

The Woodworker's Journal

Vol. 5, No. 1

January/February 1981

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In This Issue:

18th Cent. Vanity

Workshop Drawing Board

3 Projects from Scrap Ends

Shaker Cupboard

Black Forest Clock

4 Fine Gifts to Make



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Each issue of THE WOODWORKER'S JOURNAL is filled with fully detailed plans for all types of wood-working projects, from a roll-top desk to simple pull toys. Whether your taste is traditional or contemporary, you are sure to find interesting ideas in every issue. There are regular columns on restoring antiques and workshop income plus useful jigs and shop tips, but our main purpose has always been to provide our readers with a variety of PROJECT PLANS. Check the contents of available issues below and send your order today...supplies are limited.

Vol. 1 No. 1 Jan-Feb '77: Shaker Woodbox, Old-Time Toys, Bunching Table, Glass Top Tables, Early American Wall Shelf, 19th Cent. Steeple Clock, Butler's Tray Table, Velvet Lined Treasure Case, Louvered Hamper, Colonial Pipe Box, Picture Framing Primer.

Vol. 1 No. 2 Mar-Apr '77: Contemp. Coffee Table, Little Red Wagon, Shaker Bench, Five-Rail Table Lamp, Shaker Wall Cabinet, Picture Frame, 3 Handy Kitchen Items, Bookcase Desk, Butcher's Table, Home-Made Clamp, Practical Bird Houses.

Vol. 1 No. 3 May-June '77: Colonial Plate Rack, 17th Cent. Hutch Table, Adirondack Lawn Chair, Picnic Table, 18th Cent. Blanket Chest, Shaker Candlestand, English Tea Box, Child's Swan Rocker, 3 Projects for Scrap Ends, Small Shaker Table, Toy Train, Table Saw Cove Cutting.

Vol. 1 No. 5 Sept-Oct '77: Taper Jig, Counting-House Desk, Dancing Man Folk Toy, Shaker Step-Chest, Duck Decoys, 3 Wall Decorations, Hutch Cupboard, Collector's Pier Cabinet, Box Joint Jig, Picture Frame.

Vol. 1 No. 6 Nov-Dec '77: Firewood Box, Valet Stand, Miniature Victorian Sleigh, 6 Holiday Gifts, Wine Rack, Pencil-Post Bed, Shaker Settee, Shelving System, Swinging Cradle, Ox Yoke.

Vol. 2 No. 1 Jan-Feb '78: Edge Sander, Colonial Dry Sink, Gossip Bench, Bookcase Night Table, Shaker Portable Chest, Victorian Washstand & Mirror, Vanity Mirror, Rustic Wall Plaque, Aquarium Stand.

Vol. 2 No. 3 May-June '78: Shaker Lantern Table Lamp, Aeolian Harp, Two Cutting Boards, Pine Trestle Desk, Early American Bookcase, Novelty Windspeed Indicator, Notes on a Louis XV Table, Nursery Mobile, Round Tapering Jig, Tudor Birdhouse.

Vol. 2 No. 4 July-Aug '78: Hobby Horse, Magazine Rack, Pipe Cabinet, Two Pine Projects, 18th Cent. Water Bench, Octagonal Wall Clock, Boomerangs, Bowl-Making Jig, Giant Shop Compass.

Vol. 2 No. 5 Sept-Oct '78: Pine Wall Shelf, Nail Box Table Lamp, Doll Cradle, Contemp. Candle Lantern, Plant Stand, Shaker Wool-Wheel Part I, Contemp. Table, Veneered Puzzle, Easy Picture Frames, Pine Gun Cabinet, Home-Built Planer for Radial Saw.

Vol. 2 No. 6 Nov-Dec '78: Stereo End Table, Contemp. Lamp, 6 Holiday Gifts, Shaker Wool Wheel Part II, Chopping Block Table, Improved Table Saw Tapering Jig, 18th Cent. Half-Round Table, Bird Feeder.

Vol. 3 No. 1 Jan-Feb '79: 18th Cent. Settle, Tenon Jigs, Pine Lap Desk, Contemp. Coffee Table, Roll-Top Desk Part I, Contemp. End Table, Plant Stand, Walnut Serving Tray, Curio Table, Candle Box, Wall Box, Tumbling Toby Toy, Colonial Spoon Rack.

Vol. 3 No. 2 Mar-Apr '79: Wood Weathervanes, Cranberry Scoop Magazine Rack, Roll-Top Desk Part II, Table Saw Jigs, Music Stand, Corner Shelves, Pine Blanket Chest, Shaker Style Bed, Magic Money Printer

Vol. 3 No. 3 May-June '79: Cherry Dressing Mirror, Medicine Cabinet, Patio Settee, Pine Dry Sink, Spanish Chest, Fishing Rod Rack, Small Utility Table, Hidden Maze Toy, Child's Wall Rack.

Vol. 3 No. 4 July-Aug '79: Sofa Table, Tea Cart, Candle Sconce, 2 Whittling Projects, Cabinetmaker's Table Lamp, Country Cupboard, Tablesaw Multi-Fence, 2 Pull Toys, Inlaid Spool Chest.

Vol. 3 No. 5 Sept-Oct '79: Shaker Table, Contemp. Tier Table, Porch Swing, Traditional Wall Clock, Wall Cabinet, Record & Tape Cabinet, Steam Bending, Bandsaw Resawing Jig, Home-Built Fence for Table and Bandsaws, Clam Digger's Basket, Crocodile Pull Toy, Galliered Wall Shelf.

Vol. 3 No. 6 Nov-Dec '79: Clothes Tree, Pine Floor Lamp, Harvest Table, 5 Holiday Gifts, 19th Cent. Washstand, Tablesaw Round Tapering Jig, Quilting Frame, Tot's Tricycle, Swedish Door Harp.

Vol. 4 No. 1 Jan-Feb '80: Doughbox End Table, Contemp. Loveseat, Mahogany Chairside Table, Corner Cupboard Part I, Small Pine Corner Cabinet, Knife Rack-Cutting Board, Apple-Shaped Mirror, Pine Tape Dispenser, Auxilliary Cut-Off Table for Tablesaw.

Vol. 4 No. 2 Mar-Apr '80: Firewood Rack & Carrier, Red Baron Triplane Toy, Pine Pie Safe with Pierced Tin Panels, Contemp. Glass Top Coffee Table and Matching End Table, 19th Cent. Pine Commode, Corner Cupboard Part II, Butcher Block Toy Box, Mahogany Corner Shelf, Jig for Wooden Trivets, Radial Arm Crosscut Table.

Vol. 4 No. 3 May-June '80: Miniature Campaign Chest, 19th Cent. Sawbuck Table, Decorative Frog, Violin Sconce, Shaker Cutlery Tray, Swinging Bracket & Planter, Club Chair & Ottoman, Oak Cottage Chair, Wooden Lock.

Vol. 4 No. 4 July-Aug '80: Magazine Rack, Gothic Oak Stool, Whale Cribbage Board, Doll Cradle, Nut & Bolt Toy, Basketweave 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 Lamp, 18th Cent. Trestle Table.

Please Note

Vol. I, No. 1 through Vol. IV, No. 4 are newsprint issues for \$1.50 each. From Vol. IV, No. 5 on, they are magazines for \$2.25 each. CT residents only



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The Woodworker's Journal (ISSN 0199-1892) is published bi-monthly in January, March, May, July, September and November by The Madrigal Publishing Co., Inc., P.O. Box 1629, New Milford, CT 06776. Telephone: (203)-355-2697.

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Application to mail at controlled circulation rates is pending at Brookfield, CT, and additional mailing offices. Third class postage paid at Brookfield, CT.

Subscription Rates

In the United States and its possessions:
One year (6 issues) \$12.00
Two years (12 issues) \$22.00

Canada and other foreign:
One year - \$14.00
Two years - \$26.00

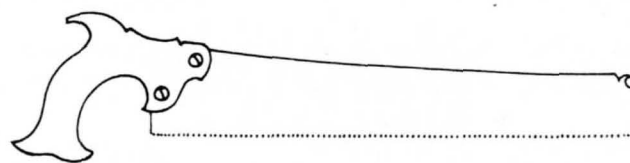
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Postmaster: Send Change of Address to **The Woodworker's Journal**, P.O. Box 1629, New Milford, CT 06776.

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

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Shoptalk

The Mirror Image Ogre

One of my daughters took a big gamble and came home with a cardboard box containing one very young rabbit. Guess who was elected to build a proper house for the little guy?

Having built one rabbit hutch about a dozen years ago and having access to a reasonably well-equipped shop, I approached the task with considerable confidence...but little enthusiasm.

After completing the frames which formed the sides of the hutch, I proceeded to screw on various cleats to hold the mesh flooring and sides. Fortunately, the kids became bored with my slow progress and had wandered off when I made the discovery that I had just built two right sides.

Most of you, I'm sure, have experienced that sickening feeling when the realization sinks in that you have made a bad mistake. When something like that happens in a cartoon, the character usually has a thought balloon over his head with a big question mark followed by a couple of exclamation points. Standing there, I could feel my personal balloon sprouting.

After years of craftily avoiding this typical novice's error, I'd dropped my guard for a few moments and been caught. Fortunately, the situation was saved by the tedious removal and relocation of about a dozen screws.

Making identical parts instead of parts that are mirror images of each other is an ever-present danger. The mirror image ogre lurks within many projects, particularly those that have two sides which need to be dadoed, rabbeted or cleated on the inboard side. He's waiting within several

projects in this issue...ready to seize the unwary so beware.

I was caught again and managed to escape relatively unscathed but I'm realistic enough to admit that someday, somehow...he will get me again.

Which brings me to the point of the story. If any readers have made really monumental woodworking blunders and have the good humor to share them maybe we can all get a rueful chuckle from the experience and hopefully learn something. We might even make such letters a regular feature of each issue. I'm sure there are plenty of interesting stories out there waiting to be told...and no fair requesting anonymity.

Extinct Back Issues

As the 1977 and 1978 back issues run out we will no longer be reprinting them. Actually most of the plans in those older issues will appear in a book which we have been working on and hope to see in print later this year. There will be more news about this later but for now please note that a couple of issues are no longer being listed on page 2 though they may still be listed on the bound-in order form.

The New Year

By the time you read this a new year will have begun and I must admit to welcoming 1981 with some mixed feelings. The double squeeze of OPEC prices and inflation hurts all of us. As far as high interest rates are concerned, MasterCard and Visa credit cards are just about 1/32 of an inch in thickness. I think I'll leave my "plastic money" in the shop and use them for feeler gauges for fine-fitting of cabinet doors or maybe shimming out hinges.

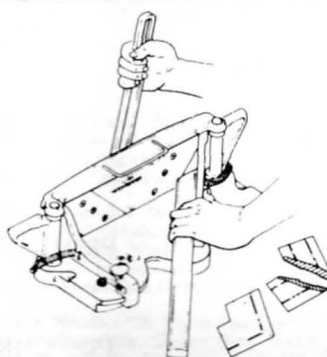
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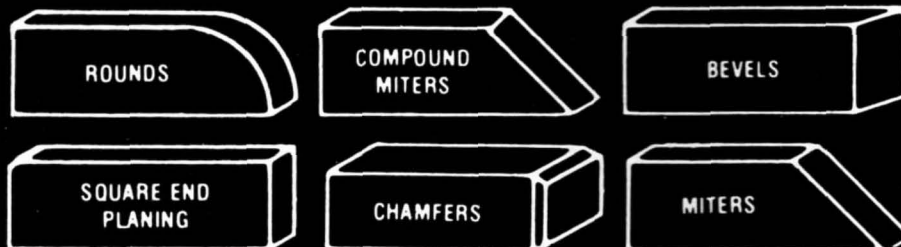
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Letters

Let me tell you what sold me on subscribing to your magazine: the item "Lathe Steady Rest" by Roger E. Schroeder (Nov/Dec 1980 issue). I "invented" a steady rest myself some time ago to use in my pastime of making walking sticks, but I use plastic skate wheels at the contact point to minimize friction. Also, I have a Craftsman lathe, which has a tubular bed instead of the customary flat bed with separated ways. So my steady rests (I use two for a 36" stick) have to be clamped to the lathe table.

Their main drawback has been that they must be positioned, the wood cut away around them, then they must be moved to new locations in order to cut down the wood at their former positions. This because they are not self-compensating, that is, do not follow as the work is cut down.

Mr. Schroeder's plan is ideal and when I have combined his design with mine, I shall make three steady rests--one for each 9 inches of length--and I will not have to move them at all during the operation of cutting down the stick, thus saving a great deal of time, trouble and fussing around. M. Banister, Portland, OR.

I am building two wall clocks from your plans in the Sept/Oct 1979 issue (Vol. 3, No. 5). I ordered the clock movement and pendulum specified in your plan write-up (No. 78C32 from Albert Constantine and Sons, Inc.); however the pendulum arms I received are 4" too short. They should be 12"-13" long. How do I get longer arms? R. Striker, Charleston, MO.

We ordered the 78C32 movement and pendulum from the then current

(1980) Constantine catalog, and at that time it included a 12 3/4" long pendulum. After receiving your letter, we checked the latest (1981) Constantine catalog, and discovered that although the part number has remained the same, they've changed both the movement type and the pendulum length. Apparently, you were sent the one shown in the 1981 catalog.

After a little searching, we found that the company Klockit, P.O. Box 629, Lake Geneva, WI 53147 sells the same movement and pendulum that we specified. It's their model number 204-32 (specify brass pendulum). A pair of hands (ask for 99-0, black) comes with the movement.

When specifying a source of supply, we assume it will continue to be available. However, since catalog changes are beyond our control, difficulties like this will sometimes occur. When possible, as in this case, we'll try to provide additional sources.

I have a problem with four captain's chairs. Some legs are loose and others are glued tight. How in the world can I get the tight ones out and reglue all of them? G. Verity, Hampton Bay, NY.

If a joint is good and tight, it usually is best to just let it alone, unless taking it apart makes the overall restoration easier. If this is the case with your chairs, you'll probably want to review John Olson's "Restoring Antiques" column on page 9 of this issue. In it, John discusses several of the techniques he uses to disassemble furniture joints.

I have tried to locate a book called "Puzzles In Wood" by Edwin Wyatt for several years without any luck. If you

Continued on Page 7

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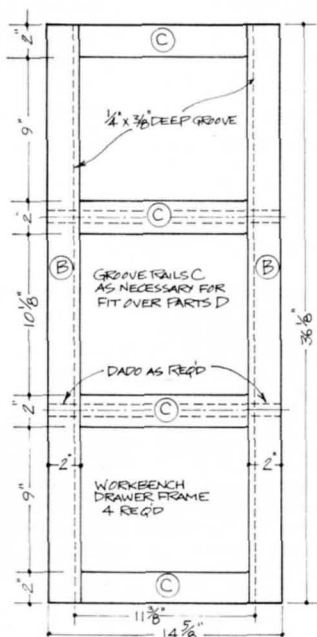
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Letters (cont'd)

or your readers can tell me where I can get a copy of this publication, I would greatly appreciate it. T. Elzey, Brookfield, Vt.

It's available in a softbound edition from Woodcraft Supply Co., 313 Montvale Ave., Woburn, MA 01888. Current price is \$4.30 postpaid.

I am in the process of finishing the cabinetmaker's workbench project in your Sept/Oct 1980 issue and found an error in the drawer frame layout shown on page 19. The drawer frame should be dimensioned as shown here. C.R. Patterson, Edwardsville, IL.



I am in need of some woodworking information. I would like to know where to purchase clock movements, faces and glass for regulator clocks. D. L. Scott, Forsyth, Mo.

In this issue, our "Cabinetmaker's Supplies" section (page 31) lists a number of mail-order firms that specialize in the sale of clock parts. We hope that you and many of our other readers will find this information helpful.

I have been trying to locate a source for teak for a project but have not had success. Can you send me the name and address of a supplier. Thank you. Fred Priff, West Creek, N.J..

Two companies that sell small quantities of teak via mail-order are: John Harra Wood & Supply Co.,

511 West 25th Street, New York, NY 10001 and Sterling Hardwoods, Inc., 412 Pine Street, Burlington, VT 05401.

In the September/October 1980 issue (Vol. 4, No. 5) you have plans for making wooden nuts and bolts. I would like to find a source for the 1 inch tap and die needed to make these. Your help would be appreciated. A. Storck, Sonoma, CA 95476.

You can order a 1 inch threadbox and tap from Conover Woodcraft Specialties, Inc. 1825 Madison Road, Parkman, OH 44080. The set is currently priced at around \$65.00. Most other mail-order woodworking suppliers also carry tap and die sets.

I'm looking for plastic liners for wooden cannister sets. Can you help? B. King, Decatur, Al.

Recently we've had a number of readers ask this same question...and to date have not been able to find a source. Perhaps some of our readers can help.

Editor's Note: Our last issue included a letter from Mr. T. W. Taylor, asking for information on air drying of lumber. In our reply we suggested the government publication, "Wood Handbook, Wood as an Engineering Material." Since then, several readers have been kind enough to send along the names of additional government publications, all offering further information on the subject. The following can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

"Seasoning Small Quantities of Lumber", by E.F. Rasmussen, U.S. Forest Service Research note FPL-089, USDA Forest Products Laboratory (1965). No charge.

"Air Drying of Lumber, a Guide to Industry Practices", Agriculture Handbook No. 402, USDA Forest Products Laboratory. No charge.

"Drying Eastern Hardwood Lumber", Agriculture Handbook No. 528, USDA Forest Products Laboratory. No charge.

"Dry Kiln Operators Manual", Agriculture Handbook No. 188. \$6.00.

"Improvements in Solar Dry Kiln Design" by Eugene M. Wenzert. U.S. Forest Service Research Note FPL-0212, USDA Forest Products Laboratory (1971).

"Electric Moisture Meters for Wood", Technical Report FPL-6. USDA Forest Products Laboratory (1975). No charge.

Workshop Income

by Paul Levine

Lately, there seems to be a lot of discouraging economic news, but if you can read the handwriting on the wall, it could be good times for your workshop income. No matter what skill level you enjoy, there are items you can make for which exists a demand. The simplest item, if it is made with care and pride, will find a buyer.

I often hear people complaining about how expensive everything is, and about the poor quality you find these days. With all the mass produced junk around, any well made item will command a market, if it displays that "don't tread on me" pride. Now is the time to let your enthusiasm for wood show through, and offer whatever well crafted items you have to the market place.

But beware. Take that extra care to make sure what you offer is the best you can do. You must be your severest critic, and if the item doesn't measure up, then don't offer it for sale.

Today more than ever people are looking for value. Before they part with their pennies, they want to see the

value. Big industry cannot deliver like the small craftsman. The individual takes a piece from concept to finish - all the way. The piece itself becomes an extension of the craftsman.

Today the work of many woodworking craftsmen is considered fine art. Whether this is true or not is unimportant, but it does show us just how personal a handcrafted piece can become.

Reacting to a society of nameless numbered people, many are seeking handmade products, and returning to the "old way" of doing things. Another thing that pleases me in this movement is the idea of fixing something, rather than throwing it away. Long ago craftsmen of every kind produced things to last. The idea of throwing these things away just did not exist. Things were repaired until it was just no longer possible. I hope we can learn a lesson from these early craftsmen and again start to be thrifty - and make our products to last.

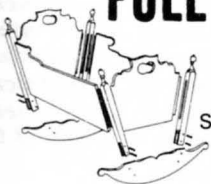
After all, this adds to the human quality of a piece. It becomes a part of the household, with its own personality. Eventually it gets handed down, and then it becomes revered. This piece belonged to Grandpa Sam. That chair was given to you by your Uncle Joseph.

