in. chamfer on all four edges of the top.



**Step 15:** Cut the handle (part D) to length and width. Secure the handle in a hand screw as shown and use the router table with the piloted 45 degree chamfer bit to cut a 1/8 in. chamfer all around the bottom edge. Make sure both the hand screw and the handle are flat to the table. Flip the handle over and repeat the process in order to cut the 1/2 in. chamfer on the top. You'll get a better cut if the 1/2 in. chamfer is cut in several steps. Once completed, the handle can be glued to the top with a small dowel pin.

**Step 16:** Final sand all surfaces. The canisters look best with sharp edges so avoid rounding them over as you sand. Several coats of Watco Danish Oil provide a good final finish.



Each canister has a plastic liner to make cleaning easier. Shown here is the canister used to hold tea.

### Bill of Materials

#### Flour

Part	Description	Size	No. Req'd
A	Side	See Table (parts A)	4
B	Bottom	1/4 x 7 x 7	1
C	Top	3/4 x 7 1/4 x 7 1/4	1
D	Handle	3/4 x 1 3/4 x 1 3/4	1
E	Liner		1

#### Sugar

A	Side	See Table (parts A)	4
B	Bottom	1/4 x 5 3/4 x 5 3/4	1
C	Top	3/4 x 6 x 6	1
D	Handle	3/4 x 1 1/2 x 1 1/2	1
E	Liner		1

#### Coffee

A	Side	See Table (parts A)	4
B	Bottom	1/4 x 4 3/4 x 4 3/4	1
C	Top	3/4 x 5 x 5	1
D	Handle	3/4 x 1 1/4 x 1 1/4	1
E	Liner		1

#### Tea

A	Side	See Table (parts A)	4
B	Bottom	1/4 x 4 3/4 x 4 3/4	1
C	Top	3/4 x 5 x 5	1
D	Handle	3/4 x 1 1/4 x 1 1/4	1
E	Liner		1

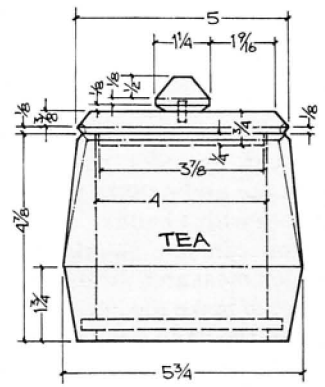
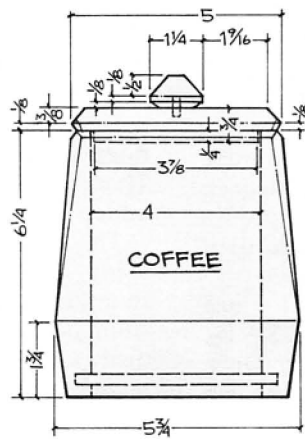
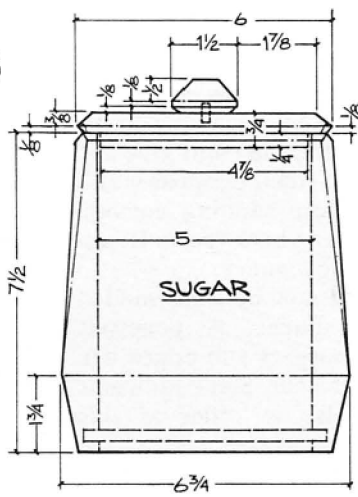
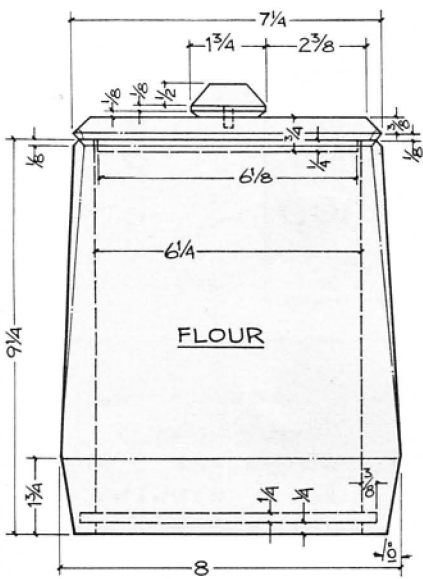
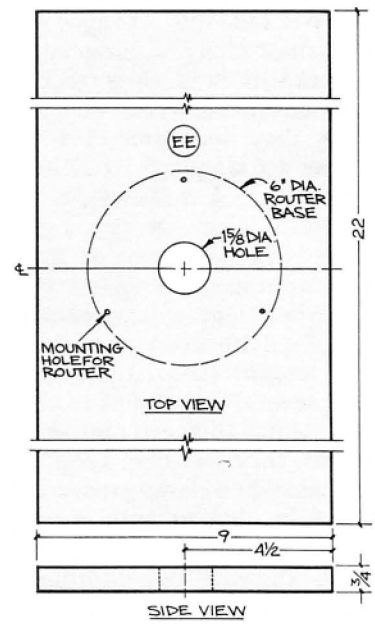
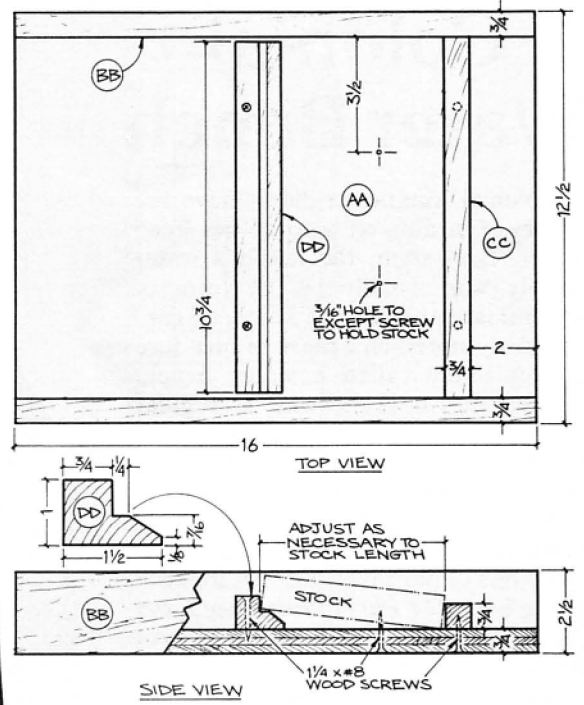
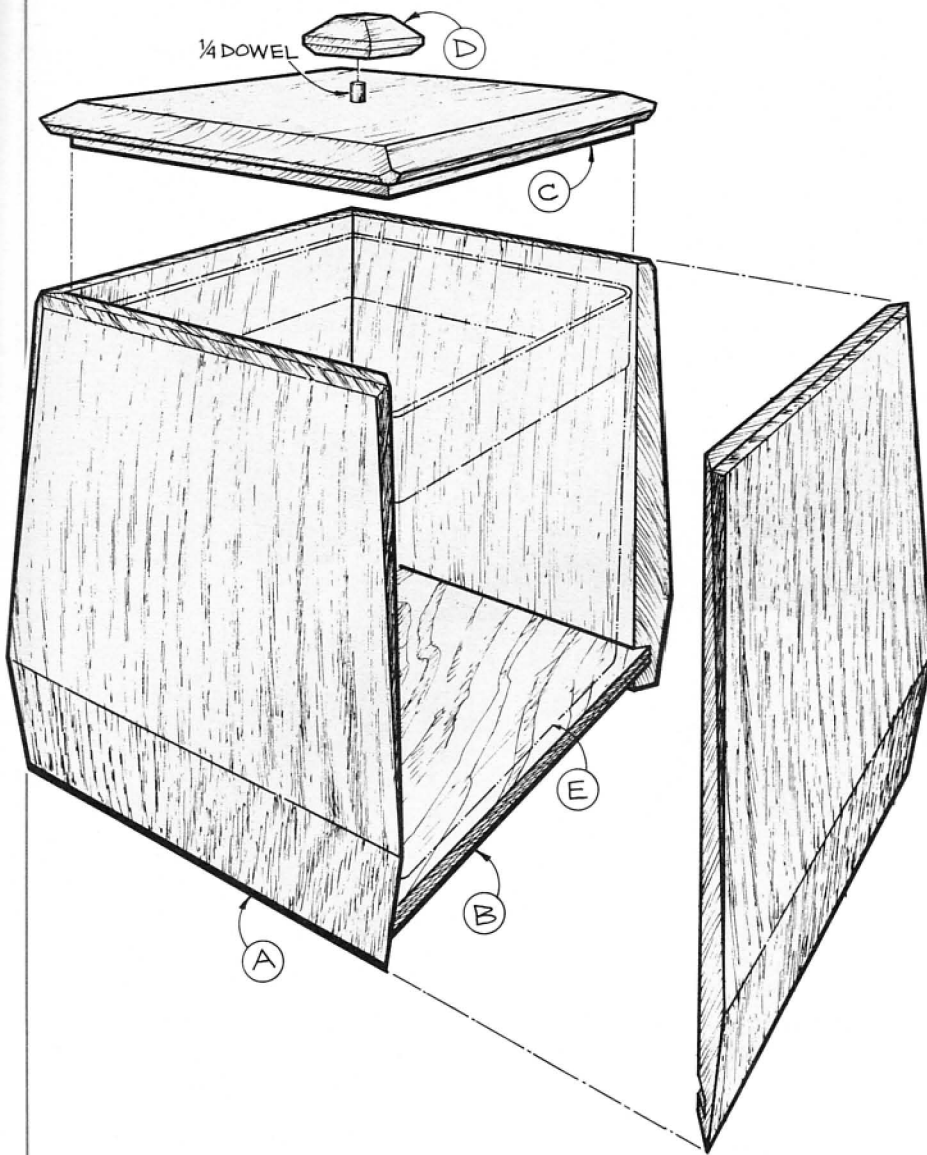
### Table (Parts A)

#### Quantity & Initial (Rough Sawn Stock) Dimensions

	Quantity	Size
Flour	2	1 1/4 x 8 1/2 x 19
Sugar	2	1 1/4 x 7 1/4 x 16
Coffee	2	1 1/4 x 6 1/4 x 14
Tea	1	1 1/4 x 6 1/4 x 20

#### Final Quantity & Dimensions (after planing one side, jointing one edge, and cutting to length)

	Quantity	Size
Flour	4	1 1/8 x 8 1/2 x 9 1/4
Sugar	4	1 1/8 x 7 1/4 x 7 1/2
Coffee	4	1 1/8 x 6 1/4 x 6 1/4
Tea	4	1 1/8 x 6 1/4 x 4 7/8



SIDE ELEVATIONS

# Colonial Water Bench

Colonial Americans didn't have the luxury of turning on a tap to get fresh water. Back then, the family's water supply was usually in the form of several large buckets of water, all conveniently stored on a piece of furniture appropriately called a water bench. Filling the buckets was a regular chore, usually assigned to one of the children, and it meant a trek to the well or nearby stream.

We've seen the benches in many sizes and shapes, but this design has to be one of our favorites. We found it in the book *The Pine Furniture of Early New England* by Russell Hawes Kettell, Dover Publications.

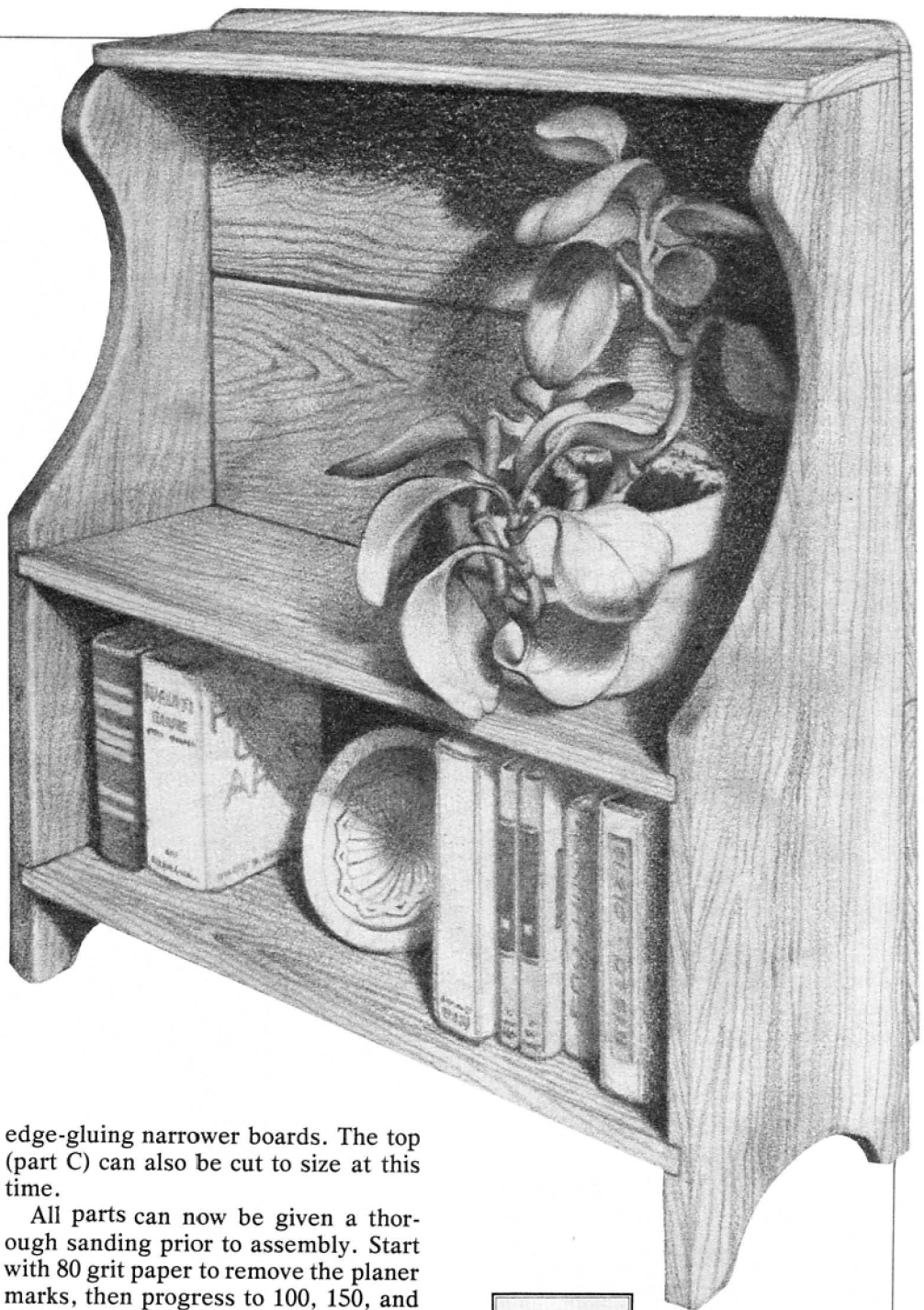
We made only minor dimensional changes, the most important one being a change in stock thickness from 1 in. to  $\frac{3}{4}$  in. We felt this change was worthwhile since many of our readers prefer to work with  $\frac{3}{4}$  in. thick stock.

