

The Woodworker's Journal

Vol. 6, No. 5

September/October 1982

\$2.50



Danish Chest of Drawers: Circa 1920

Included In This Issue: Contemporary Writing Desk • Spaghetti Measure
Horizontal Boring Jig • Early American Corner Cupboard • Whale Toy

BACK ISSUES



Each issue of *THE WOODWORKER'S JOURNAL* is filled with detailed plans for all types of woodworking projects, a few of which are shown above. There are also 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. 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. 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, Auxiliary 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, Lathe Steady Rest.

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

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

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

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

Vol. 5, No. 5 Sept-Oct '81: 18th Cent. Rudder Table, Musical Jewelry Box, Colonial Candlestick, Deacon's Wall Shelf, Toy Hippo, Spalted Boxes, Woodbox, Sew-

ing Cabinet with Tambour Doors, 18th Cent. Tavern Table, Router Jig for Stopped Dadoes.

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

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

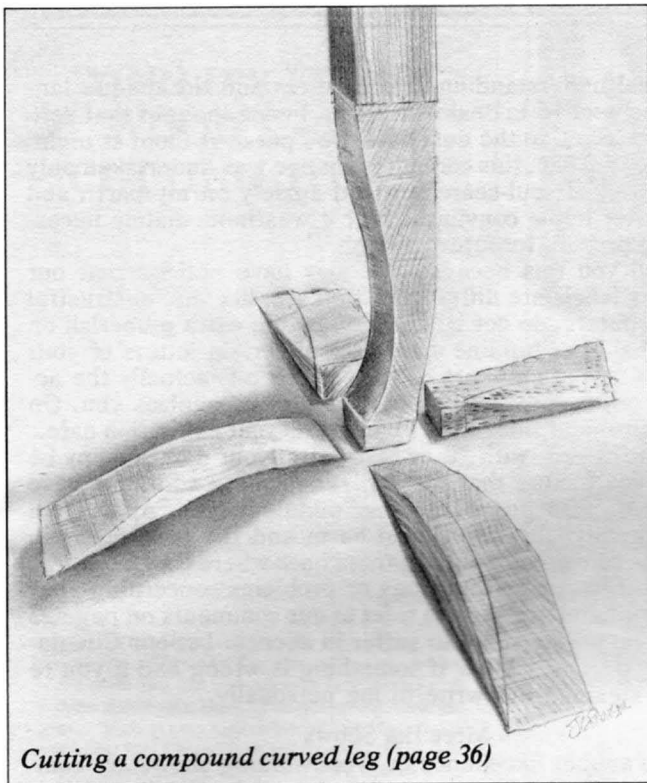
Vol. 6, No. 2 Mar-Apr '82: Early American Blanket Chest, 18th Cent. Corner Shelf, Pine Footstool, Cheese Cutting Board, Napkin Holder, Trivets, Coaster Set, Pierced Tin Cabinet, Hutch Clock, Oak File Cabinet, Mahogany Tripod Table, Wall Hung Plant Bracket.

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

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

Please Note

Vol. 1, No. 5 through Vol. 4, No. 4 are newsprint issues for \$1.50 each. From Vol. 4, No. 5 on, they are magazines for \$2.50 each, postpaid. CT residents only please add 7½% sales tax.



Cutting a compound curved leg (page 36)

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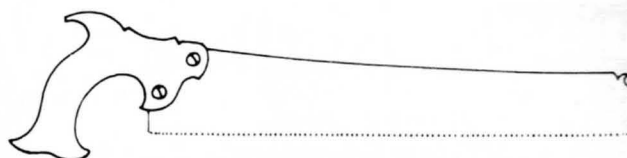
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Contributions

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



The Woodworker's Journal

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SEPTEMBER/OCTOBER 1982

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Shoptalk

The Birth of a Project

The convoluted process by which a seemingly simple project reaches its final published state never fails to fascinate me. As an example, the "simple" towel holder on page 41 was conceived many weeks ago when I mentioned that a relatively easy-to-make utilitarian project, preferably in a contemporary style, was needed to fill one page.

A cousin of mine who had a lot of unwelcomed leisure time while recovering from a motorcycle accident, got word of our urgent need and mailed in some sketches for a towel rack that was basically a slotted box fastened to a wall. The basic idea was intriguing so we built a prototype and, as we usually do, showed it to all of the staff to get their reactions. Everyone tried it out with dish towels and all agreed that it was an attractive and useful design. I liked it but felt that the prototype was a bit too "klunky" looking and that the design needed some further refining.

Someone suggested that it would look better if the slotted board appeared to be set out from the wall with no visible means of support. It took about half an hour to come up with a way to create this effect without being too complicated or wasteful of material and we all felt pretty good about the final design. It looked good, was useful, inexpensive and easy to make. As far as we were concerned, all our criteria had been met. A finished piece was made and rushed to the photo studio...another "simple" project completed.

Another Computer

Coincidental with turning out our biggest issue ever, we multiplied our daily problems by making a transition from one computer system to another. Being well over the age of 40, I've managed to stumble blissfully through life without

any real understanding of computers and the unique languages needed to deal with them. I once thought that software referred to the dust cover you put over them at night. Needless to say, this computer change was undertaken only after a lot of soul-searching and anxiety on my part...and only after being convinced that it was immediately necessary to prepare for future growth.

I tell you this because you may have noticed that our mailing labels are different. If you are, like me, mistrustful of computers, do not be alarmed by the extra gibberish on the label. The top line consisting of certain letters of your name and the numbers of your zip code is actually the account number by which the computer recognizes you. On the right-hand side of the same line is your expiration date.

Some of you, with Jr. or M.D. after your names may be dismayed to find that these distinguishing additions have now been transposed into your middle initials. Apart from looking silly, this will do no harm and the computer will soon be cajoled into putting them back where they belong.

If you have any questions or problems concerning your subscription I urge you to refer to our comments on page 23 which implore you not to suffer in silence. Let our Circulation Department know if something is wrong and if you're really steamed up, write to me personally.

More Big Shows

Two annual Excellence in Woodworking shows are coming up soon. For Easterners the place to be October 15th to 17th is Madison Square Garden. The midwestern show will be held November 12th to 14th at the Hyatt Regency Hotel in downtown Chicago. Admission at either show is \$5.00. These shows have become quite an annual event which all woodworkers will enjoy...so come up out of the cellar and see what the other guys are doing.

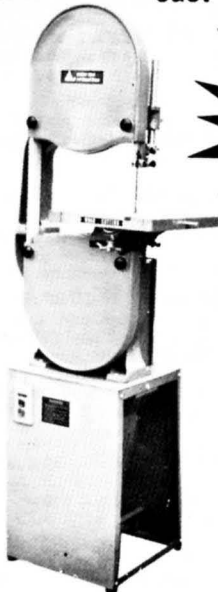
Jim McQuillan

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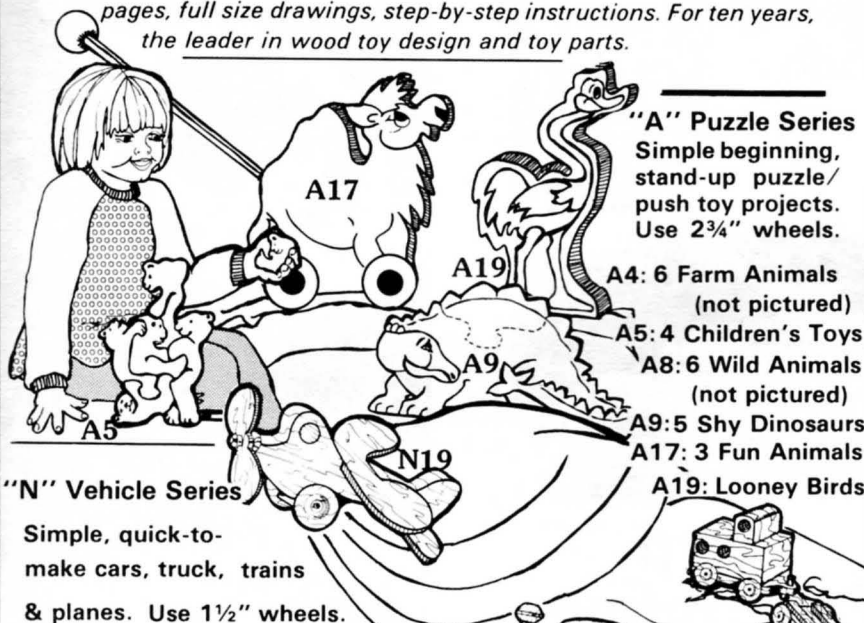
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Letters

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Charles Dugas, Opelousas, LA

Aliphatic resin (often called yellow glue) is a good glue for securing wood tambours to canvas. It's sold under several trade names, the two most common being Titebond and Elmer's Carpenter's Glue.

Artist's canvas of about 10 ounces in weight is a good choice for a roll-top. It's available at most art supply stores.

Can you tell me where I can purchase 3/8 inch diameter walnut dowels?

Robert E. Gillenwater, Jerseyville, IL

Walnut (and oak) dowels in 36 inch lengths are sold by the company Woodworks, 4013 Clay Ave., Suite A, Fort Worth, TX 76117. Diameters range from 1/4 to 1 inch, and include 3/8 inch. Send 25¢ for a copy of their current catalog.

I am trying to get a set of plans so I can build a 3 or 4 inch belt sander. Can you help?

Darrel Richardson, Peotone, IL

Plans for a 6 inch stationary belt sander are available from Gilliom Manufacturing Inc., 1109 North Second Street, St. Charles, MO 63301. Price is \$4.00 plus \$1.00 for first-class postage.

Editor's Note: Readers in the Milwaukee area will be interested to learn of the Wisconsin Woodworkers' Guild. According to the guild's president, Frank S. Obremski, the organization was formed in order to "disseminate as much information as possible on all aspects of woodworking, through lectures, demonstrations, seminars, exhibits and, when possible, workshops".

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(continued on page 8)

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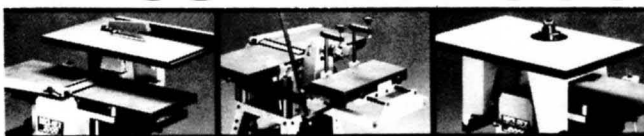
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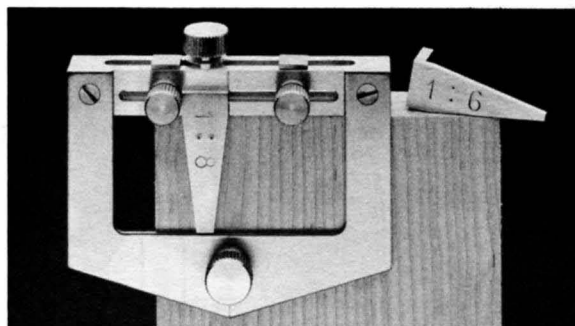
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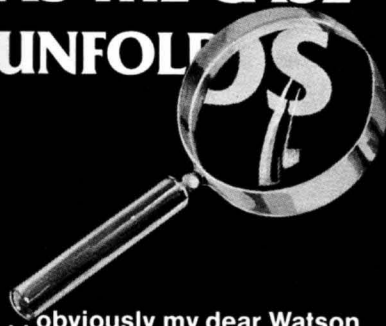
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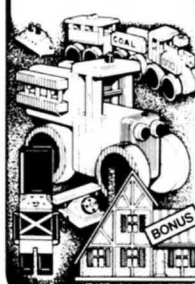


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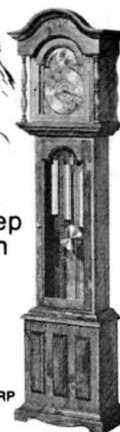
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Letters (Cont'd)

sional, may obtain additional information by writing to the Wisconsin Woodworkers' Guild, P.O. Box 137, Milwaukee, WI 53201.

We would also like to mention that The Woodworker's Journal welcomes information about any woodworking clubs, groups, guilds, etc. in your area. At some future date we hope to be able to provide a listing of them.

If you belong to one of these groups, or know of one, we would appreciate it if you would let us know.

In his "Restoring Antiques" column in the January/February 1982 issue, John Olson mentions that when he cleans up antique furniture joints he often uses a small hand grinder. I'd like to learn more about this tool. Where can one be purchased?

Also, in the same column, John discusses epoxy glues. Can you give me a brand name and source?

Ed Tucker, Indiana, PA

John Olson replies: I use a Dremel ball bearing Moto-Tool with a tungsten carbide burr. It can be purchased at most hardware stores and hobby and craft outlets. Also, it can be purchased via mail-order from Silvo Hardware Co., 2205 Richmond St., Philadelphia, PA 19125.

Regarding epoxies, most hardware stores now carry epoxy glues that are formulated for wood. If not available locally it can be ordered from Chem-Tech, Dept. WJ, 4669 Lander Rd., Chagrin Falls, OH 44022. Cost of one pint is \$9.50 postpaid.

I am a young man, age 23, married, with two children, and hope to make the craftsmanship of fine furniture my life's profession. I'm very much interested in a woodworking apprenticeship (furniture making) or simply securing employment with a reputable furniture maker. I have some knowledge and skill, and a lot of ambition to learn the trade inside and out - and am willing to relocate. Any help you could offer would be appreciated.

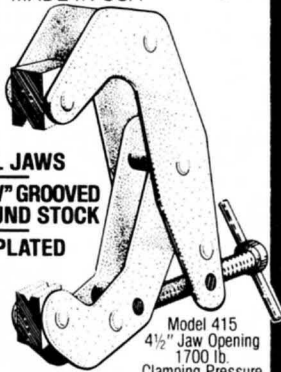
Philip L. Seidl
Rt. 1 Box 385B
Shawano, WI 54166

Perhaps one of our readers has a woodworking shop and is looking for an apprentice. Hope you make a connection, Philip.

(continued on page 10)

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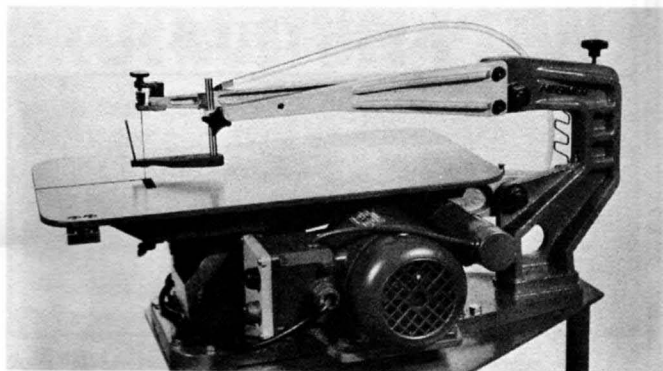


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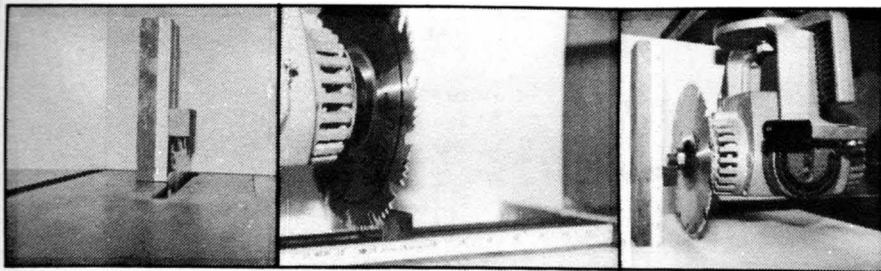


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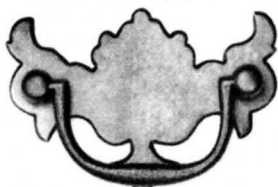
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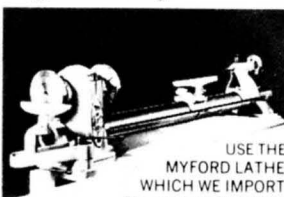
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Letters (Cont'd)

Where can I find the 22 inch heavy-duty full extension drawer slides required for the oak file cabinet featured in your March/April 1982 issue?
Howard M. Berg, Dolgeville, NY

The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374 sells a good quality slide for \$23.00 per pair. Order p/n P5430 22 inch.

Editor's Note: In the "Letters" section of our May/June 1982 issue, we listed the Tandy Leather Co. as a source for leather supplies. However, the address we listed is not their current one. Their new address is P.O. Box 2934, Ft. Worth, TX 76113.

Thank you very much for publishing my letter requesting information regarding my 6 inch Sears planer, in the July/August 1982 issue of your fine magazine *The Woodworker's Journal*. I received many, many letters with all sorts of hints, copies of similar tools and many fine wishes. It is a great feeling opening the mail and realizing the time, effort and expense these fine people have gone through to help out someone like me.

Believe me when I say - even if I don't solve the jointer problem satisfactorily, I'm more than happy to know there are people out in the world willing to give of themselves to aid another unknown person.

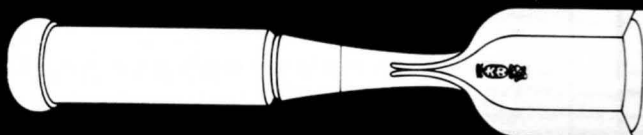
Again, thanks for the favor of printing the letter and to know that life is still worth being a woodworker hobbyist.

Walter A. Wisniewski, N. Versailles, PA

Walter, we think your letter says a lot about our many readers. It seems they all have a love for the craft of making things in wood, and won't hesitate to share that knowledge and experience with someone who also enjoys this special craft. Hope you have that jointer running smoothly soon.

Editor's Note: Here are a few more letters that have us stumped.