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Restoring Antiques

by John W. Olson

Anyone who spends time browsing in antique shops soon learns that loose joints are a common furniture ailment. Repairing such a joint normally requires that it first be disassembled - a process that, to the novice at least, might seem to be somewhat of a stiff challenge. However, there are a few tricks used by experienced restorers that make the disassembly operation a comparatively easy one. We shall discuss them here.

Before starting, carefully check the joint to find out how it is fastened. Chances are it has been glued, but it may also be secured with one or more small nails. If found, the first order of business is to remove the nails, as any force applied to a nailed joint can damage one or both members. Look for clues such as slight indentations or discolorations that conceal filled nail holes. A sharp awl makes an ideal tool for probing these suspected trouble spots.

In many cases, the best method for disassembling a joint is to simply use your two hands, aided, if possible, by a good woodworking vise. Carefully pulling, pushing, and twisting, with minimal force, will often do the job. If more persuasion is needed, a mallet or hammer can be used. To protect the wood surfaces, wrap rags around the hammer face or use a rubber mallet. Tap lightly at first, taking care to avoid causing damage. Be patient and go slowly. You'll be surprised how often this method works effectively.

Another disassembling technique takes into account the fact that most old time glues (and even some modern ones) are water soluble. Water soluble simply means that it will dissolve in water - and such a glue, exposed to moisture,

will begin to soften. A joint can be disassembled by wrapping it in a water soaked heavy cloth and keeping it saturated for as long as is necessary to soften the glue. Once softened, the joint can be taken apart with little effort. Sometimes the process can take as long as 4 or 5 days. Be sure to keep the cloth well soaked and take time to occasionally check the joint for signs of loosening. As the glue begins to soften, separate the joints using the hand disassembly techniques just described.

For more stubborn cases, other measures can be taken. With through tenons, often a punch made from hardwood (oak, maple, birch or similar) can be used to drive out the tenon from the backside. This same approach can be used in the case of blind joints by drilling an access hole to just the right depth in just the right place so that the wooden punch will push out the tenon. Of course you can use a steel punch but then you are almost sure to destroy the piece being driven. After reassembly, the hole can be repaired by using a plug or inlaying a boat-shaped "dutchman." This drilling approach can also be used to get a solvent down inside to the joint where it can do the most good.

About the only joint that can create any real difficulty is the one that has been previously disassembled, properly cleaned and then reassembled with epoxy. Water won't dissolve epoxy, but there is a solvent on the market that will.

Sometimes the only remedy is to destroy one or both members of the joint when it is imperative to repair or replace another member behind the one to be disassembled. The best approach, in this case, is to plan your work so as to destroy only one member of the joint and only the one which is going to be the simplest and easiest to reproduce.

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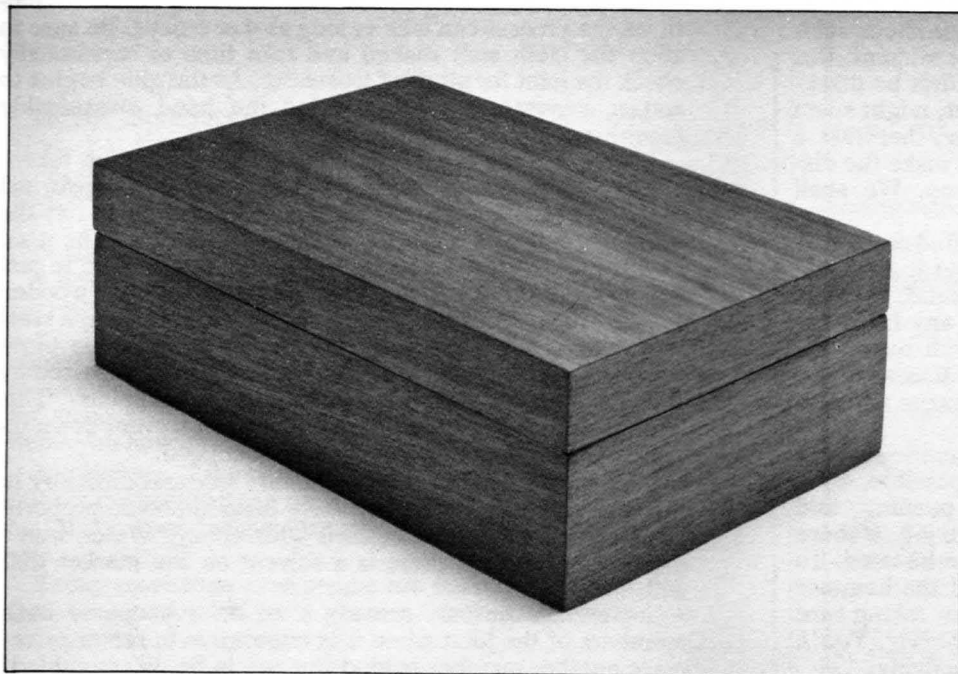
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The Beginning Woodworker



Veneering Basics

Veneers in one form or another have been used to enhance woodworking projects for several thousands of years yet many modern woodworkers have never tried their hand at this fascinating craft.

There are many good reasons for veneering but basically veneers, which are very thin slices of wood, are used because certain beautiful and exotic woods are simply too scarce and costly to be used in board form.

The general notion that only cheap or shoddy furniture is veneered is largely false. Though veneers can cover a multitude of sins, the true purpose of veneering is to upgrade a piece. The proof of this rests in museums around the world where the finest examples of the cabinetmakers art can be found. Many of these masterpieces are largely veneered.

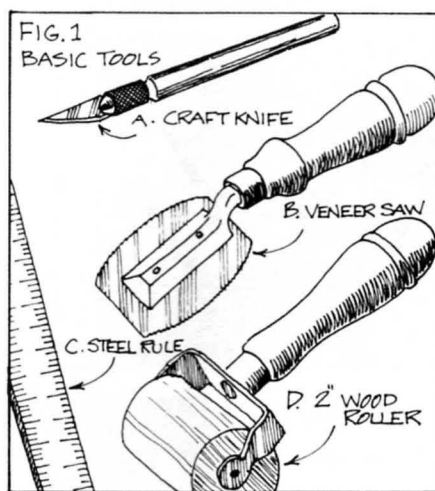
Veneered panels used instead of solid boards enables us to achieve interesting grain patterns and these veneered panels are far more dimensionally stable than solid lumber which is prone to contract and expand with changes in the seasons.

Perhaps the best reason for working with veneers is that it's really interesting work and not much in the way of special or expensive equipment is required. Apart from a selection of veneers, the tools shown in Fig. 1 are the basic ones needed and are easy to obtain.

The best way to get started is to attempt a small and relatively simple project such as a veneered box. Step-by-step procedures will introduce you

tered and a successfully completed and attractive project will hopefully spur you on to more advanced work.

Today veneers are available in almost a hundred or more varieties of both domestic and imported woods. There are a number of mail-order firms that sell veneers and related equipment and a list of these sources is given at the conclusion along with a couple of books that will take you much



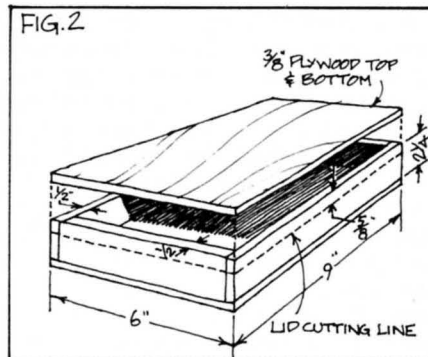
further into the fine points of veneering and marquetry which involves the use of veneers to create pictures.

Modern veneers come in common thicknesses of 1/28", 1/40" and the very thin 1/64" veneers which have a thin flexible backing and can even be rolled around curved surfaces. We will be working with veneer of either 1/28" or 1/40" thickness.

Most veneers are sold in sheets or leaves which are anywhere from 4 to

species) and 36 inches long. Fancy burls, which are cut from wart-like growths on the trunks of certain trees, are sold in various odd shaped pieces. All veneers are sold by the square foot and most dealers will sell in lots as small as 3 square feet.

Before we veneer a box, we will first have to build one. No fancy joinery is required but it's vital that the joints be perfectly flush and the box be built in such a way that minimizes later shrinkage problems.



The box shown in Fig. 2 can be made from four pieces of 1/2 or 3/8 inch thick hardwood, butt-joined and glued to form sides and ends. Our box was made of solid walnut with 3/8" birch plywood top and bottom. The lip which holds the lid in place is an inner box liner made from solid birch resawed to 3/16" thickness. We chose birch for the interior because birch plywood is easy to get and the light birch contrasts nicely with the dark walnut. Using a cabinet grade hardwood plywood for the box top and bottom reduces the problem of shrinkage across the width of these parts. Remember that veneers should be glued only to relatively stable surfaces. Shrinkage of the "ground" or board to which the veneer is glued will inevitably result in cracking of the veneer.

Joints are glued, butted and nailed together. Use small finishing nails driven near the corners of sides. Remember that later you will separate the lid from the rest of the box by sawing all the way around 1 inch down from the top so you don't want these nails located where the sawblade may hit them. When applying glue to end grain, apply a thin coat and wait for the glue to sink in, then apply another coat before joining.

Use C-clamps or handscrews to clamp sides and ends together. The plywood top and bottom are glued and clamped without nails. Allow the box to dry overnight, then sand all joints perfectly flush. Keep in mind that even very slight joint irregularities will eventually "telegraph" or show through the thin veneer; thus veneering is not merely a method for covering up sloppy joinery.

The box shown in the photo was

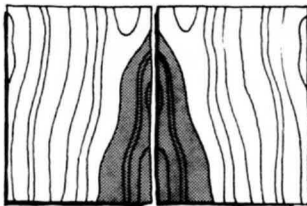
Beginning Woodworker (cont'd)

veneer with a straight stripe grain. However, you may choose from many dozens of other attractive veneers. For this initial project though stick to one of the more easily worked veneers and avoid the fancy burls, crotches or other highly figured types.

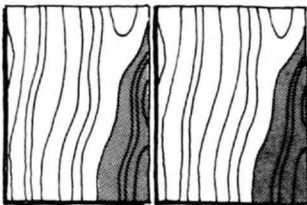
Veneer supply catalogs often show colored pictures of various veneers and some companies offer collections of veneer samples, each of which is labeled for identification. These are very useful in helping you select the veneers you'd like to try on future projects.

A minimum purchase of 3 square feet of veneer will provide enough coverage for boxes of the size given. Prices for walnut veneer run about 45 or 50 cents per square foot so the investment is certainly minimal.

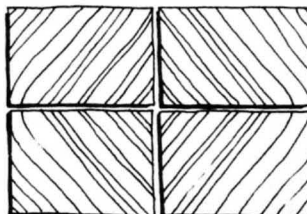
FIG. 3 MATCHING VENEERS



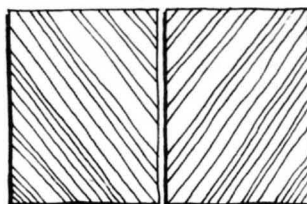
A. BOOK MATCHED



B. END TO END OR RUNNING



C. QUARTERED DIAMOND



D. HERRINGBONE

Chances are the veneer sheets you obtain will be stacked in the order in which they were originally cut from the log. Veneer dealers keep sheets in this order. If you open the first sheet as you would the page of a book and butt its right edge against the edge of the next sheet, you will see that two sheets form a book-matched or symmetrical

pair. This is most apparent on veneers that have a definite figured grain pattern (Fig. 3A). If you lay out consecutive sheets side by side as they come from the stack you will see what is called a running match (Fig. 3B).

When it's necessary to join two or more veneer sheets together to cover an area wider than the width of a single sheet, very attractive grain patterns can be achieved by book-matching or cutting sheets to form diamond or herringbone patterns (Fig. 3 C & D).

The various methods of matching veneers is a subject in itself and one that will best be further investigated after you have gained a bit of experience with simple techniques.

Returning to the project at hand, let's examine the veneers you have purchased. Chances are the sheets will be slightly rippled, curled or wavy. If they are relatively flat...no problem; otherwise they will have to be flattened before cutting and gluing them in place.

To properly flatten veneers, you'll need at least two days, preferably three. First, sprinkle water *lightly* on the sheet (just on one side). Don't overdo it...just apply enough water to speckle the sheet over most of its area. The moistened sheet is then placed between two sheets of brown or wrapping paper. Do *not* use newspaper...it will transfer ink to the veneer.

Place this "sandwich" on a flat surface such as a piece of masonite and add another panel of masonite or hardboard on top. Now weight the whole business down by adding books or bricks evenly over the entire panel. Use plenty of weight. Allow the veneer to dry for 24 hours, then replace the kraft paper "blankets" with fresh dry sheets. Allow at least another 24 hours of drying time. If possible, another change of paper and an additional 24 hours is better.

Remove the veneer only when you're ready to use it immediately. If you wait too long, the veneer may start curling again. On the other hand, if you moistened the veneer too much or did not allow sufficient drying time, the veneer will shrink enough after it's glued down to start cracking.

Apart from curling, there's another condition you may have to deal with before your veneer is ready for use and that's splits in the sheets. These are quite common in many types of veneers and are fairly easy to repair.

Just pull the split sections together so that they butt rather than overlap. If you work on a wooden or pressboard surface, you can use veneer pins (which are very thin) to hold the splits together while you cover the split with tape. Drive pins along each side of the

(Continued on Next Page)

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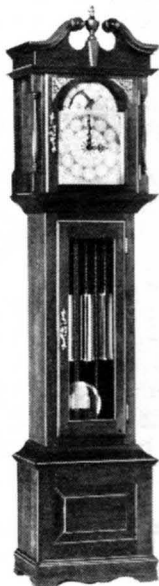
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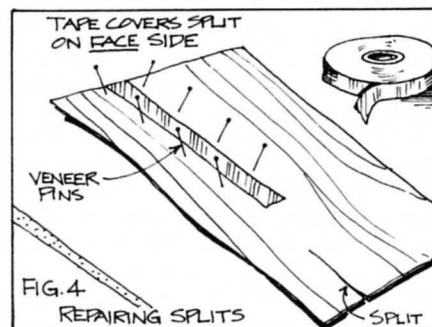
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Beginning Woodworker (cont'd)

split, angled towards and about 1 inch
from it (Fig 4).



Traditionally, moistened gummed paper tape of 1 1/2" width is used to hold the split together but clear cellophane tape permits inspection of the joint after taping and can be peeled off later without wetting the veneer. Remember that the tape is applied to the face or "good" side of the veneer and is left in place until the veneer has been glued down and the glue has completely dried. Later, before sanding and finishing, the tape is removed by careful peeling. Any tape residue and glue is scraped off with the edge of a chisel held in an almost vertical position.

The veneer is now ready for use and the next step is to cut the sheets into pieces which will cover the six sides of the box. Hardly anyone is capable of cutting these pieces to fit *exactly* flush with the edges of the box so we won't even try. Instead we will cut all pieces at least 3/8" oversize, both in length and width and glue them in place with 3/16" overhangs. The overhangs are then trimmed off flush.

Which brings us to the technique of cutting veneers. Many craftsmen work almost exclusively with a razor knife of the type that takes replaceable blades and is shown in Fig. 1. These are fine for cross-grain cuts on many veneers and are a necessity for making curved cuts but the blades sometimes tend to follow strong grains and run off a bit from a steel straight edge used to guide them.

Experience is the best teacher here but generally a veneer saw, used with a straight edge is better for making long cuts in straight grained veneers. These little saws will cut nicely along a straight-edge and will not chip the edges of the kerf. Their thin blades will also cut nicely through burls or gnarly grain.

Since we are cutting the pieces a bit oversize, chipping and slight irregularities in the cut are not quite so important so you can use either knife or veneer saw. Six pieces are needed to cover all sides of the box and, in the case of our example, the pieces are cut so that all grain runs lengthwise of the

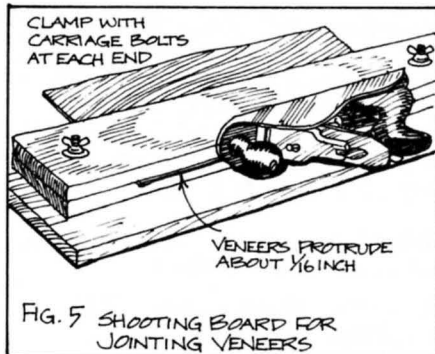
Beginning Woodworker (cont'd)

box. If the veneer sheets you have on hand are not wide enough to cover the top and bottom of the box, you will have to join two sheets together to achieve the needed width. If your veneer is straight grained without any distinguishing grain figure such as whorls or elongated leaf-shaped patterns, you can make either a book-match or a running match of the two sheets as previously explained.

Lay out the sheets in various ways and see if you can come up with an interesting pattern. When you've decided how the sheets will be joined, stack the sheets with edges to be jointed facing in the same direction.

Use your veneer knife and a straight edge to cut through both sheets, far enough in from the ragged edges to insure a straight edge on each piece. This cut will give a fair jointing edge but probably not clean enough for the "invisible" joint we always strive for.

To further joint the edges, clamp the two pieces between two straight square edged boards with the veneer edges even and just slightly protruding. A bench plane set for a very light cut is then run along this jointing or "shooting" board until the two veneer sheets have been planed flush with the boards (Fig. 5).



Lay the jointed sheets on a flat surface and bring the jointed edges together. If the fit isn't perfect, try again. When you've got it right close the joint in the same manner as explained for repairing splits using pins and tape. Incidentally, don't worry about pin holes in the veneer. They become invisible in the finishing process.

After cutting the pieces we must now decide on the type of glue to be used and how the veneered pieces will be clamped in place until dry.

There are many conflicting opinions as to the best glue or adhesive to use for veneering. It seems that each authority has a logical argument in favor of a particular glue and one gets the impression that the use of any glue other than the "right" one is a prelude to disaster.

Perhaps the best way to consider glues is on the basis of whether or not they require heavy clamping which of

course implies additional equipment such as C-clamps, handscrews, cauls and presses.

The glues suitable for veneer work that require clamping and extended drying time are the polyvinyl resin or white glues and the aliphatic or yellow glues both of which are familiar to all. Both types have the advantage of a delayed setting time which allows you more time to get clamping arrangements set. A disadvantage of both of these glues is the fact that they are not water resistant.

A third type which requires clamping are the plastic resin glues such as Weldwood or Cascamite. These come in powder form and are mixed with cold water in amounts needed. They also provide ample setting time and are water resistant.

Of the types that do not require clamping, hot hide glue which bonds as it cools has been in use for several thousands of years. It is purchased in dry form and must be first soaked, then kept heated in an electric glue pot. This glue requires the use of a veneer hammer to apply concentrated pressure to bond the veneer tightly to the ground. The glue cools quickly and the bonding must be done without delay. An advantage is that bubbles or unbonded spots can be reheated with an electric flatiron and re-worked. This glue is not water resistant.

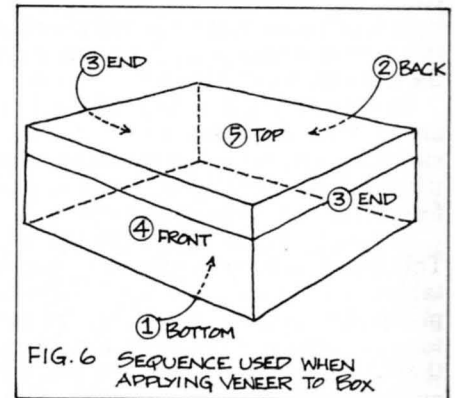
Contact cements which bond immediately upon contact are very convenient to use but have some troublesome characteristics. Water-based contact cements should not be used. They introduce moisture to the veneer after it has been laid. In time, as the veneer dries, shrinkage will cause unsightly cracks.