The two sides (parts A) can be made first. Since they measure  $11\frac{1}{4}$  in. wide, you can use standard 1 x 12 lumberyard stock (which measures  $\frac{3}{4}$  in. thick by  $11\frac{1}{4}$  in. wide). Or, if you prefer, you can edge-glue two or more narrower boards in order to get  $11\frac{1}{4}$  in. width. When edge-gluing, be sure to allow a little extra stock for both the width and length. Also, it's a good idea to add several dowel pins to each edge joint. Although these pins don't add strength, they will help keep the boards aligned when clamp pressure is applied. Apply glue to both mating surfaces, then clamp with bar or pipe clamps and allow to dry overnight. Once dry, trim to the length and width shown in the bill of materials.

The  $\frac{3}{8}$  in. deep by  $\frac{3}{4}$  in. wide dadoes for the shelves (parts B) are best cut using the table saw equipped with a dado-head cutter. Set the dado-head for a  $\frac{3}{8}$  in. depth of cut, then use the miter gauge to push the stock through the cutter. Once the dadoes are cut, transfer the curved profile from the grid pattern to the stock, then cut out with a band or saber saw.

You can use standard 1 x 6 stock (which measures  $\frac{3}{4}$  in. thick by  $5\frac{1}{2}$  in. wide) to make the back (parts D). Once again, the dado-head can be put to use—this time to cut the tongue and groove joints.

The two shelves (parts B) are made from either standard 1 x 12 stock or by



edge-gluing narrower boards. The top (part C) can also be cut to size at this time.

All parts can now be given a thorough sanding prior to assembly. Start with 80 grit paper to remove the planer marks, then progress to 100, 150, and 220 grit.

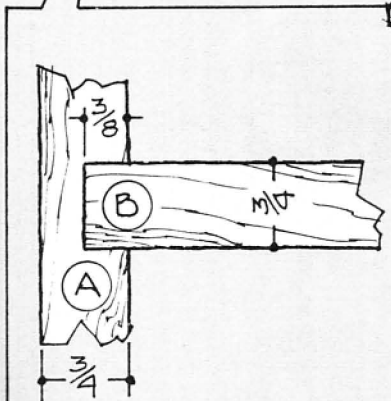
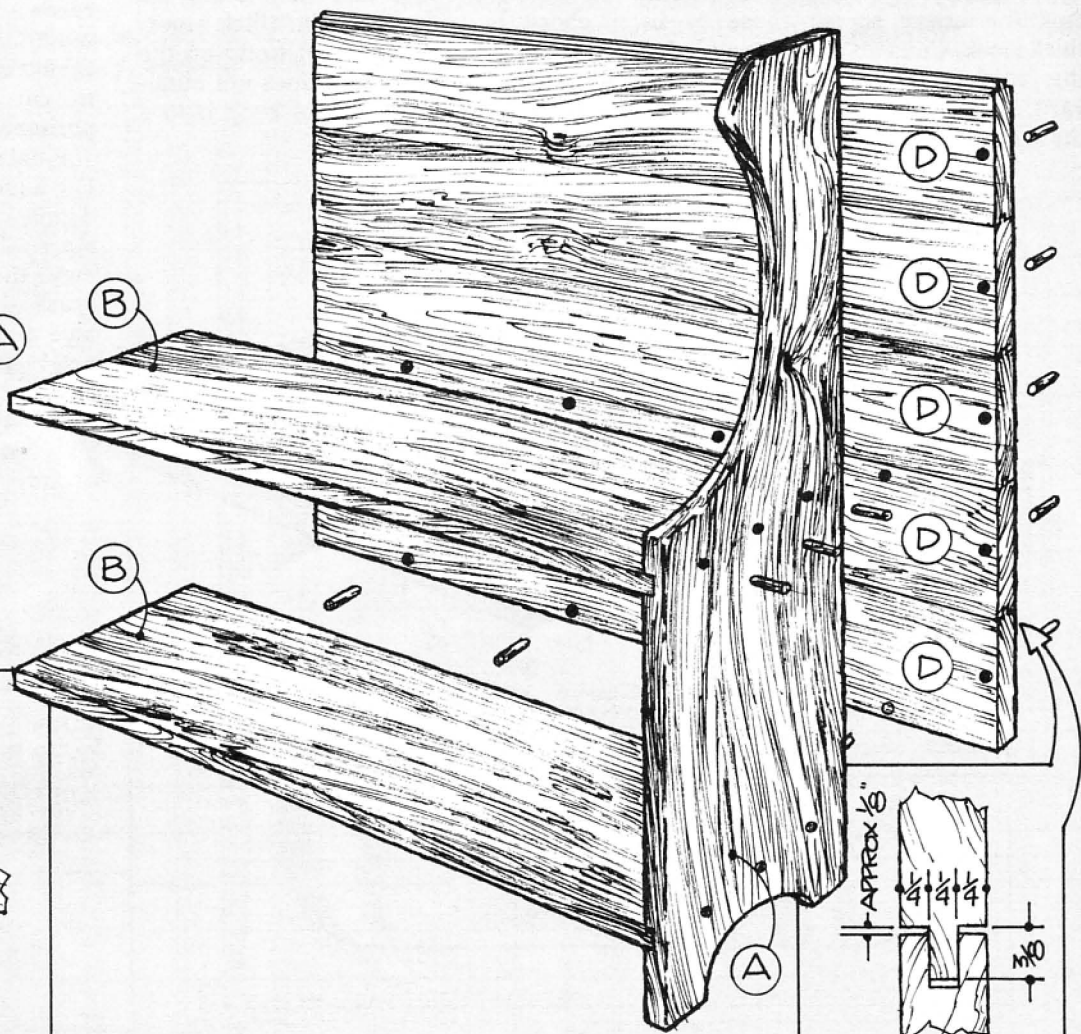
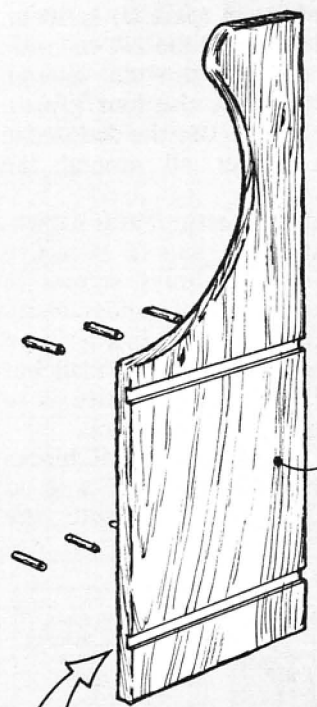
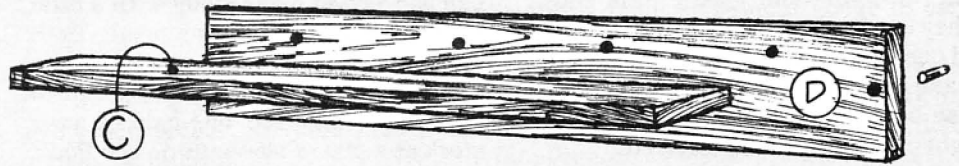
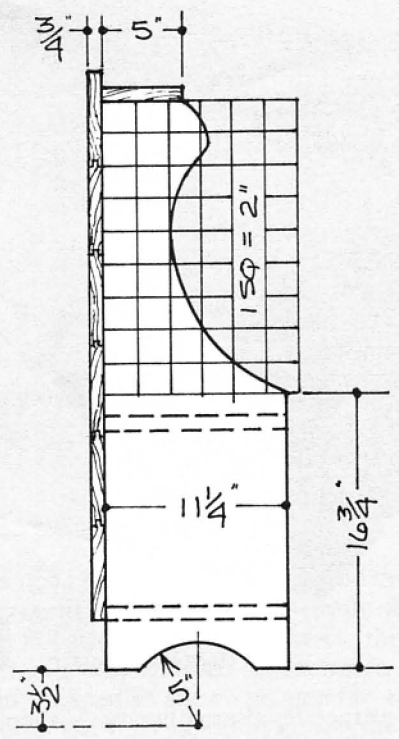
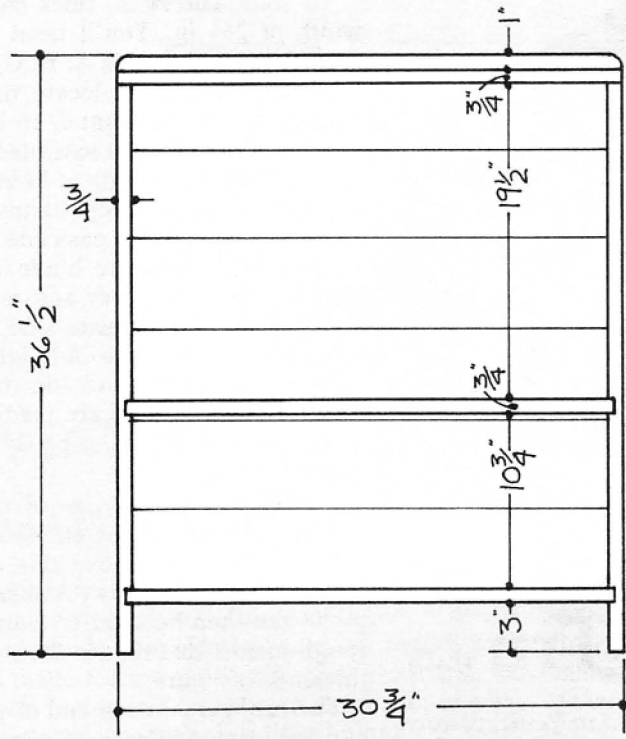
Assemble parts A to B with glue and clamps. Check for squareness and adjust as necessary. Once dry, remove all clamps and drill holes for dowel pins as shown. Cut each dowel pin slightly over length, then add glue and drive into place. Trim the excess with a dovetail saw before sanding smooth. The top (part C) and back (parts D) are added in the same manner.

The bench can now be final sanded using 220 grit paper. A generous rounding of all corners and edges will simulate years of wear. Some judicious distressing is also in order at this point.

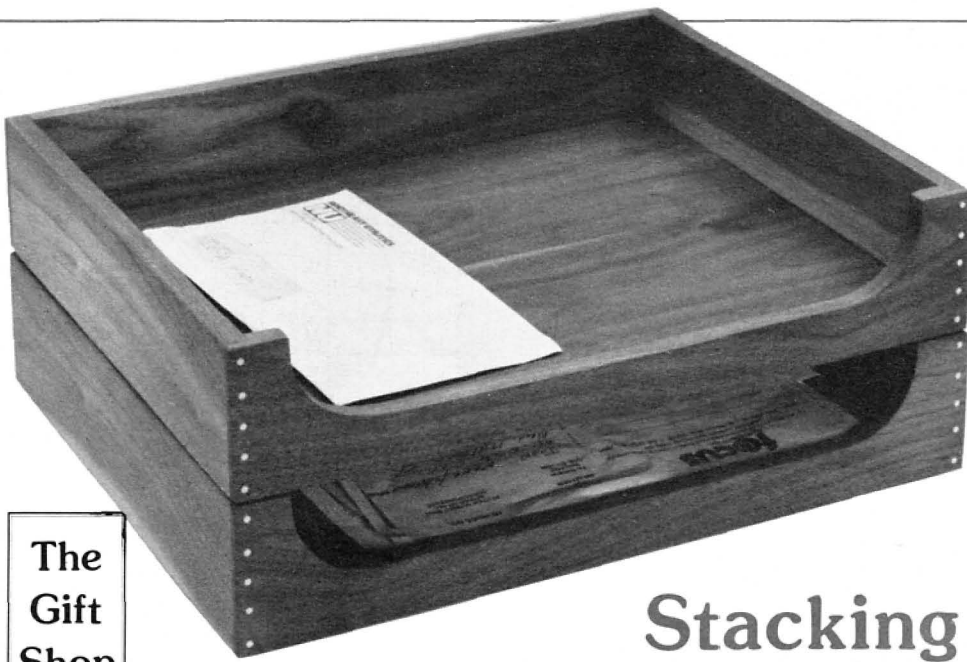
Two coats of Minwax's Early American Wood Finish will produce a good color. An application of their Antique Oil Finish will complete the project.