I have been trying to get a manual and a schematic for a model #109.0703 Sears metal lathe. Sears told me it was a discontinued model and no informa-



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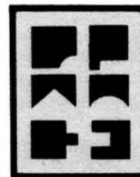
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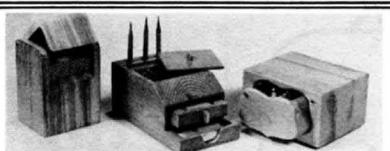
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Letters (Cont'd)

tion was available. They wouldn't tell me who the maker of that lathe was. I wrote to Action Line in the Detroit Free Press, but I didn't get an answer from them. I am hoping the readers of *The Woodworker's Journal* might have a lathe with the same model number and could get me a manual and schematic.

Walter Banish
20862 Hunt Club
Harper Woods, MI 48225

I have the old Craftsman three wheel band saw, model 103.24300, for which I need a manual. They are no longer available from Sears.

I also have a Craftsman 9 inch table saw with the micro-adjustment fence, model 103.20003. For years I have looked for table extensions for the saw without success. I would like to find the extensions that allow the fine adjustment on the fence to be used across the full width of the table. If any of the readers of *The Woodworker's Journal* can help, I would be most grateful.

R.H. Rockwell
5852 Lowell Ave.
Alexandria, VA 22312

I'm looking for plans for a lawn ornament in the style of a lighthouse. I've seen windmills and wishing wells, but never a lighthouse. Can you help?

M. Herroscheck
26528 Wagner
Warren, MI 48089

I am looking for plans for baby beds. There are some babies coming soon to relatives, and my husband and I would like to provide special, made-with-love new beds for these little ones. We enjoyed the cradle plans in a recent (May/June 1982) issue of *The Woodworker's Journal*. Now, can you help us find baby bed plans for when the cradle is outgrown?

Thanks for your help.

Mrs. Diane Presley
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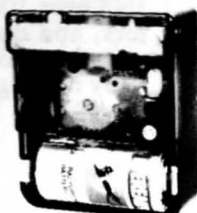
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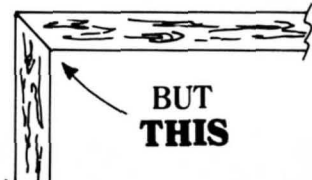
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The Woodworker's Journal



pays for project submissions from readers!

We are always interested in **original** plans for furniture (all styles), toys, clocks, jigs, and accessories. To receive consideration for publication we need:

1. Fully dimensioned sketches. This doesn't mean we expect the work of a professional draftsman - in fact, the sketch can be done freehand (we re-draw all sketches). Just make them as clear as possible and be sure to include all necessary dimensions.

2. A high quality black and white photo. By "high quality" we mean clear, sharp and free from distracting background. An examination of any current issue will provide a good idea of what we look for in photo quality.

3. A write-up that explains how the project was made. Include finishing instructions, and describe in detail any special techniques.

Send all material in an envelope of adequate size. Back the photo with stiff cardboard, and note on the envelope, "Photo, do not bend".

Mail to **The Woodworker's Journal**, P.O. Box 1629, 25 Town View Dr., New Milford, CT 06776, "Attention: Editor". We will respond in 4-5 weeks.

Workshop Income

by Paul Levine

It's always enjoyable to hear from readers who have had some success marketing projects that were featured in *The Woodworker's Journal*. One wrote to say that he sold eighteen Swedish door harps (*The Woodworker's Journal*, November/December 1979) to friends. A senior citizens' woodworking shop made the doughbox end table (*The Woodworker's Journal*, January/February 1980) to sell at a crafts show. And perhaps the most popular item has been the oak salt and pepper shakers featured in March/April 1981. One reader, apparently a pretty effective salesman, sold over 100 pairs of them. The message from these letters, and many others, seems to be that more and more part-time woodworkers are making things to sell.

By making items for sale, a woodworker not only enjoys the obvious benefit - making a little extra money; he can also expect to gain a certain feeling of worth and sense of accomplishment that comes from a job well done. I've seen high-salaried professional people derive a sense of satisfaction from their woodworking shop that they can't get at the office. To enjoy woodworking this way is a worthwhile end in itself.

When a woodworker sells something made with his own hands, it is a reinforcement and validation of the whole process. If you have been thinking of making things to sell in your workshop, and enjoy these rewards, I can't think of a better time than right now to get started.

Despite the poor economy, most crafts have had a track record that can only be described as phenomenal. For example, the Northeast Crafts Fair at Rhinebeck, NY has been so successful that a second show has been formed called the American Craft Salon. And all throughout the country, craft shows and shops are springing into existence. The American Craft Museum has even opened another museum for crafts in the International Paper Company building in New York City.

Other signs of the increasing interest in crafts is the growth of the number of books available. These range from do-it-yourself and furniture building, to how to write do-it-yourself books, and who to sell all this stuff to. Many woodworking supply companies offer a good selection of these books.

Still another sign of the growing interest is the number of societies, and craftsmen groups that have formed. Some of these groups meet specific needs, such as the Marquetry Society, or S.A.W. (Society of American Woodworkers). With others, the reasons are less formal. They may be groups with common interests, or with whom you can purchase materials at much lower costs. Sometimes these groups get together to form shows. This can be helpful if you feel that you have an item or two that is marketable, but there isn't enough to fill a gallery.

If you've had enough convincing, here are some places to start looking for business:

The Craftworker's Market

published by Writer's Digest Books

9933 Alliance Road

Cincinnati, OH 45242

Lists fairs, shops, shows, and galleries

The Crafts Report

published by The Crafts Report Publishing Co., Inc.

700 Orange Street

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Gives up-to-date information on many crafts, and deals with many of the problems facing the professional craftworker

American Craft Magazine (formerly Craft Horizons)

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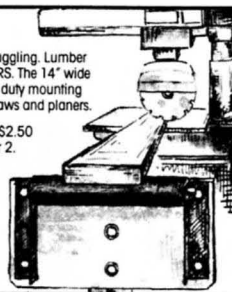
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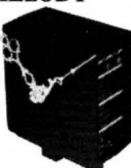
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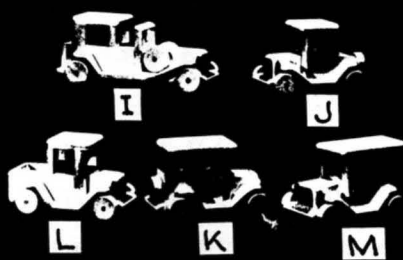
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Restoring Antiques

More Finishing Tips

by John W. Olson

As discussed in my last column, coarse-grained hardwoods such as oak, mahogany, walnut, and ash (among many other wood species) must have their pores filled with a paste wood filler in order to be finished to mirror-like smoothness. Using a piece of burlap or a coarse rag, the filler is rubbed across the grain, packing it into the individual pores.

In most cases, proper application of a paste wood filler requires that the excess be removed after about thirty minutes. However, be sure you remove all the filler from the surface. If you don't, and it sets-up, you're probably going to have a problem - and the problem may be even greater if the wood was stained before adding the filler.

Unstained surfaces can usually be cleaned with a thorough sanding using very fine sandpaper. However, it is very difficult to remove excess filler from a stained surface without leaving light colored patches. Sometimes, judicious sanding with very fine sandpaper will do the trick, but you must be careful not to cut into the stained surface. If necessary, a reapplication of stain in the immediate area will often correct the blemish.

If sanding won't work, you can try using a cloth moistened with lacquer thinner. Just add enough to the cloth so that it wets the wood surface - too much thinner might cause it to run to adjoining surfaces. Generally, you will find that it is necessary to wipe the entire surface to get acceptable results. If done properly you will pick up enough stain to amalgamate with the surrounding surface and leave a minimum of color difference. This trick can also be used to

lighten areas that appear too dark. Extra care should be taken if Plastic Wood® or any of its relatives is used as lacquer thinner will soften these materials. In fact, lacquer thinner can be used to rejuvenate this product if it has begun to harden in the container. When using lacquer thinner, be sure to take proper safety precautions. Use a respirator to protect yourself from breathing the vapors and wear rubber gloves to keep it from contacting your hands.

If the color remains uneven, or if sapwood shows up light, (as often happens with walnut) properly applied colors in oil can usually correct the difference. Sienna, burnt sienna, umber, and burnt umber, either used alone or mixed together, can closely match almost any color used in wood finishing. A very small amount of these colors will go a long way. They should be thinned with mineral spirits and applied with a soft cloth. Rub the color in, blending and high-lighting to match the stained surface.

Where very light streaks occur (white sapwood in walnut for example) it may be necessary to apply the colors with a very fine brush. A one inch sign painters brush is ideal. It doesn't leave any brush marks when the paint (that's what colors in oil are) is of the proper viscosity and the brush is used properly. The color should be thin enough to just barely cover the wood, yet allow the grain to show through. It should run and level so that the brush marks don't show. The brush is used with soft gentle strokes, coaxing the color to cover, yet not be readily apparent. Successful application takes a lot of concentration and practice.

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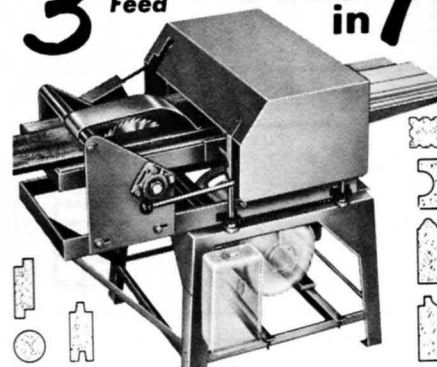
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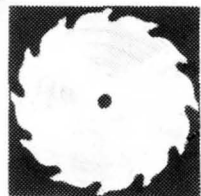
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The Beginning Woodworker

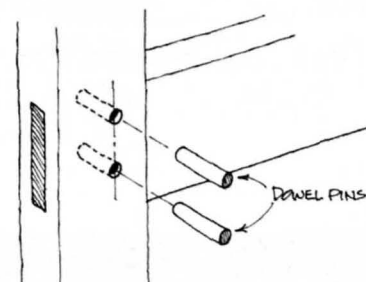
Pinned And Wedged Mortise And Tenon Joints

The mortise and tenon joint is undoubtedly one of the most important joints in woodworking. Long ago our clever ancestors devised variations of the mortise and tenon joint that do not depend on glue to hold together. Basically, these joints can be divided into two main groups: pinned joints and wedged joints. There are quite a few variations within these two groups; each designed to solve a particular joinery problem. Chances are the joints discussed here will meet 95% of your needs. Perhaps one of the most satisfying aspects of woodworking is the cutting of handsome, well-fitted joints. Most of the pinned and wedged joints are not only very satisfying to make, but add considerably to the overall appearance of the project.

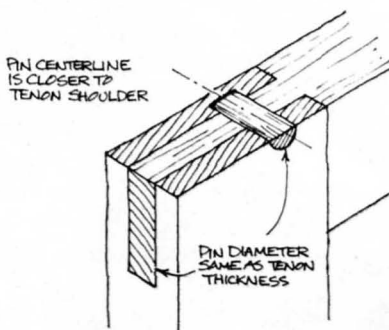
years ago. Though the technique was easy and certainly effective, some ancient genius came up with an improvement which made the joint even more secure. By slightly off-setting the holes through the tenon from the holes through the mortise, the pins, when driven in, exert a tremendous amount of leverage to draw the joint tight.

Figure 2 shows such a joint sliced open to better illustrate this concept. The technique is referred to as drawboring or drawpinning and its use, particularly in the stopped or blind pin version by 18th century cabinet-makers, has caused plenty of headaches for present day craftsmen trying to disassemble such joints on an antique needing repair.

FIG. 1



A - JOINT IS CLAMPED TOGETHER AND DRILLED COMPLETELY THROUGH FOR ONE OR MORE PINS

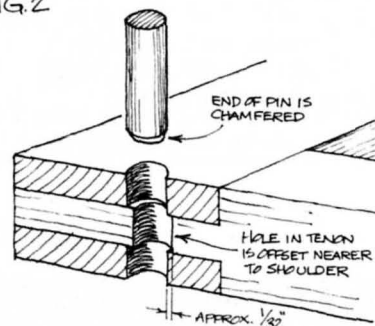


B - SECTIONED JOINT SHOWS STOPPED PIN HOLE

The easiest way to lock a mortise and tenon joint together is to drive a hardwood dowel or pin completely through both members (Fig. 1A). Two pins are better than one and are usually used when the tenon is large enough...at least 1½ inches in height. If the holes for the pins are bored almost, but not quite, through the joint (Fig. 1B), the pins cannot be driven out.

Pinning the mortise and tenon is a simple enough concept and the method was probably in use even before the Egyptians were using it 5000

FIG. 2



JOINT IS SECTIONED TO SHOW HOW PIN HOLE IN TENON IS OFFSET TO HELP DRAW JOINT TIGHT

To drawbore a through or blind mortise and tenon joint, drill through the mortise cheeks (or through one and partially through the other for a stopped pin), then assemble the joint and clamp it together. Run the drill bit back into the holes and use it to make just a slight indentation in the tenon cheek. Remove the tenon and drill through it at a point about 1/32 inch nearer to the tenon shoulder.

Location of the pins and their diameter will depend on the thickness and width of the joining parts. In most furniture construction, pin diameters equal the tenon thickness and may range from ¼ to ½ inch. Since quite a bit of leverage is applied to the joint when the pins are driven home, you should be careful not to make too much of a good thing and offset the holes much more than 1/32 inch; otherwise the mortise cheeks may split or the tenon will tear. The tip of each pin should be chamfered slightly as this will help ease it into the offset hole in the tenon.

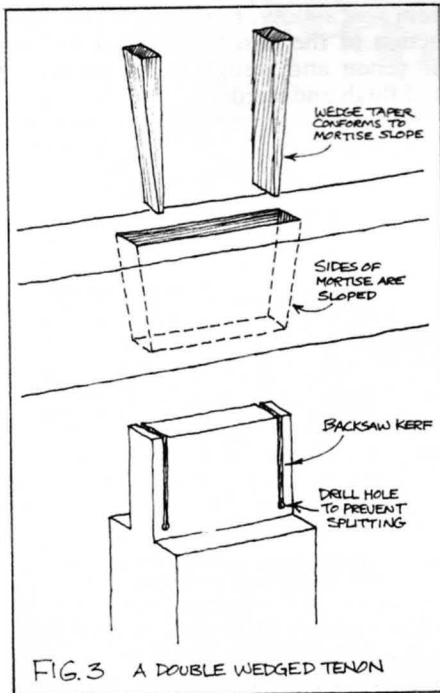
Old-timers often made their pins by splitting them off from a block of scrap

Beginning Woodworker (cont'd)

hardwood. These riven pins were then worked square, hexagonal or octagonal in section and when driven home, their sharp corners cut into the sides of the hole; increasing their holding power. The practice is still to be recommended when building antique reproductions of pine.

In modern practice, even when drawbored pins are used to lock a joint, the tenons are still carefully cut for a good fit and glued into the mortises. The pins can be considered as a decorative form of insurance against future glue failure.

The second group of joints that will hold without glue are the various forms employing wedges, though again in modern practice some of them are glued. The first example is a through tenon with double exposed wedges (Fig. 3). Note that the wedges



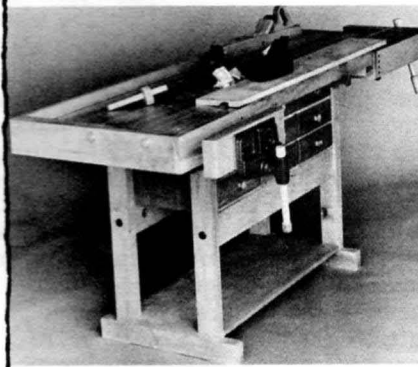
are placed so that they are at a right angle to the grain direction of the mortised part. This is done to prevent splitting of the mortises. Often in contemporary work the wedges are made from a contrasting wood and add considerable visual interest to the joint if done neatly. Whether or not the wedges are emphasized, care should be exercised in cutting and placing them.

To make this joint, first cut the mortise and tenon in the usual way for a good fit. The tenon length is established by cutting the shoulders to allow the tenon to protrude about 1/16 inch from the mortised part when the joint is assembled. This allows the tenon stub to be trimmed neatly flush. A point well worth mentioning here is

(continued on next page)

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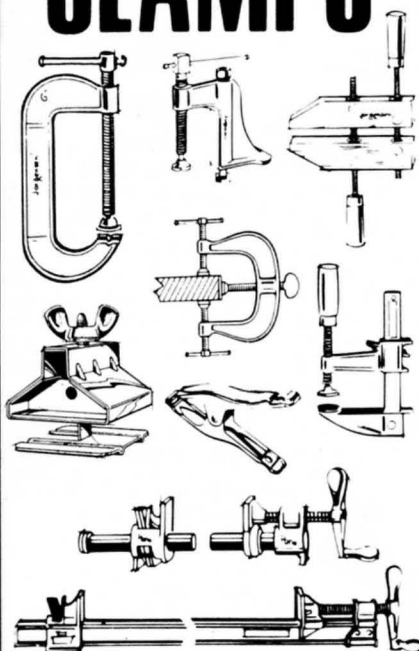
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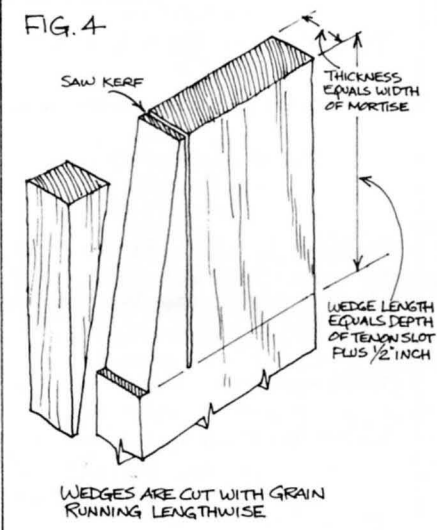
that most parts that are tenoned on one end have a corresponding tenon on the opposite end and the distance between tenon shoulders is usually quite critical, so don't forget to take this into consideration when laying out the length of the tenons.