Constantine's Veneer Cement is a contact type which has been developed exclusively for veneers and seems quite satisfactory. Whether or not it will hold for 50 years or more still remains to be seen. For simple projects, this cement is very convenient to use. Because the veneer must be positioned exactly on the ground, this contact cement can be tricky to use with more advanced projects. Once contact has been made, the veneer cannot be shifted even slightly.

So you see, there is really no ideal glue. Each type has advantages and disadvantages and only through experimentation can the novice decide when a particular type is most appropriate.

For the sake of convenience we will use Constantine's Veneer Cement on this project. There are six sides to cover and we are going to follow a sequence that would make clamping rather cumbersome and time-consuming. The sequence used in covering a box is shown in Fig. 6. The reason for following this sequence is to keep edge and end grain as inconspicuous as possible. Other sequences can and have been used, particularly when clamping

is involved, but for this project we will stick to the old rule of veneering first those parts that are seen last.



Let's get started by veneering the box bottom. Spread the cement on both the box bottom and the underside of your oversize veneer square. Use the brush applicator that comes with the cement and a wooden spreader with notched edge to spread cement evenly. Use a blunt awl to hold the veneer down while you spread the cement.

When the cement has dried on both surfaces to the point where a sheet of brown paper can be moved over the surface without sticking, you are ready to go. Lay the sheet of brown paper (which is larger than the box bottom) on the box so that about 1/2 inch of cemented surface is exposed along one end. Take your oversize sheet of veneer and hold it so that it overhangs the ends and sides of the box by about 3/16 inch all around. Now bring the veneer in contact with the cement along and parallel to the edge of the box. Rub your fingers along this strip to start bonding the veneer.

Pull the brown paper slipsheet down another 1/2 inch and again press the surfaces together. Continue removing the slipsheet and rubbing the veneer into place being very careful to keep the veneer centered on the box.

After full contact has been made, use a roller to apply pressure to the entire surface. Work down the center first, then down the sides. Be careful not to break off overhangs but do make sure you bond the edges. Continue to roller the veneer until you're positive that all the area has been well worked over.

After bonding, trim overhangs by turning the box veneer side down on a smooth surface and trimming with a sharp knife or veneer saw.

When using the saw, start the cut at the edge away from you and draw the saw towards you for about half the distance. Then cut away from you from the near edge. It's the same principle as planing end grain of a board from both edges toward the middle to avoid

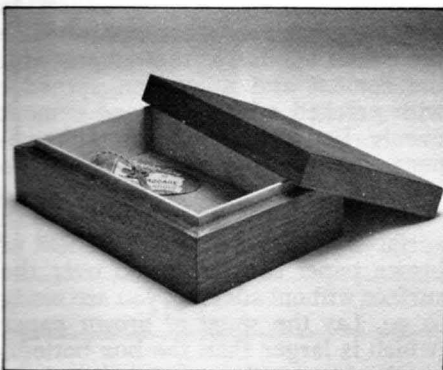
(Continued on Next Page)

Beginning Woodworker (cont'd)

A sanding block and fine sandpaper will clean up the cut edges. A light touch is all that's needed to bring the veneer edges perfectly flush with the ground.

The remaining five sides of the box are covered in the same way. As each surface is veneered, the overhangs are trimmed off and lightly sanded before the next surface is covered.

The next step is to remove the lid. This is best done with a bandsaw but a tablesaw will do the job if a fine-tooth plywood cutting blade is used. Set the fence 1 inch from the blade and place the box long side down with the top against the fence. Run the box slowly over the blade, then stand the box on end and run the next cut. Continue until the lid has been cut free.



The liner of the box, shown in the photo above, provides a contrast of woods and also a lip which will hold the lid in place. To cut the liner rip a 28 inch length of birch or maple to a width equal to the depth of the box plus $\frac{1}{4}$ inch. Resaw this piece to get a strip $\frac{3}{16}$ inch thick.

Cut this strip into four pieces to fit around the inside of the box. Mitering the ends makes a nice touch. When the pieces are cut and fitted, spread glue on the insides of box and clamp the liner in place. Use pads to protect the exterior surfaces of the box.

If you had to tape over jointed pieces of veneer on the box top and bottom, carefully pull the tape off, taking care that the tape does not lift small slivers out of the veneer. If this happens it's better to use a chisel held in an almost vertical position to scrape the tape off. Don't try to sand the tape off.

Power equipment should generally be avoided when sanding veneers. It's safer to use a hand sanding block. Sanding has its disadvantages as it tends to fill the pores of the veneer with dust; also sanding can cause fuzziness on certain veneers and obscure the grain. It helps to start with a fine grade of paper, about 120 grit, and use a soft bristle brush and vacuum to frequently clear the surfaces of dust.

Some open-grained veneers, just like their solid wood counterparts may

filling to render the surfaces free of minute holes and striations.

The subject of wood finishing is too extensive to cover in detail here and the finish chosen will depend on the species of wood involved and individual preferences. Generally though, the veneer can be finished with the same procedures used for solid construction. Finishes such as polyurethane varnish or some of the resin penetrating oils are suitable. It may take quite a few coats of finish to build up a good smooth surface. Sand lightly between coats and give a final rubbing with 4/0 steel wool to remove dust specks. Remember to take great care when sanding corners as it is very easy to sand right through the finish and veneer.

There are some basic rules in veneering that may be worth mentioning in conclusion. When laying veneer on solid boards, the grain of the veneer should run in the same direction, or parallel with the grain of the boards. Conversely, if plywood is used as a ground, the plywood grain and veneer grain should be as nearly at right angles as possible.

Panels and other grounds that are likely to warp should be veneered on both sides to equalize the stress. A lower grade of veneer can be used for the back side if it does not show. With projects such as the box just completed, it's not really necessary to veneer the inside surfaces as the relative thickness and small area involved should not warp to any perceptible degree.

The two boxes shown in the photo below indicate just two of the many beautiful possibilities that you may want to explore once you've mastered the basics. The large box, which is 3 x 6 x 9 inches displays a central top panel of maple burl with inlaid ebony ini-

tials. The panel is bordered with a thin strip of rosewood and ebony and a wide mitered border of macassar ebony. The rest of the box is macassar ebony and you will note that the sides are book-matched and the grain flows up the sides and continues on the box top. All corners are inlaid with maple both for contrast and protection.

The tiny box measures $1\frac{1}{2}$ x 2 x $2\frac{3}{4}$ inches and is covered with maple burl with inlaid corners of ebony. Both boxes have liners of contrasting woods.

Two books that will provide considerably more information on the subject are *Veneering Simplified* by Harry Jason Hobbs published by Albert Constantine and Son, Inc., 2050 Eastchester Road, Bronx, New York 10461 and *The Art and Practice of Marquetry* by William A. Lincoln, published by Thames and Hudson Ltd. of London. Although this book deals mainly with marquetry, it contains much basic and advanced information on veneering and inlaying and bordering of veneers.

The following is a partial list of mail-order firms that specialize in veneers and related equipment:

Craftsman Wood Service Co., 1735 West Cortland Ct., Addison, IL 60101

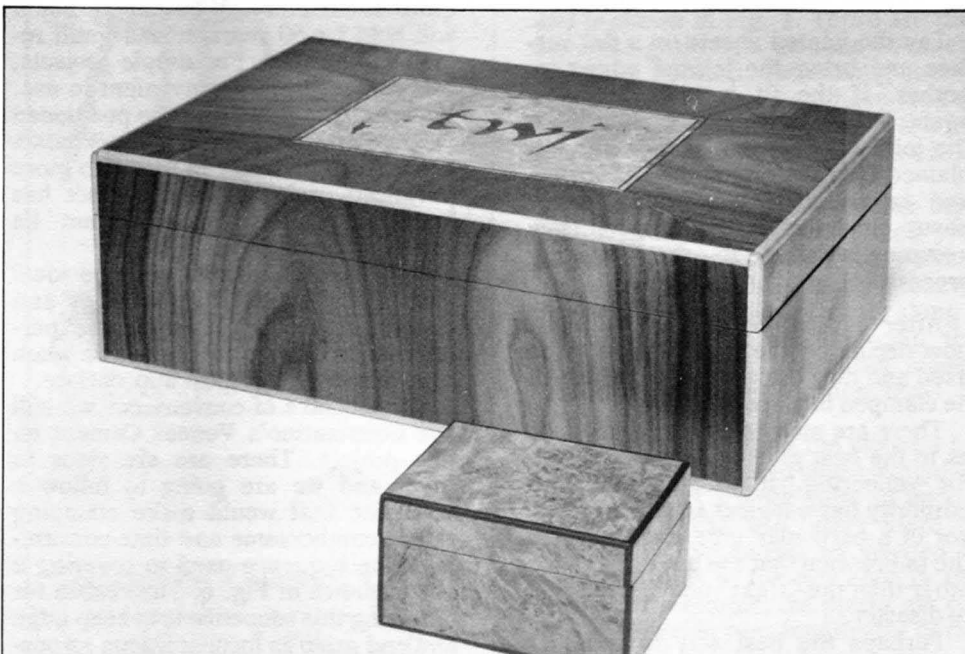
Albert Constantine and Son, 2050 Eastchester Rd., Bronx, N.Y. 10461

A Cut Above Veneers, P.O. Box 139, Greensburg, OH 44232

Artistry in Veneers, Inc., 633 Montauk Ave., Brooklyn, N.Y. 11208

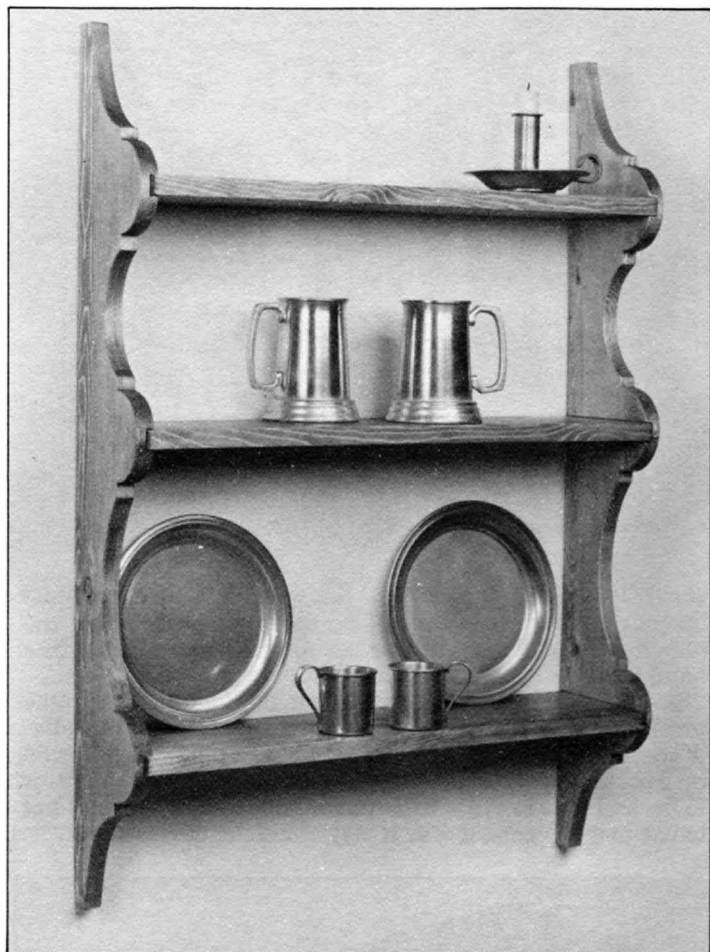
Bob Morgan Wood, 1123 Bardstown Rd., Louisville, KY 40204

American Woodcrafters, P.O. Box 919, Piqua, OH 45356



The Gift Shop

18th Cent. Shelves



The design of this classic piece is based on a colonial original. Solidly constructed from $\frac{3}{4}$ " pine, there are three good size shelves that provide plenty of display area. It's an enjoyable project that will add a handsome look to just about any room in the house.

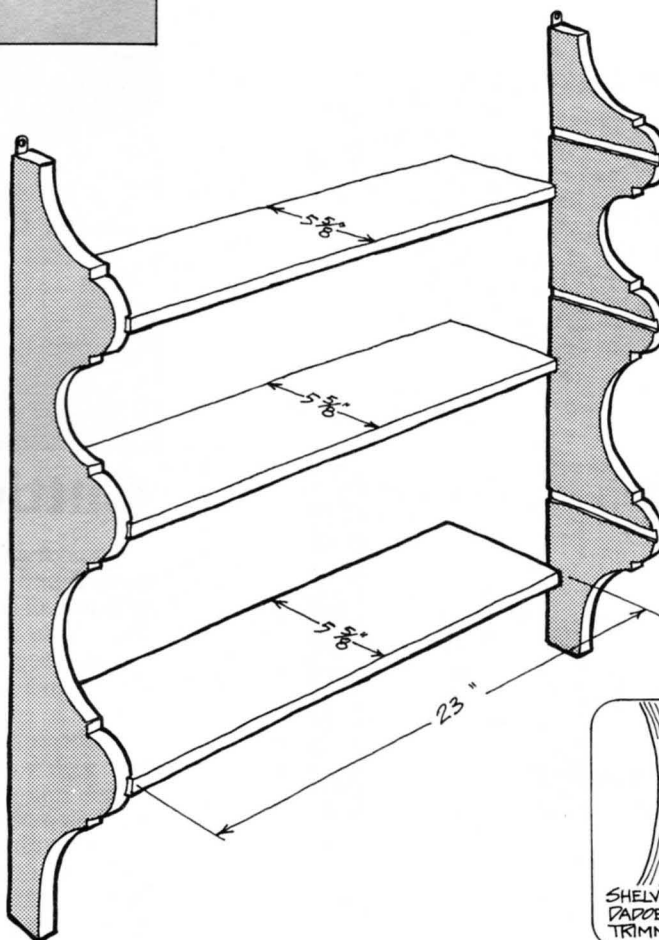
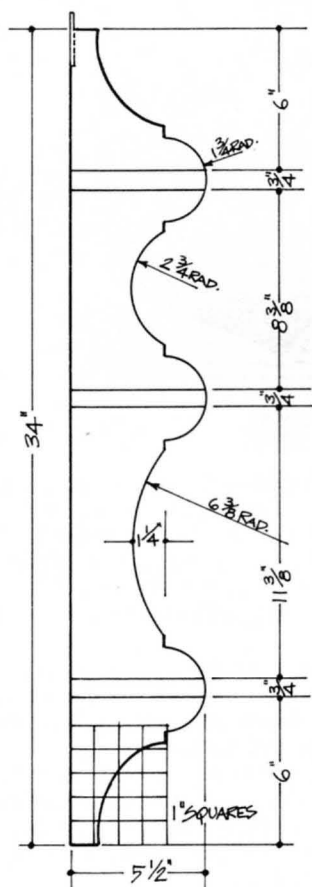
Make the two sides first, cutting each one to $\frac{3}{4}$ " thick x $5\frac{1}{2}$ " wide x 34" long. Standard lumberyard 1 x 6 stock (which actually measures $\frac{3}{4}$ " thick x $5\frac{1}{2}$ " wide) can be used here. Lay out and mark the location of the three shelf dadoes, then cut them $\frac{3}{4}$ " wide x $\frac{1}{4}$ " deep. It's best to cut the dadoes slightly less than the $\frac{3}{4}$ " shelf thickness, so that after the shelves are sanded, the fit will be perfect. The dadoes can be cut by making repeated passes with the table or radial saw blade, or by using a dado head cutter. Also, a router will do the job well.

Now, the curves can be transferred from the drawing to the stock. Use a saber saw, bandsaw or coping saw to cut to shape, keeping the sawblade on the waste side of the line.

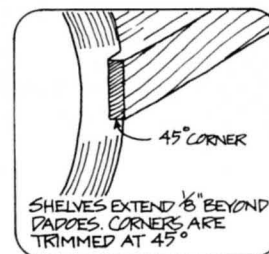
The shelves can now be cut to length and width, and the front corners nipped off at 45 degrees as shown in the detail. If you wish to use $5\frac{1}{2}$ " wide stock throughout, simply make the front edge of the shelf flush with the side curve.

Now sides and shelves can be given a thorough sanding. Make sure any planer marks are removed. Also, especially concentrate on the curved front edges of the sides.

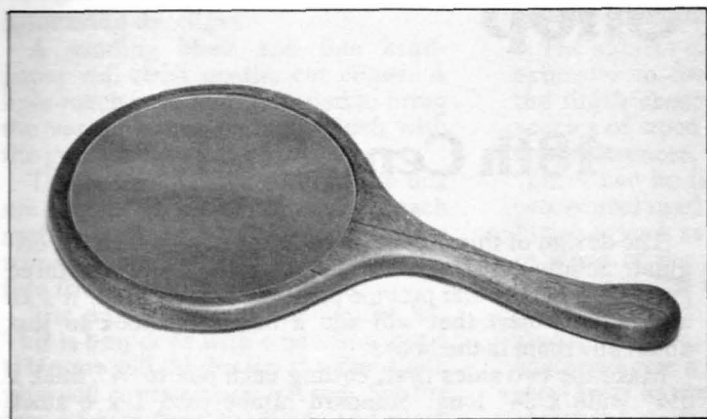
Minwax Early American is a good choice of stain for this project. Apply two coats, let dry, then finish with two coats of satin polyurethane varnish.



SIDES $\frac{3}{4}$ " x $5\frac{1}{2}$ " x 34" 2 REQ'D
SHELVES $\frac{3}{4}$ " x $5\frac{5}{8}$ " x 23" 3 REQ'D



The Gift Shop (cont'd)



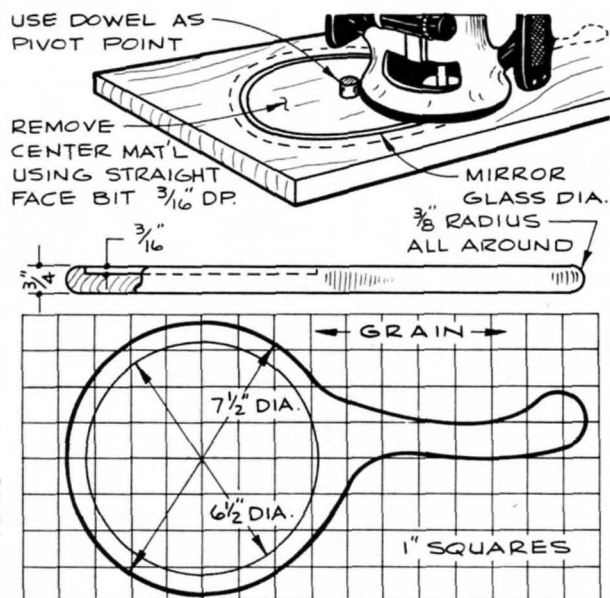
Hand Mirror

With pleasing lines and a gracefully curved handle, this stylish mahogany hand mirror will make a most attractive and useful gift.

Start with good flat $\frac{3}{4}$ " stock, about 15" long and at least $7\frac{1}{2}$ " wide. Using the grid pattern, lay out and mark the entire profile as shown, then locate and mark the center point of the glass cutout circle. At this center point, drill a $\frac{1}{4}$ " dia. x $\frac{1}{4}$ " deep hole for gluing a $\frac{1}{4}$ " dia. x $\frac{1}{2}$ " long dowel pin. This pin will serve as a bearing point for the router to cut a perfect circle.