## The Gift Shop

Bill of Materials			
Colonial Water Bench			
Part	Description	Size	No. Req'd
A	End	$\frac{3}{4}$ x $11\frac{1}{4}$ x $34\frac{3}{4}$	2
B	Shelf	$\frac{3}{4}$ x $11\frac{1}{4}$ x 30	2
C	Top	$\frac{3}{4}$ x 5 x $30\frac{3}{4}$	1
D	Back	$\frac{3}{4}$ x $5\frac{1}{2}$ x $30\frac{3}{4}$	6



The  
Gift  
Shop



# Stacking Desk Trays

by Gene Austin

Here's an attractive alternative to the run-of-the-mill plastic desk trays. They can be used individually or stacked one upon another as shown. Ours is made from walnut, although oak would also be a good choice, especially if a light colored wood is preferred.

We wanted to avoid having the tray look too heavy so we chose  $\frac{3}{8}$  in. thick stock. Chances are you won't find this thickness at your local lumber yard, so you'll have to start with  $\frac{3}{4}$  in. thick stock. You can have a millwork

shop thickness plane it to  $\frac{3}{8}$  in., or you can use a hand plane along with a little hard work to get the same result. Both methods are acceptable, but keep in mind that it can be rather painful to look down and see one-half of your stock as a pile of shavings on the floor.

Another option and the one that we chose, is to resaw  $\frac{3}{4}$  in. thick stock. Resawing is not difficult to do on the table saw, and while it does not eliminate waste stock, it does keep it to a minimum.

To start, cut  $\frac{3}{4}$  in. thick stock to a width of  $2\frac{1}{2}$  in. You'll need enough material to make parts A, B, C, and D. As shown in Fig. 1, locate the table saw rip fence at a point  $\frac{7}{16}$  in. from the inside tooth of the saw blade, then set the blade to a height of  $\frac{3}{8}$  in. Using a push stock (to keep hands safely away from the blade) pass one edge of the stock through the blade (cut 1), then flip the stock over and make the same cut on the opposite side (cut 2). Now raise the blade to a height of  $\frac{3}{4}$  in. and make cuts 3 and 4 in the same manner. Cuts 5 and 6 are made in the same way only with the blade  $1\frac{1}{8}$  in. above the table.

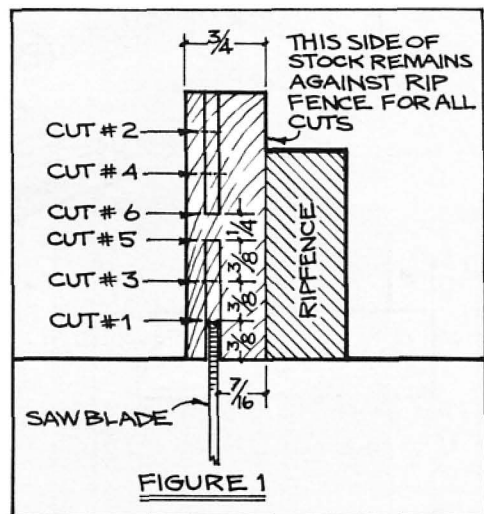
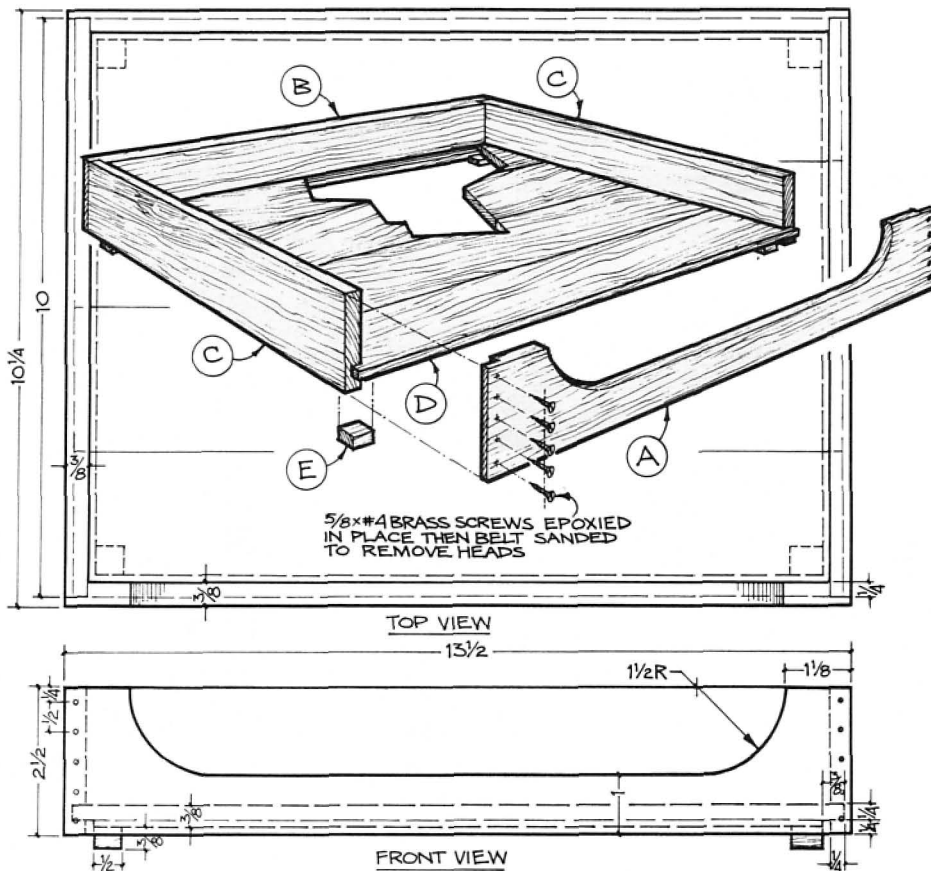
You'll note that  $\frac{1}{4}$  in. of material still remains on the stock. For safety sake it's best to remove this using a band saw or a hand saw. A sharp hand plane can then be used to remove the rough surface and reduce the stock to a thickness of  $\frac{3}{8}$  in.

The rabbets on each end of parts A and the groove in each of parts B, C, and D are best cut using a table saw equipped with a dado-head cutter. Use a band or saber saw to make the curved cutout in part A.

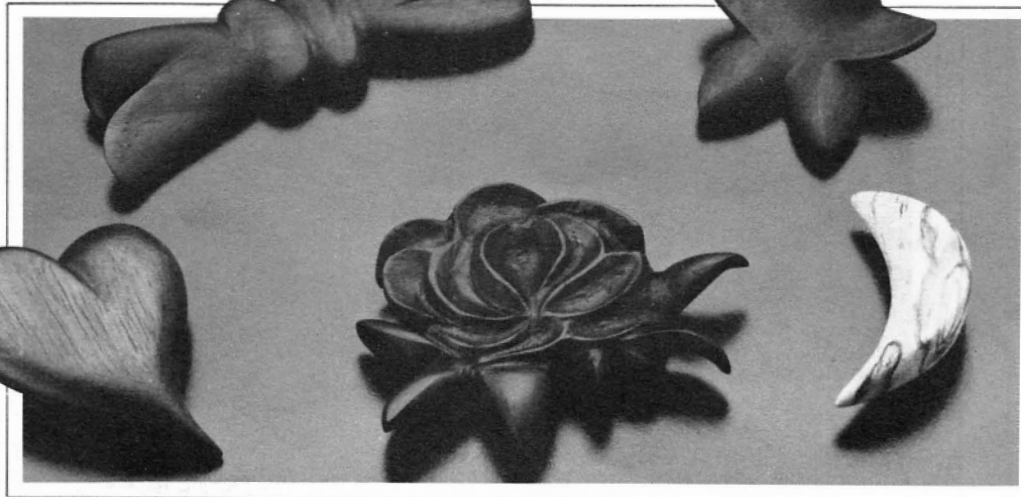
Since the bottom (part D) is 10 in. wide, four lengths of the  $2\frac{1}{2}$  in. wide resawn stock will provide enough material. Edge-glue the four pieces, then trim to length. Use the dado-head to cut the rabbet all around the perimeter.

Final sand, then assemble as shown. For added strength, and an attractive detail, we epoxied brass screws in place, then used a belt sander to remove the heads. It results in a series of brass pins at each joint, a small but nice detail. Another alternative is to use  $\frac{1}{8}$  in. dia. birch dowel stock.

The addition of four small blocks (parts E) and two coats of a good penetrating oil will complete the project. Wwj



The  
Gift  
Shop



# Wooden Brooches

As woodworkers, we know that wood, unlike any other material, has a hard-to-define quality that makes it special. A brooch made of molded plastic has little appeal. But a brooch made from wood is different. No matter how many are made, no two will be alike; not in shape, or color, or texture. Each brooch, then, is a little unique and we think that has much to do with their appeal.

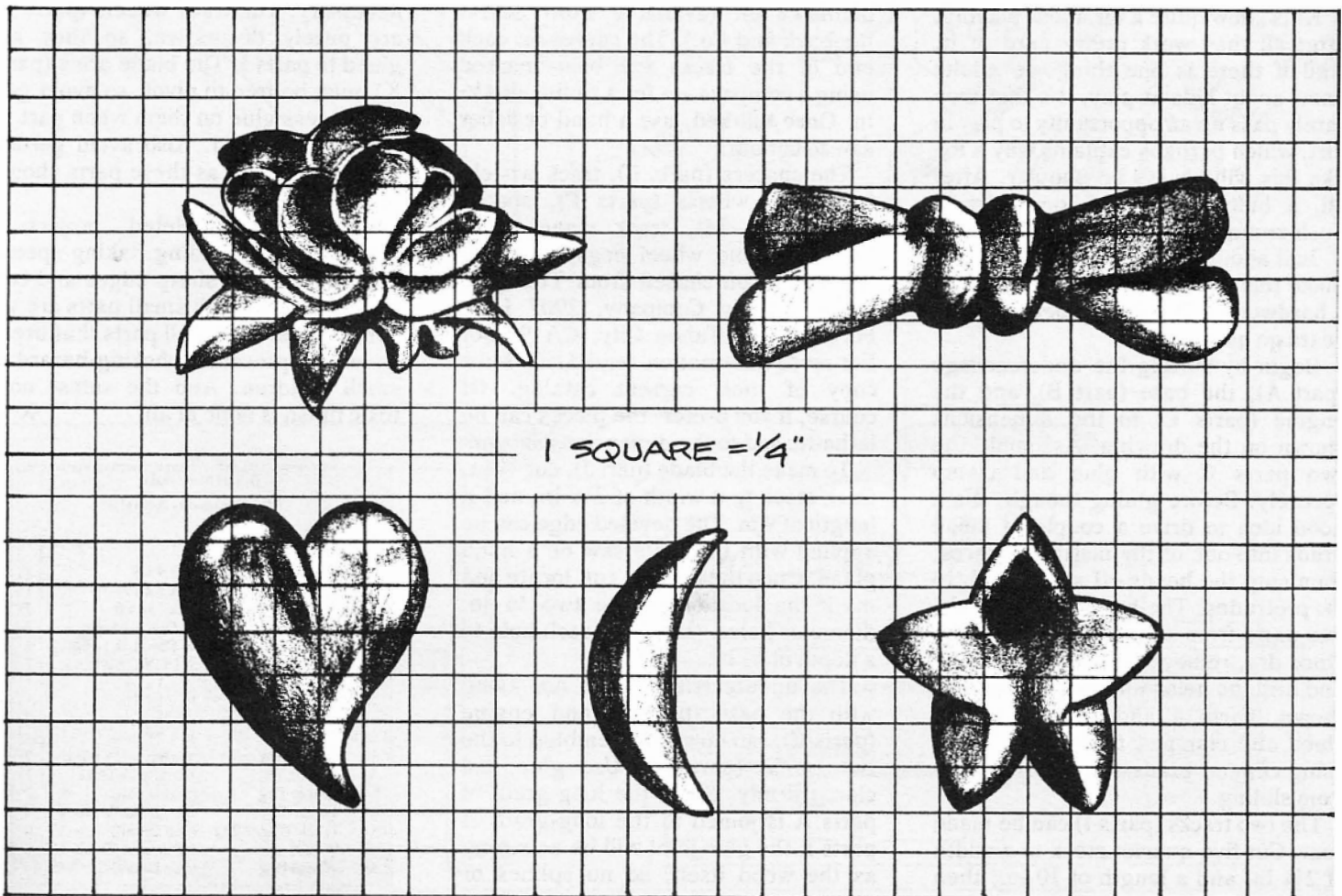
These brooches have something else that many woodworkers will find appealing — they don't take very long to make. The half-moon shape can be made in just a few minutes, and the heart and star won't take much longer. The bowtie takes about an hour, while two hours should be enough for the rose.