The usual procedure is to shoulder the tenon on all four sides, but this makes for a lot of extra work and more chance for error, so if possible, try to omit one pair of shoulders, preferably across the smallest dimensions of the workpiece.

A backsaw is used to cut two slots in the tenon as shown. These slots are located about $\frac{3}{16}$ inch from the tenon ends and stopped about $\frac{1}{4}$ inch short of the shoulders. These dimensions are approximate depending on the type and flexibility of the wood and the size of the tenon. To forestall splitting it's helpful to drill a small hole at the bottom of each kerf as shown in Fig. 3.

The mortise needs to be tapered at the top and bottom to provide clearance for the wedged tenon. Fig. 3 shows how the mortise flares to the outside. The degree of taper really depends on the width of the mortised part but generally the mortise should be tapered to a slope of $\frac{3}{8}$ to 6. In other words, for every inch of mortise depth it should slope $\frac{1}{16}$ inch. A lot of woodworking books recommend a slope of 1 in 6 for wedges in general and this is fine for large removable wedges which we will discuss later, but most glued mortise and tenon joints in furniture look better with wedges that show as fairly thin stripes across the tenon.

Wedges are laid out and cut from scrap hardwood so that the grain runs lengthwise of the wedge (Fig. 4). The thickness of the stock from which the wedges are cut should equal the mortise width. Wedge length equals the

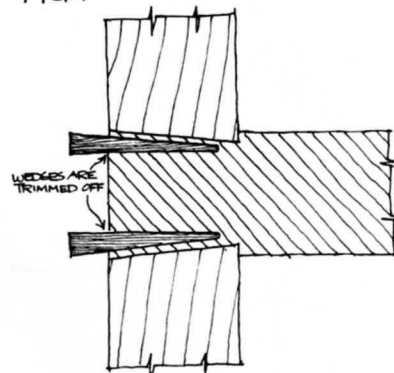


depth of the tenon kerfs (including drilled holes), plus about $\frac{1}{2}$ inch to allow for trimming the wedges flush

after assembly. Note that the wedges are tapered along one side only; the opposite side is perpendicular to the ends. The degree of taper can be laid out by setting the thickness at the tip of the wedge to equal the width of the sawblade kerf. This is usually about $\frac{1}{16}$ inch if a backsaw is used. The wedge taper is then made to a slope to conform with the mortise taper which, as previously mentioned, is $\frac{1}{16}$ inch of slope for every inch of mortise depth.

When assembling the joint, glue is spread on all sides of the mortise and the joint is clamped up so that the tenon end is centered in the mortise and the wedge kerfs are accessible. At this point, from the outside, the tenon will seem far too small for the mortise. Glue is spread on both faces of the wedges and they are hammered in alternately, until you can feel and hear them seat solidly. Fig. 5 shows a cross-section of the assembled joint before the tenon and wedge stubs are trimmed flush and sanded.

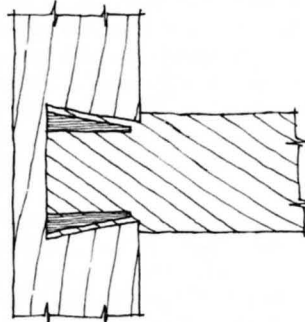
FIG. 5



SECTIONAL VIEW OF ASSEMBLED DOUBLE WEDGED MORTISE & TENON

The blind or foxed wedge joint (Fig. 6) is a fine exercise in layout and cutting but in the "real world" of woodworking it is seldom used as it is difficult to taper the blind mortise just

FIG. 6

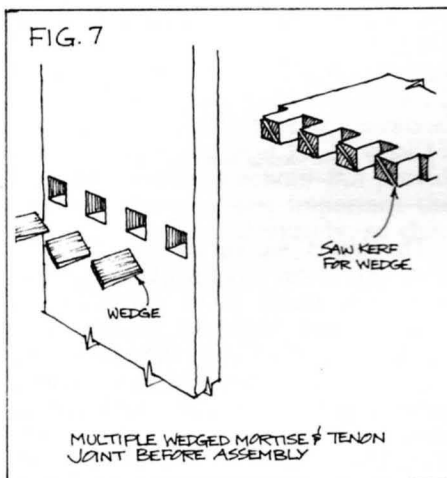


SECTIONAL VIEW OF BLIND OR FOXED DOUBLE WEDGED MORTISE & TENON

enough to allow the wedges to fully seat. If the mortise taper is too great the joint will remain loose, though you

will not be able to take it apart intact. If you would enjoy the challenge of trying this joint, plan on leaving plenty of wood between the mortise bottom and the back or blind surface; at least $\frac{3}{8}$ inch is needed to withstand the wedges mashing against the mortise bottom. Cut the mortise bottom to flare $\frac{1}{8}$ inch at each end and use wedges no longer than the depth of the kerfs cut in the tenons.

Yet another type of wedged tenon joint is one where multiple tenons are cut and each tenon is kerfed diagonally for one wedge (Fig. 7). This is an excellent joint for joining wide pieces of solid stock at a right angle. The wedges add additional strength and if made of contrasting wood, provide an interesting effect.



Depending on the width of the board to be joined, the number of tenons needed, and their width, are laid out allowing for a notch at each end equal to one half the width of a tenon. Like the box joint, the tenons are best cut with a jig on the tablesaw with the waste between tenons being removed by passes over a dado head.

Mortises are marked on the mating pieces by scribing from the tenons and most of the waste is drilled out before the mortises are squared off with a chisel. To wedge the tenons use a back saw to cut diagonally across each tenon from corner to corner and almost to the bottom. Wedges are cut from a block of scrap in the same manner as previously described, allowing extra length for trimming flush. Care should be taken to cut the wedges uniformly in thickness so that they will appear identical when trimmed flush. If one or two are thicker than the rest, they will stick out like the proverbial sore thumb and the appearance of the joint will be marred.

There is another group of wedged joints that are designed to be disassembled if necessary. These joints, called loose tenon or tusk joints, are not glued but employ one or more

(continued on next page)

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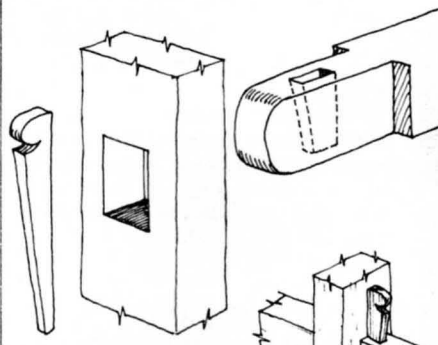
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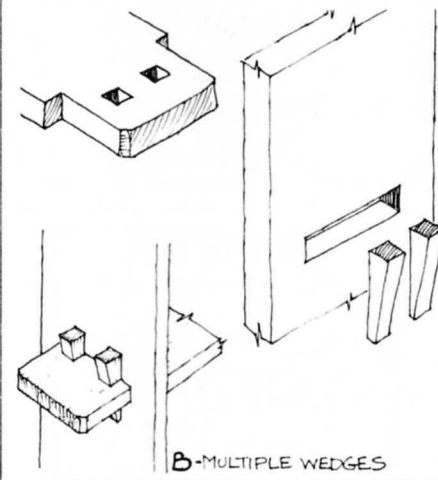
Beginning Woodworker (cont'd)

tapered wedges that can be easily removed. These joints are commonly used at each end of the stretcher on trestle tables. Fig. 8 A & B shows the two types most often used. They are fun to make and add interest to the finished piece.

FIG. 8



A - SINGLE LOOSE WEDGE



B - MULTIPLE WEDGES

Since these joints are usually used to join members of relatively large sections, the protruding tenons should be given fairly substantial shoulders to provide plenty of bearing surface. Also, the projecting tenon stub should be left rather long beyond the wedge mortise to prevent splitting of the stub along the grain from the mortise. For the sake of appearance, the tenon stub can be rounded off as shown or chamfered.

Wedges should be cut long enough to provide plenty of bearing surface on each side of the mortise, also to allow for trimming their ends so they protrude a uniform distance. Cut the wedges with lengthwise grain and taper one side. Too much taper will cause the wedges to work loose, so for these large wedges, a taper of 1 inch for every 6 inches of wedge length is about right. Traditionally the wedges are shaped at their upper ends as shown both for appearance and to facilitate removal.

The location of the wedge mortise in

relation to the large mortise in the vertical member is critical for getting a tight joint. Fig. 9 shows that the wedge mortise should extend about 1/8 inch inside the large mortise. If this is not done, the wedge will not draw the joint tight. The wedge mortise should also be sloped to conform to the taper of the wedge.

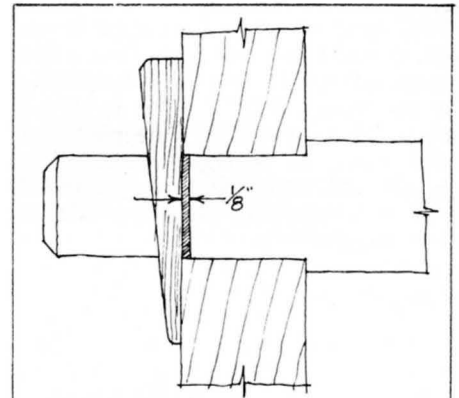


FIG. 9 THE WEDGE MORTISE EXTENDS SLIGHTLY INTO LARGE MORTISE

The joints we've covered are the ones that most woodworkers use but there are many more exotic types. Chinese and Japanese joiners have traditionally disdained the use of fasteners or even glue and have created many ingenious wedged and pinned joints, some of which are very complex. Fig. 10 shows a Japanese mitered tenon joint that wedges itself.

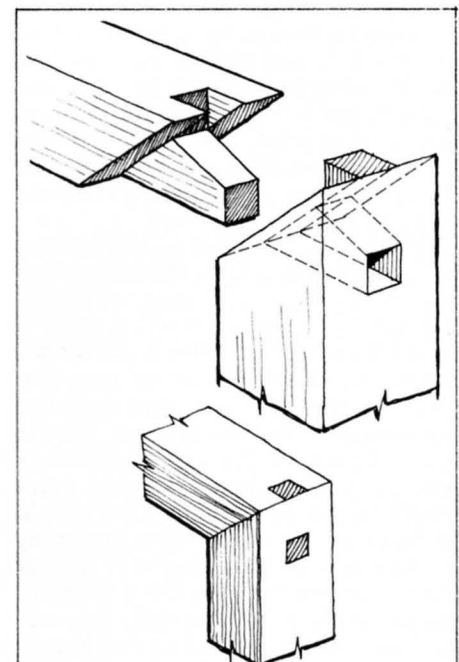


FIG. 10 JAPANESE MITERED AND WEDGED TENON JOINT

This joint cannot be machined and demands a high degree of layout and hand tool skill. You can only profit from an attempt to duplicate this joint and who knows what your efforts will lead to.

Early American Wall Cupboard

by Steve Benjamin

With space at a premium in the homes of most early Americans, wall cabinets enjoyed a great deal of popularity because they added some much needed storage area.

While not an original piece, the one shown offers many of the characteristics that make early American designs so appealing to many of us. To simplify construction, dowels are used for most joints, although experienced woodworkers will no doubt choose to incorporate the mortise and tenon. Pine is used throughout, except for the plywood back (part G and H).

Begin by making the bottom (A), top (C), and two shelves (B). As shown in the detail, all four parts are identical. An eight foot length of 1 x 12 stock ($\frac{3}{4}$ inch by 11 $\frac{1}{4}$ inch actual) will provide enough material. It's important that the angles be cut accurately, so check your saw before starting. Also, make sure the dimensions are cut exactly as shown.

To make part D, rip 1 inch stock ($\frac{3}{4}$ inch actual) to a width of about 3 $\frac{3}{8}$ inches, then set the table or radial arm

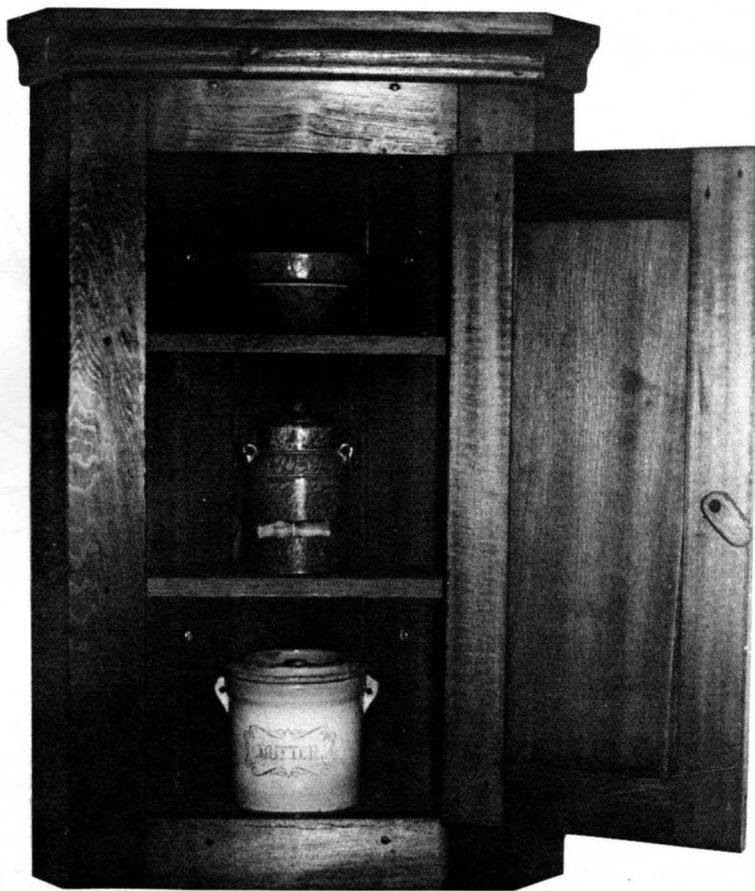


Photo by Author

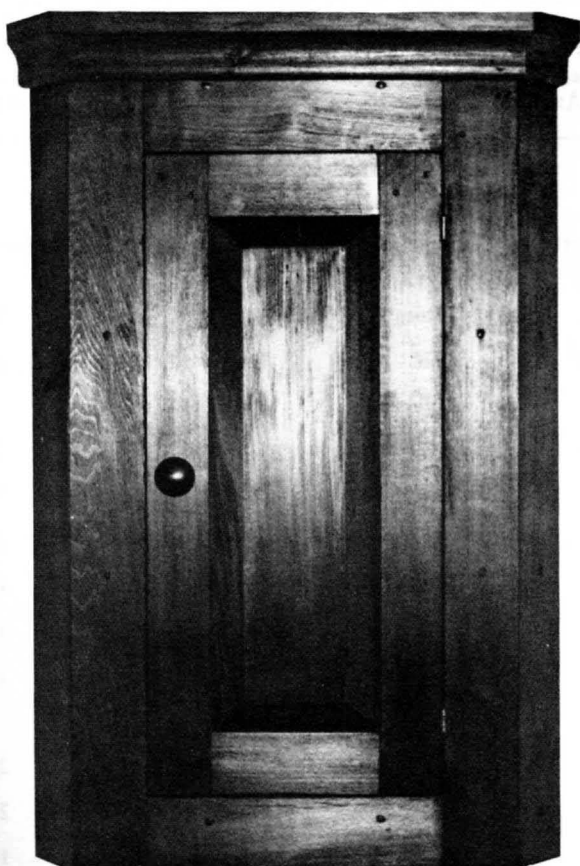


Photo by Author

saw blade to a 22 $\frac{1}{2}$ degree angle and cut a bevel along one edge. Return the blade to the zero degree position and with the beveled edge against the fence, rip the piece to its finish width of 3 inches.

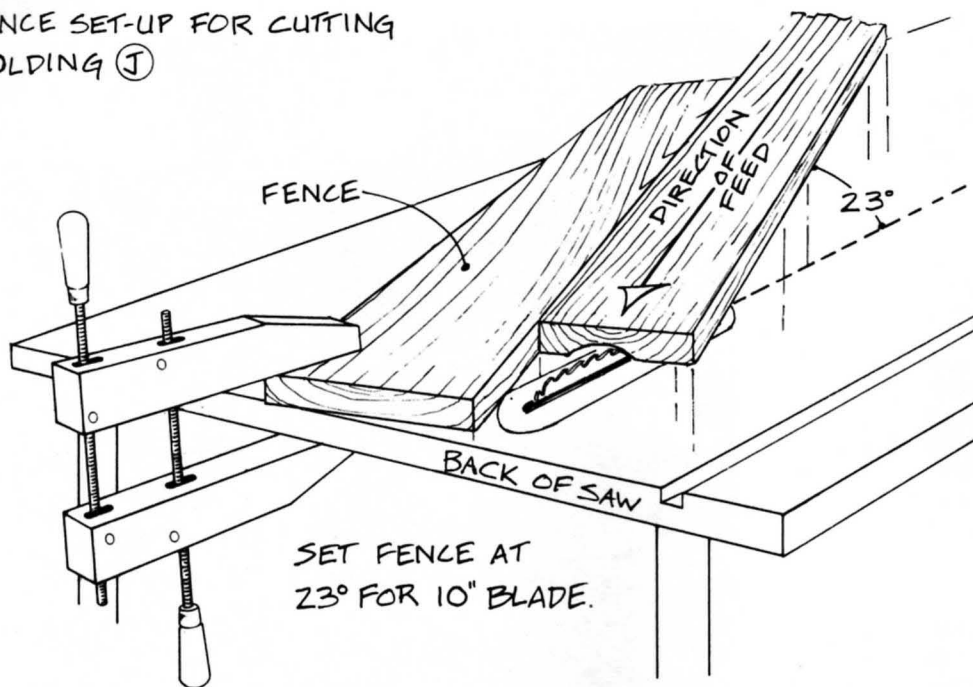
Cut part E to the dimensions shown in the Bill of Materials. Be sure both ends are square. Referring to the detail, drill parts E and D for $\frac{3}{8}$ inch diameter by 2 inch long dowel pins. If you have one, a doweling jig will be helpful here. Drill the holes slightly more than 1 inch deep to allow room for any excess glue in the hole.