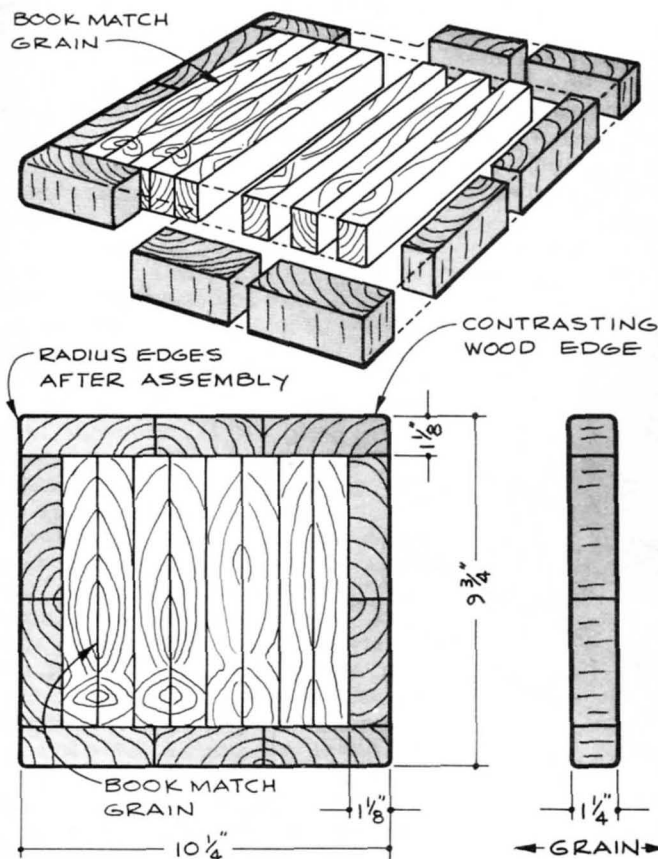
Use a $\frac{1}{4}$ " dia. straight bit in the router and set for a depth of $\frac{3}{16}$ " - $\frac{1}{4}$ ". We used a Sears router with a base diameter of 6", resulting in a $6\frac{1}{2}$ " diameter circle. If your router has a different base diameter, make dimensional changes as necessary.

To make the cut, bear edge of router base against pin and



slowly lower bit into the wood. Keep the base firmly against the pin as the router makes the complete circle. Now the pin can be cut flush with surface and the router used free hand to remove the remaining material.

A bandsaw or saber saw will cut the handle and frame profiles. Give edges a good rounding, especially the handle. A complete sanding is essential. Stain if desired, followed by 2 coats polyurethane. Have a glass shop cut a $\frac{1}{8}$ " mirror to fit, and glue in place with mirror adhesive. Be careful not to use just any adhesive as it may affect the mirror silver.



Cutting Boards

by Paul Levine

I make these attractive boards from scrap stock...and have found them to be good sellers. Oak, maple, ash, or teak are all suitable wood choices. Cut $1\frac{1}{4}$ " stock (or $\frac{5}{4}$ ") to $7\frac{1}{2}$ " wide x $9\frac{3}{4}$ " long. Crosscut the stock into eight 1" strips, keeping them in the order as cut. The $9\frac{3}{4}$ " length results in a bit of scrap. Each piece will measure $1\frac{1}{4}$ x 1 x $7\frac{1}{2}$.

To bookmatch the grain, twist the first piece, end grain up, with a counter-clockwise rotation. Twist the second piece, end grain up, with a clockwise rotation. Continue until all pieces are end grain up and matched.

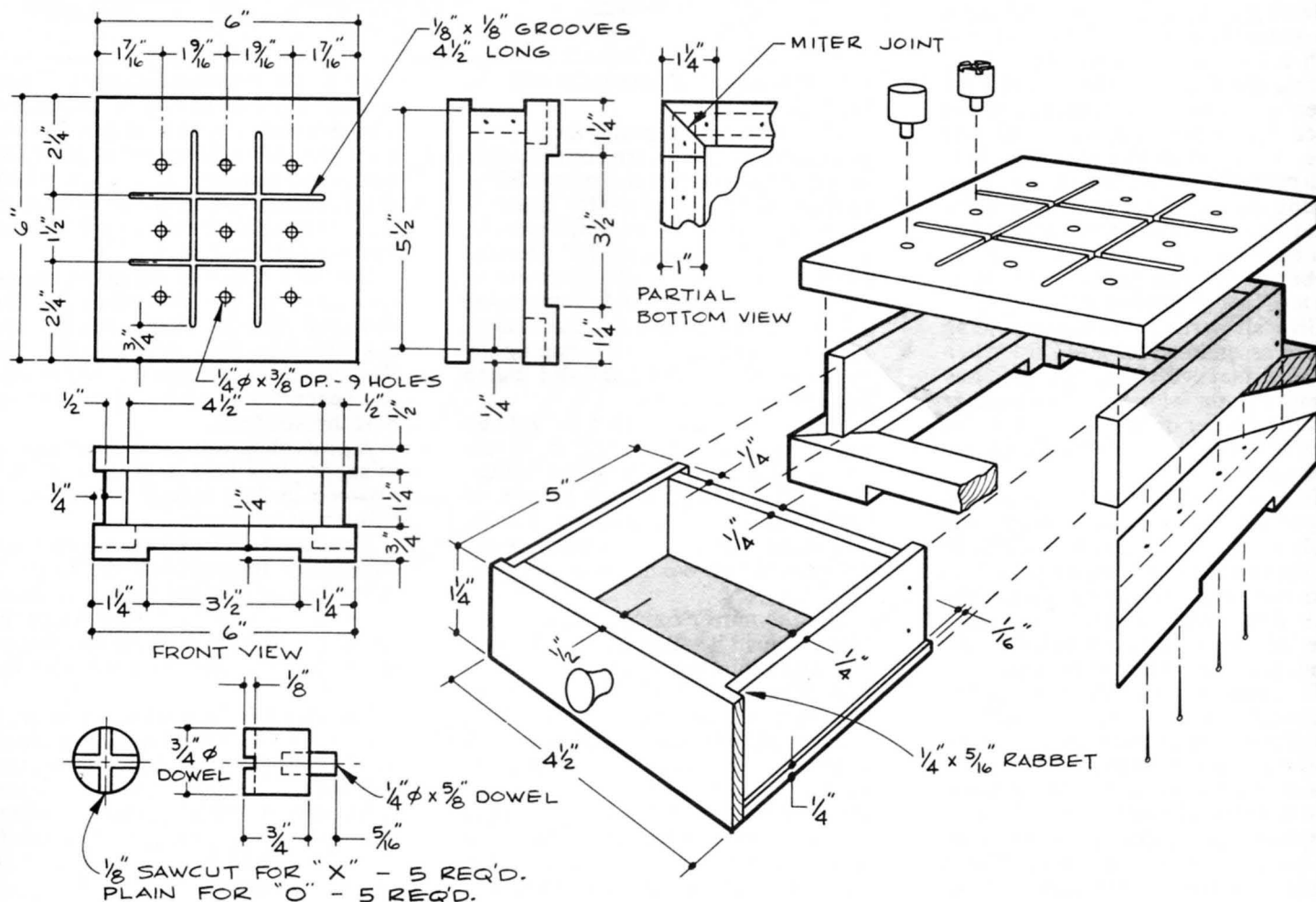
Glue with Elmer's Glue-All. When dry, even edges, then add end grain frame. When frame dries, belt sand surfaces flush. Further sand by hand, ending with 320 grit paper.

Tic-Tac-Toe enthusiasts will like this one. With a mahogany playing board and small drawer for storing the playing pieces, it makes a rather unique set - one that should sell well at craft fairs and gift shops.

After cutting the two sides and back, start work on the $\frac{1}{2} \times 6 \times 6$ top. Lay out the location of the horizontal and vertical lines as shown. Now, set up your router with a $\frac{1}{8}$ " dia. straight bit (set for a $\frac{1}{8}$ " deep cut) and a guide plate. Adjust the guide plate to locate the grooves as shown, then make the cut, stopping $\frac{3}{4}$ " in from the edge. Drill holes as shown, adding a slight chamfer to each one.

The playing pieces are $\frac{3}{4}$ " dia. dowel stock cut $\frac{3}{4}$ " long. The "X's" are stained dark, the "O's" left natural.

Assemble with glue and small finishing nails. For a final finish we applied two coats of pure tung oil.



Vanity

by Robert A. McCoy

Did you ever finish a project and wonder what to do with the small pieces of stock that are left over? You may be surprised to learn that this lovely vanity was built using not much more than just such scrap parts. It's an enjoyable project to build - for yourself, as a gift, or for sale. We keep ours on top of a chest of drawers, using it as a dressing mirror and to accommodate an assortment of watches, tie tacks, combs, rings, keys, and other small items.

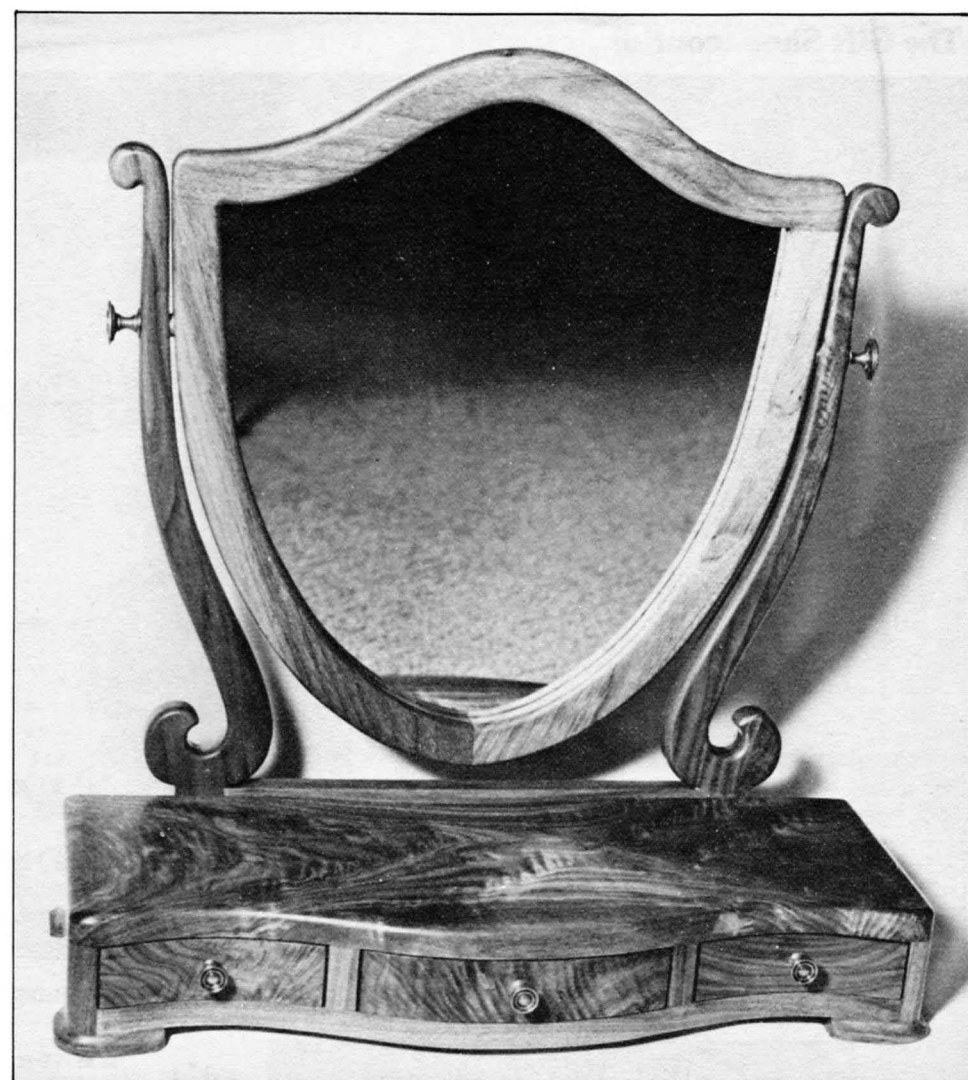
Construction is well within the capability of the beginner of quality woodworking. The drawing shows almost all joints to be dowels. Advanced woodworkers may prefer to make other types of joints but the vanity has little strain so dowel joints are adequate. Woods suggested are the common cabinet hardwoods - walnut, cherry, birch, maple or other suitable hardwood. All stock is surfaced to $\frac{3}{4}$ " except for the $1\frac{1}{4}$ " center drawer front, the $\frac{1}{2}$ " feet, and the $\frac{1}{4}$ " back panel. It is much easier to lay out the curved pieces on paper or light cardboard than to work directly on the wood.

Begin by cutting the top and bottom of the base unit to size ($\frac{3}{4}$ x 8 x 20). Referring to Fig. 3, lay out and mark the serpentine pattern, then cut out with a bandsaw or saber saw. After cutting the drawer dividers and base sides to size, lay out and bore all dowel holes. Use a doweling jig to drill one hole, then locate the matching hole with center markers. Use care to avoid cutting through the top. A brad point wood bit, which has a short spur point, will be useful here. Now, a $\frac{1}{4}$ " x $\frac{1}{4}$ " rabbet for the back panel can be cut in the top, bottom, and ends.

Give all parts a thorough sanding before assembling for a dry fit. When satisfied that everything fits, glue and clamp the unit together. Remember that the drawer dividers are set $\frac{1}{4}$ " in from the back in order to accept the back panel.

To make the feet, lay out the pattern as per Fig. 4, then cut to shape and apply a $\frac{1}{4}$ " routed cove as shown. To get the two front feet, measure in $2\frac{1}{2}$ " from each end and cut off. To get the back feet, measure $1\frac{3}{4}$ " from each side of the centerline and cut off. Sand, glue, and clamp to the base.

To make the drawers, refer to the exploded view and to Fig. 5. Don't cut the drawer front curves until after the drawers are assembled. Slide assembled drawer units into the base, then use the curved base front as a template and transfer the curves to the top edge of the drawer front. Use a handsaw to cut out the curves. Now,



front surfaces. A drum sander will also be helpful here.

The mirror unit poses no difficult problems. All pieces are cut according to the templates and the mirror frame assembled first. The mirror frame is made from three pieces which must be fitted carefully with $\frac{5}{16}$ " dowels. Make a dry assembly to be sure everything fits. When satisfied, clamp using a band or web clamp. If these clamps are not available, place a clamp tightly on each side of the joint and clamp against the two clamps.

Now use a router with a $\frac{1}{4}$ " rabbeting bit to cut a $\frac{1}{4}$ " x $11/32$ " deep rabbet all around for the mirror glass. Also, a $\frac{1}{4}$ " rounding over bit can be used to cut the front corners as shown. The arms that hold the mirror frame are sanded and rounded over using the same bit.

Lay the mirror frame, and the arms that will hold it together, on a flat surface and adjust the pieces so that there is no more than $1/16$ " clearance where they are joined together. A brass washer will fill this space when assembled. Measure the distance between the arms at the base and cut the stretcher that joins them. (The drawing shows a half-lap joint but a mortise and tenon or dowel joint may be substituted.) If you have been very

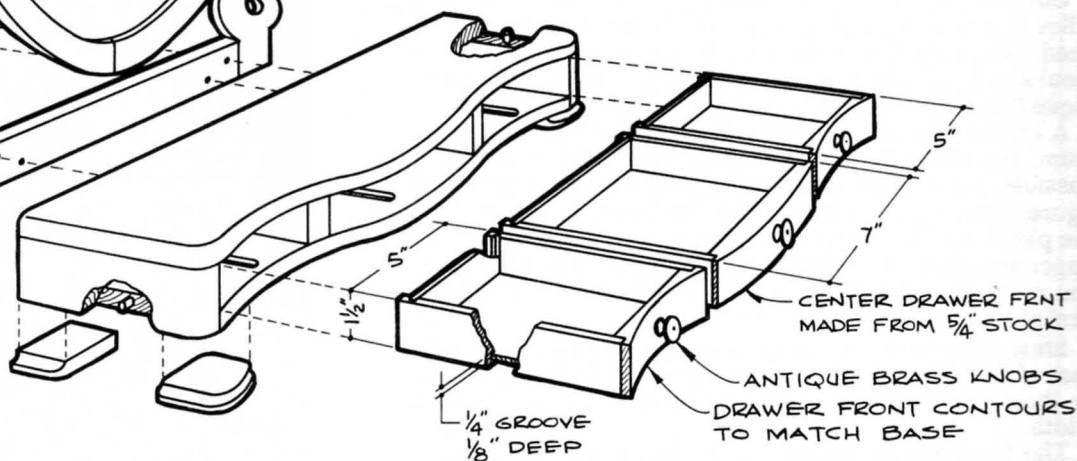
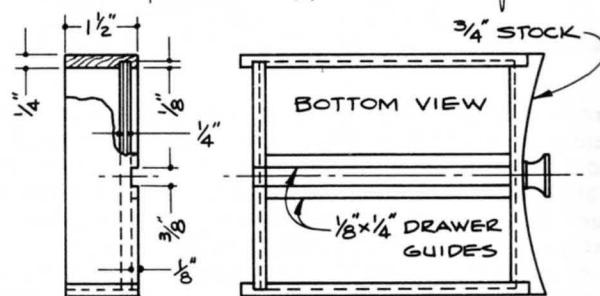
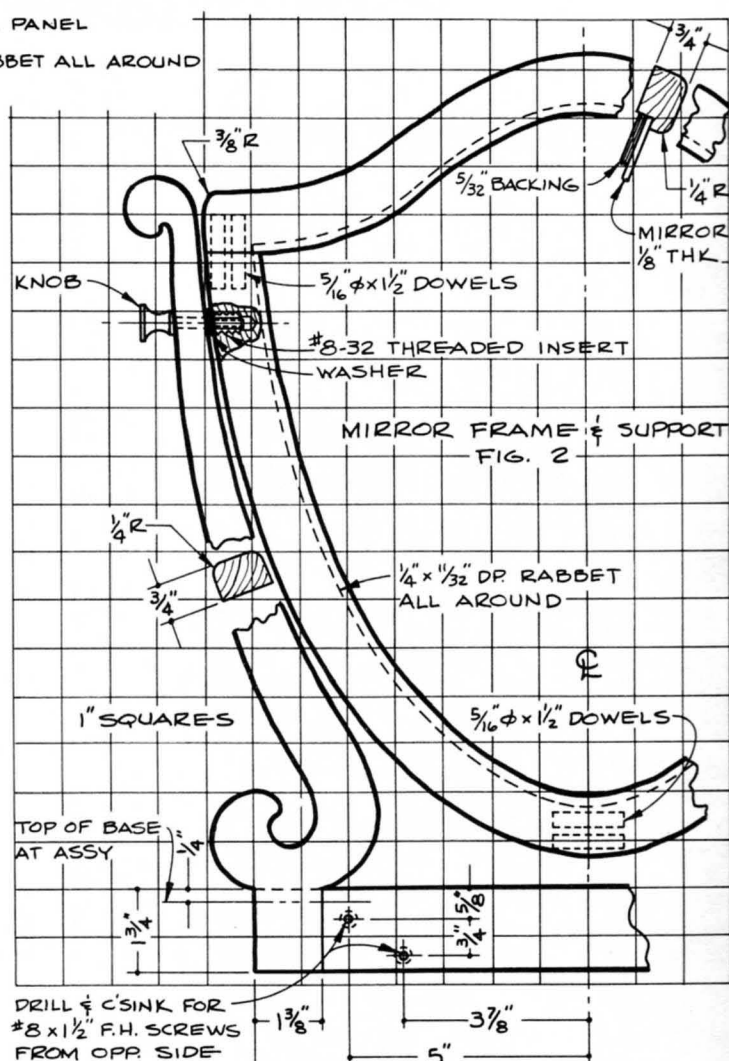
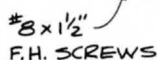
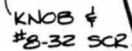
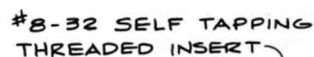
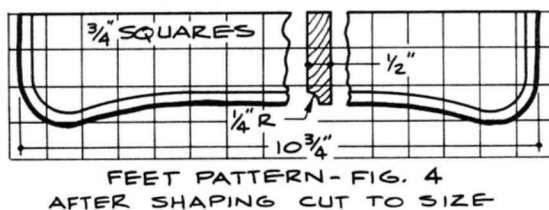
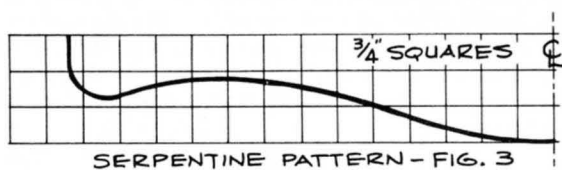
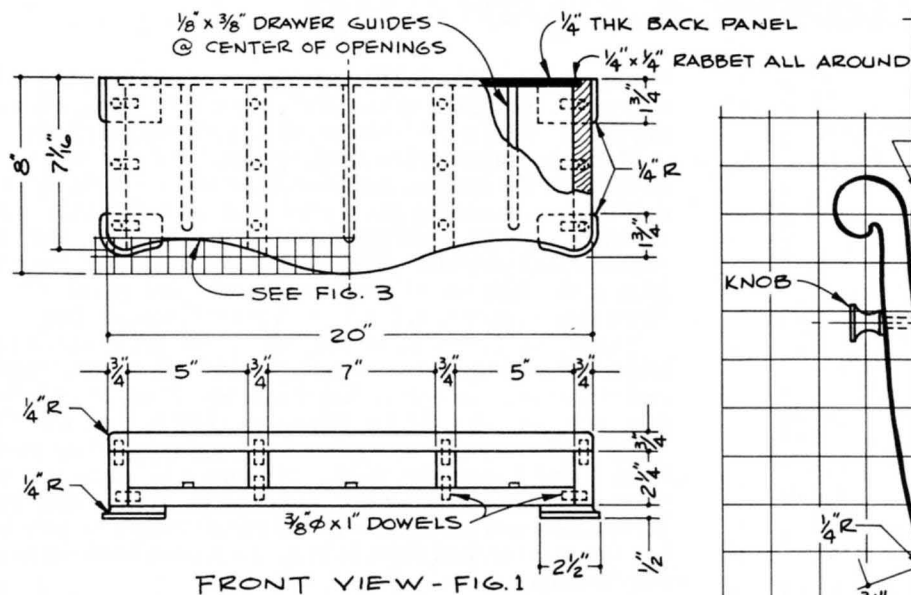
same as the drawing indicates. If not, a slight adjustment may be necessary. The two arms can now be glued to the stretcher. After the glue has dried, lay the pieces together and locate where the threaded inserts are to be placed, then drill a hole through each arm for the threaded knob shaft.