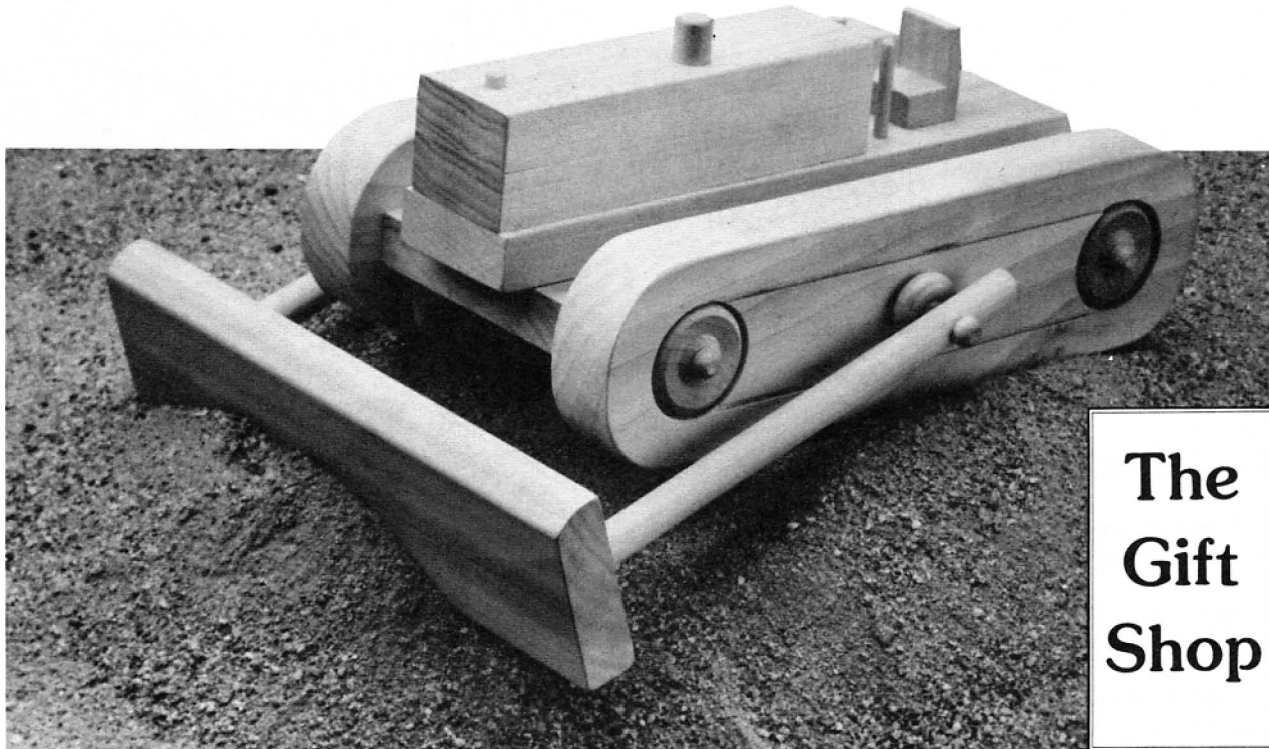
All five brooches are made from 1/4 in. thick stock. Use whatever kind of wood suits your fancy, keeping in mind

that this is a good time to rummage around the scrap bin.

All the brooches are made in basically the same way. Transfer the full size profile to your stock, then cut out with a coping or band saw. The half-moon, heart, star and bowtie are simply shaped as shown using a file and sandpaper. Use 220 grit for the final sanding. Follow the same steps to make the rose, but use a small half-round gouge to carve the petals.

Make a shallow mortise in the back of each brooch so that a bar pin can be fastened with epoxy glue. Bar pins (with a safety catch) can be ordered from Spore Handicrafts, 12195 U.S. 12 West, White Pigeon, MI 49099. A set of six (3/4 in. long) will cost 35¢. Order part number 1-JF114. Two coats of a good penetrating oil will complete the project. W&J





**The  
Gift  
Shop**

# Toy Bulldozer

by C.J. Maginley

Kids know quite a bit about playing, after all they work pretty hard at it. And if there is one thing we adults know about kids at play, it's that they rarely pass up an opportunity to play in dirt, which perhaps explains why a toy like this will always be popular. After all, a bulldozer needs some dirt to push around - the more the better.

Just about any wood can be used to make this project, even pine, although a hardwood will stand up better as the years go by.

Begin by cutting the undercarriage (part A), the base (part B), and the engine (parts C) to the dimensions shown on the drawing. Assemble the two parts C with glue and clamp securely. Before gluing though, it's a good idea to drive a couple of small brads into one of the mating surfaces, then snip the heads off so about 1/16 in. protrudes. The brads will keep the two parts from sliding when clamped. Once dry, remove clamps, then locate and drill the holes for parts D and E as shown. Parts A and B can now be glued and clamped to parts C, again using clipped brads to keep the parts from sliding.

The two tracks (parts I) can be made next. Cut five-quarter stock to a width of 2 3/4 in. and a length of 10 in., then

lay out the location of the 1 1/2 in. diameter by 1/2 in. deep holes. A 1 1/2 in. diameter spade bit or Forstner bit can be used to drill the holes. The 1/8 in. deep by 1/8 in. wide grooves are best cut using a router equipped with an edge-guide and a 1/8 in. diameter bit (available from Sears, Roebuck and Co.). The curves on each end of the tracks are best marked using a compass set for a radius of 1 1/2 in. Once marked, use a band or saber saw to cut out.

The spacers (parts L), track wheels (parts N), wheels (parts P), spacer pegs (parts M), track wheel pegs (parts O), and wheel pegs (parts Q) can all be purchased from The Toy-maker Supply Company, 2907 Lake Forest Road, Tahoe City, CA 95730. For more information send \$1.00 for a copy of their current catalog. Of course, if you prefer, the pieces can be lathe-turned to the dimensions shown.

To make the blade (part J), cut 3/4 in. thick stock to a width of 2 1/2 in. and a length of 9 in. The beveled edge can be applied with the table saw or a hand plane. Once the bevel is cut, locate and mark the location of the two 1/2 in. diameter holes, then bore each hole to a depth of 1/2 in.

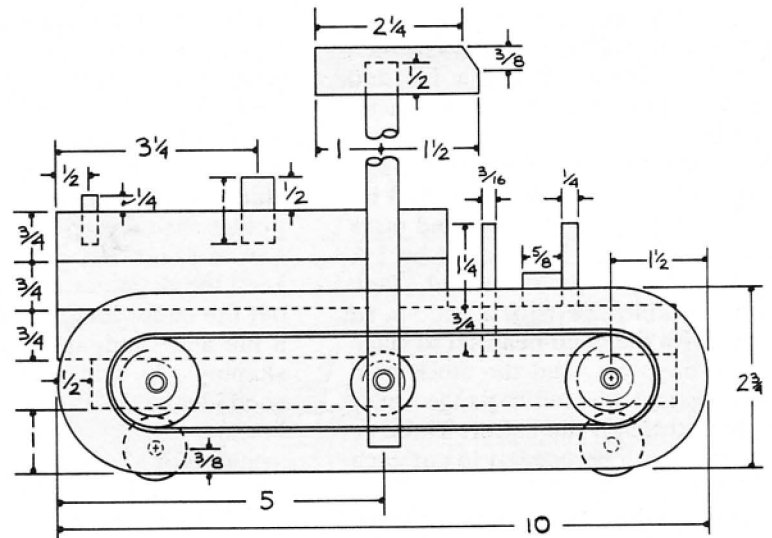
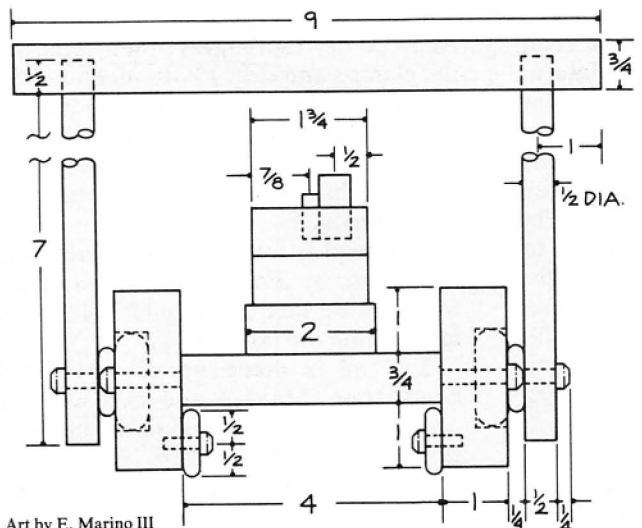
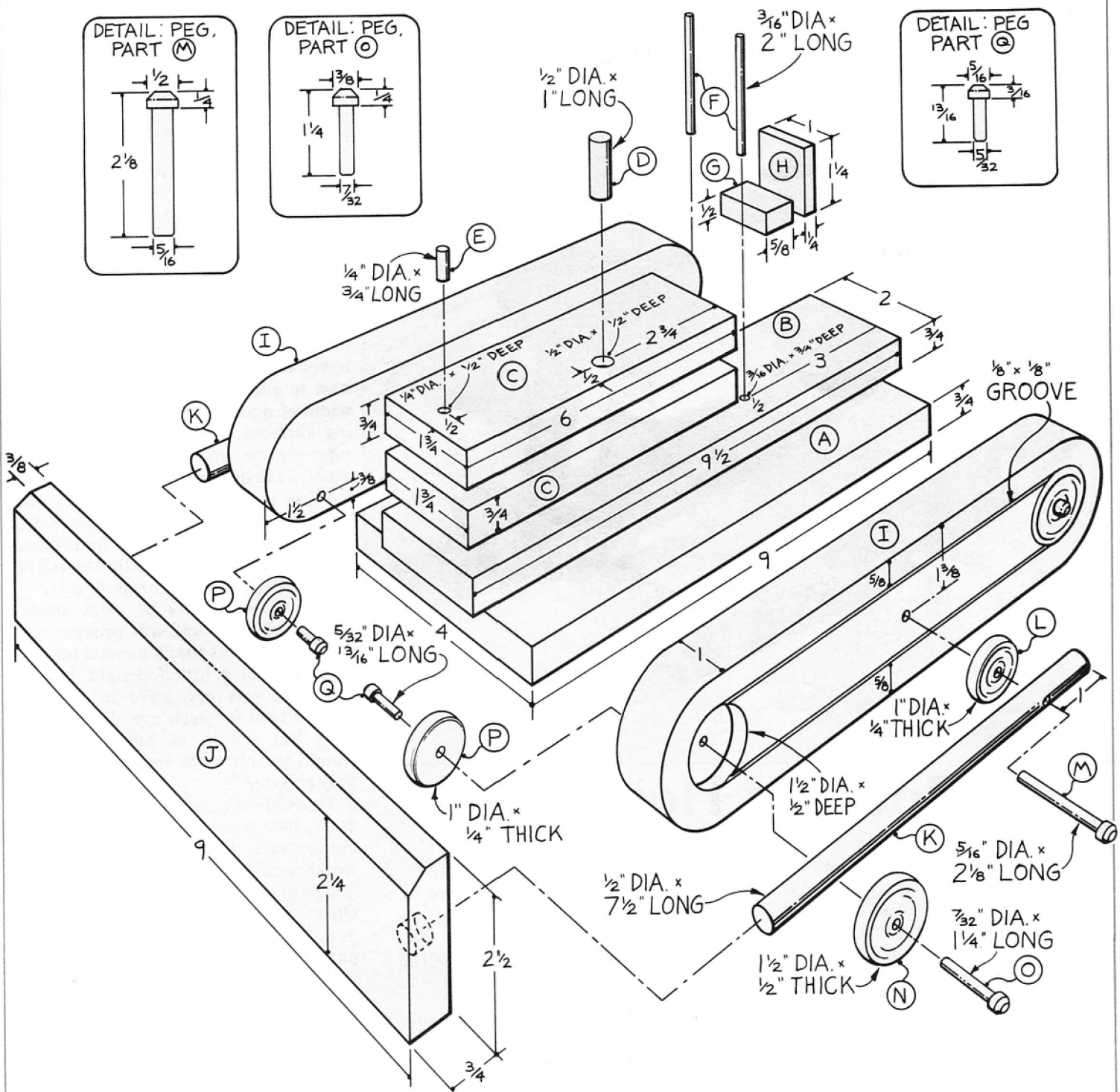
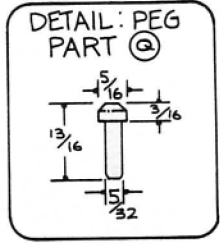
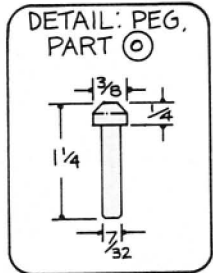
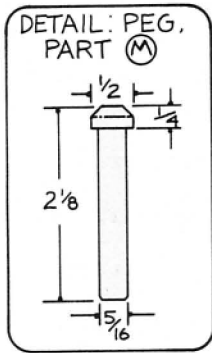
The undercarriage (part A), along with the base (part B) and engine (parts C), can now be assembled to the two tracks (parts I). Use glue and clamp firmly. Since the long-grain of parts A is joined to the long-grain of parts I, the glue joint will be as strong as the wood itself, so no splines or

dowel pins are needed. However, to keep the parts from moving when clamped, we used clipped brads to hold things in place.