Parts D and E can now be joined to form the outer frame. Apply glue to the mating surfaces of both parts and also to the dowel pins. Keep in mind that the dowel pins must have a lengthwise groove to allow trapped air and glue to escape, otherwise you may not be able to close the joint. Assemble parts D and E and clamp securely with bar or pipe clamps. Apply only enough pressure to bring the mating surfaces in firm contact - too much pressure will squeeze most of the glue out of the joint. Use small scraps of wood as clamp pads to protect the frame. It's important that the frame be square, so check this before setting aside to dry. Make adjustments as necessary.

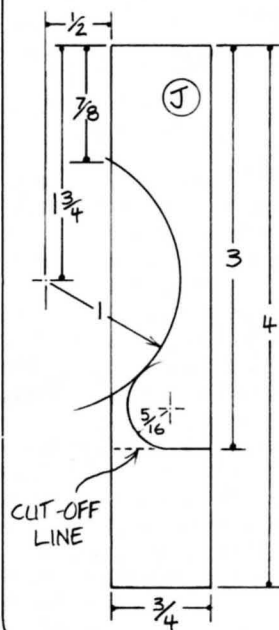
Make the two back pieces (parts G & H) next. Solid stock can be used, but plywood is probably a better choice, especially if you plan to paint the interior. Note that part H is wider than part G. Also, part H has a $\frac{1}{4}$ inch deep by $\frac{1}{2}$ inch wide rabbet along one edge.

The cabinet can now be partially assembled. Sand thoroughly parts A, B, C, frame parts D and E, and back parts G and H. If there are deep scratches or dents, you may need to start with 80 grit aluminum oxide paper, otherwise start with 100 grit. For a proper sanding job you also need to remove all planer marks (the marks made at the mill by the cutter blades of a surface planer). Follow the first sanding with a second sanding using 120 grit. A third and fourth sanding with 150, then 220 grit will result in a smooth finish that will take a stain nicely.

FENCE SET-UP FOR CUTTING MOLDING (J)



MOLDING PROFILE



If you plan to paint or stain the cabinet, now is the best time to do it - before the parts are assembled. These cabinets often had painted interiors (in this case, parts B, the top of A, the bottom of C, and inside of G & H) with all other parts stained. If you use paint, choose one of the early American colors available at many paint stores. If you can't get one locally, several attractive colors can be ordered from Cohasset Colonials, Cohasset, MA 02025.

After the stain and/or paint has dried, the back parts (G & H) can be assembled to parts A, B, and C. Lay out and mark the location of parts A, B, and C, then join to the back parts with 1 1/4 inch x #8 countersunk wood screws. The front frame (parts D and E) can also be added at this time. I used square nails to give the piece a more authentic look. Before driving the nails through, I first drilled pilot holes in order to prevent the wood from splitting. The general locations of the nails are shown in the photo. A good source for old-fashioned cut and decorative nails is the Tremont Nail Company, P.O. Box 111, Wareham, MA 02571.

The two sides (part F) can now be made. Rip the stock to about 2 1/2 inches, then cut a 22 1/2 degree bevel along one edge. Now measure the actual opening on the cabinet and rip the stock so that it has an exact fit. Drill pilot holes, then secure with cut nails.

To make the molding (J), the table saw is set up as shown above. A 23 degree angle is used for a 10 inch blade. Other size blades will require some experimentation to get the correct angle.

Lower the blade so that it is barely (about 1/32 inch) above the table. When properly set up, just the very top of the highest tooth should contact the board at a point 1 3/4 inch from the edge. Make the first cut with the blade set at a height of 1/32 inch. Use two push sticks, one to hold the workpiece against the fence, the other to feed the stock. After each pass raise the blade another 1/32 inch. It will take around a dozen passes to complete the cove cut.

Rip the stock to three inches (see above), then round off at the cut-off line using a sharp plane followed by a good sanding. The plate (I) is cut to shape and glued to the top as shown. The molding is mitered at 22 1/2 degrees, then attached to the plate with glue and finishing nails, countersunk and filled.

With the cabinet completed, the frame and panel door can be made next (parts K, L, and M). Cut parts K and L to size as shown. At this point, it's best to use actual measurements from the cabinet to determine dimensions. The 5/16 inch deep by 1/4 inch wide groove can best be cut with a

router. Note that the groove must be stopped short of the ends on part K.

The center panel (M) is the visual highlight of this piece, so try to select stock that has a pleasing wood figure. The tapered edge can be cut on the table saw, radial arm saw, or with a panel raising cutter on the shaper.

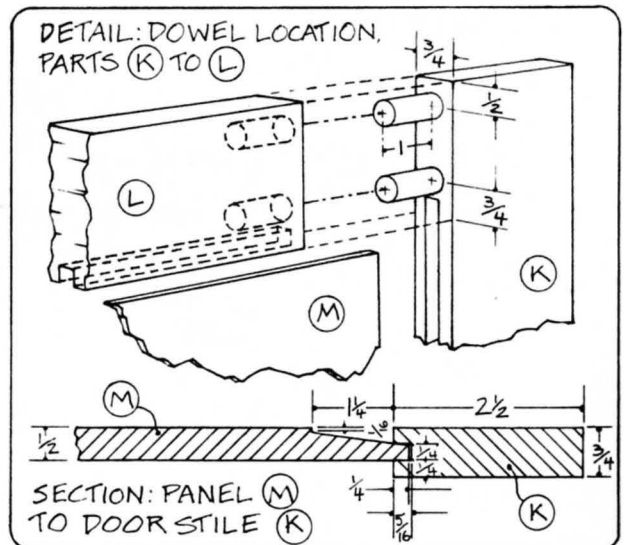
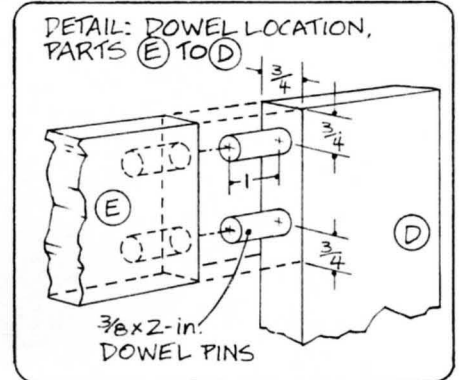
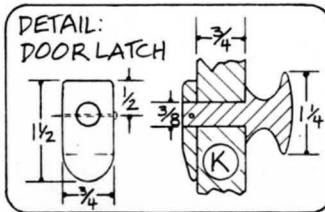
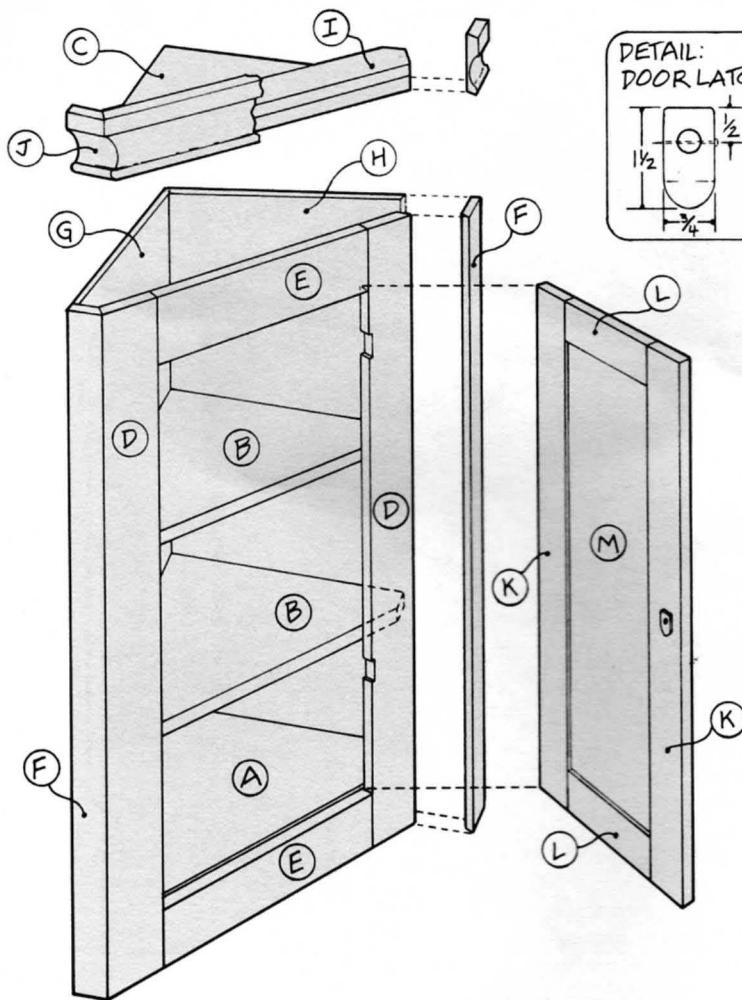
Sand all parts thoroughly, then stain or paint as desired. Assemble the door as shown. Use glue to join parts K and L, but do not glue the panel (M) in place. It must be free to expand and contract in the frame.

Various kinds of commercial door latches are available but the one shown is most authentic. The door hangs on a pair of 1/4 inch brass butt hinges which are mortised into parts D and K.

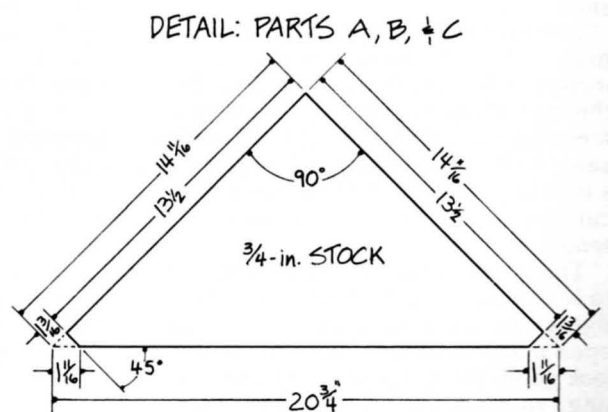
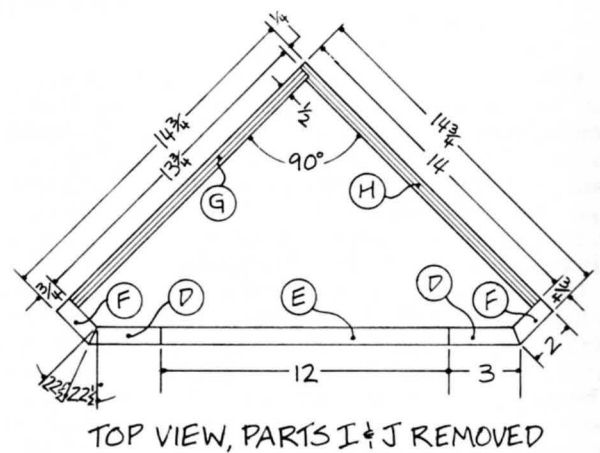
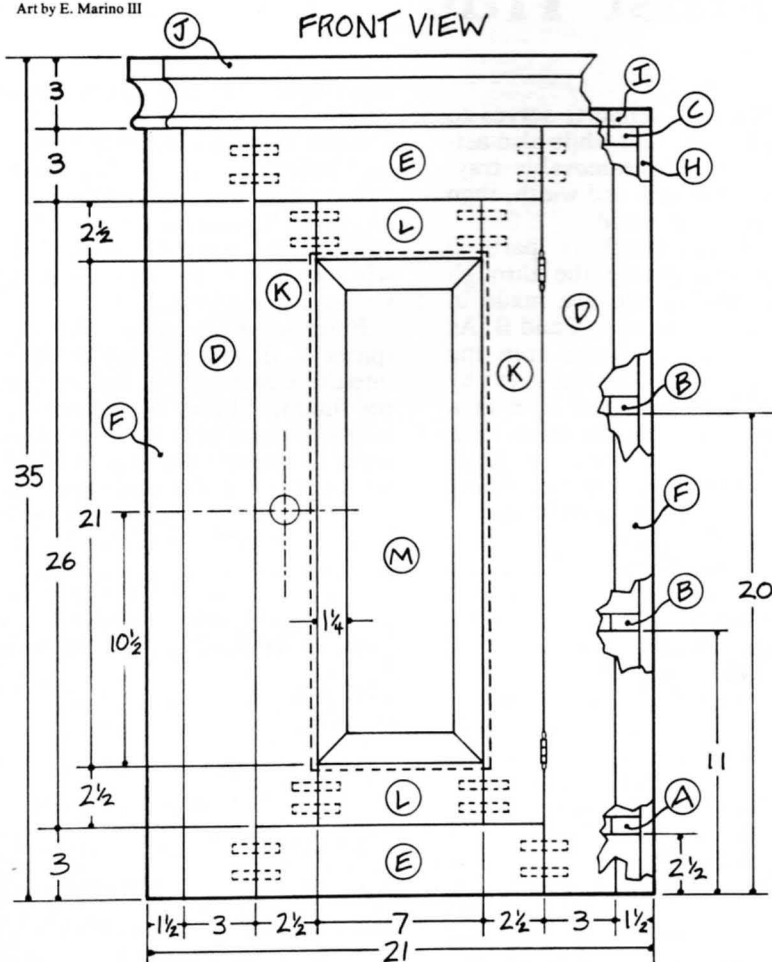
Stained surfaces can be finished with two coats of Min-wax Antique Oil Finish. Painted surfaces can be left as is.

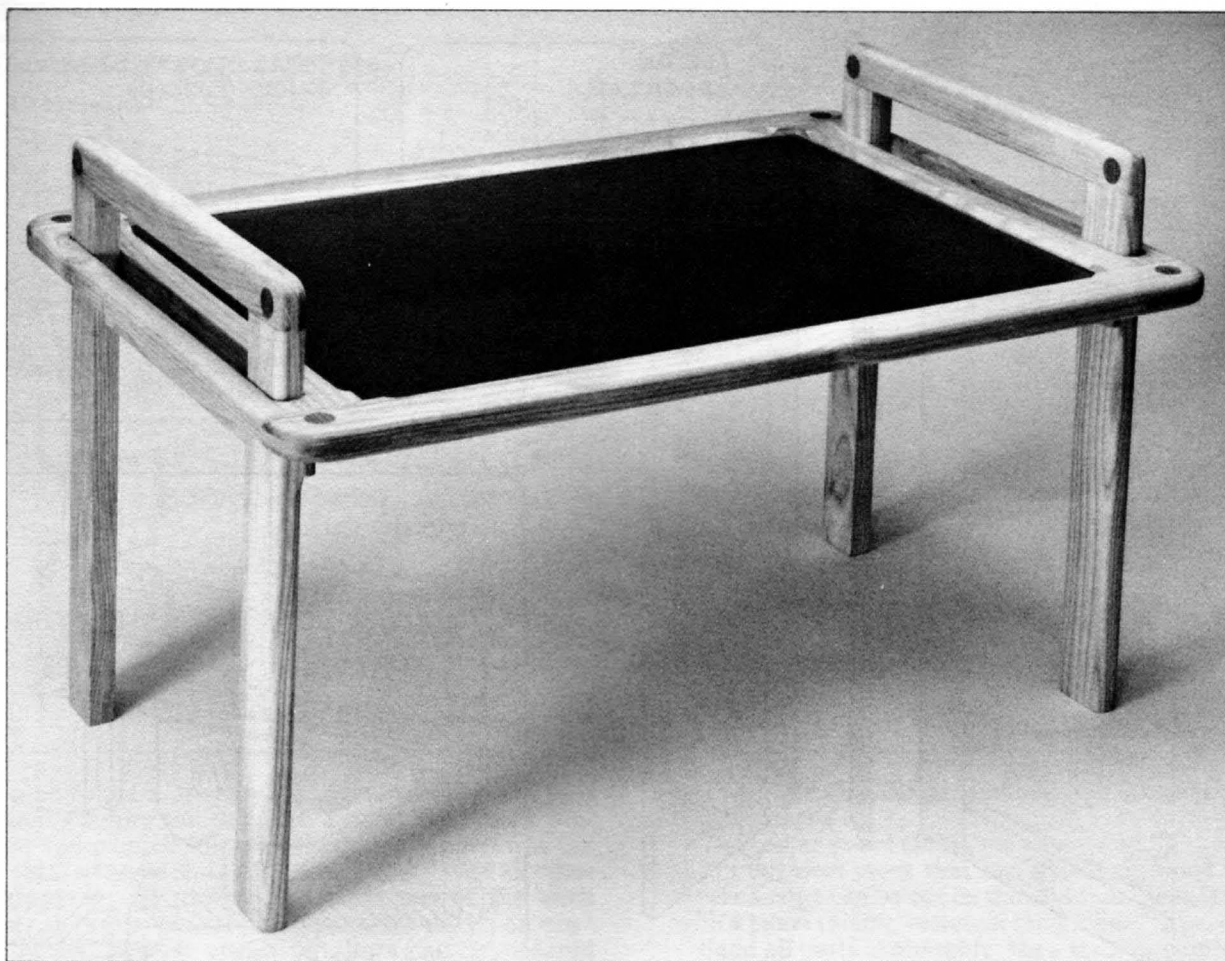
Bill of Materials (All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Bottom	See Detail	1
B	Shelf	See Detail	2
C	Top	See Detail	1
D	Cabinet Stile	3/4 x 3 x 32	2
E	Cabinet Rail	3/4 x 3 x 10	2
F	Side	3/4 x 2 x 32	2
G	Left Back	1/2 x 13 3/4 x 32	1
H	Right Back	1/2 x 14 x 32	1
I	Plate	3/4 x 2 x 21	1
J	Molding	See Detail	
K	Door Stile	3/4 x 2 1/2 x 26	2
L	Door Rail	3/4 x 2 1/2 x 7	2
M	Panel	1/2 x 7 1/2 x 21 1/2	1



Art by E. Marino III





Breakfast Tray

What a luxurious way to start the day - breakfast in bed. This attractive contemporary styled serving tray features a Formica® top and legs that pull out of the tray to permit easy storage. Once disassembled, the three parts can be conveniently hung on a kitchen wall or stored flat in a cabinet.