Now drill a hole in the mirror frame (in line with the arm hole) for the threaded insert. These inserts are available from the Brookstone Co., 127 Voss Farm Rd., Peterboro, NH 03458. A wooden knob can be epoxied to an 8-32 threaded rod.

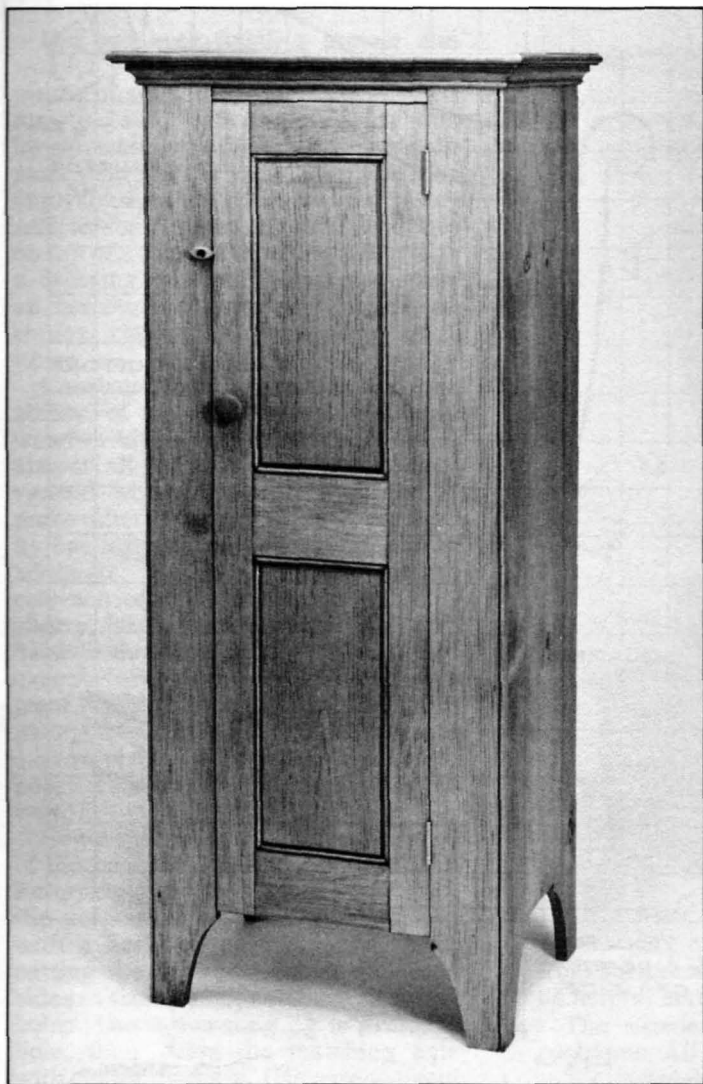
A glass shop will cut the $\frac{1}{8}$ " mirror to shape. It is held in place with $\frac{1}{4}$ " plywood ($5/32$ ") tacked to the frame with brads or screws.

Final sand all surfaces of both base and mirror frame. Most of the good cabinet woods do not require a stain; however if a stain is desired it should be done at this time. Some woods finish better if a filler is used, oak for example.

The choice of finishes is a matter of personal taste, but if a nice grained wood is used a clear finish is recommended. I generally prefer a clear polyurethane finish which, when properly done, produces a smooth hard finish which wears well and is easy to maintain.



Pine Shaker Cupboard



Many elements of fine Shaker design can be found in this charming pine cupboard. Although not an exact reproduction, our plans are based on an authentic Shaker piece - and we have made only minor dimensional and construction changes. For example, the top moulding on the original was probably cut using several special moulding planes. To reproduce it, we revised the design slightly to permit the use of standard mouldings. The result is an unusual and attractive detail that is reasonably easy to make.

Our method of applying beading to the door rails and stiles is also a bit unusual in that it results in a mitered bead. Normally this is not easy to do, at least not with a moulding head cutter, but we managed to work out a technique that makes the operation fairly simple.

A project like this looks best if knots are kept to a minimum, especially in front, so choose your pine carefully. If possible, select door panel stock that has pleasing wood figure. Notice ours is cut so that the figure is centered on the panel, and that the lower panel is a continuation of the upper one. Of course, there's no hard and fast rule that says you must do it this way, but we do feel it can add a great deal of interest to a piece.

Start construction by edge-joining enough stock to take care of two sides (B), four shelves (C), and the top (E). Two or three boards will have to be joined to get the needed width.

The front pieces (A) are cut to length and width, then

ing head cutter (No. 9-2352) to apply a bead along the outside edge. Part D is now cut $2\frac{1}{2}$ " wide x $14\frac{1}{2}$ " long, including the $\frac{3}{8}$ " thick x $1\frac{1}{2}$ " wide x $1\frac{1}{4}$ " long tenons each end.

Make the frame and panel door next. Note that steps 1-4 summarize the method used to cut the mitered rails. If you don't have a moulding head cutter, you can still produce the effect of a panel beading. Simply cut the panel (part K) rabbet about $\frac{1}{8}$ " wide. This extra room provides a place to glue a $\frac{1}{4}$ " half round moulding around the panel. For a clean look be sure to miter the corners of the moulding.

To bead the panels as we did, refer to the bill of materials and cut door stiles (G) and rails (H, I and J) to overall length and width (rail length includes tenons). Now, noting the door rail tenon details, cut tenons as shown, then use the moulding head cutter to apply a $\frac{1}{4}$ " bead (step 1) on parts G, H, I, and J as shown. Next, a $\frac{1}{4}$ " wide x $\frac{3}{8}$ " deep groove (step 2) is routed along the same parts. Notice that the groove does not extend along the entire length of part G, but rather is stopped short to keep the groove from running out the ends.

Use a miter square with a 45 degree angle (step 3) to lay out the $5/16$ " miter cuts on the rails, then cut out on waste side of line with a backsaw. To insure a perfect 45 degree angle, construct the jig as shown (step 4). Locate the jig exactly on the miter line and use a sharp chisel to pare excess stock.

Lay rails (H, I and J) in position on parts G. Using the rails as templates, mark the exact location of the mortise and miter cuts on part G. Cut the mortises first, then use the backsaw and chisel to remove most of the miter cutout. Now, again use the special jig to pare the miter.

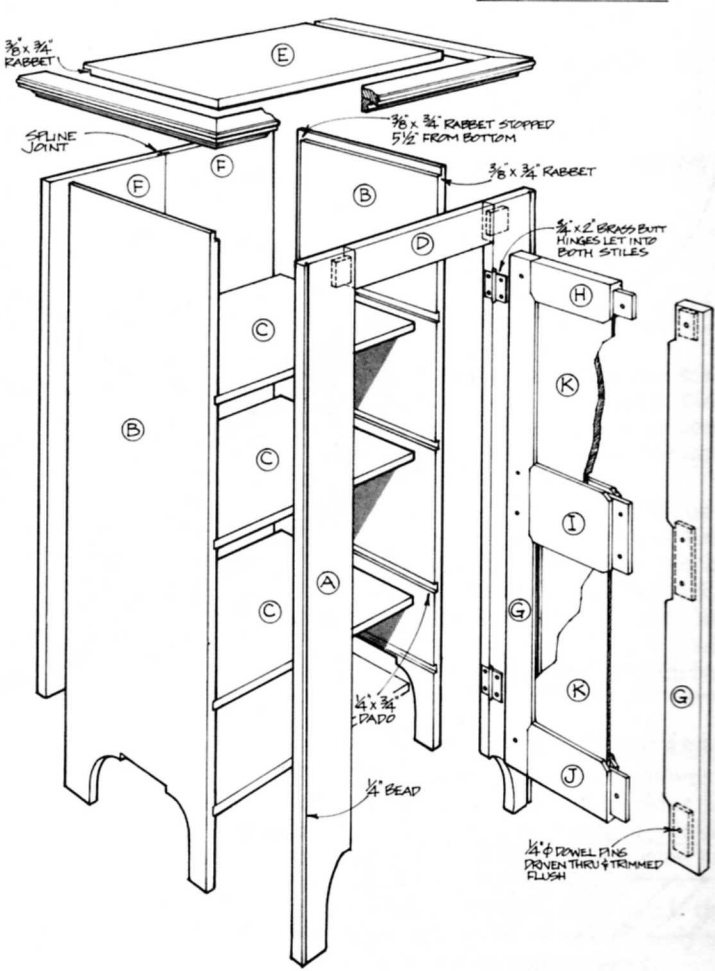
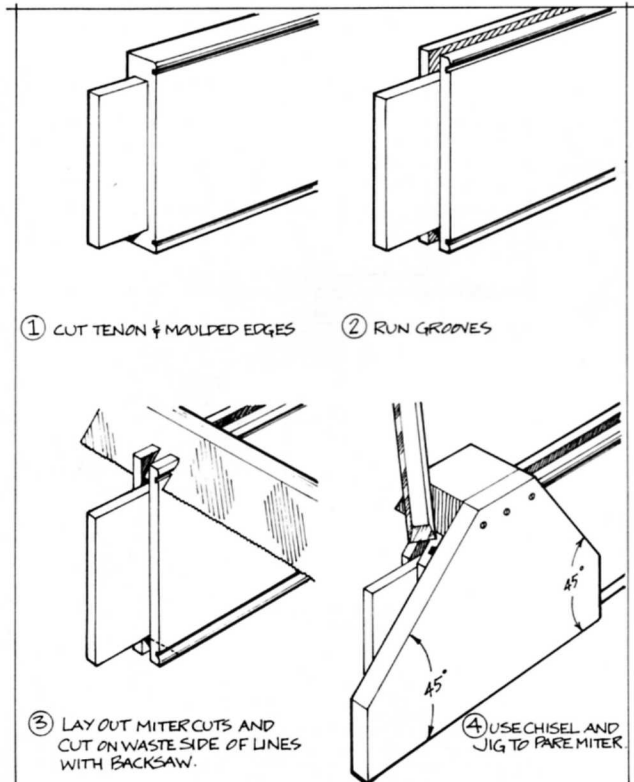
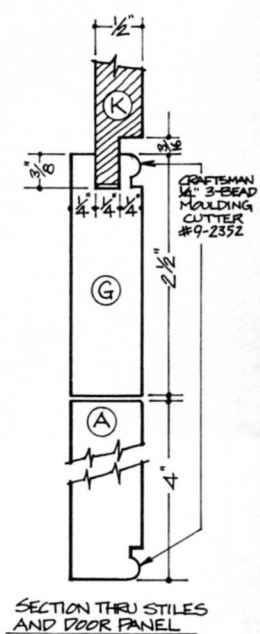
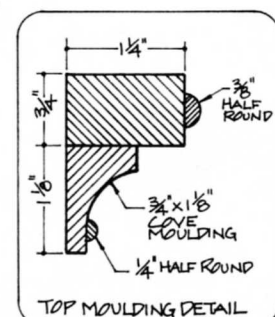
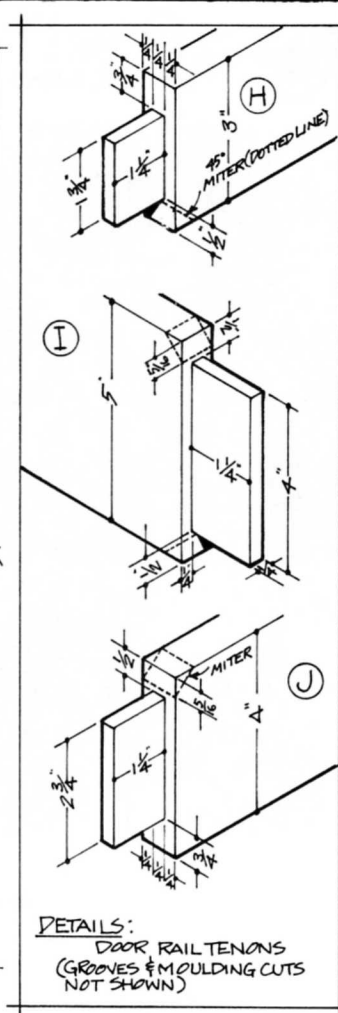
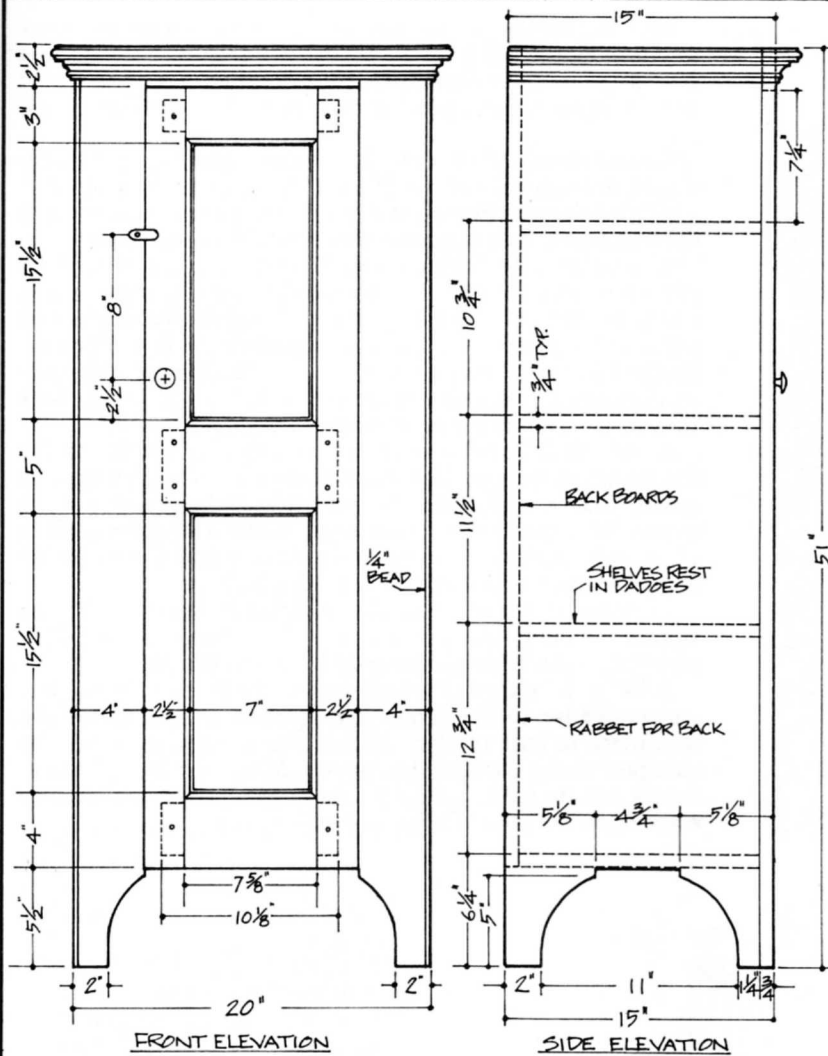
Select panel stock (K) and cut to size, then form a $\frac{1}{4}$ " x $\frac{1}{2}$ " rabbet around the edge. After giving all parts a complete sanding, the door can be assembled with glue and clamps. It's most important that the door be both square and flat, so pre-assemble the parts and check it over. After gluing and clamping, check it once again, and make adjustments as necessary.

After a thorough sanding, the rest of the cabinet can be assembled. The shelves are glued in dadoes and further secured with two countersunk wood screws. Use plugs to cover holes. Wood screws and glue also join parts A to B. Attach back with screws driven in shelves. Glue and finishing nails, countersunk and filled, hold the top, and the top moulding to the carcass.

Final sand all parts, then stain to suit. We used two coats of Minwax Provincial wood stain, followed by two coats of their Antique Oil finish.