The various remaining parts can now be cut to size and assembled as shown. Use glue and clamp where necessary. The track wheels (parts N) are purely decorative, so they are glued to parts I. The blade arms (parts K) must be free to pivot, so avoid getting excess glue on them when part M is glued to part I. Also avoid getting glue on parts L, as these parts should be free to turn.

Give the completed project a thorough final sanding, taking special care to round all sharp edges and corners. Make sure all small parts are securely fastened. Small parts that break from toys present a choking hazard to small children. And the safest non-toxic finish is none at all. Wvj

Bill of Materials (All Dimensions Actual)			
Part	Description	Size	No. Req'd
A	Undercarriage	3/4 x 4 x 9	1
B	Base	3/4 x 2 x 9 1/2	1
C	Engine	3/4 x 1 3/4 x 6	2
D	Exhaust	1/2 Dia. x 1 Long	1
E	Radiator Cap	1/4 Dia. x 3/4 Long	1
F	Control Lever	3/16 Dia. x 2 Long	2
G	Seat Cushion	1/2 x 1 x 3/4	1
H	Seat Back	3/4 x 1 x 1 1/4	1
I	Track	1 x 2 3/4 x 10	2
J	Blade	3/4 x 2 1/2 x 9	1
K	Blade Arm	1/2 Dia. x 7 1/2 Long	2
L	Spacer	1 Dia. x 1/4 Thick	2
M	Spacer Peg	(See Detail)	2
N	Track Wheel	1 1/2 Dia. x 1/2 Thick	4
O	Track Wheel Peg	(See Detail)	4
P	Wheel	1 Dia. x 1/4 Thick	4
Q	Wheel Peg	(See Detail)	4





# Rocking Horse

by Ray Kozak

Pint-sized cowboys will have lots of fun on this sturdy rocking horse made from pine. The horse's head requires some carving, but since the design is fairly simple, we expect that even beginners will have little difficulty.

The two rockers (parts A) can be made first. Cut 1 3/4 in. thick stock to a width of 4 3/4 in. and a length of 41 in., then transfer the curved profile from the grid pattern to the stock. Cut to shape with a band or saber saw, keeping the blade slightly on the waste side of the line. Once cut, use a file and sandpaper to smooth the stock exactly to the line.

Next, make the two stretchers (parts B) from 1 3/4 in. thick stock cut to 3 in. wide and 17 in. long. Lay out and mark the location of the 7/8 in. deep by 1 3/4 in. wide dadoes on each end, then equip the table saw with a dado-head cutter. With the dado-head set to make a 7/8 in. deep cut, and the stock held firmly against the miter gauge, pass the stock through the cutter. Three or four passes will be needed to cut each dado to the 1 3/4 in. width.

The two holes in each of the stretchers are bored at an angle of 108 de-

grees as shown. To insure the accuracy of the hole angles, it's a good idea to make the simple jig shown in Fig. 1. Once made, clamp the jig to the stretcher so that the holes are properly located, then bore the holes with a 1 in. diameter bit.

The four legs (parts C) are made from 1 3/4 in. square stock. The 1 in. diameter by 1 1/4 in. long tenons can be lathe-turned, but we made ours by hand with little difficulty. With the leg cut to a length of 14 in., use a compass or draftsman's circle template to scribe a 1 in. circle at the center of each end. Also, at a point 1 1/4 in. from each end, scribe a line around all four sides. With these scribed lines as guides, use a rasp or Stanley Surform tool to rough out the tenon. Work to keep the diameter constant throughout the entire length of the tenon. Use a file and sandpaper to complete the shaping. As you final shape, it's a good idea to test the fit in the stretcher holes.

Standard 2 by 12 stock, which measures 1 3/4 in. thick by 11 1/4 in. wide, will make a good seat (part D). If you can't get wide enough stock, you'll

## Bill of Materials (All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Rocker	1 3/4 x 4 3/4 x 41	2
B	Stretcher	1 3/4 x 3 x 17	2
C	Leg	1 3/4 x 1 3/4 x 14	4
D	Seat	1 3/4 x 11 x 27	1
E	Head	3 1/2 x 10 1/4 x 14 1/2	1
F	Handle	1 Dia. by 10 Long	1

need to edge-gluе two or more narrower boards. When edge-gluing, it's best to allow a little extra length and width of stock. Apply glue to both mating surfaces, then clamp with bar or pipe clamps and allow to dry overnight. Transfer the curved profile from the grid pattern to the stock, then cut to shape with a band or saber saw. Next, using the jig, bore the four tenon holes as shown. The hole for the tail is then bored with a 1 1/4 in. spade bit.

Two pieces of 1 3/4 in. thick stock, face-glued together, will provide the 3 1/2 in. thickness that's needed for the head (part E). A little foresight, before the stock was cut, gave us a well-shaped knot for each eye. Since most pine has plenty of knots, readers should be able to do the same thing if they choose.

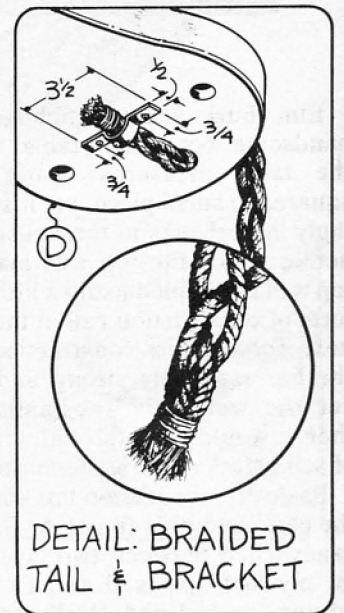
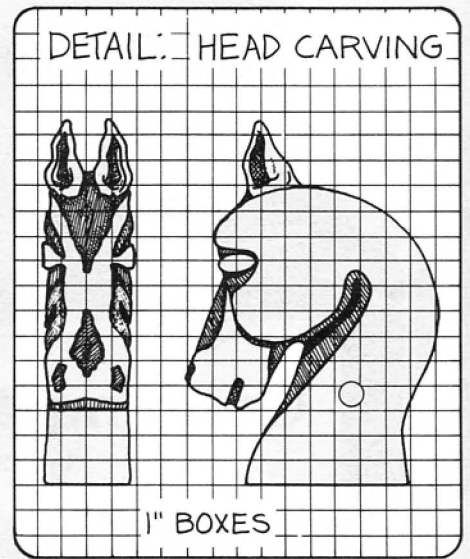
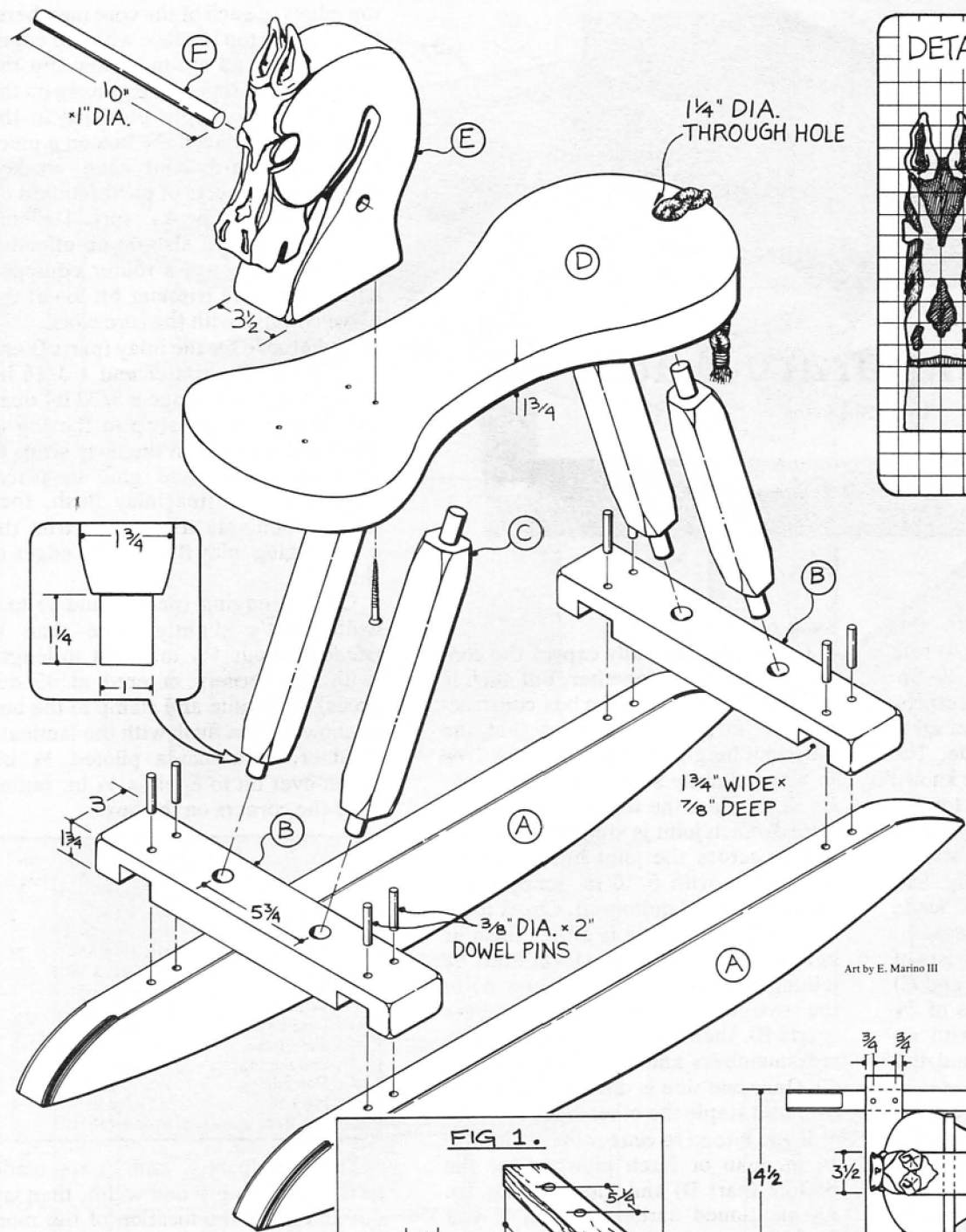
Transfer the grid pattern to the stock, then use a band or saber saw to cut to shape. Clamp the stock to your workbench, then use a half-round gouge to carve the features as shown. Once carved, sand thoroughly before boring a 1 in. diameter hole through part E to accept the handle (part F) made from a 10 in. length of 1 in. dowel stock.

Give the entire assembly a final sanding, then glue the legs (parts C) to the stretchers (parts B) and seat (part D). Once dry, glue and clamp the stretchers to the rockers (parts A). Allow to dry thoroughly, then remove the clamps and drill 1 3/4 in. deep holes for 3/8 in. diameter by 2 in. long dowel pins as shown. Apply glue to the pins, then drive into place with a mallet. Use a file to chamfer the 1/4 in. of the pin that's exposed.

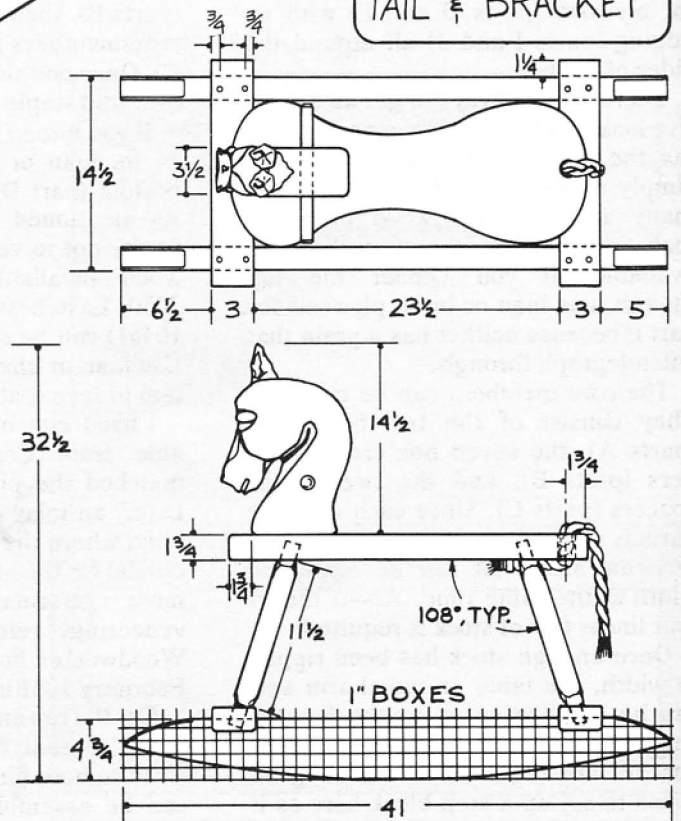
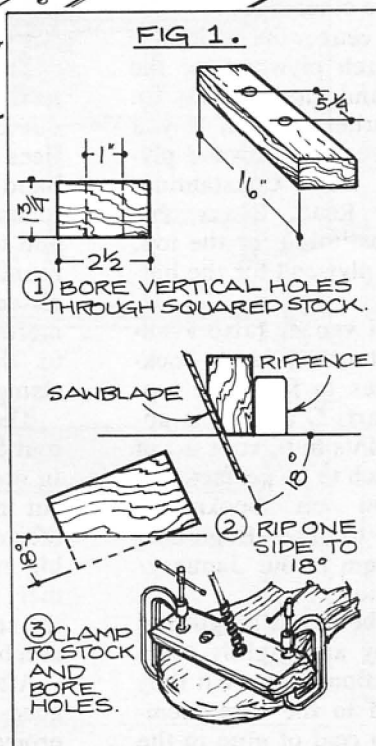
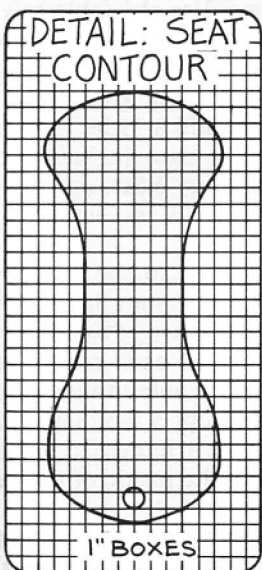
The head is attached with glue and four 1/4 in. by 3 1/2 in. lag screws with washers. Be sure to drill pilot holes before adding the lag screws.