Ours is made from ash, since this wood takes well to washing and scrubbing, although we think oak would also look good with this piece. The open mortise and tenon joints are both strong and attractive. A $\frac{3}{8}$ inch diameter teak pin in each joint adds further to the strength and appearance.

The four legs (part A) can be made first. Cut each one to a width of $1\frac{1}{2}$ inches and a length of 14 inches. The through tenon can best be cut using a tenon jig in conjunction with the table saw. With the saw blade adjusted for a 1 inch depth of cut, set the tenon jig to cut the $\frac{1}{4}$ inch wide by 1 inch long tenon.

The handle (part B) can now be cut to length and width. Again, the tenon jig can be used, this time to cut the open mortise. In order for this joint to look good, the parts must be close fitting, so make the mortise cuts carefully, removing a little at a time, and always checking the fit with the leg

tenon.

Part C, the tray support, serves to add strength to the unit while also acting as a stop for the removable tray. Cut this part to length and width, then add the notch on each end.

The tray frame members, parts D and E, also incorporate the through mortise and tenon, and are made in the same manner as parts A and B. As with parts A and B, make sure the joints are well fitted. The slot is cut by drilling a $\frac{3}{4}$ inch diameter hole at a point centered $2\frac{3}{8}$ inches from each end of part E. Use a ruler to draw guide lines connecting the two holes, then cut out the waste material with a saber saw. Work carefully to make the cut a straight one. Keep in mind that if parts A and B are slightly thicker than $\frac{3}{4}$ inch, the width of the slot should be adjusted accordingly. A round file will expand the hole if needed.

The tray (part F) is made from $\frac{1}{4}$ inch birch plywood. Cut it to length and width, then apply Formica® to both the top and bottom. Since the tray is reversible, we used a rust colored Formica® on one side and plain white Formica® on the other.

The grooves in parts E and D can now be cut. Use a router to cut the groove $\frac{3}{8}$ inch deep with a width that allows for a slip fit of the Formica®

top. Note that the groove must be stopped on each end.

Sand all parts (except the Formica® top) before assembly. Join with glue and clamps. Use a plug cutter to cut $\frac{1}{2}$ or $\frac{5}{8}$ inch diameter pins. We used teak, but any wood of contrasting color will look good, and of course, it adds strength to the joint.

Final sand all parts. The leg unit (parts A, B, and C) should slip easily into the slot in part E. Before applying the final finish, try the tray out by sitting with it in bed. Some readers may want to shorten the legs a bit, it depends on how tall you are and how soft your bed is. An application of Watco Danish Oil will complete the project.

Bill of Materials (All Dimensions Actual)			
Part	Description	Size	No. Req'd
A	Leg	$\frac{3}{4}$ x $1\frac{1}{2}$ x 14	4
B	Handle	$\frac{3}{4}$ x 1 x 12	2
C	Table Support	$\frac{3}{4}$ x 1 x 12	2
D	Front & Back Frame	$\frac{3}{4}$ x $1\frac{1}{4}$ x 24	2
E	Side Frame	$\frac{3}{4}$ x $2\frac{1}{4}$ x 16	2
F	Tray	$\frac{1}{4}$ x $14\frac{1}{2}$ x $20\frac{1}{2}$	1
G	Formica®	As Req'd	



Photo by Author

Veneered End Table

by Robert A. McCoy

A curly birch veneer adds an especially distinctive look to this trestle style end table. Adding further to its visual appeal is a border of veneer inlay and a mitered birch frame.

All other parts are made of birch solid stock, although as usual, just about any kind of hardwood is also suitable.

For those who prefer to avoid veneering the top there are a couple of alternate methods. The first, and easiest method, is to make the top from solid stock. Simply edge-glue three or four boards to get enough width.

The second method is shown in the detail of the alternate top construction. The center panel is made of solid stock with a 1/4 inch wide by 3/8 inch long tongue cut along its perimeter. The veneer inlay is optional, but if you plan to include it, the groove for the inlay is best cut and fitted to the frame parts (J and K) before they are mitered. Cutting the groove is best accomplished on a shaper, but if carefully done, the router and jointer can also be used. If

the jointer is used, set the fence to the width of the inlay strip, and set the depth of cut to slightly less than the thickness of the inlay strip. *Caution: This method requires that the safety guard be removed, so use push sticks and keep hands away from the blade.*

Readers who enjoy veneering will probably choose to have a veneered top as shown in the exploded view. Cut the top (G) from 1/2 inch plywood to overall length and width. Make sure the corners are square. Both the top and bottom of the plywood will require veneer in order to equalize stresses, although the veneer used on the bottom can be an inexpensive type. Poplar is often used here. Be sure the veneer runs at right angles to the grain direction of the face veneer on the plywood. And use birch plywood - not fir. The grain of fir plywood will eventually telegraph through. For more information on veneering, there is an excellent book called *Veneering Simplified* by Harry J. Hobbs. It's available by mail-order from Constantine, 2050 East-

chester Road, Bronx, NY 10461. Current price is \$6.95 plus shipping.

After applying the veneer, use a dado head cutter to cut the 5/16 inch by 5/16 inch rabbet around the perimeter of the top. Work carefully to avoid splintering the veneer.

The frame parts (J and K) are made next. Cut the groove for the veneer inlay as described earlier. The miters are cut after the inlay is glued in place. The 1/4 inch wide by 3/8 inch deep groove is cut by making repeated passes over the table saw blade. Holes are drilled at the miters to take 3/8 inch diameter by 1 1/2 inch long dowel pins. Glue and clamp parts J and K to the top and allow to dry overnight.

The remaining parts are made to the dimensions shown. The leg (part A) will probably require edge-gluing two boards to get the 11 inch width that is required.

On this project it is best to finish the individual pieces before assembly. Any good quality finish that is water and alcohol resistant is suitable. Polyurethane is suggested, although Watco Danish Oil Finish is also a good choice. Shellac is not suitable.

If a stain is to be used, it should be done after final sanding. Try a sample on scrap wood, including a coat of final finish. A filler may be required on open grain woods.

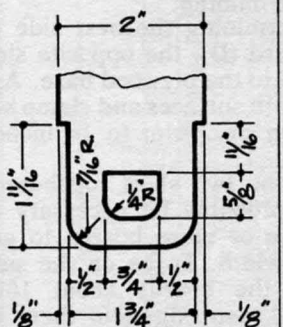
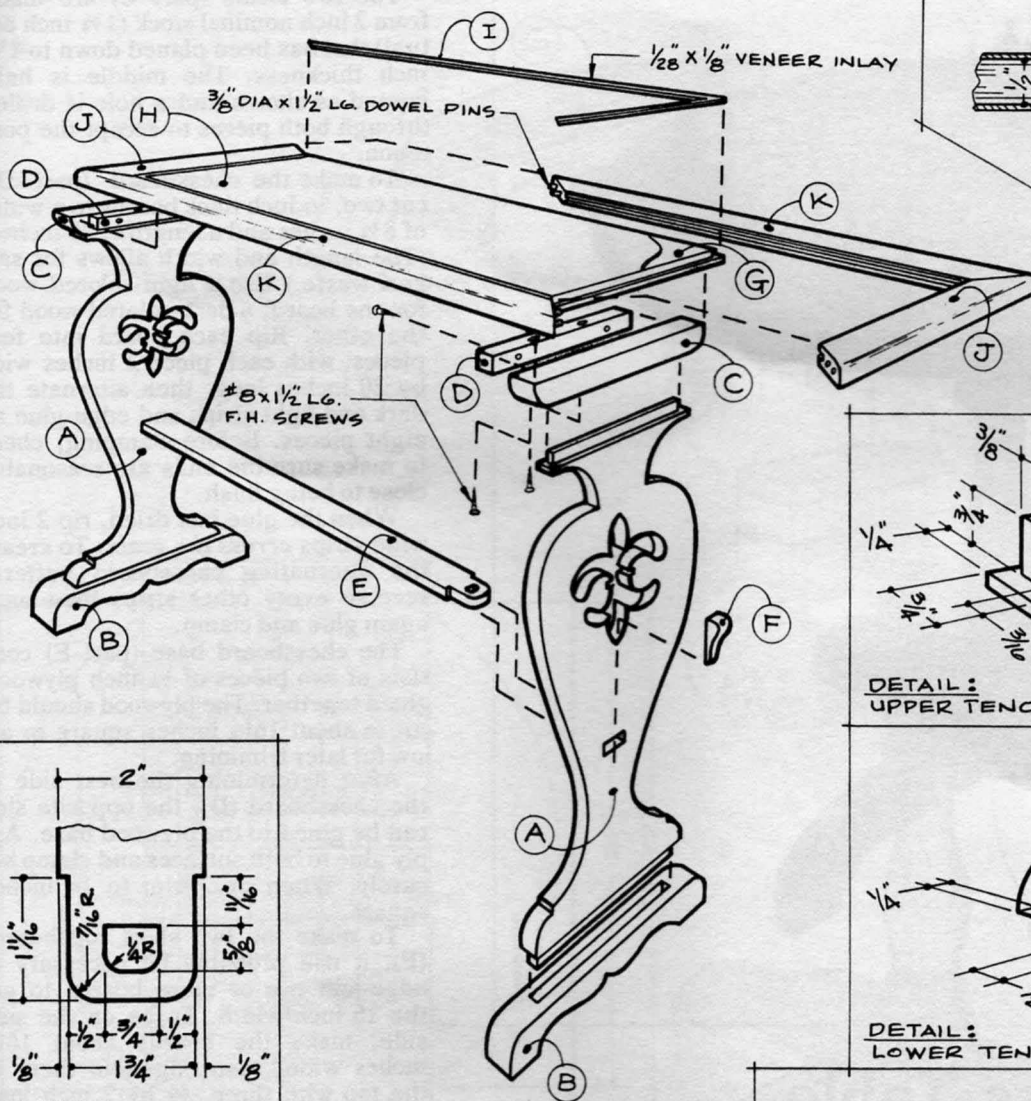
When polyurethane finish is used, three or four coats are required. Each coat should dry overnight followed by a light sanding with a fine paper. Do not use steel wool between coats as it is nearly impossible to remove all of the particles. The last coat should be sanded smooth using a 280 grit paper followed by a good rubbing using #0000 steel wool. This may be followed by a coat of good wax.

The assembly process is simple. With the top face down on a pad to prevent scratching, locate one cleat on the top and attach with screws as shown. Use a depth stop when drilling pilot hole so that you do not drill through the top. Place stretcher in slots and locate other end so that the ends are square with the top. Fasten with screws as indicated. Turn table upright and insert pegs in slots. Thumb pressure or a light tap on the pegs is all that is required.

Bill of Materials

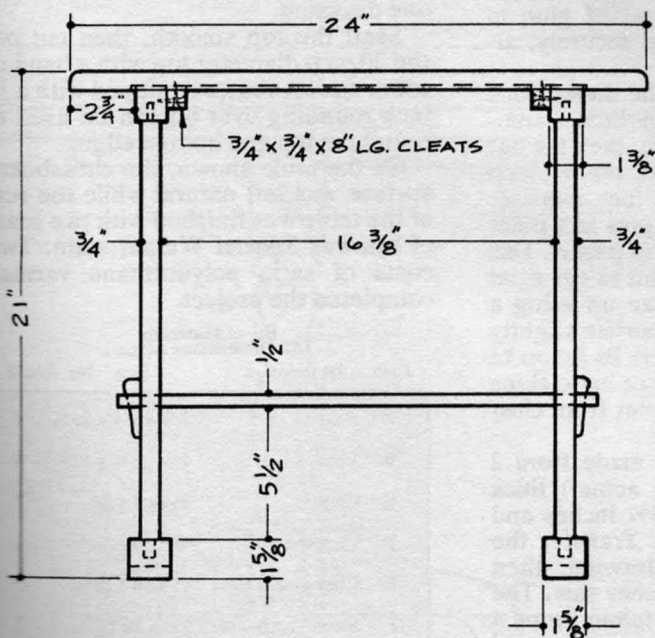
(All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Leg	3/4 x 9 3/4 x 19	2
B	Foot	1 3/4 x 1 3/4 x 11	2
C	Support	1 3/4 x 1 3/4 x 9 3/4	2
D	Cleat	3/4 x 3/4 x 8	2
E	Stretcher	1/2 x 2 x 19 3/4	1
F	Peg	3/4 x 3/4 x 2 1/2	2
G	Top	1/2 x 10 3/4 x 19 3/4	1
H	Veneer	As Req'd	
I	Inlay	As Req'd	
J	Short Top Frame	3/4 x 2 1/2 x 15	2
K	Long Top Frame	3/4 x 2 1/2 x 24	2

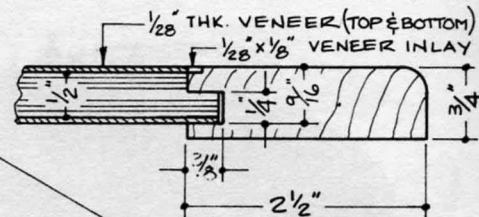


DETAIL:
STRETCHER END

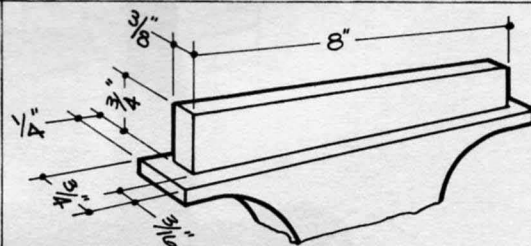
Art by The Drawing Board,
Naugatuck, CT



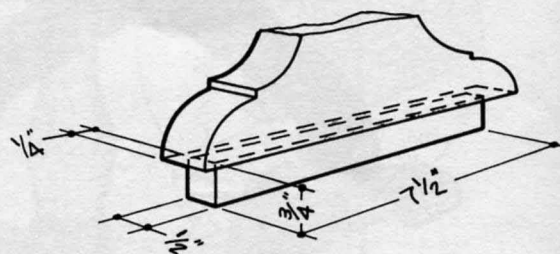
SIDE ELEVATION



DETAIL:
TOP CONSTRUCTION

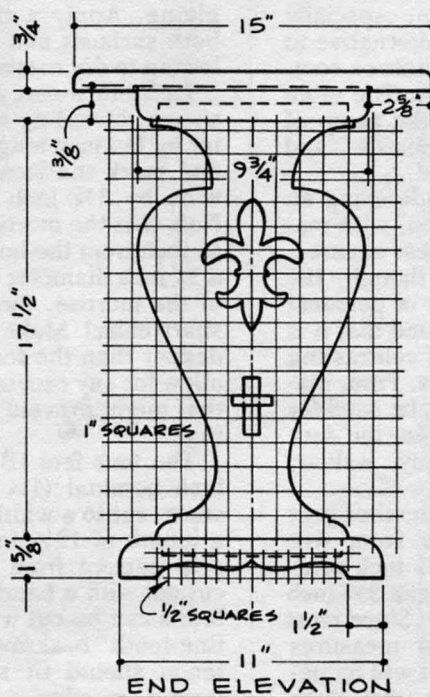
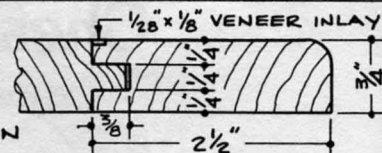


DETAIL:
UPPER TENON

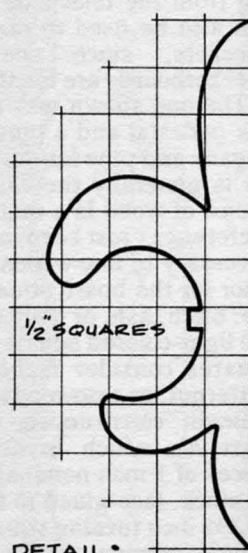


DETAIL:
LOWER TENON

DETAIL:
ALTERNATE
TOP CONSTRUCTION



END ELEVATION



DETAIL:
FLEUR-DE-LIS
CUTOUT



Photo by Author

Chess Table

by Roger Schroeder

A chess table can be a popular addition to a den or living room, especially since it offers a pleasant alternative to the seemingly endless nonsense coming from the television set. The table can also be used to play the game of checkers, since chessboards and checkerboards are identical.