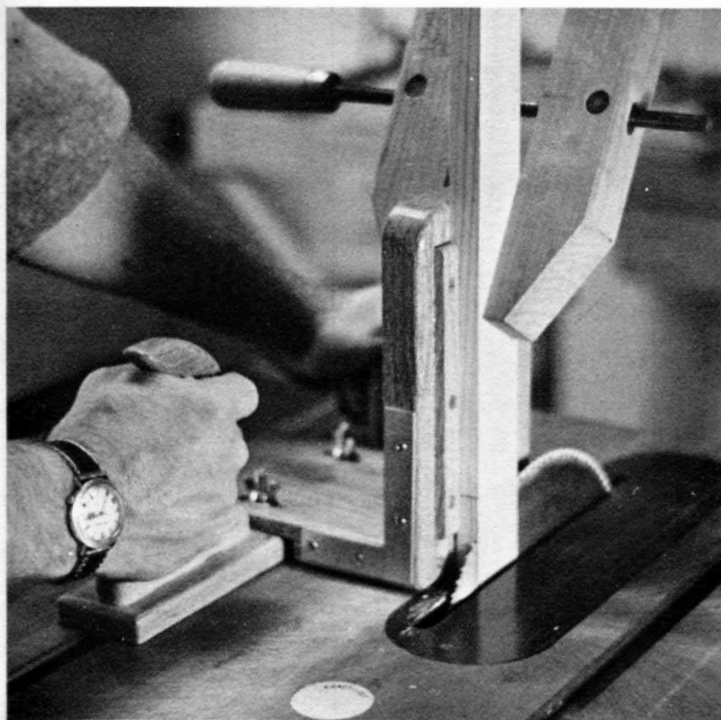
Bill of Materials (All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Front	$\frac{3}{4}$ x 4 x 51	2
B	Side	$\frac{3}{4}$ x $14\frac{1}{4}$ x 51	2
C	Shelf	$\frac{3}{4}$ x $13\frac{1}{2}$ x 19	4
D	Case Rail	$\frac{3}{4}$ x $2\frac{1}{2}$ x $14\frac{1}{2}$ (inc. $1\frac{1}{4}$ " long tenons)	1
E	Top	$\frac{3}{4}$ x $14\frac{1}{4}$ x $19\frac{1}{4}$	1
F	Back	$\frac{3}{4}$ x 9 $\frac{1}{2}$ x 45 $\frac{1}{4}$	2
G	Stile	$\frac{3}{4}$ x $2\frac{1}{2}$ x 43	2
H	Top Rail	$\frac{3}{4}$ x 3 x 10 $\frac{1}{4}$ (includes tenons)	1
I	Center Rail	$\frac{3}{4}$ x 5 x 10 $\frac{1}{4}$ (includes tenons)	1
J	Lower Rail	$\frac{3}{4}$ x 4 x 10 $\frac{1}{4}$ (includes tenons)	1
K	Panel	$1\frac{1}{4}$ x 7 $\frac{3}{4}$ x 16 $\frac{1}{4}$	2



Tenon Jig

by Ross E. Iverson



Here's a tablesaw tenon jig that's both accurate and easy to build. Guide (A) is made by cutting two rabbets along a $2\frac{1}{4}'' \times 13''$ piece of hardwood, thus creating a tongue which should be sized for a good fit in your tablesaw miter gauge slot.

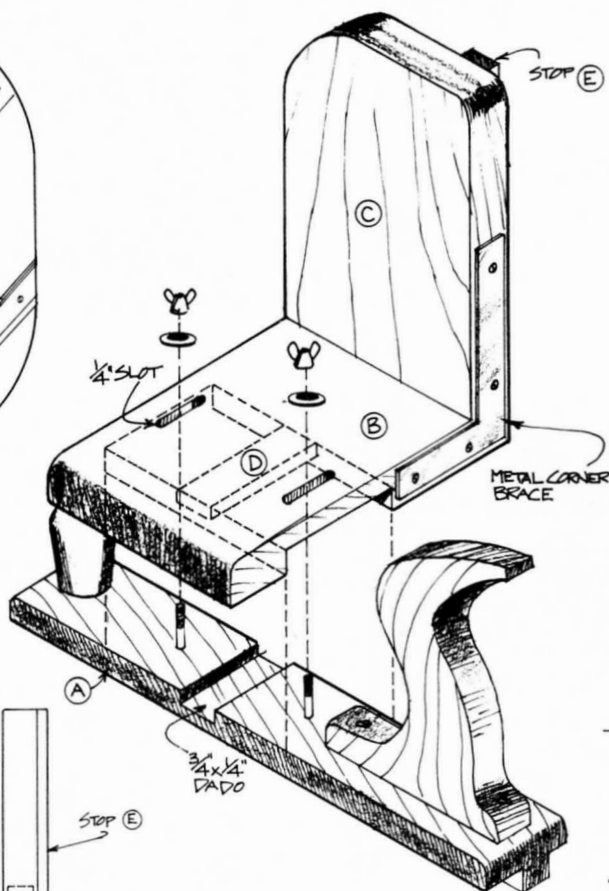
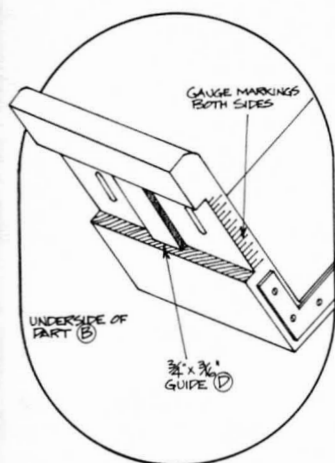
Counterbore and drill two $\frac{3}{16}''$ dia. holes along the centerline of tongue for two $\frac{3}{16}'' \times 2''$ carriage bolts. Cut a $\frac{1}{4}'' \times \frac{3}{4}''$ dado across the top of the guide and centered between the bolt holes. Add push handles at each end as shown.

The adjustable holder (parts B and C) is constructed by joining two pieces of 1×6 hardwood at a right angle, using a rabbet joint and braces as shown. The lengths of the two parts will vary according to the distance between your particular table slot and saw blade, and the amount of adjustment desired. Most tenons are cut on $\frac{3}{4}''$ to $1\frac{1}{8}''$ thick stock so slots about 1 inch long should be adequate.

A wide dado is cut across the bottom of B which will lay flat on the tabletop. The dado should be deep enough to insure that B will slide on the table rather than the jig guide. Next cut the $\frac{1}{4}''$ wide adjustment slots through B to align with carriage bolts in guide. Join B and C and fasten to guide with bolts, washers and wing nuts.

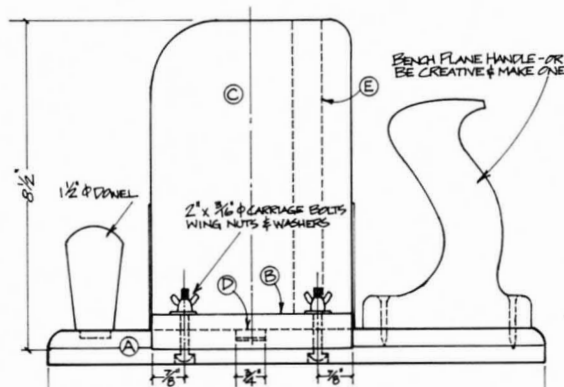
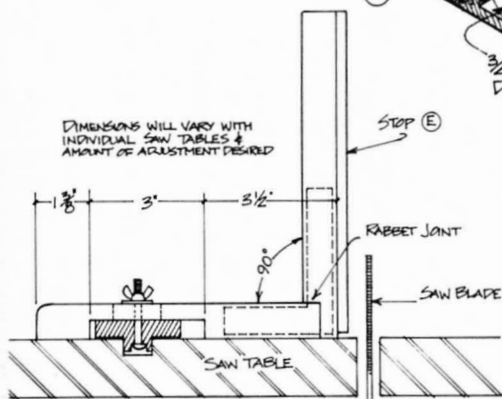
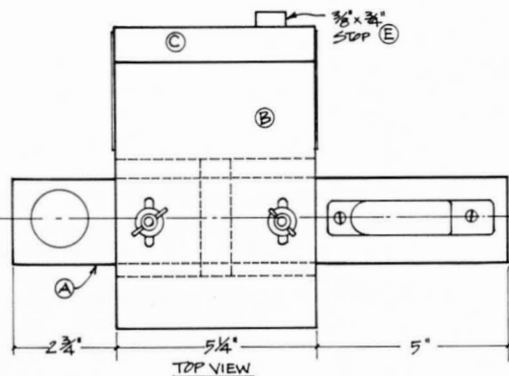
In order to insure that the adjustable holder will stay square to the guide, a $\frac{3}{16}'' \times \frac{3}{4}''$ hardwood strip (D) is screwed to the underside of part B, across the dado.

A $\frac{3}{8}'' \times \frac{3}{4}''$ strip (E) is fastened to the face of the holder, perpendicular to the table. This serves as a stop for the workpiece to butt against. In use, the workpiece should be clamped to the face of the holder. Markings in $\frac{1}{8}''$ increments can be made on each side of the holder and arrows marked on the guide for ease of adjustment.

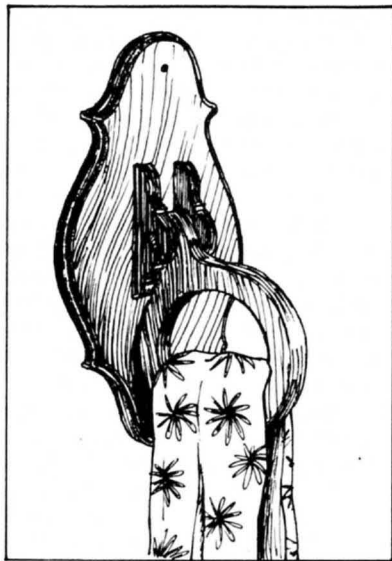


MATERIALS LIST

- 1 - $1'' \times 6'' \times \frac{3}{8}''$ HARDWOOD
- 1 - $4'' \times 1\frac{1}{2}'' \phi$ DOWEL
- 1 - BENCH PLANE HANDLE
- 2 - RT. ANGLE METAL BRACES
- 2 - $\frac{3}{16}'' \phi \times 2''$ CARRIAGE BOLTS
- 2 - WING NUTS & WASHERS



3 Projects From The Scrap Bin



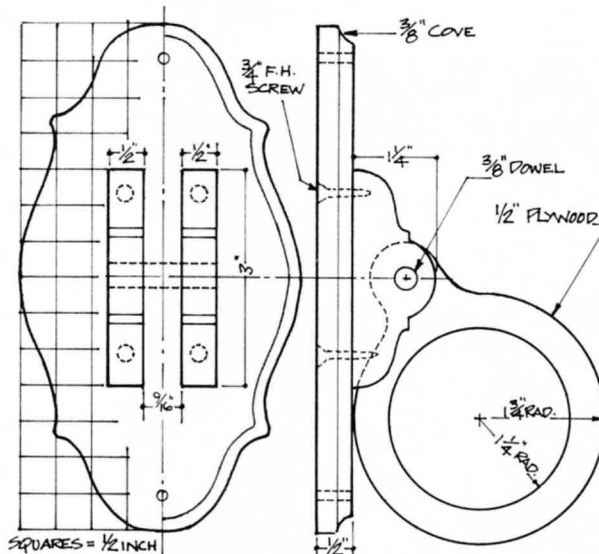
MATCHBOX

Hang this small box by the fireplace or woodstove and you won't have to go searching for a match when it's time to start the fire. It provides lots of space to store a generous supply of wooden matches.

Cut the back, sides, and front to size from $\frac{3}{8}$ " thick pine. A small triangular block is also cut to serve as a bottom. Sand all parts thoroughly.

Assemble sides to front and back with glue and small finishing nails. Apply a thin coat of glue to the triangular bottom and assemble to the bottom as shown.

Final sand all surfaces and edges, then apply a stain of your choice. Final finish with 2 coats of polyurethane varnish, followed by a rub down with 4/0 steel wool.

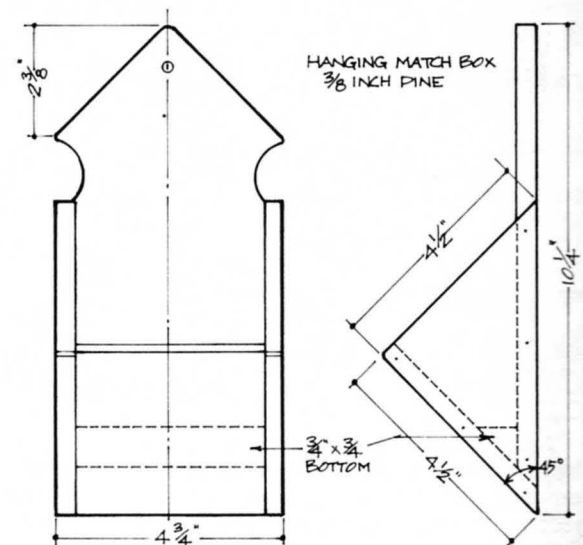
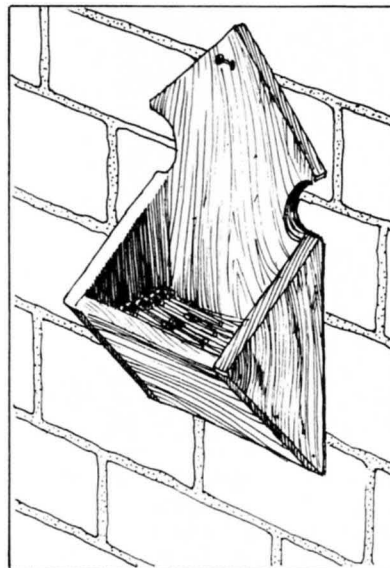


TOWEL RING

Here's a pleasant change from the usual plated steel or molded plastic towel holders. Use it in the bath with small hand towels or for dish towels in the kitchen. For adequate strength, the ring should be hardwood plywood, with the back and hinge made from matching solid stock. Mahogany, walnut, or birch are good choices.

After cutting parts to size, sand all surfaces and then use a router to apply a $\frac{3}{8}$ " cove around the back. Assemble hinge halves to the back with glue and wood screws. The plywood ring pivots on a $\frac{3}{8}$ " dowel, with dowel ends glued to hinge halves.

Final sand all parts, using special care to thoroughly round off edges on the ring. Two coats of polyurethane will complete the project.



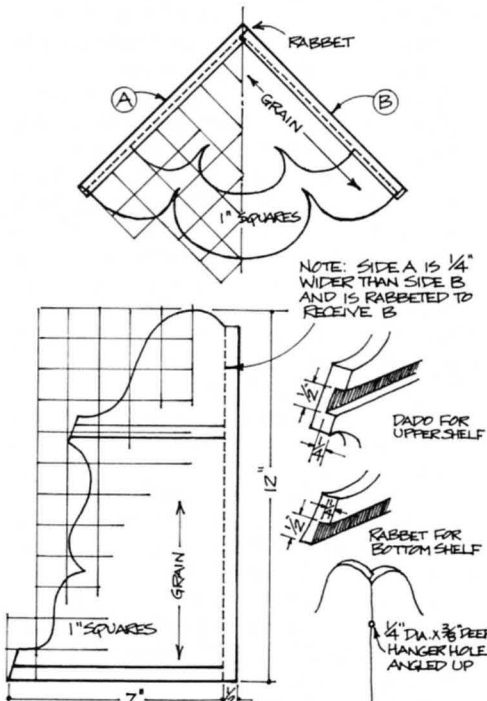
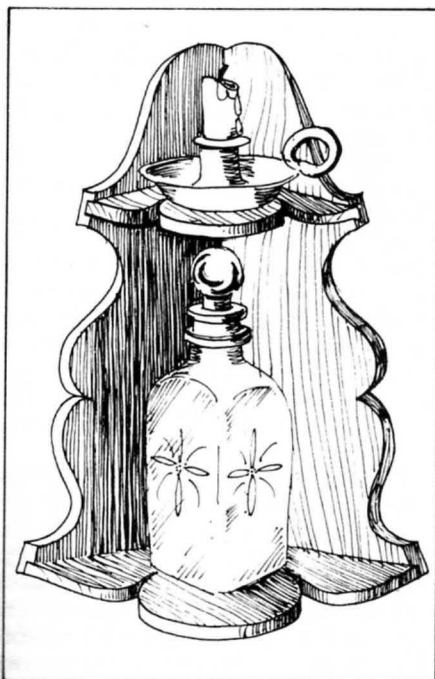
CORNER SHELVES

This charming wall shelf is a scaled down version of a lovely antique piece. Made from $\frac{1}{2}$ " pine, it can be completed in just one or two evenings in the workshop.

Parts A & B are cut from $\frac{1}{2}$ " thick by 12" long stock. Note that side A has a $\frac{1}{4}$ " deep by $\frac{1}{2}$ " wide rabbet on one end, which means that side A must be cut $\frac{1}{4}$ " wider than side B. Also note that sides A & B also have a $\frac{1}{2}$ " wide dado and rabbet cut for the shelves. A jig or saber saw will cut the curved scrollwork.

Now, using the grid pattern provided, cut out the top & bottom shelves as shown. Be sure to give the sides and shelves a thorough sanding, taking special care to smooth the curved surfaces.

Assemble all parts, final sand, then stain to suit. Two coats of polyurethane will complete the project.



Contemporary Cabinet

by Paul Levine



I love wood. Its great strength and beauty give me a feeling of warmth. I enjoy being in a room of wooden objects, wooden paneling, and wood floors.

Over the years each different species of wood that I've worked has shown me its own personality. Some are sweet smelling and tasting, like cherry and vermillion, some are very clean working, and finish very smooth and pleasant to the touch, like birch and maple. Then again, some woods are ornery like zebra and African rosewood.

When I look at a board laying in a pile, I will sometimes see irregularities in the grain that produce a striking appearance. To me these boards beg to be made into furniture.

Such was the case one day when I saw the mineral stains in a maple board. I took the board home and resawn it, and bookmatched it into two panels. These panels sat in my shop for months until I decided what wood to use for the frame, and what type of cabinet to build around them.

In this cabinet the frame for the maple panels, the carcass, and the

this cabinet are simple and straightforward and the woodwork is completely unornamented, with the exception of the exposed dovetails. The construction involves frame and panel, for the doors and back; through dovetails, for the carcass; and mortise and tenon, for the frames and stand. I originally intended to make four small drawers for the inside but later decided to leave the open pigeon holes.

Before plywood became available, and before modern glues, large solid areas were created using frame and panel construction. Horizontal rails, and vertical stiles were joined together using a variety of mortise and tenon joints, to create frames. The empty spaces in this lattice would then be filled in using thin panels.

Often the frame became a showcase for unusually attractive panels. Butt, crotch, stump, and burls were resawn, or veneered, and sometimes matched into panels. Today if you wish to utilize any of these you will have to find them and dry them yourself but the results you will get are worth it. If you wish to use dry lumber that has an interesting figure for panels, you still

stains, many from sugaring and worms. There are many varieties of two toned woods that will provide interesting color patterns when flat sawn, like ash, apple, cherry and pear.

To resaw boards for panels a band saw is the best machine. For narrow panels you can use a table saw. If you don't have either of these machines you can still make the panels. If you saw the wood when it is still green it will be much easier to work, and you can use a log saw. Since the panels are usually short, 18" to 30", this is really not much work. The disadvantage here is that you will not see the dried down colors, and you will have to wait until the pieces dry before you can work them. They may warp, and you may end up having to resaw them again.

If you dry the wood first, the job of resawing on these short lengths is still not a very big one. Great care must be taken, even with kiln dried wood, to let the resawn pieces reach equilibrium before you incorporate them into a piece of furniture. If your shop is dry and the wood is wet, when you open up the board it will curl towards the fresh sawn side. On the other hand if you buy kiln dried hardwood, and your shop is damp the outside of the board will pick up some moisture before sawing, and then when you resaw the inside will take on moisture, and the wood will curl away from the fresh sawn side.