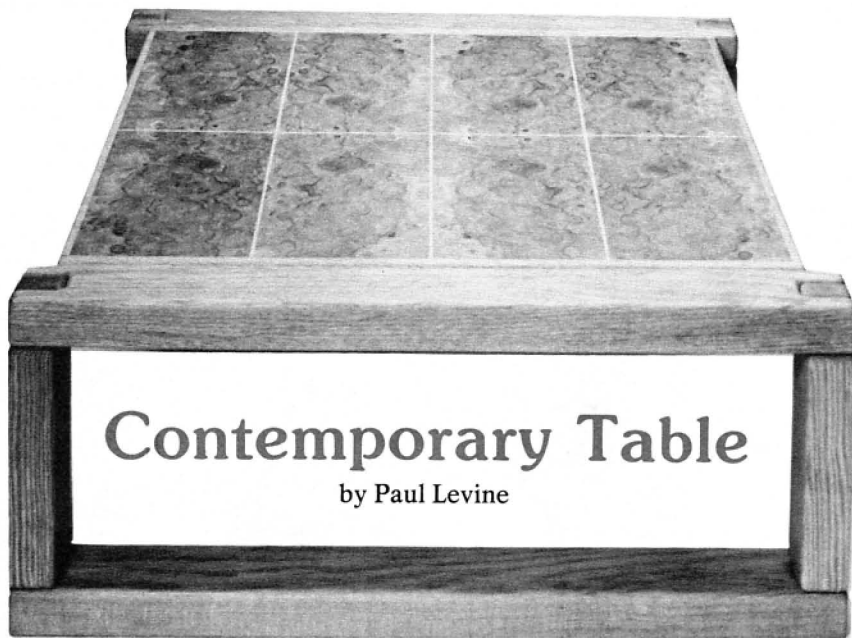
The tail is made up of 3/8-1/2 in. hemp rope, braided and tied at the ends. A bracket, screwed to the underside, holds the tail in place.

Final sand, then stain to suit. Two coats of polyurethane varnish provide



Art by E. Marino III





# Contemporary Table

by Paul Levine

Elm burl veneer highlights this handsome occasional table. Overall, the table measures nearly 40 in. square, no small piece, yet it's surprisingly light thanks to the unusual manner in which the top was made. The top was assembled using a little known form of construction called the torsion box. Torsion box construction makes the top extremely strong and stable, yet the weight is substantially less than it would be if the top were made of solid stock of the same thickness.

Basically, the torsion box consists of the core members (parts A, B, and C) sandwiched between two layers of  $\frac{3}{8}$  in. plywood (parts D and E) with an edging (parts I and J) all around the sides of the box.

There are two ways to get an attractive looking top. You can veneer part E (as the drawing shows) or you can simply make part E from one of the many attractive hardwood plywoods (oak, cherry, walnut, etc.) that are available. If you veneer the top though, use luan or birch plywood for part E because neither has a grain that will telegraph through.

The core members can be cut first. They consist of the two box sides (parts A), the seven box cross members (parts B), and the twenty-four spacers (parts C). Since each of these parts is made from  $\frac{3}{4}$  in. thick by  $3\frac{1}{4}$  in. wide stock, all can be ripped to width at the same time. About thirty-four linear feet of stock is required.

Once enough stock has been ripped to width, the table or radial-arm saw can be used to cut it to the lengths shown in the bill of materials. Since 24 spacers are required, it makes good sense to set up a stop block here as it saves considerable time when doing

such repetitive cuts.

One would normally expect the core stock to be glued together, but such is not the case with torsion box construction. In fact, it's important that the parts not be glued. They must be free to move slightly so that all edges will be flush when the top and bottom are added. Each joint is simply stapled together across the joint line. I used a staple gun with  $\frac{5}{16}$  in. staples and found it worked quite well. Check to be sure that each staple is either flush or below the surface of the stock. Start by joining the two box sides (parts A) to the two outside box crossmembers (parts B), then add the rest of the box crossmembers and the spacers (parts C). Once one side is done, flip the core over and staple the other side.

If you intend to veneer the table, use  $\frac{3}{8}$  in. luan or birch plywood for the bottom (part D) and the top (part E). As mentioned earlier though, if you prefer not to veneer, a hardwood plywood (available from Constantine, 2050 Eastchester Road, Bronx, NY 10461) can be substituted for the top. Use luan or birch plywood for the bottom to save cost.

I used elm burl veneer (also available from Constantine) and book-matched the pieces to form the top. Later, an inlay (parts G and H) is applied where the joints butt, so it is not critical for the match to be perfect. For more information on bookmatch veneering, refer to The Beginning Woodworker column in our January/February 1981 issue.

Cut the top and bottom to length and width so that they are slightly oversized in both directions. Once cut they can be assembled to the core members. Apply a thin coat of glue to the

top edges of each of the core members, then lay the top in place with the edges overhanging all around. Now flip the core over and repeat the process on the other side. To apply pressure to the glue joints, I placed the box on a piece of particleboard, and then stacked three of four sheets of particleboard on top. A stack of books, spread evenly over the top, will also do an effective job. Once dry, use a router equipped with a laminate trimmer bit to cut the plywood flush with the core stock.

The groove for the inlay (parts G and H) is cut with a router and a  $\frac{3}{16}$  in. straight bit set to make a  $\frac{5}{32}$  in. deep cut. Clamp a guidestrip to the top to guide the router. Cut the inlay strips to  $3\frac{1}{16}$  in. square and glue in place. Once dry, sand the inlay flush, then use the laminate trimmer to trim the overhanging inlay flush to the edges of the top.

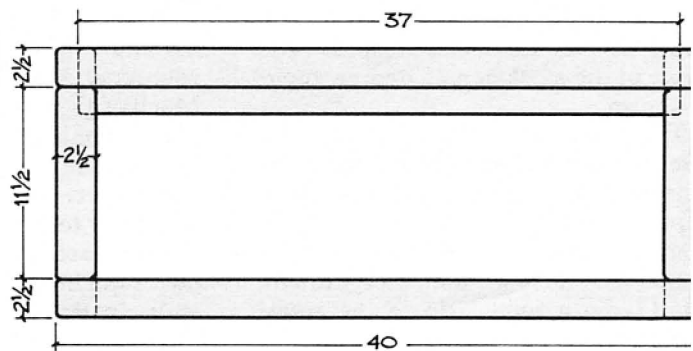
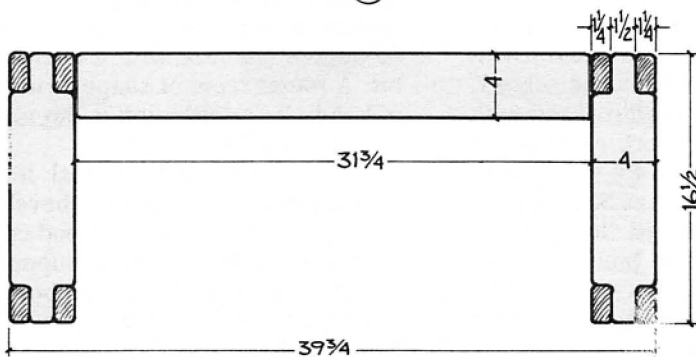
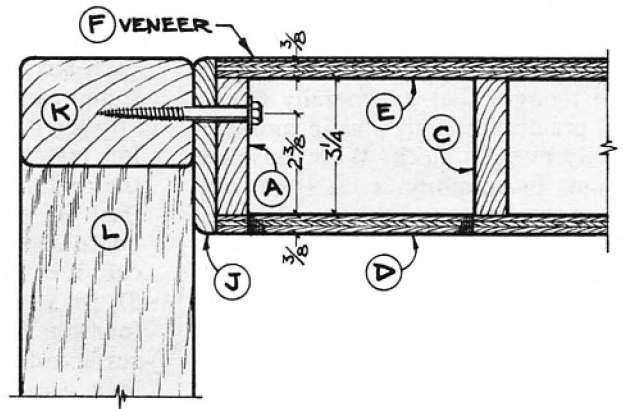
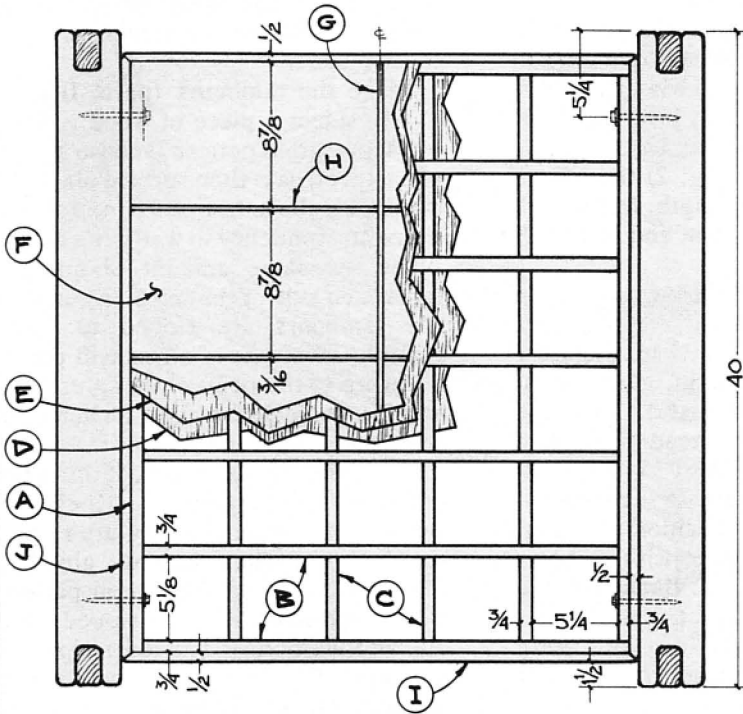
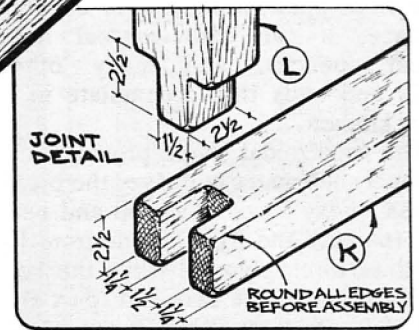
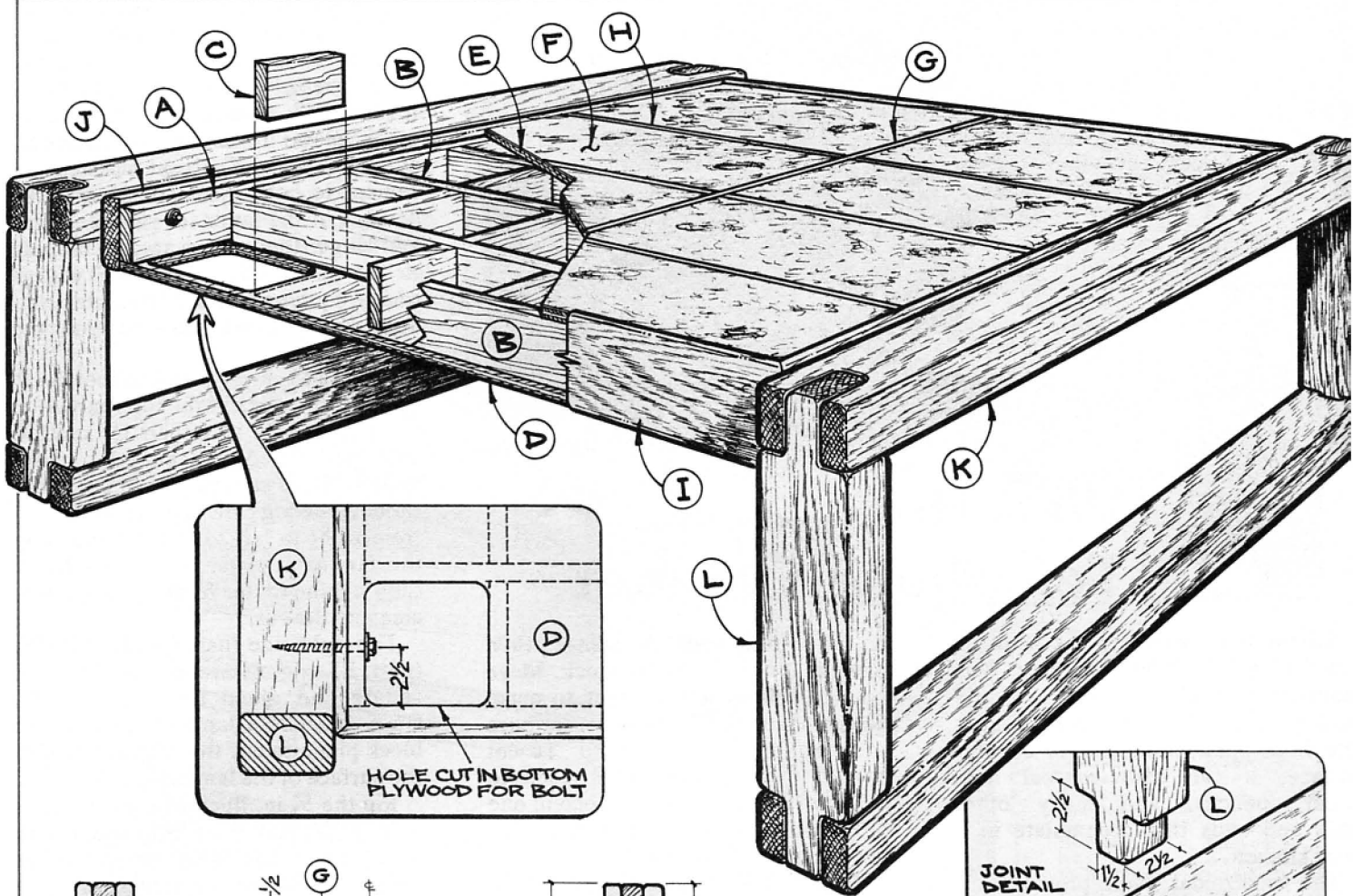
Cut the edging (parts I and J) to a width that's slightly more than is needed (about  $4\frac{1}{4}$  in.). Cut to length (with the corners mitered at 45 degrees), then glue and clamp to the box as shown. Trim flush with the laminate trimmer, then use a piloted  $\frac{3}{8}$  in. round-over bit to apply a  $\frac{3}{8}$  in. radius to all the corners on the box.