The one shown was made using an oak pedestal and a pine top, with mahogany and pine for the chess squares. As is generally the case though, the choice of wood is a matter of personal preference - just keep in mind that it is necessary to use woods of contrasting color for the board squares. Pine, maple, birch, ash, or holly can be used for the light-colored squares. For the dark squares consider mahogany, walnut, butternut, or rosewood.

Begin construction with the post (part A), which is made from five pieces of 1 inch nominal ($\frac{3}{4}$ inch actual) stock, face-glued to form a $3\frac{3}{4}$ inch by $3\frac{3}{4}$ inch turning square. Since most 1 inch nominal hardwood measures about $13/16$ inches thick, it will be necessary to surface plane the stock

down to $\frac{3}{4}$ inch thickness before face gluing. Apply a thin coat of glue to both surfaces and clamp securely, allowing to dry overnight.

Lathe-turn part A to the dimensions shown, including the $1\frac{1}{2}$ inch diameter by $1\frac{1}{2}$ inch long tenon, then lay out and mark the location of the $\frac{3}{4}$ inch wide by $3\frac{3}{4}$ inch long foot mortise. Note that the mortise begins at a point $\frac{1}{2}$ inch from the bottom of part A. Use a $\frac{3}{4}$ inch diameter drill bit to cut most of the mortise, then clean up using a sharp chisel. Make the mortise slightly deeper than the foot (part B) tenon to allow for any excess glue or loose chips that might prevent the joint from closing.

The four feet (B) are made from 2 inch nominal ($1\frac{1}{4}$ inch actual) thick stock, cut to a width of $6\frac{3}{4}$ inches and a length of $12\frac{1}{4}$ inches. Transfer the grid pattern from the drawing, then cut out with a band or saber saw. The tenon can be cut with a tenon jig or a fine-tooth backsaw. The completed tenon should fit snugly in the post (part A) mortise.

The two cleats (part C) are made from 2 inch nominal stock ($1\frac{3}{4}$ inch actual) that has been planed down to $1\frac{1}{2}$ inch thickness. The middle is half-lapped as shown and a hole is drilled through both pieces to accept the post tenon.

To make the chessboard (part D), cut two, $\frac{1}{2}$ inch thick boards to a width of $8\frac{3}{4}$ inches and a length of 20 inches. (The length and width allows for saw kerf waste.) Use a light-colored wood for one board, a dark-colored wood for the other. Rip each board into four pieces, with each piece 2 inches wide by 20 inches long, then alternate the dark and light strips and edge-glue all eight pieces. Before clamping, check to make sure the ends are reasonably close to being flush.

When the glue has dried, rip 2 inch wide strips *across the grain*. To create the alternating chessboard pattern, reverse every other strip, then once again glue and clamp.

The chessboard base (part E) consists of two pieces of $\frac{1}{2}$ inch plywood glued together. The plywood should be cut to about $16\frac{1}{4}$ inches square to allow for later trimming.

After determining the best side of the chessboard (D), the opposite side can be glued to the plywood base. Apply glue to both surfaces and clamp securely. When dry, trim to 16 inches square.

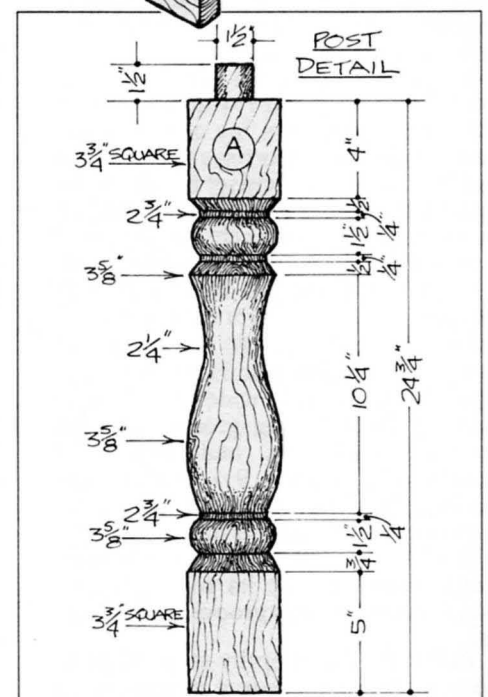
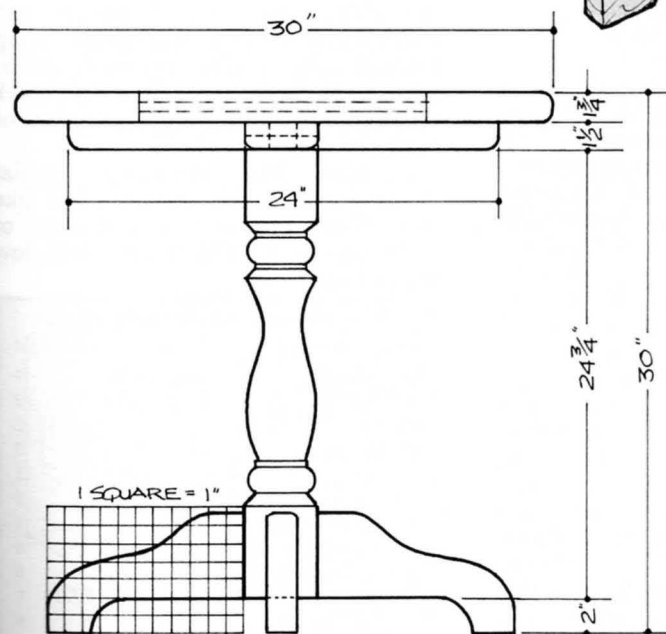
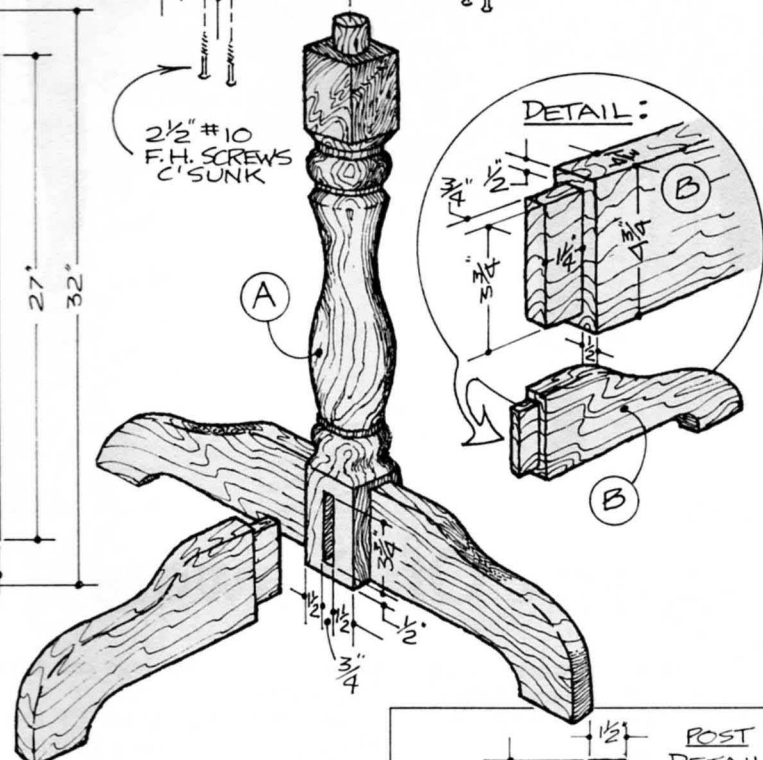
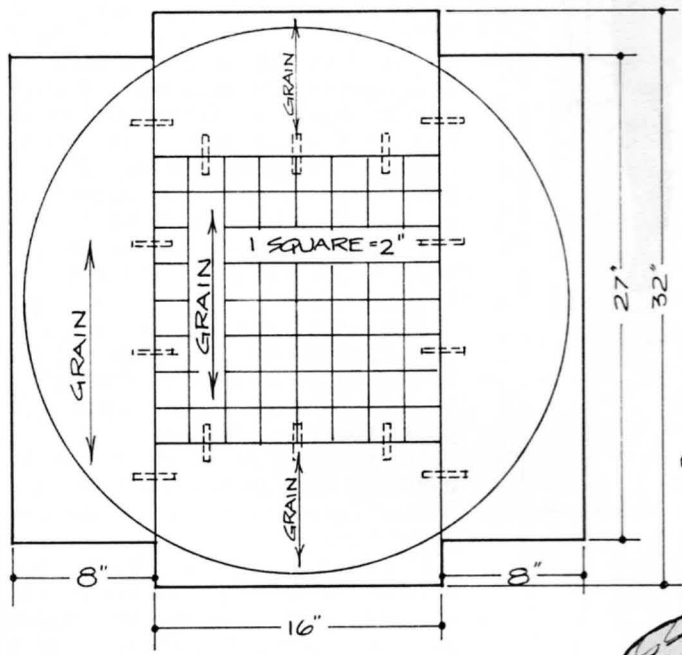
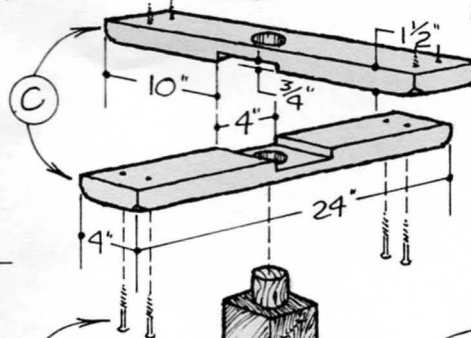
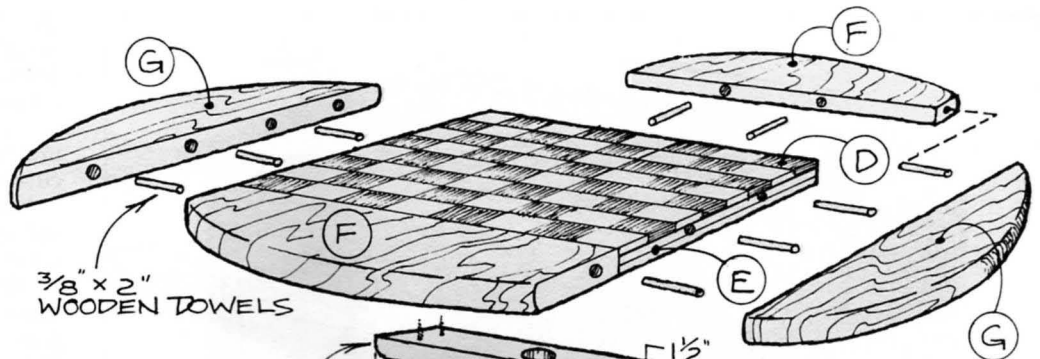
To make the two short top boards (F), it will probably be necessary to edge-join two or more boards to get the 16 inch width. To be on the safe side, make the boards about $16\frac{1}{4}$ inches wide, then edge-join them to the top with three, $\frac{3}{8}$ by 2 inch long dowels as shown. Clamp firmly, allow to dry, then trim to the exact width of the chessboard (part D). Next, the long top boards (B) can be joined in the same manner. Note that when all top parts are joined the grain all runs in one direction.

Sand the top smooth, then cut out the 30 inch diameter top with a band or saber saw. A router equipped with a $\frac{3}{8}$ inch rounding-over bit can be used to round the top and bottom edges.

On the table shown, the chessboard surface was left natural while the rest of the table was finished with two coats of Minwax Special Walnut stain. Two coats of satin polyurethane varnish completed the project.

Bill of Materials (All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Post	$3\frac{3}{4}$ x $3\frac{3}{4}$ x 26 $\frac{1}{4}$	1
B	Foot	$1\frac{3}{4}$ x $6\frac{3}{4}$ x $12\frac{1}{4}$	4
C	Cleats	$1\frac{1}{2}$ x 4 x 24	2
D	Chessboard	$\frac{1}{2}$ x 16 x 16	1
E	Chessboard Base	$\frac{1}{2}$ x 16 x 16	2
F	Short Top Boards	$1\frac{1}{2}$ x 16 x 8	2
G	Long Top Boards	$1\frac{1}{2}$ x 8 x 27	2





Chest Of Drawers

This small chest of drawers, made from pine, is a fairly typical example of Danish country furniture from the early part of this century.

Begin by making the two front legs (part A). Cut each to $1\frac{3}{8}$ inch square x $28\frac{1}{4}$ inch long, then lay out the locations of the four mortises for parts D and E. Use a sharp chisel to cut to the dimensions shown. The $\frac{1}{4}$ inch wide x $\frac{3}{8}$ inch deep x 19 inch long groove is best cut with a router equipped with a $\frac{1}{4}$ inch straight bit. Note that it is stopped $9\frac{1}{4}$ inches from the bottom.

The two back legs (B) are cut to the same overall dimensions as the front legs. Two, $\frac{1}{4}$ inch wide by $\frac{3}{8}$ inch deep by 19 inch long grooves are cut on each back leg, and again the grooves are stopped $9\frac{1}{4}$ inches from the bottom. Also, to accept the inside tenon on part G, part B has a short ($\frac{1}{4}$ inch wide by $\frac{3}{8}$ inch deep by $\frac{3}{4}$ inch long) groove cut at its top. A sharp chisel will make this groove in short order.

Refer to the step-by-step illustrations to make the curve shape on all four legs. Once the template is made, the profile can be quickly traced to the

stock, and all four legs can be cut in surprisingly little time.

The two sides (part C) are next. Since part C measures 13 inches wide (including the front and back tongue), it will be necessary to edge-glue two pieces of stock in order to get enough width. Two, 42 inch lengths of 1×8 stock (which actually measures $\frac{3}{4}$ inch x $7\frac{1}{4}$ inch) will provide enough material to make both sides and still allow for some final trimming. Locate and drill about three dowel pin holes along the mating edges of the 42 inch long boards. These dowel pins will primarily serve to align the boards as they are glued and clamped. Apply glue to both mating surfaces, then clamp securely with bar or pipe clamps. Allow to dry overnight. When dry, rip the board to a width of 13 inches. The $\frac{1}{4}$ inch wide by $\frac{3}{8}$ inch long tongue can best be cut using a dado head cutter although repeated passes with a regular table or radial-arm saw will yield the same results. Check for a comfortable fit in the leg grooves. After the tongues have been made, the board can be crosscut into 19 inch lengths.

The three dividers (part D) and the

top divider (part E) are cut to the length and width shown in the Bill of Materials. The tenons are cut to the dimensions specified in the details. A tenon jig will be helpful here, but the joint can also be cut with a dado head cutter, or by hand with a back saw.

Next, the lower back frame (F), and the upper back frame (G) are cut to length and width. The tenons, shown in the details, are cut in the same manner as the dividers. Note that both parts have a $\frac{1}{4}$ inch wide by $\frac{3}{8}$ inch deep groove along the entire length to accept the back (J).

After cutting the $\frac{1}{4}$ inch thick plywood back to length and width, the chest frame is ready for assembly. Sand all parts thoroughly, then assemble as shown using glue and bar or pipe clamps. Allow to dry thoroughly.

The drawer supports (H) are joined to the sides (C) with $1\frac{1}{2} \times \#8$ wood screws. Four screws are required for each support. The screw holes through part H should be slightly slotted so that part C will be free to expand and contract with changes in humidity. No glue should be used, except perhaps for a 2 inch long area at the middle. The drawer guide (I) can now be cut and glued to part H, but it should not be glued to part C.

The three drawers are made as shown on the drawing. Drawer pulls can be made as shown, although a number of ready-made commercial pulls would also look good.

The molding (L) is carved from $\frac{3}{4}$ inch stock, then glued to the front legs. Drawer stops (K) are cut to size and glued in place.

Like the sides, the top (M) is made of edge-glued stock, and it is joined in the same manner. To add the molded edge, use a router equipped with a piloted $5/32$ inch Roman ogee bit, then use sandpaper to round-off the lower edge. The top is joined to the rest of the cabinet with $1\frac{1}{4} \times \#10$ round head wood screws (and washers) driven up through slotted holes in parts E and G, and also through a slotted block screwed and glued to the center of each side (C).