Don't lay these panels down ever again. Since they are thin even small changes in shop humidity can cause a board that only has one side exposed to warp.

The panels can be used directly in frames. If you wish to bookmatch them before making up the door, joint the edge to be matched with a jointer or plane, and butt joint them. With today's adhesives this will be a strong joint, and more than adequate for the load. I clamp the joint up tight and make sure that it is clamped on both sides (with pipe clamps) to prevent the pressure from warping the panel, i.e. buckling up or down.

After the glue is dry take off the clamps and scrape off the excess glue. Plane the panel down with a hand plane or again on the jointer. If you choose a highly decorative wood for the panel it's best to leave the frame plain. I rabbeted the edges of the panels to fit into grooves in the frame so that the panel surfaces would be just slightly lower than the frames. This was done so that the frame could contain this wild pattern.

The frames should be given the same attention as the panels. If you choose an interesting pattern for the panel play down the grain in the frame. I chose rosewood because it picked up the colors in the panel. The top and the bottom rails are one con-

exactly. Note that rails are $\frac{1}{8}$ inch thicker than stiles.

After I made the frames and assembled the doors dry, I left them to stand at one end of my shop for a few more months. In this manner I let the doors grow on me. Several times I switched the panels from one frame to the other, or turned them upside down. When I finally decided upon the correct (for me) orientation of the panels and frames, the design of the whole cabinet had grown in my mind. I let the doors determine the rest of the cabinet because they are such a strong element. The job of the rest of the cabinet is to frame, support, and contain the doors.

The joints on the frames for the doors are slip joints, which are very easy to make. Although there are other stronger versions of the mortise and tenon joint, this one is quick and very forgiving.

I cut the slip joint on the band saw. I first cut the open mortises on the rail stock, leaving the stock $\frac{1}{8}$ " longer than final measure so that I can sand them flush. I regulate the depth of cut with a stop block behind the blade. As with almost every machine joint I cut, I make a trial cut first. If the measurements are just what I want them to be, I cut up the stock. Next come the tenon cuts on the stiles. Again I will make trial cuts, first for depth, and then for the width of the tenon. When the tenon will just fit in the open mortise with hand pressure only, I cut up the tenons.

The frame can be assembled to check for fit, and appearance. If you have cut a tenon too big for the open mortise, you can use a plane or a chisel to pare it down to a snug fit. If the tenon is too small, cut a piece of veneer and glue it onto the tenon with the grains parallel.

After the frame joints are corrected groove the inside of the rails and stiles to receive the panels. This can be done with a plane or a router. The grooves should be carried on to the tenons for a distance of about $\frac{3}{8}$ " from the shoulders or just take a $\frac{3}{8}$ " square notch out of each tenon to provide clearance for panel corners. The groove for the panel should provide for a very small amount of clearance at the top and bottom. Theoretically if the expansion rates for the frame wood and the panel wood are the same no extra is necessary. Leave about $\frac{1}{16}$ " for ease of fit. The rate of expansion on most domestic hardwoods is $\frac{1}{10}$ of a percent for length only. That is to say for an 18" hardwood panel to go from green to dry the shrinkage will be only about $\frac{1}{64}$ ".

On the other hand the rate of expansion or contraction of most domestic hardwoods across the grain is about 4% for radial shrinkage, to 10-12% for tangential shrinkage. That means a panel of about 12" in width will shrink almost $\frac{1}{4}$ " going from green to dry.

This translates into an allowance of about $\frac{1}{8}$ " on each side of each panel allowing for as much as 20% change in humidity. The wood will not change as fast as the atmosphere. For the wood to adjust fully to a 20% change it would take at least six months.

The doors can now be assembled with glue; remember however not to glue the panel into the frame. The panel must be allowed to expand into the deep groove provided for it without tearing the frame apart. If you put one drop of glue at the top center and bottom center of each panel it will suffice to hold the panel in place and stop it from rattling.

In setting out to finalize your design for the cabinet, you should allow for some trimming down of the doors to fit the space. On these doors I allowed $\frac{1}{16}$ ".

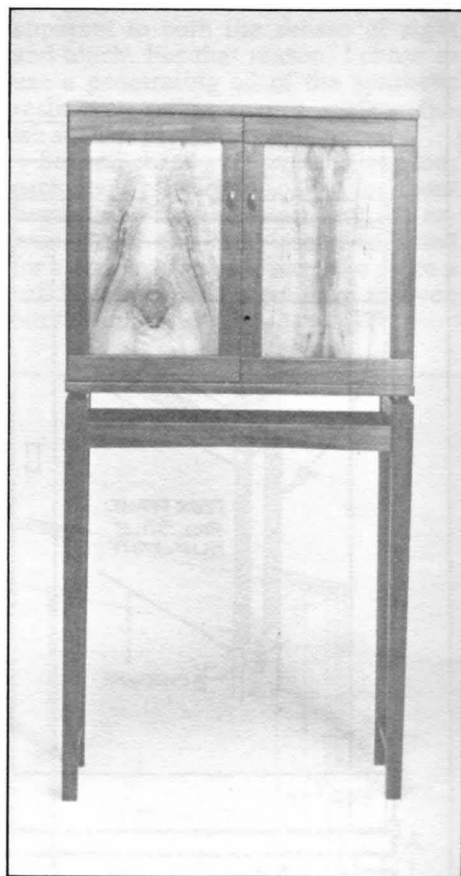
The back of the cabinet is also of frame and panel construction, however the rails and stiles are of equal thickness. For the back there is one continuous frame across with a middle stile, called a muntin. If the frames were to contain glass panels, these stiles would be called mullions. This muntin is mortised at the ends, and fits over notches or dados cut on each side of the rails. The panels are thicker than those of the door and are made of African rosewood, book-matched and jointed.

For the top, bottom and sides of the carcass solid slabs were used. The pieces are chosen from straight grained flat stock, and then are jointed and planed. The top and the bottom are wider than the sides so that they overhang the doors, and further reinforce the containment of the panels.

The carcass pieces are rabbeted in the back to receive the back frame. Housings, or grooves across the grain are made to receive the partitions. The carcass is then dovetailed together. The carcass should be glued face up on a flat surface, and care should be taken to see that the bottom, top, and sides are square. If they are not square you can square it up by shifting the clamps.

Let the glue dry in all of these assemblies thoroughly, before any further machining. The back panel may be glued in place (that is the frame and panel assembly). The doors can now be fitted to the front of the cabinet. The hinges used here are straight brass knife hinges. You will have to predrill all screw holes. In African rosewood the screw holes will have to be larger than usual or you will twist off the heads of the screws in this very dense wood.

The stand can now be built and using the dimensions of the cabinet, continue the line of the edges straight down to the floor. It was a common practice with Shaker furniture to have the outside edge of the tapered legs plumb. Taper the two inner edges as shown in the drawings. The stand is



Front view of cabinet shows book-matched panels of doors.



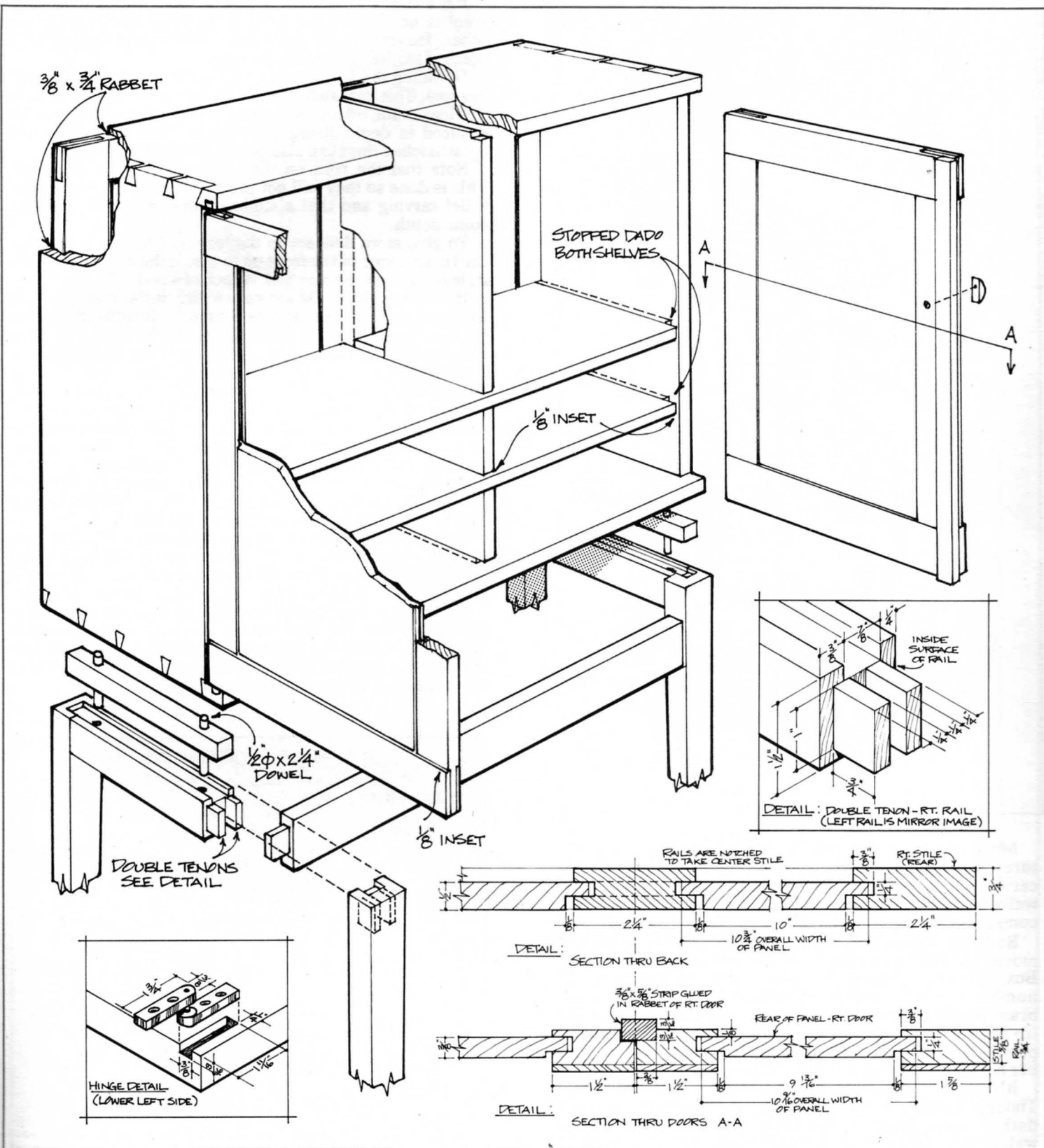
Rear view displays framed panels of book-matched rosewood. Note that, unlike doors, stiles run from top to bottom with rails butting against them.

You can cut your tenons using a router, band saw, table saw, or by hand. I used a radial arm saw with a stopping block to cut the single tenons, and the band saw to cut the double tenons. The mortises were made by drilling a line of holes to the correct depth and then finishing up with a mallet and chisel.

through the top side rails of the stand. Driving screws in rosewood and ebony is not easy even with oversize pilot holes. Use #10 2 1/4" sheet metal screws. These screws are hardened and can bite without breaking. An alternative, as shown in the drawings, is to use hardwood dowel pins glued into the bottom of the case and through the ebony feet.

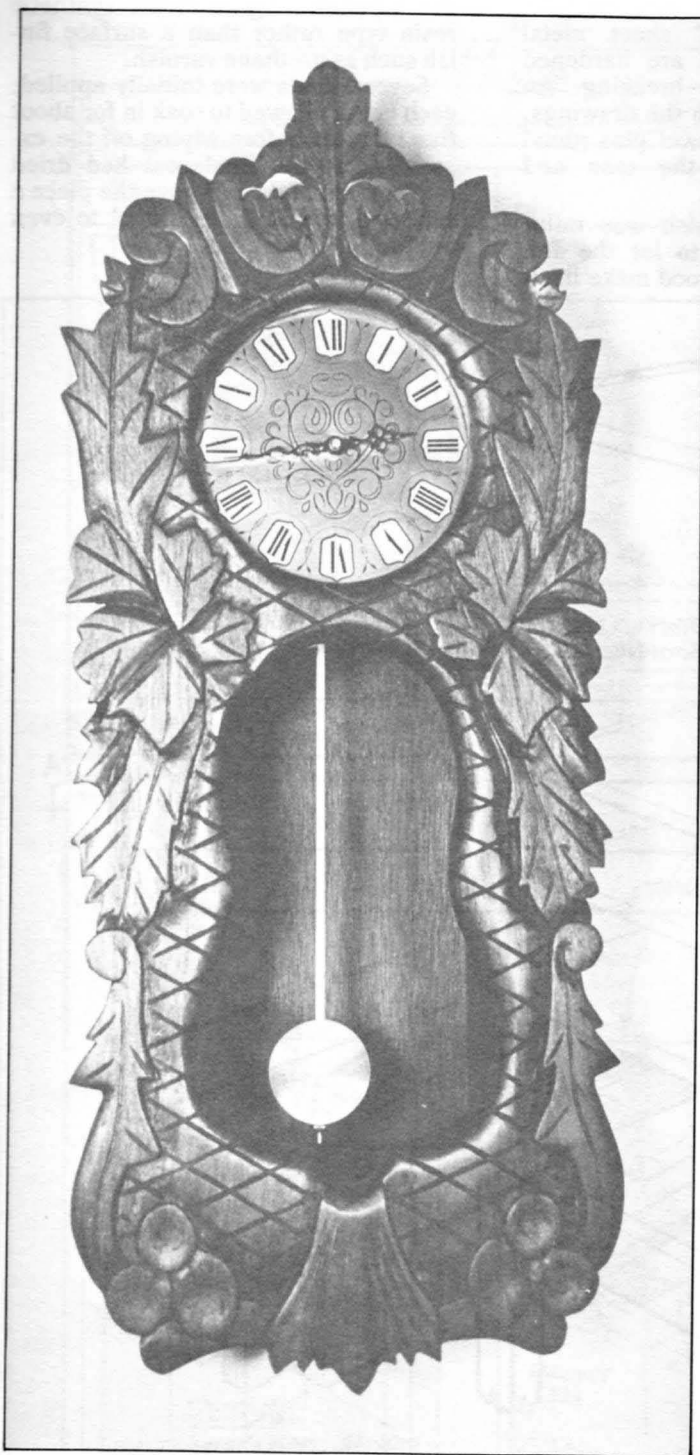
apparent to both the senses of sight and touch. For that reason, I chose to use a penetrating oil of the synthetic resin type rather than a surface finish such as urethane varnish.

Several coats were initially applied; each being allowed to soak in for about five minutes before wiping off the excess. After the final coat had dried for a couple of days, I gave the piece a rubdown with 4/0 steel wool to even out the soft sheen.



Black Forest Clock

by Roger E. Schroeder



Made of mahogany, this impressive looking clock features a case joined with hand cut dovetails and a front carved with oak leaf and fruit motif. The result is a unique wall piece - one that can be enjoyed for many generations to come.

Both the dial and the quartz crystal battery pendulum movement can be ordered from the company Klokkit, P.O. Box 629, Lake Geneva, WI 53147. The movement model number is SP-109 and it includes a 13 $\frac{1}{2}$ " long brushed brass pendulum and bob. A pair of hands also is included (to get the hands shown, ask for No. 99-0, black). Current price is \$12.40 each, plus shipping. The brass dial is number 8090, currently priced at \$4.60 plus shipping.

It's best to begin by carving the front of the clock. Though a South American mahogany was used, another

inches wide so no glue joints would show. Having sketched the design on a piece of tracing paper, I transferred it to the wood with carbon paper. Only one side of the front need be sketched since the design is symmetrical and the tracing paper can be reversed, allowing the design to be duplicated on the opposite side.

A saber or jig saw will be needed for cutting the front out and a bandsaw will facilitate many of the cuts. Before carving, take a router and run it with a $\frac{1}{2}$ inch beading bit around the dial and the pendulum opening.

I'm a strong proponent of Swiss-made carving tools. The steel is not brittle and it holds an edge better than any other. However, I do recommend frequent stropping on a piece of leather during the carving.

Outlining the leaves can be accomplished with a V-parting tool. This can also be used to give a slight undercut to the leaves for effect. The areas around the leaves can be reduced in depth using a #3 gouge. The leaf veins and crosshatched lines can also be done with the veiner.

Note that the fruit on the bottom is slightly hollowed. This is done so they will not protrude above the rest of the relief carving and that a slight shadow will give the fruit some depth.

To give more delicacy to the leaves, I removed wood on the reverse side of the front up to where the case would hold it, leaving between a $\frac{1}{4}$ and $\frac{3}{8}$ inch of wood.

Handmade dovetails are not as difficult to make as they look and make for an attractive case. A helpful discussion on the techniques of dovetailing can be found in *The Woodworker's Journal*, Vol. 3, No. 5 and Vol. 3, No. 6.

After the sides, top, and bottom have been cut and joined, triangular glue blocks are glued to the four inside corners of the case. Four round headed wood screws are used to secure the carved front to the glue blocks. Properly locate and tack the dial face to the $\frac{1}{4}$ " thick dial board, then tack the dial board to the back of the carved front.

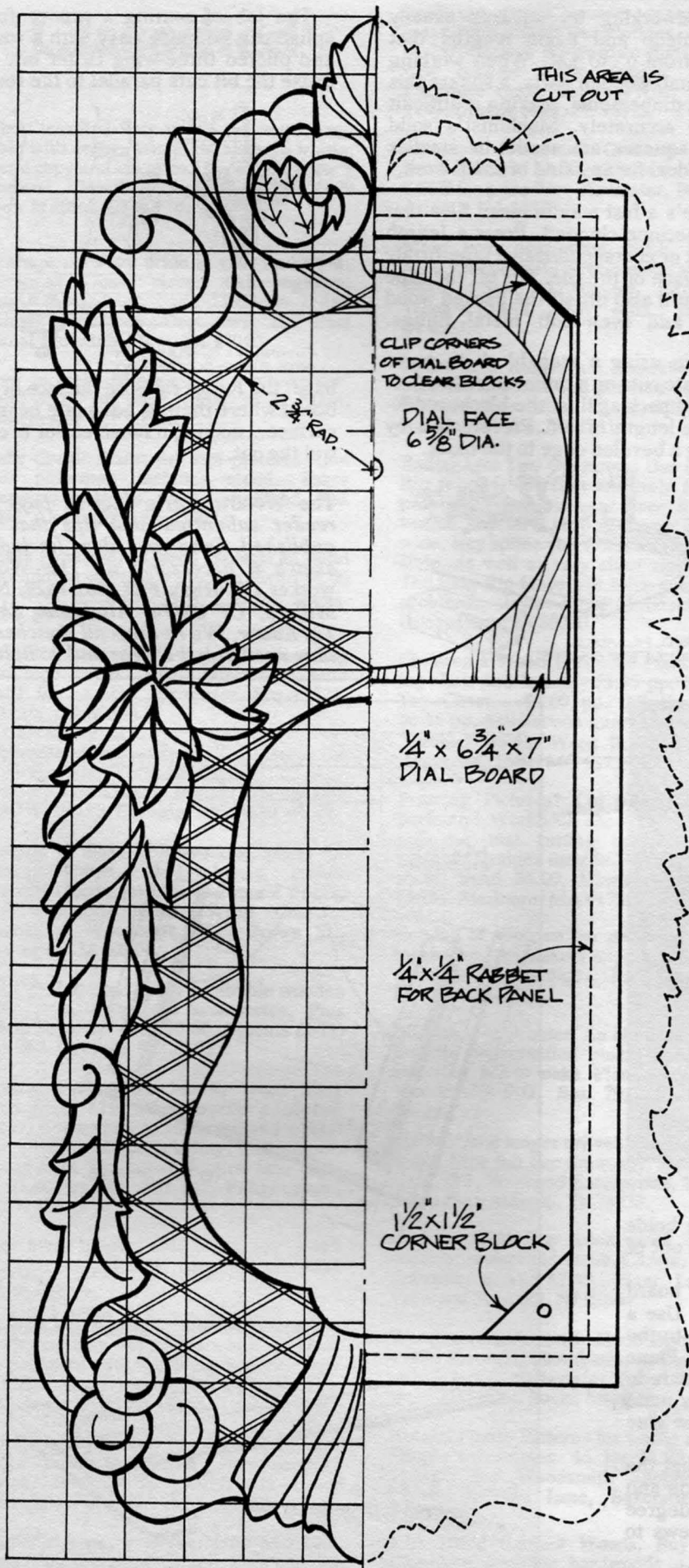
A router is used to cut a $\frac{1}{4}$ " x $\frac{1}{4}$ " rabbet for the back panel. Square the rounded corner with a straight chisel. The $\frac{1}{4}$ " thick back panel can now be cut to size.