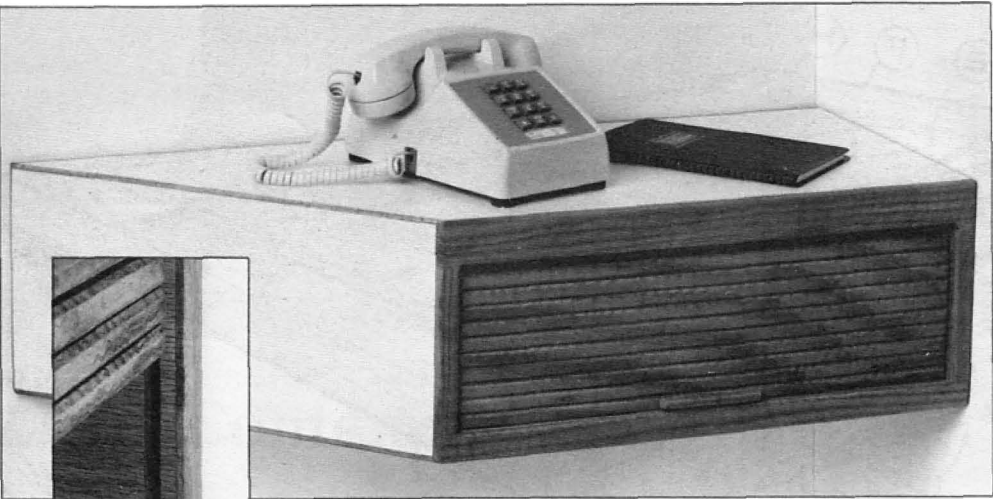
Bill of Materials			No.
Part	Description	Size	Req'd
A	Box Side	$\frac{3}{4}$ x $3\frac{1}{4}$ x 36	2
B	Box Crossmember	$\frac{3}{4}$ x $3\frac{1}{4}$ x $29\frac{1}{4}$	7
C	Spacer	$\frac{3}{4}$ x $3\frac{1}{4}$ x $5\frac{1}{8}$	24
D	Bottom	$\frac{3}{8}$ x $30\frac{3}{4}$ x 36	1
E	Top	$\frac{3}{8}$ x $30\frac{3}{4}$ x 36	1
F	Veneer	$1\frac{1}{16}$ x $30\frac{3}{4}$ x 36	1
G	Long Inlay	$\frac{3}{16}$ x $3\frac{1}{16}$ x 36	1
H	Short Inlay	$\frac{3}{16}$ x $3\frac{1}{16}$ x $30\frac{3}{4}$	3
I	End Edging	$\frac{1}{2}$ x 4 x $31\frac{1}{4}$	2
J	Side Edging	$\frac{1}{2}$ x 4 x 37	2
K	Leg Rail	$2\frac{1}{2}$ x 4 x 40	4
L	Leg Stile	$2\frac{1}{2}$ x 4 x $16\frac{1}{2}$	4

The legs (part K and L) are made next. Cut to length and width, then lay out and mark the location of the mortises and tenons. Use the table saw or band saw to cut out, working carefully to insure a good fit. With the mortises and tenons cut, use the piloted  $\frac{3}{8}$  in. round-over bit to add a  $\frac{3}{8}$  in. radius to all edges on the legs, including the mortises and tenons. Next, apply glue to the joints, then assemble and clamp.

The box is joined to the legs with four  $\frac{5}{16}$  in. by 4 in. long lag screws. In order to drive the screws a hole is cut in the bottom at each corner grid (see detail). Drill a hole in the bottom big enough to accept a laminate trimmer, then use the trimmer to cut out the square using the inside of the grid as a bearing surface.

After final sanding, three coats of a good penetrating oil will complete the project.





## Wall Hung Telephone Cabinet

by Paul Levine

Mixing the warmth of oak with the practicality of plastic laminate, this multi-purpose shelf makes a handy addition in the kitchen. Useable as a telephone shelf, mini-desk or counter surface, it can also conceal note paper, pencils, and many other odds and ends that accumulate in a busy kitchen.

The trapezoidal shape provides additional shelf space and gives the piece a less "boxy" look. The top and bottom (parts A and B) are made from 3/4 in. thick birch plywood while the box ends (parts C), the case end (part D), and the case back (part E) are made from 3/4 in. solid oak stock. Solid stock was selected for these parts because tambours do not slide easily in grooves cut in plywood. Readers should keep in mind though, that it generally is not good practice to apply plastic laminate directly to solid stock. With seasonal changes in humidity, solid stock will change in width, and this could cause warping. However, in this case, any change in width will be minimal because the stock is relatively narrow so there is little likelihood of a problem occurring.

Begin by cutting the top (part A) and the bottom (part B) to a width of 11 1/2 in. and a length of around 33 in. (see Fig. 1). Trim one end square, then at a point 20 in. from the square end, crosscut the stock at a 45 degree angle as shown.

The project is designed so that the tambour can be installed (or removed if necessary) through a slot in the back of part B (see Fig. 1). Lay out the location of the slot as shown, then equip a router with a 3/4 in. diameter straight bit. Clamp a guidestrip to the stock and set the bit to make a 1/4 in. deep cut. With the router base held against

the guidestrip, start the router, then carefully lower it into the stock. Move the router from left to right to make the cut, always holding the router base firmly against the guidestrip. To cut through 3/4 in. stock you'll need to make two more passes; the second one with the bit set 1/2 in. deep, the third with the bit set 3/4 in. deep.

The box ends (parts C), the case end (part D), and the case back (part E) can now be cut to a width of 6 3/8 in. from 3/4 in. thick stock. Allow a little extra for the length of each piece. Lay the parts on the bottom (see Fig. 2) then mark and cut to the exact length. Miter both ends of part D, and one end of part E as shown.

Next, the tambour groove is cut in each box end (parts C). You'll need a router equipped with a 1/4 in. diameter straight bit and a 7/16 in. guide bushing (available from Sears). To guide the router, you'll also need a template (see Fig. 3) made from 1/4 in. hardboard. Once the template is made, locate it in its proper position (see Fig. 3), then tack it in place with three or four small brads driven flush with the surface of the template. Cut the groove in a counterclockwise direction with the router guide bushing held firmly against the template.

Parts A, B, C, D, and E can now be assembled. Use glue and secure with countersunk flat-headed wood screws. Much of the case will be covered with plastic laminate, so work carefully to insure that the joints are flush with each other. Any unevenness at a joint will have to be trimmed flush before the laminate is applied. Since the tambours will be installed between the box ends (parts C), it's important that these two ends be parallel and at right angles to parts A and B.

The plastic laminate (parts N, O, and P) can now be applied. I chose Wilson Art's Solid Frosty White No. 1573, matte finish, although many readers will, no doubt, want to select other colors. To secure the laminate, apply two coats of solvent base contact cement to both the laminate and the wood. Cut the laminate slightly wider and longer than necessary, then apply to the case before trimming with a router equipped with a laminate trimmer. Use a hand plane to trim the mitered end.

Next, a 1/4 in. by 1/4 in. rabbet is cut on the side edges of the top (part A) to accept the right side (part Q) and left side (part R) edging. I used a router with a 3/8 in. straight bit to cut these rabbets, taking care to move the router from right to left to prevent chipping the laminate. After the first pass, I then ran the router from left to right to clean up the cut.

The right side (part Q) and left side (part R) edging are cut to 5/16 in. square and glued into the rabbets. Once dry, use a laminate trimmer or block plane to cut the edging flush to the surface of the laminate.

Rip the 1/4 in. thick trim stock (parts S, T, U, V, and W) a little wider than necessary, then glue in place as shown. Trim any overhang with a block plane.

Make the tambours (parts I) next. Try to select a piece of wood with an attractive grain pattern (I chose a piece of curly red oak) then surface plane the stock to a thickness of 3/8 in. To minimize any tendency to warp, it's best to plane the same amount of material from each side of the stock. As soon as the tambours are ripped to width though, a number of strips will probably warp to the point of being useless, so it's a good idea to allow for some extra stock.

Next, rip the stock into 1/2 in. wide tambour strips (parts I). Keep the strips in the sequence they are ripped so that later, when they are glued to the canvas, the original grain pattern will be preserved. Once ripped, cull out any warped or twisted strips. (If too many strips warp, you may have to abandon the idea of keeping the grain pattern in sequence.) Then apply the 45 degree chamfer with a chamfering bit. A router table or shaper will come in handy here, although it can also be done using a hand plane.

Cut the tambours to final length, then lay out all 23 of them, bevel side up, on a piece of scrap plywood or particleboard. Next, form a supporting frame all around the 23 tambours by nailing batten strips in place. These batten strips should be about 1 1/2 in. wide and not any thicker than the 3/4

in. thick tambours. Make sure that the frame is square and that the tambours are held firmly in place.

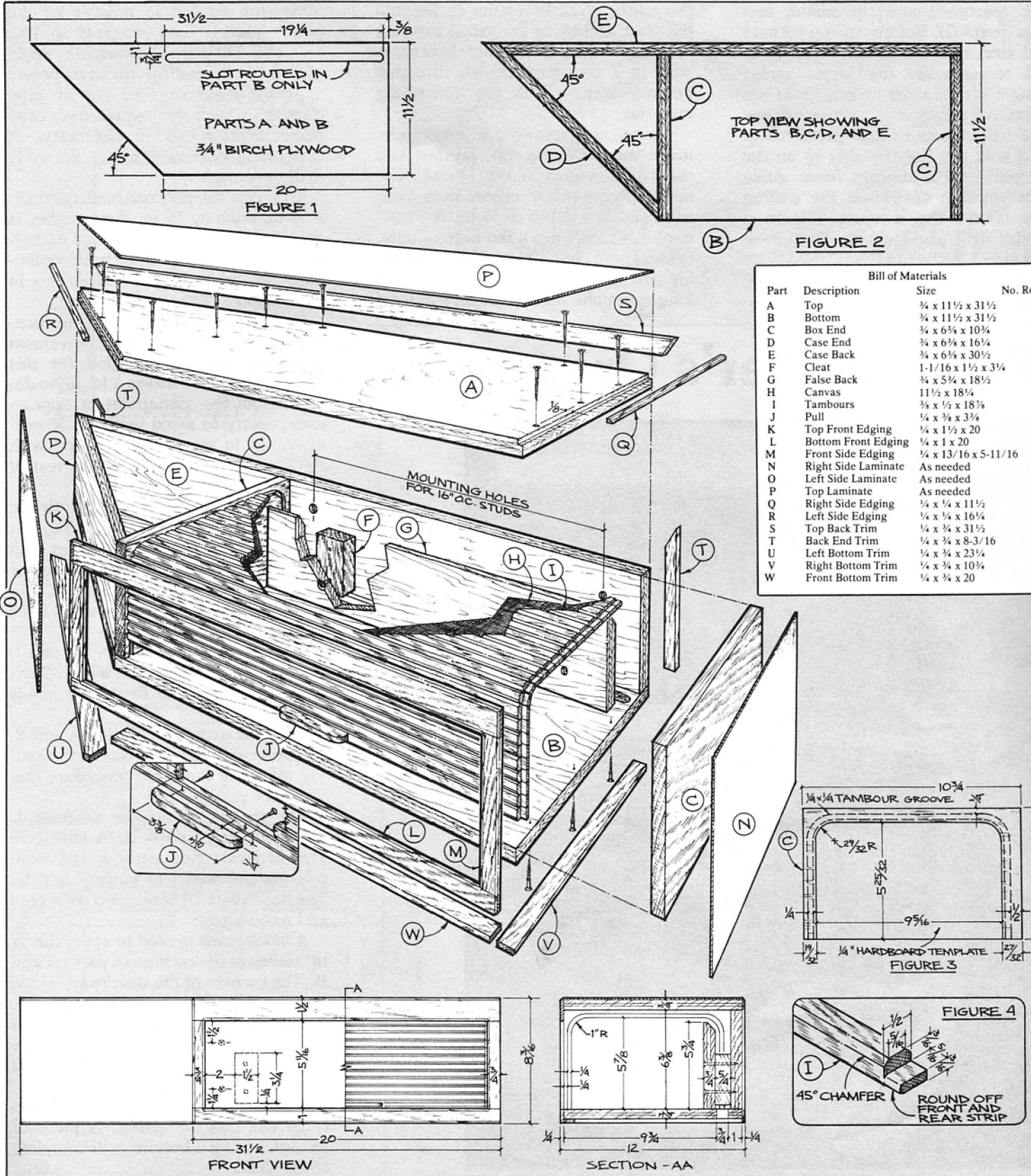
With a guidestrip clamped to the tambours, use a router with a  $\frac{3}{8}$  in. diameter straight bit to cut the shoulder on each end of the tambours (see Fig. 4). Now each piece can be removed from the batten strip frame and given a good sanding. Once sanded, place them back in the frame, but this time they must be in sequence and fac-

ing bevel side down. Cut a piece of artist's canvas (available at art supply shops) to size. Apply a thin coat of yellow glue to the back of the tambours, then add the canvas. Gently stretch it out, pressing into the glue. Allow 24 hours to dry, then trim the canvas about  $\frac{3}{8}$  in. from each shouldered end.