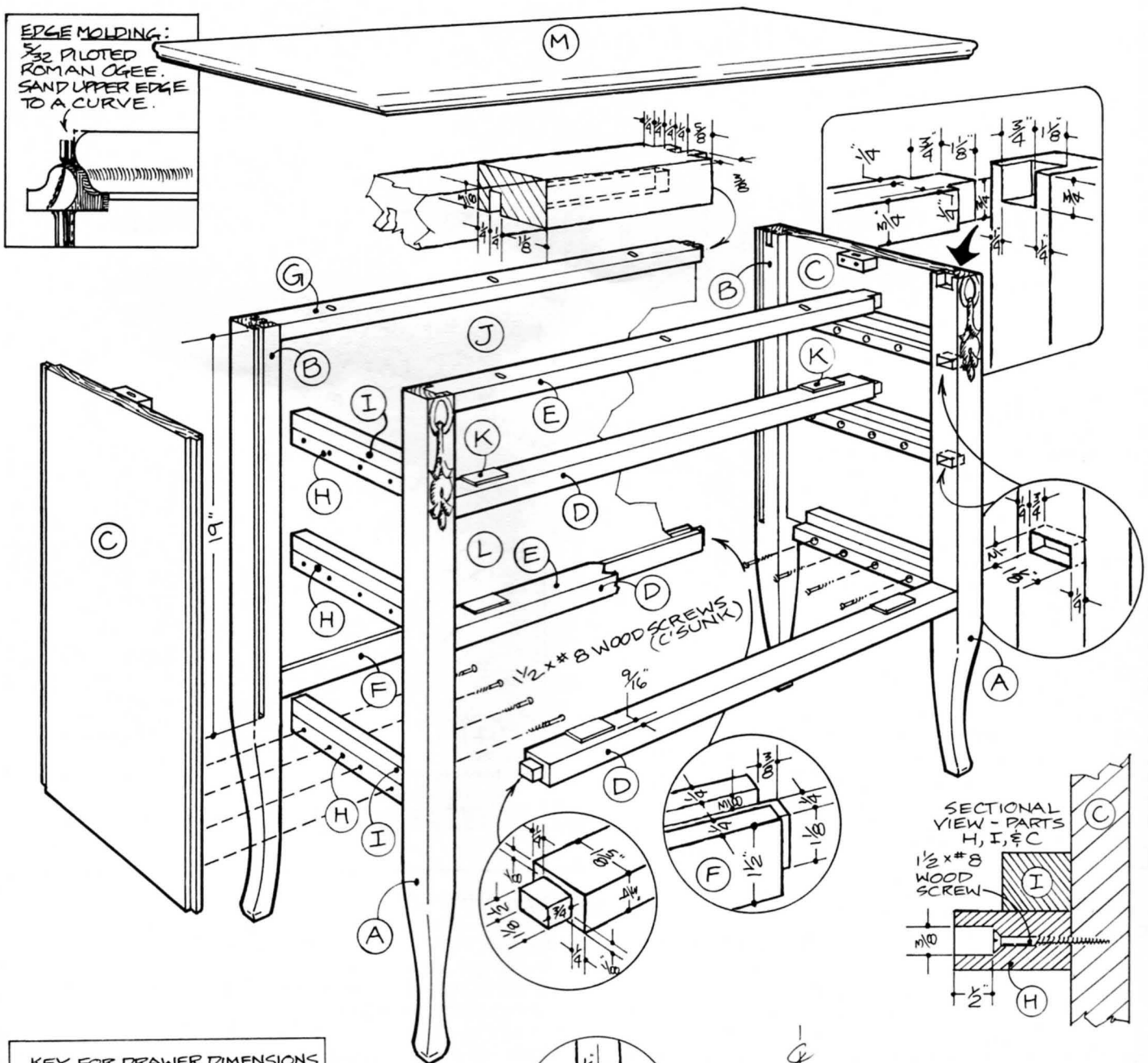
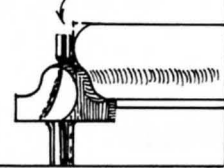
A stain like Minwax's Special Walnut looks good on a project like this. When dry, add several coats of their Antique Oil Finish for a soft, low luster final finish.

Bill of Materials (All Dimensions Actual)

Part	Description	Size	No. Req'd
A	Front Leg	$1\frac{3}{8} \times 1\frac{1}{8} \times 28\frac{1}{4}$	2
B	Back Leg	$1\frac{3}{8} \times 1\frac{1}{8} \times 28\frac{1}{4}$	2
C	Side	$\frac{3}{4} \times 13 \times 19$	2
D	Divider	$\frac{3}{4} \times 1\frac{1}{8} \times 22\frac{1}{2}$	3
E	Top Divider	$\frac{3}{4} \times 1\frac{1}{8} \times 22\frac{1}{2}$	1
F	Lower Back Frame	$\frac{3}{4} \times 1\frac{1}{8} \times 21\frac{1}{4}$	1
G	Upper Back Frame	$\frac{3}{4} \times 1\frac{1}{8} \times 21\frac{1}{4}$	1
H	Drawer Support	$\frac{3}{4} \times 1\frac{1}{2} \times 10$	6
I	Drawer Guide	$\frac{3}{4} \times \frac{3}{4} \times 10$	6
J	Back	$\frac{1}{4} \times 21\text{-}5/16 \times 17\text{-}7/16$	1
K	Drawer Stops	$\frac{1}{4} \times 1 \times 2$	6
L	Applied Molding	See Detail	2
M	Top	$\frac{3}{4} \times 16\frac{3}{4} \times 26\frac{3}{4}$	1
N	Drawer	See Detail	3

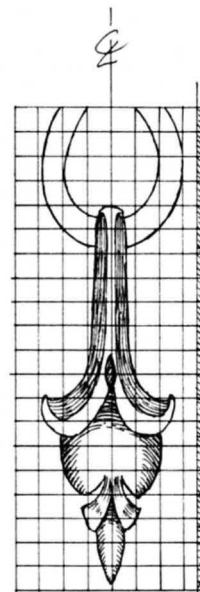
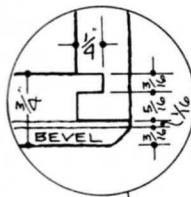
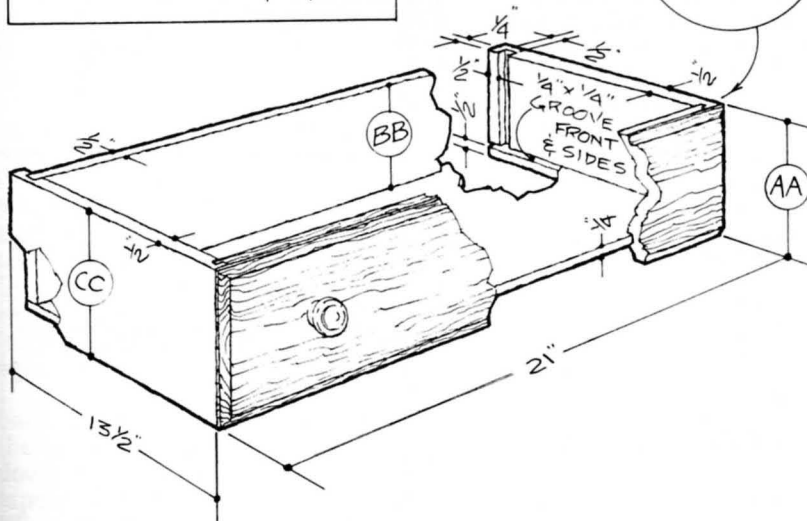
EDGE MOLDING:

5/32 PILOTED
ROMAN OGEE.
SAND UPPER EDGE
TO A CURVE.



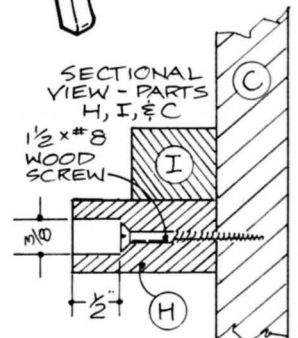
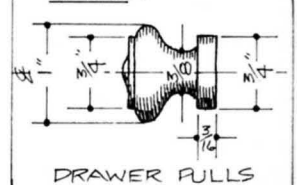
KEY FOR DRAWER DIMENSIONS

	AA	BB	CC
TOP DRAWER	3 3/4	3 3/4	3 3/4
CENTER DRAWER	5 3/4	5	5 1/2
BOTTOM DRAWER	6 3/4	6 3/4	6 3/4

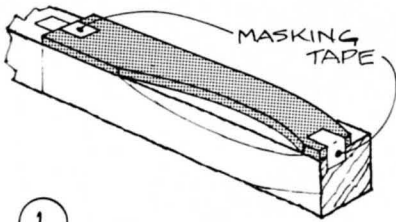


1 SQUARE = 1/4 INCH
3/8" STOCK

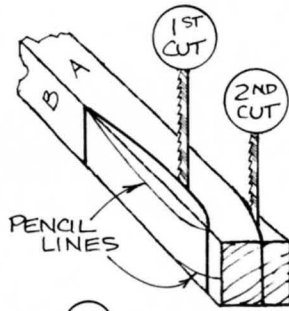
DETAIL:



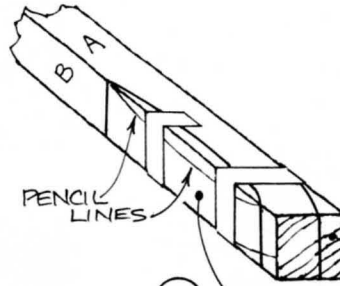
Cutting Leg Curves



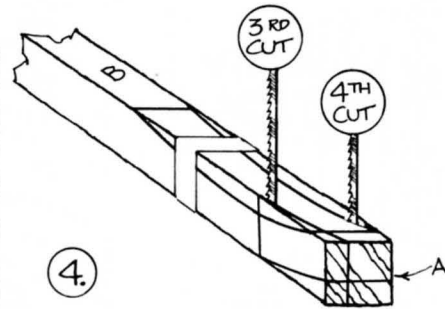
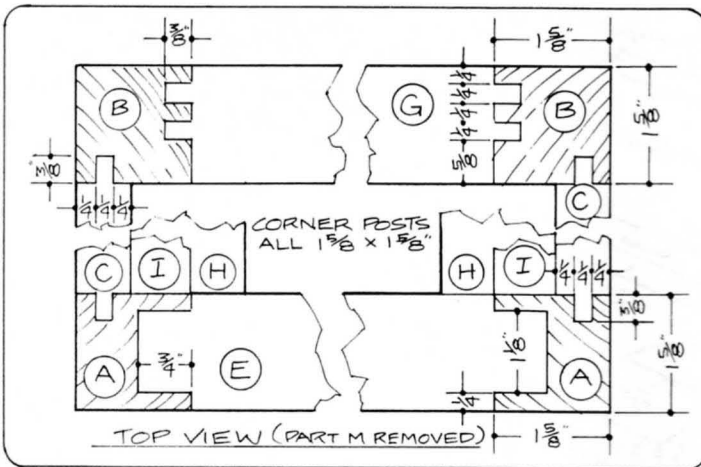
1. MAKE TEMPLATE OF $\frac{1}{4}$ " HARDBOARD & SCRIBE OUTLINE ON 2 ADJOINING SURFACES OF SQUARED BLOCK



2. MAKE FIRST & SECOND CUTS ON SIDE A.

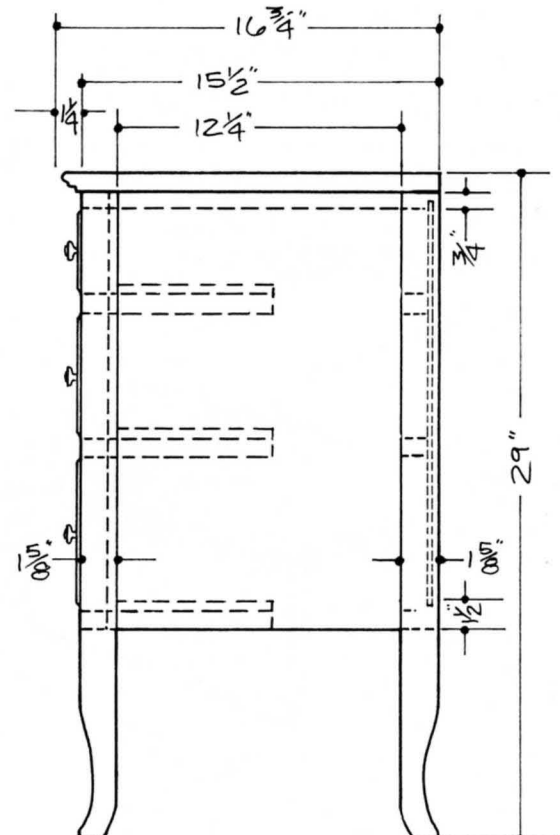
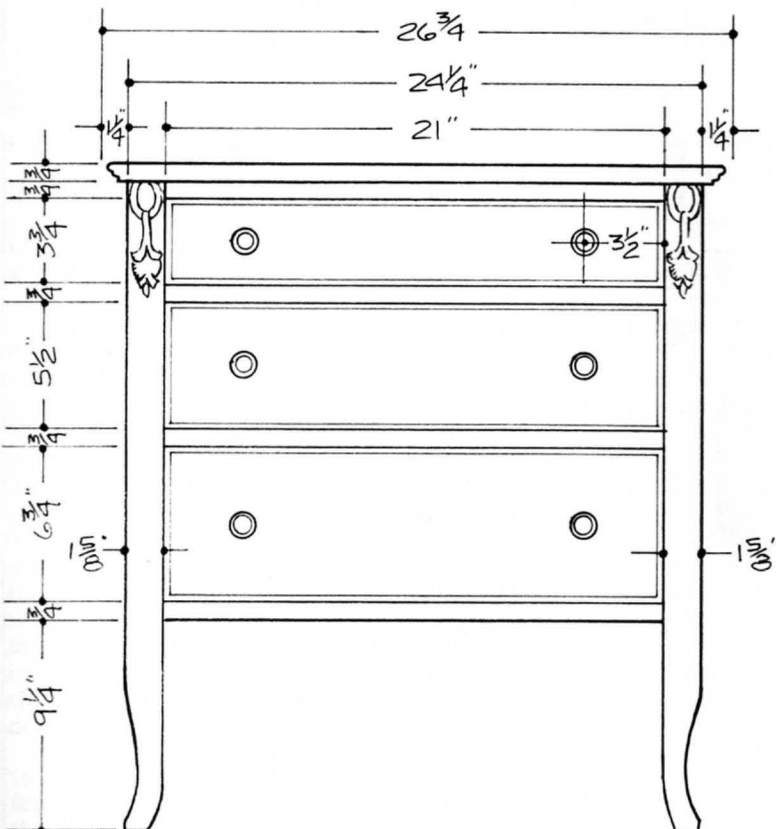


3. TAPE WASTE PIECES IN PLACE BEFORE MAKING 3RD & 4TH CUTS.



4. MAKE THIRD & FOURTH CUTS ON SIDE B

SQUARE = $\frac{1}{2}$ "





Contemporary Writing Desk

by Walter Miles

I designed and built this elegant writing desk for my daughter. With the top "pigeon-hole" cabinet removed, it also serves as an occasional table. Solid cherry lumber and some $\frac{1}{4}$ " cherry plywood was used but walnut would be an excellent substitute.

Construction begins with the top which is made up of four solid cherry boards planed to $\frac{3}{4}$ " thickness. After arranging the boards for the most interesting grain patterns, the mating edges are jointed and the boards are glued together and clamped. No dowels or splines are necessary to reinforce the edge-joints.

The legs are made up by face gluing and clamping two $\frac{3}{4}$ " x 8" x 30" boards together. This lamination is then ripped into four $1\frac{1}{2}$ " square legs. While the legs are still square the stopped grooves which hold the rail tenons are laid out and cut. A router with a $\frac{3}{8}$ " straight bit can be used to cut the grooves a bit short of their full lengths. Use a $\frac{3}{8}$ " mortising chisel to square off the groove ends.

The legs are then tapered with a bandsaw or by using a taper jig with the tablesaw. Starting from a point 5" down from the leg top, each leg is tapered on four sides to $\frac{7}{8}$ " at the foot. When making the tapering cuts, plan on leaving a little extra stock to allow

for finish planing to remove the saw marks.

Next, lay out and cut the mortise in each leg to hold the $\frac{3}{8}$ " x $\frac{1}{2}$ " x $1\frac{1}{4}$ " tenons of the lower leg rails (F). These mortises can be cut by first drilling out most of the waste, then cleaning up with a $\frac{3}{8}$ " mortising chisel. Two upper end rails (C) are then cut to length and rabbeted at each end to form tenons to fit snugly in the leg grooves. Using a router cut a $\frac{3}{8}$ " x $\frac{3}{8}$ " groove the full length of each rail and $\frac{3}{8}$ " up from the bottom edge. This groove houses the tongues on the drawer supports (H).

The back rail (D) is then cut and tenoned in the same manner as the end rails. A stopped groove is routed $\frac{3}{8}$ " below the top edge to take the $\frac{3}{8}$ " x $\frac{3}{8}$ " tongue of part L. This groove, as shown in the detail drawing is 2" long and centered on the rail.

To maintain a continuous grain pattern running the length of the front rail (E) and across both drawer fronts, it's necessary to cut the drawer fronts from the rail itself rather than from a separate board. While it's possible to cut starting slots with the tablesaw and then use a handsaw to finish cutting out the large notches for the drawer fronts, it's safer and easier to simply rip a 1" strip off the rail bottom and then make the four crosscuts needed to

separate the drawer fronts.

Choose a piece of fairly straight-grained stock for rail E and cut it oversize in length and width to allow for the kerf width of the ripping cut and the crosscuts. After the cuts are completed, set aside the drawer fronts for later work. The three remaining upright pieces and the bottom strip are then sanded, glued and clamped together so that drawer openings of $17\frac{1}{8}$ " across are established.

The glue joint between the four parts of rail (E) consists of long grain being joined and these joints should not require reinforcement, but you may find it helpful to run dowel pins into the joints up through the bottom rail just to keep the parts from sliding under clamp pressure. Allow ample time for the glue to cure before clamping the assembled rail to the bench and routing the tenons on each end. Also route the groove in the center divider which takes the tongue or brace (L). This should align with the stopped groove cut in the rear apron.

The leg rails (F) are then cut from $\frac{5}{8}$ " stock and the tenons are formed at each end. To determine the exact length of these rails, temporarily assemble two legs and an end rail, clamp the assembly square and measure up 9" from the foot of each leg to mark the bottom edge of the rail. The tenons on each end of the rail are $\frac{1}{2}$ " long. Note that the shoulders on each side must be cut at an angle that matches the taper of the legs. With the clamped up assembly, the legs themselves can be used to mark these angles on the rail stock. The tenon cheek and shoulder cuts are best done with a fine toothed dovetail saw. Use the same saw to cut the notches centered on each rail to hold the long stretcher (G). Cut this stretcher $\frac{1}{2}$ " overlong so that the ends can be trimmed flush with the rails after assembly.