Now put the movement in place and secure with the center nut. After adding a "C" sized battery, the back panel can be put in place with screws on back locks. A hanger is mortised into the back of the case to complete the assembly.

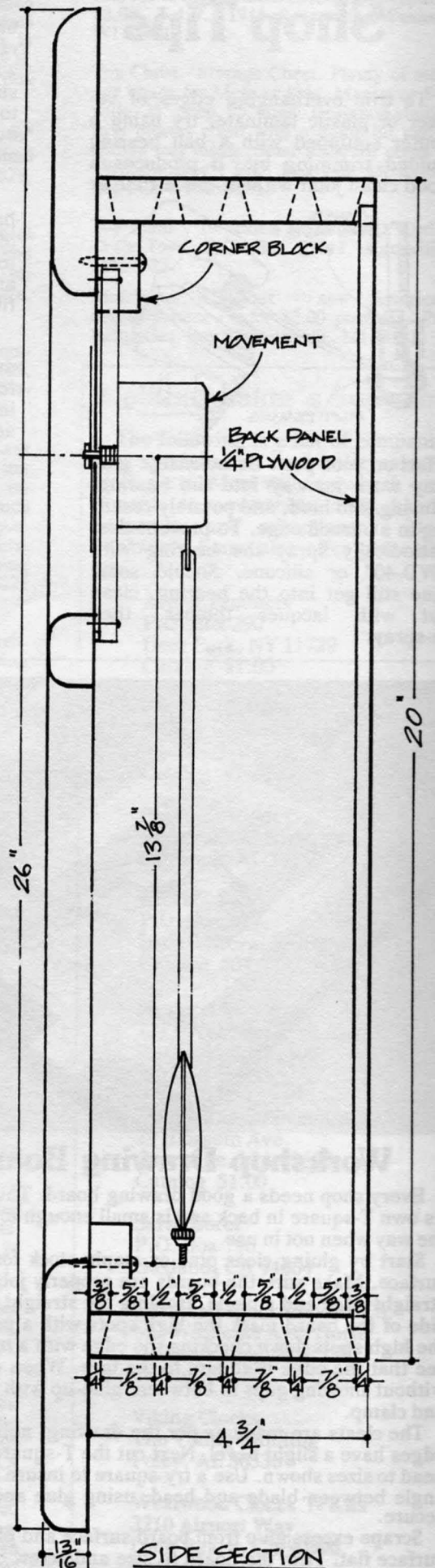
Final finish consisted of an application of brown mahogany paste filler. For best results, follow the manufacturers directions for both the preparation and use of the filler. Following this I applied several coats of pure tung oil, rubbing down the final coat with a clean, soft cloth.

Bill of Materials (All Dimensions Actual)

Description	Size	No. Req'd
Case Side	$\frac{3}{4}$ x $4\frac{3}{4}$ x 20	2
Case Top	$\frac{3}{4}$ x $4\frac{3}{4}$ x $8\frac{1}{4}$	1
Case Bottom	$\frac{3}{4}$ x $4\frac{3}{4}$ x $8\frac{1}{4}$	1
Case Back	$\frac{1}{4}$ x $7\frac{1}{4}$ x 19	1
Corner Block	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $\frac{3}{4}$	4
Dial Board	$\frac{1}{4}$ x $6\frac{3}{4}$ x 7	
Carved Front	$13/16$ x 11 x 26	1
Movement & Pendulum	Klokkit # SP-109	1
Hands	Klokkit # 99-0, black	Pair



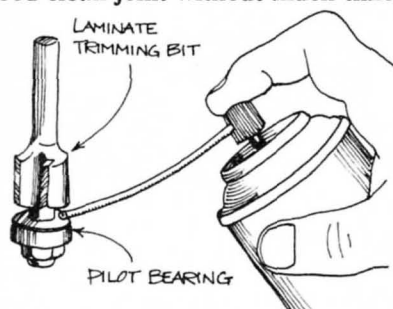
1 INCH SQUARES



SIDE SECTION

Shop Tips

To trim overhanging edges of veneer or plastic laminate, try using a router equipped with a ball bearing guided trimming bit. It produces a good clean joint without much time or

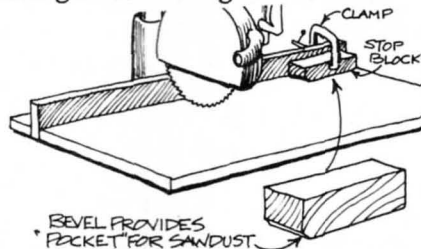


effort on your part. Occasionally, glue may work its way into the bearing, causing it to bind, and possibly resulting in a burned edge. To prevent this, periodically spray the bearing with "WD-40" or silicone. Should some glue still get into the bearing, clean out with lacquer thinner, then re-spray.

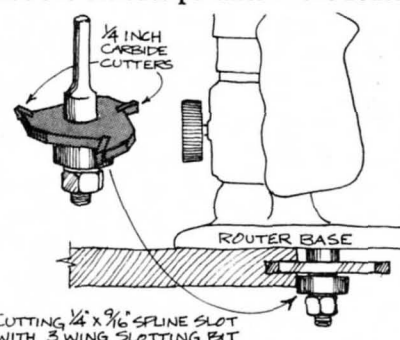
Woodworking try squares usually have blade and beam lengths that range from 6" to 12". When working with small wooden parts, a square this size is cumbersome, making it difficult to use accurately. Machinist's solid beam squares are made in smaller sizes, ideal for any kind of small work.

Here's a fast way to clean files that have become clogged. Press a length of duct or contact adhesive tape firmly to the face of the file. Lift off the tape and you'll also lift off the packed wood fibers and even soft metal filings.

When using a stop block to make duplicate cuts on a radial saw, sawdust tends to pack against the block, reducing the length of cut. Prevent this by adding a beveled edge to the block.

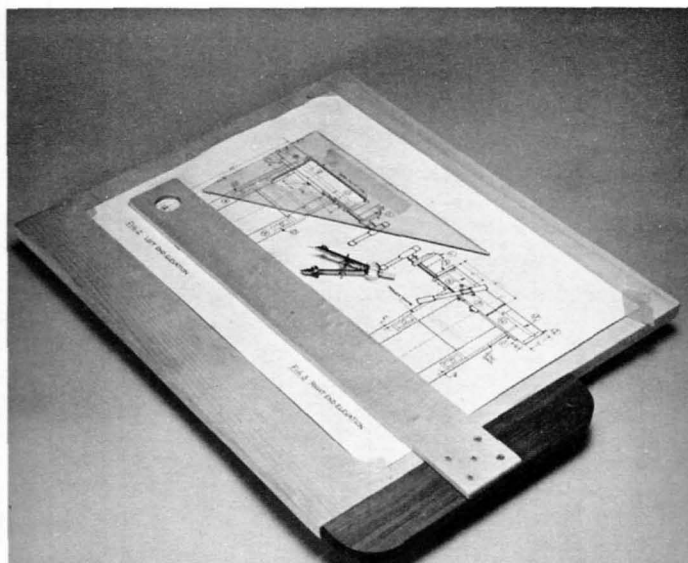


The job of routing a groove for a spline can be made easy with a router and piloted three-wing cutter bit. Because the bit cuts parallel to the router



base, the router rides on the face of the board where there is adequate bearing surface...making it much easier to control the cut.

The Woodworker's Journal pays 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 re-draw all sketches so they need only be clear and complete.



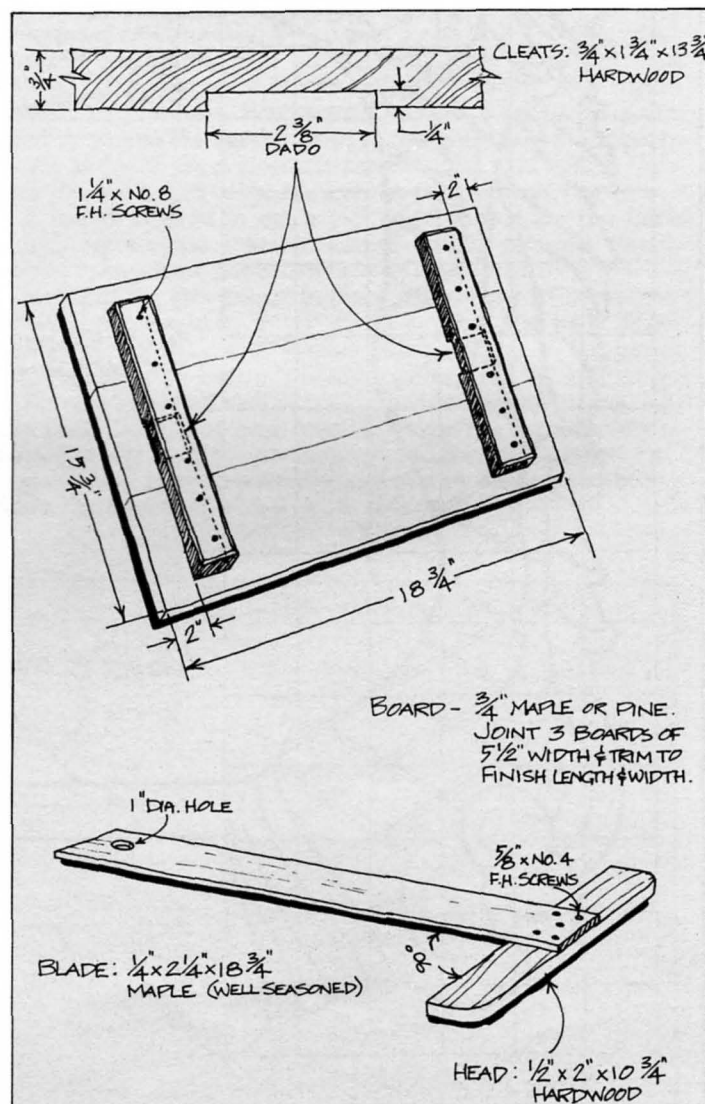
Workshop Drawing Board

Every shop needs a good drawing board. This one holds its own T-square in back and is small enough to tuck out of the way when not in use.

Start by gluing clear pine or maple stock for the board surface. Make sure the boards are properly jointed. Use a straight edge and a plane. Holding the straight edge to the side of the board mark the high spots with a pencil. Plane the high spots down checking the edge with a try-square to see that the edge is square to the face. When edges mate without showing gaps in between, glue-up with yellow glue and clamp.

The cleats are made as per the drawing, noting that the edges have a slight bevel. Next cut the T-square blade and head to sizes shown. Use a try-square to insure a 90 degree angle between blade and head, using glue and screws to secure.

Scrape excess glue from board surface and plane the top surface flat. Trim the board to size and screw cleats to the



Classified

The Classified Rate is 50¢ per word, payable with order. Minimum ad is 15 words. Send copy and check to **The Woodworker's Journal**, Classified Dept., P.O. Box 1629 New Milford, CT 06776.

Craftsmen - show pride in your fine work. Personalize your pieces with engraved solid brass plates. Send \$1.00 for 2 line sample plate. VB, Dept. WJ, 807 East Dana, Mountain View, CA 94040.

How to make M-o-n-e-y as a wholesaler. Send \$3.00 for book. Fraley's, 31 Main, Winchester, KY 40391.

Baby Cradle Plans, full size patterns, (not half patterns), includes stand. Takes standard mattress. \$5.00. Sandland, Box 7082, Alexandria, VA 22307.

Three personalized wood projects to build for children in a single evening. Send \$1.00 to: Wood'n'Crafts, 725W. 600S., Jonesboro, IN 46938.

Buy Direct - save 50% on all your sanding and tape needs. Small quantities. Send SASE for pricelist. Fixmaster, Box 15521, Atlanta, GA 30333.

"How Polyethylene Glycol (PEG) Helps the Hobbyist Who Works with Wood"; 25 page booklet; send \$2.00 to Brandy Station, Box 78AJW, RD #3, Corning, NY 14830.

Wanted to Buy: Woodworking plans for making lamps, shadow-boxes, corner shelves, clocks, jewelry and music boxes, and woodcraft items. Write Creative Frames & Woodcraft, 2127 Brown St., Davenport, IA 52804.

Over 75 Patterns! Enjoy profitable wooden gifts, toys, household accessories, Plus "Shop Secrets". Only \$5.00. Accents (J-11) Box 262, Danvers, MA 01923.

Woodworkers Make Money when they learn from "The Woodworker's Money Book." Covers how to sell retail and wholesale, pricing, credit, labeling, much more. Money-back guarantee. Mailed first class for \$3.00. Inprint, Box 687, Farmingdale, NJ 07727.

Knife blade hinges, solid brass, 1 3/4" x 3/8" x 3/16", \$10.00 ppd. Alan Miller, 1523 Eaton, Brush, CO 80723.

Cabinet - Spacious, sturdy, attractive jewelry cabinet. Six drawers and necklace compartment with revolving hanger. Easy to follow plans. \$3.00. Fred Faust, Box 3688, Laureldale, PA 19605.

Stainless Steel and Brass, screws and bolts. Small quantities, free catalog. Elwick, Dept. 407, 230 Woods Lane, Somerdale, NJ 08083.

Toddler's Rocking Horse, Lion and Elephant. Full size plans. Simply trace and cut out. Fun for the small ones for years to come. Plans \$5.00. B & F Woodcraft, P.O. Box 791, Pinson, AL 35126.

Make Restorations Perfect! Find proper hardware, woods, veneers, canes, stained glass, tools, more! Descriptions, addresses of 237 catalogs of "hard to find" items in new booklet, "The Source" S.A.S.E. Furniture Craft, Dept. WW01, P.O. Box 1193, Orange Park, FL 32073.

Attention Shopsmith Owners! 6 x 48" sanding belts - \$3.50. 12" discs - 75¢. Send SASE for price list - Fixmaster, Box 15521, Atlanta, GA 30333.

Make your own wood finish. Beautiful hand rubbed results from blend of oils and waxes. Send \$1.00 for formula to: Wood'n'Crafts, 725W. 600S., Jonesboro, IN 46938.

Canoe and Adirondack Guideboat: Complete instructions and patterns only \$5.89. Precision Specialties, RD #2, A2D Kimberly Lane, Mexico, NY 13114.

Radial Arm Saw Operators: Our new Easy Rip fence is the first and only fence improvement for this saw since it was invented. Rip off a strip of veneer 3/32 inch wide, tiny spline you wouldn't believe possible, as well as very short ripping cuts. The Easy Rip fence will solve your ripping problems. Iowa Royal Products, 2221 Otley, Perry, IA 50220.

Children's Wood Furniture Plans. Matching chair and bench - \$3.95 pp. Matching Toy Chest - \$3.00 pp. All three plans \$6.95 pp. Satisfaction guaranteed. 24 hour service. Martin Wood Products, 224J N. Main, Republic, MO 65738.

Framing Pictures? Cut your own mats, perfectly! Workbook shows how to make and use mat cutting board. Foolproof method. Designs include V-groove, double mats. Send \$6.00. Hawley's, 47 Grace Circle, Marlboro, MA 01752.

Catalog of Wooden toy patterns, wooden toykits and toymakers supplies. Send one dollar to Toy Designs, P.O. Box 441-N, Newton, IA 50208.

Bull Manure Grinder. An old time, wooden favorite conversation piece. Simple construction, fun to make. Plans \$3.00. B & F Woodcraft, P.O. Box 791, Pinson, AL 35126.

Make 6" and longer toy vehicles from scrap wood. Nine full size drawings. Send \$2.00, Dept. WJ, Weekend Enterprises, 12342 La Barca, San Antonio, TX 78233.

Cedar - Make any wood smell like real cedar or restore old cedar. Chests, closets, drawers, 8 oz. \$2.99, Plant Labs, 24 Vreeland St., Lodi, NJ 07644.

Woodcarvers Patterns: Three Dimensional ducks (decoys), shorebirds, animals, fish, etc. S.A.S.E. to Long's "Easy" Patterns, Box 22155B, St. Louis, MO 63116.

Animal Puzzle Patterns for young and old. Simple to complex. 15 for \$5.00. 35 for \$10.00. The Woodsmith Shoppe, 4509 Christmas Tree Lane, Bakersfield, CA 93306.

Kiln Dried Cabinet Woods. Buy direct. Complete selection hardwoods - Mahogany, Eastern White Pine. Lumber and squares. Churchill Forest Products, 91 Franklin, Hanson MA 02341.

Craftsmen - catalog of rare hard-to-find sources of tools, plans, hardware, supplies. \$3.00. T.J.P., 1911 Roosevelt, Wausau, WI 54401.

Toy Chest - Storage Chest. Plenty of storage space for Mom or kids. Measures 36" wide, 25" deep, 25" high. Designed similar to a pirates chest with a dome lid and a sliding tray inside. Send \$2.00 for plans to "Woodworker", P.O. Box 148, Montville, OH 44064. Plan #101.

Toy Plans - 10 scaled plans \$5.00. Cedar Craft Toys, P.O. Box 22011, Knoxville, TN 37922.

Distributor Closeout - new American dental cutters - 6 for \$2.00 postpaid. Pac Industries, Box 81, Belleville, MI 48111.

Cabinetmaker's Supplies

The following is a list of companies that specialize in mail-order sales of clock parts. Most will carry such components as movements, dials, hands, numerals, and miscellaneous clock hardware. Some also offer plans and kits.

Armor Products
P.O. Box 290
Deer Park, NY 11729
Catalog \$1.00

Craft Products Co.
2200 Dean Street
St. Charles, IL 60174
Catalog \$1.50

Emperor Clock Co.
Emperor Industrial Park
Fairhope, AL 36532

Klockit, Inc.
P.O. Box 629
Lake Geneva, WI 53147
Catalog 50¢

Newport Enterprises, Inc.
2313 West Burbank Blvd.
Burbank, CA 91506
Catalog \$1.00

Mason and Sullivan Co.
39 Blossom Ave.
Osterville, MA 02655
Catalog \$1.00

Selva Borel
P.O. Box 796
Oakland, CA 94604

Turncraft Clock Imports Co.
611 Winnetka Ave. North
Golden Valley, MN 55427
Catalog \$2.50

Viking Clocks
The Viking Building
Foley, AL 36536

Westwood Clocks 'N Kits
3210 Airport Way
Long Beach, CA 90806
Catalog \$1.00

Shop Notes