Apply a coat of paste wax to the tambour ends and slide into place. The cleats (parts F) are now added. These cleats serve to support the false back,

but they also act as a stop for the tambour. Two small felt dots are glued to the top of each cleat to cushion the tambour when it hits. The pull (part I) is secured with a pair of screws as shown, then the entire unit is screwed to wall studs with four  $2\frac{1}{2}$  in. by #10 wood screws. The false back (part G) can now be added.

Several coats of Watco Danish Oil applied to all wood parts, provide a good final finish.



Many stores have pipe racks for sale but they are almost always in a traditional design. This contemporary style rack has room for seven pipes, plenty of storage space for tobacco, and can accommodate all the various paraphernalia that pipe smokers always seem to accumulate.

I used  $\frac{3}{4}$  in. thick pine for all parts, but any light colored lumber will retain the contemporary look. Begin construction with the shank rest front and back (parts F) and the shank rest sides (parts G). Before cutting them to final size, rout the seven  $\frac{1}{4}$  in. deep oval recesses for the pipe shanks. Using a straight router bit, there are several ways you can do this. If you have a pin router or drill press router bit chuck, you may be able to do the job with only a straight fence guide since you can easily see the cutting line. (Don't use a router bit in a regular drill press chuck, though—it isn't safe.)

You can also cut the recesses by using a  $\frac{1}{4}$  in. thick hardboard tem-

plate and a router bit equipped with a  $\frac{1}{4}$  in. diameter straight bit and a  $\frac{7}{16}$  in. guide bushing. To make the template, use a  $\frac{9}{16}$  in. diameter drill bit to drill a pair of holes, spaced  $1\frac{1}{2}$  in. apart as shown in Fig. 1. Scribe a pair of lines to connect the two holes, then cut just inside each line with a saber saw. Use a file to remove the remaining material. To make the recess, set the router bit to a depth of  $\frac{1}{4}$  in., then clamp the template to the stock. Start the router, then lower the cutter into the stock and bring the guide bushing in contact with the template. Make one pass in a counterclockwise direction before cleaning out the remaining material.

The top and bottom (parts A) can be made next. On the top, lay out and mark the location of the  $1\frac{1}{4}$  in. diameter pipe bowl recesses, then bore each one to a depth of  $\frac{1}{4}$  in. A Forstner bit, which bores a flat bottom hole, is ideal here, but a router bit or spade bit can also be used. However, the long spur point on a spade bit will form

a pilot hole, so you may want to hide it by cutting and gluing a felt disc to the bottom of each recess.

The  $\frac{1}{8}$  in. deep by  $\frac{3}{4}$  in. wide rabbets on each end of part A are best cut using the dado-head cutter in conjunction with the table saw or radial-arm saw, although they can also be cut by making repeated passes with a regular saw blade.

Parts A and B can now be given a thorough sanding before assembly. Start with 80 grit to remove all the planer marks, then progress to 100, 150, and 220 grit. To assemble, apply glue to both mating surfaces before applying pressure with bar or pipe clamps. Check for squareness and make adjustments if necessary. If everything looks satisfactory, set aside to dry overnight.

To accept the plywood back (part C), a  $\frac{1}{4}$  in. wide by  $\frac{1}{4}$  in. deep rabbet is cut all around the back edge of parts A and B. A router equipped with a piloted  $\frac{1}{4}$  in. rabbeting bit will do this in short order.

Part C can now be cut to fit the opening and, to avoid wood movement problems, we use plywood for this part. Fir plywood leaves a lot to be desired from the standpoint of appearance, so try to avoid using it. If possible, try to match the plywood with the stock you are using for the rest of the project.

Next, cut the door (part E) to fit the front opening of parts A and B. Lay out the location of the 1 in. diameter drill hole, then bore out. When boring the hole, be sure to back up the stock with a backing block to keep the wood from tearing out.

The remaining parts (D, H, and I) are now cut to length and width. Parts H should be cut to fit snugly inside parts F and G.

With the exception of parts A and B, all parts can be given a thorough sanding following the same procedure that was used earlier.

The project can now be assembled. Glue and clamp parts H, A and I, as shown. Next, glue parts F and G to part H, and part I to parts F and G. The base (part D) is secured with glue and wood screws.

A block plane is used to apply the  $\frac{3}{4}$  in. radius to the corners of parts A and B. The corners of the door (part E) are then rounded to the same radius.

Final sand all parts with 220 grit paper, then stain (if desired) to suit. Two coats of polyurethane varnish will provide a durable final finish.

A pair of brass hinges and a friction catch can now be added. A piece of felt, glued to the bottom, will complete the project.

## Pipe Smoker's Organizer

by Brad Benson

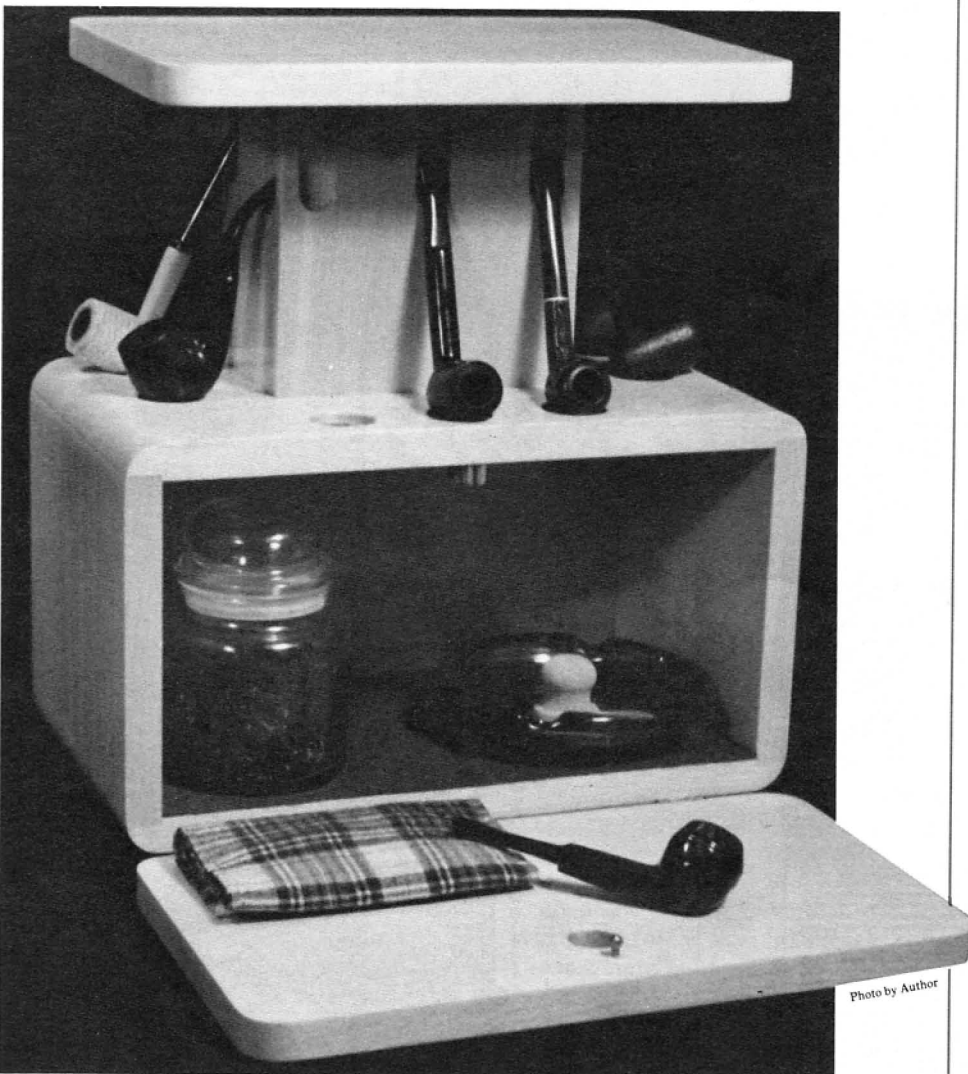
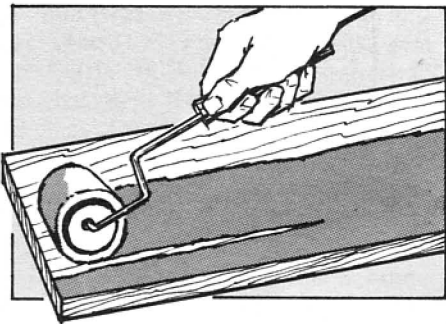


Photo by Author



# Shop Tips

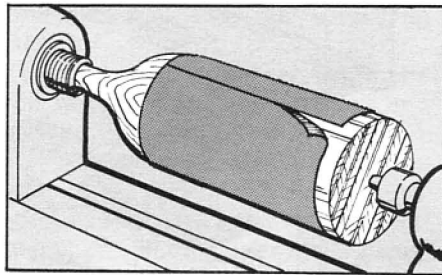
A painter's 3 in. wide trim roller makes an excellent glue spreader for those large gluing jobs. Pour the glue into a paint tray to make it easier to pick up the glue on the roller.



Old  $\frac{3}{8}$  in. to 1 in. wide band saw blades cut to about 3 in. long make excellent scrapers for smoothing small curved shapes such as coves and rounded corners. Use a grinder to remove the teeth and shape the end to the desired profile. Although not necessary, a handle (made from a split dowel) will make things easier on the hand.

The wood lathe becomes an effective drum sander when used with a turned wooden sanding drum as shown. The sanding drums can be made to just about any diameter or length—in fact, it's a good idea to have several sizes. They are turned to size on the lathe, with one end tapered to fit the head stock and the other end centered on the tail stock. Sandpaper is glued to the cylinder with rubber cement so that when the sandpaper wears it can be removed and replaced.

Melvin F. Schmidt  
West Fargo, N.D.

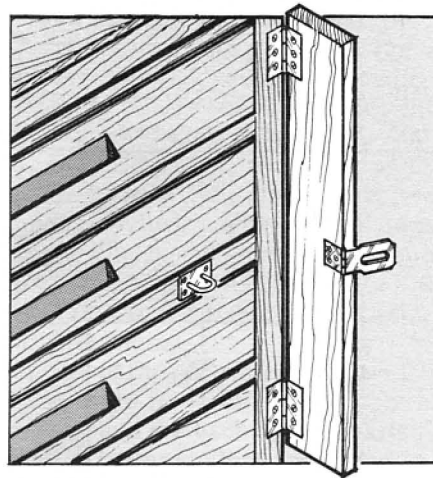


In my workshop I have a large cardboard box with a door cut in it. After varnishing a project, I place it into the box and close the door, thereby fully protecting it from any dust in the air.

Melvin F. Schmidt  
West Fargo, N.D.

One padlock will secure several shop drawers with this system. Hinge a strip of wood to the cabinet edge so that it overlaps the drawer fronts when closed. A hasp and staple complete the arrangement.

Joseph J. Ciciarelli  
New Kensington, Penn.



The Woodworker's Journal pays \$25 for reader submitted shop tips that are published. Send your ideas (including sketch if necessary) to: The Woodworker's Journal, P.O. Box 1629, New Milford, CT 06776, Attention: Shop Tip Editor. We redraw all sketches so they need only be clear and complete.

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Brass Combination PO box fronts prepaid \$6.00 each. John Bagwell, Route 1, Bruce, MS 38915.

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Red Oak, Walnut, Ash, Kiln Dried, Surfaced two sides, no minimum order. Send Stamp for catalog. Oak-N-More, 710 North Park, Salem, MO 65560.

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