Part L which braces the frame and provides a means of fastening the top is cut and tongued to fit front and rear rails. The leg-frame assembly can now be glued and clamped together. Use a slow setting glue such as liquid hide glue and first glue and clamp together each leg and upper and lower rail using a pipe clamp and scrap stock to prevent marring the legs. When both leg-rail assemblies have dried, join them with the back rail D. If you don't have a pipe clamp long enough to span the full length, make and attach the slotted blocks shown in the detail for fastening the top and run pipe clamps from each block to the legs.

The front rail and brace L is then added, clamping from front to back at L. Two clamps are also used from the front legs to each side of the drawer divider. The stretcher G can also be added at this point. Needless to say, you should constantly check the as-

(continued on next page)

Writing Desk (cont'd)

sembly for squareness during all clamping operations so that minor adjustments can be made before the glue sets.

Referring to the bill of materials, cut the required stock for the two end drawer supports (H) and the center support (J). Cut a $\frac{3}{8}$ " x $\frac{3}{8}$ " tongue the length of each end support to fit the end rails. A $\frac{3}{8}$ " x $\frac{5}{8}$ " rabbet is cut at each end of the center support to fit over front and rear ledger strips (M) which are screwed centered on the front and rear rails.

The end supports (H) are notched at each end to fit around the legs. Temporarily fit these supports into their grooves, then cut and fit end drawer guides (I) in place on top of the supports and tight against end rails (C). Run a pencil along the inboard edge of the guides to mark their location on the supports, then remove the parts and glue and nail or screw them together. The support-guide assemblies are then glued to the end rails using C-clamps and pads to protect the end rails.

The center support (J) and drawer guide (K) are glued together so that the guide is centered on the support. Three $\frac{3}{8}$ " dia. holes are then drilled through this assembly as shown and the assembly is fastened to the ledgers with four 1" screws.

Make up eight corner blocks (N) from scrap stock and glue and clamp them in place using the four extra as clamping pads on the outside corner of each leg. After making and attaching the remaining slotted blocks (with all slots running across the table), the top

is laid bottom side up on a rug. The frame is then adjusted for an equal overhang at each leg and fastened to the top with 1¼" No. 8 round head screws through the blocks and brace L. To get at the end screws you'll have to drill ⅜" access holes through the drawer support assemblies.

Drawer parts are next cut and assembled as shown. When gluing drawers together, take care to keep them square and flat until dry. The rabbet joints between the drawer fronts and sides are best reinforced with three small finishing nails or glue covered $\frac{1}{8}$ " dowel pins driven into holes drilled through the sides and into the front. The rub strips glued to each drawer side are cut to a thickness that allows the drawers to be centered in their openings.

The upper cabinet top, bottom and ends are cut from $\frac{3}{8}$ " stock so that the grain runs lengthwise of the top, down the sides and lengthwise of the bottom. This looks good and keeps shrinkage and swelling problems to a minimum. It will probably be necessary to edge-joint two or more boards to get the $8\frac{3}{4}$ " width of these parts. The original case was joined at the corners with screwed butt joints but the joinery shown in the drawing is preferable.

The top (T1) and bottom (T2) are identical so the various rabbets and dadoes should be laid out with the boards aligned side by side and taped together. The same situation applies to the ends (U). Except for the doors which are $\frac{3}{8}$ " thick, the remaining parts are of $\frac{1}{4}$ " cherry plywood. Although not shown in the drawing, all

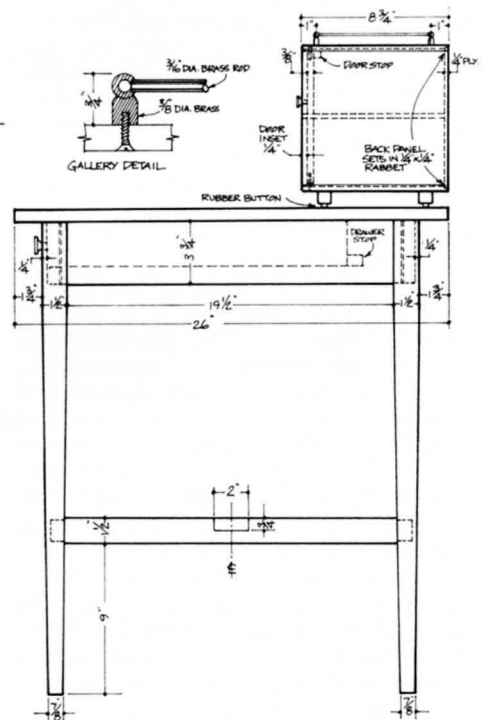
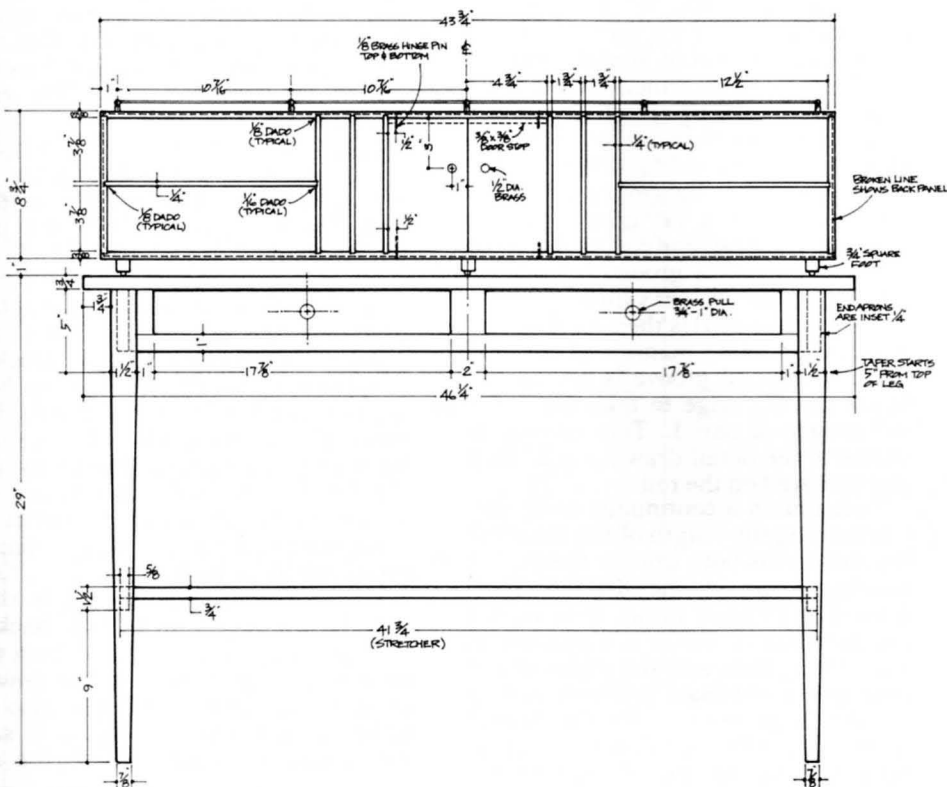
front edges of these plywood parts except the back (V) are faced with $\frac{1}{8}$ " thick strips of solid cherry to hide the laminations. Thus, all front to back dimensions should be reduced by the thickness of the facing strips which are glued in place.

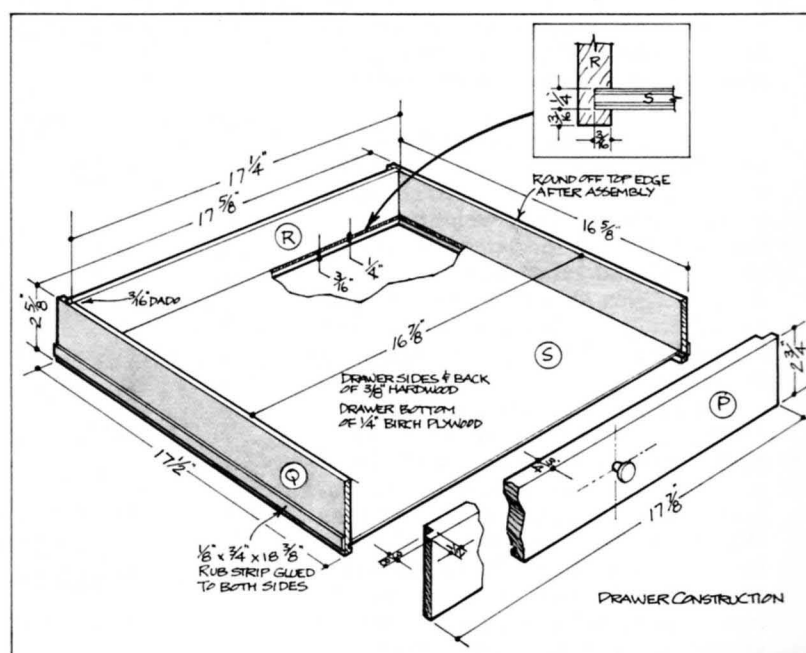
Before assembly, hinge pin holes are drilled through the top and bottom while they are aligned and clamped together. When drilling remember that the doors are inset $\frac{1}{4}$ ". The pins are driven in far enough to leave room for matching plugs to be glued in place to trap the pins and conceal the holes.

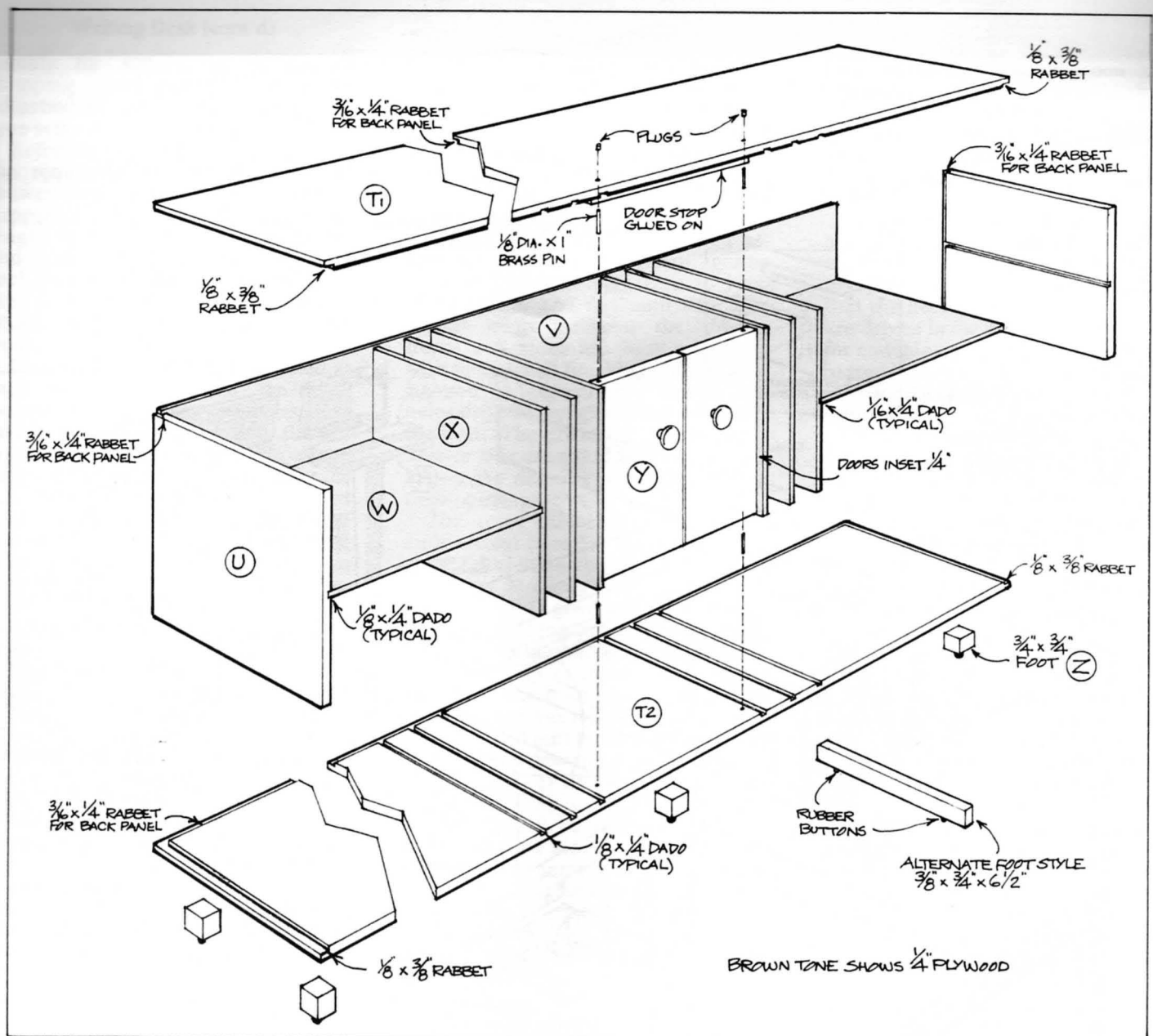
I added a brass gallery to the cabinet top and since the gallery posts were fastened by screws from underneath the top, it was necessary to locate and drill these screw holes before final assembly. Later a stubby screwdriver is used to screw the gallery posts in place. The original cabinet as seen in the photo used six brass posts but I would change the spacing and add one more post so that the gallery rails will be more rigid.

Editor's Note: The brass gallery hardware was purchased by Mr. Miles in New York City and he advised that it was the only set of its kind in the store. We have been unable to locate a source for gallery hardware that is both small in size and contemporary in style. Assuming you do not want to omit the gallery one suggestion is that posts be cut from 3/8" dia. brass rod. The top ends will need to be polished and the posts drilled to take 3/16" brass rod for rails. You can either drill and tap the lower ends for mounting

(continued on page 40)







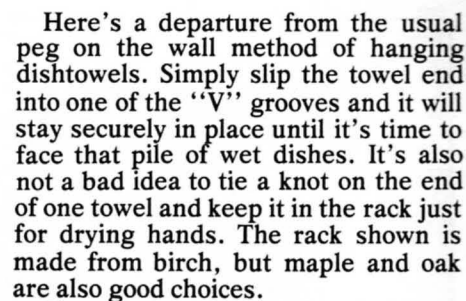
screws or simply epoxy the ends into $\frac{3}{8}$ " dia. x $\frac{1}{4}$ " deep sockets bored into the top. These plain cylindrical posts should look attractive on the cabinet.

After all parts have been tried for fit in a dry run, the cabinet is assembled with glue and clamped. Lacking enough clamps, heavy weights can be used on the top to clamp the corner joints and dadoed dividers. Either of the foot styles shown can be glued to the case bottom. Rubber or thick felt buttons are added to prevent marring of the top.

The finish to be applied is really a matter of personal preference. Generally, contemporary pieces of cherry or walnut look good unstained and finished with penetrating oil such as Watco Danish Oil or tung oil. This finish is very easy to apply, resists water or alcohol damage and is easy to repair. The insides of drawers however should be finished with shellac or varnish.

Bill of Materials (All Dimensions Actual)

Part	Size	Quantity	Part	Size	Quantity
A	$\frac{3}{4}$ x 26 x 46 $\frac{1}{4}$	1	N	1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x 2	4
B	1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x 28 $\frac{1}{4}$	4	O	$\frac{3}{4}$ x $\frac{3}{4}$ x 2 $\frac{1}{2}$	4
C	$\frac{3}{4}$ x 3 $\frac{3}{4}$ x 20 $\frac{1}{2}$	2	P	$\frac{3}{4}$ x 2 $\frac{3}{4}$ x 17 $\frac{7}{8}$	2
D	$\frac{3}{4}$ x 3 $\frac{3}{4}$ x 40 $\frac{3}{4}$	1	Q	$\frac{3}{8}$ x 2 $\frac{5}{8}$ x 17 $\frac{1}{2}$	4
E	$\frac{3}{4}$ x 3 $\frac{3}{4}$ x 40 $\frac{3}{4}$	1	R	$\frac{3}{8}$ x 2 $\frac{5}{8}$ x 17 $\frac{1}{4}$	2
F	$\frac{5}{8}$ x 1 $\frac{1}{2}$ x 21 $\frac{1}{8}$	2	S	$\frac{1}{4}$ x 16 $\frac{5}{8}$ x 17 $\frac{1}{4}$	2
G	$\frac{3}{4}$ x 2 x 41 $\frac{3}{4}$	1	T1, T2	$\frac{3}{8}$ x 8 $\frac{3}{4}$ x 43 $\frac{3}{4}$	1 ea.
H	$\frac{3}{4}$ x 2 $\frac{5}{8}$ x 20 $\frac{1}{2}$	2	U	$\frac{3}{8}$ x 8 $\frac{3}{4}$ x 8 $\frac{1}{4}$	2
I	$\frac{3}{4}$ x 1 $\frac{1}{2}$ x 20 $\frac{1}{2}$	2	V	$\frac{1}{4}$ x 8 $\frac{3}{8}$ x 43 $\frac{3}{8}$	1
J	$\frac{3}{4}$ x 3 $\frac{1}{2}$ x 20 $\frac{1}{2}$	1	W	$\frac{1}{4}$ x 8 $\frac{1}{2}$ x 12 $\frac{3}{4}$	2
K	$\frac{3}{4}$ x 2 x 20 $\frac{1}{2}$	1	X	$\frac{1}{4}$ x 8 $\frac{1}{2}$ x 8 $\frac{1}{4}$	6
L	$\frac{3}{4}$ x 2 x 21 $\frac{1}{4}$	1	Y	$\frac{3}{8}$ x 4 $\frac{3}{4}$ x 8	2
M	$\frac{5}{8}$ x $\frac{5}{8}$ x 5	2	Z	$\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{3}{4}$	6



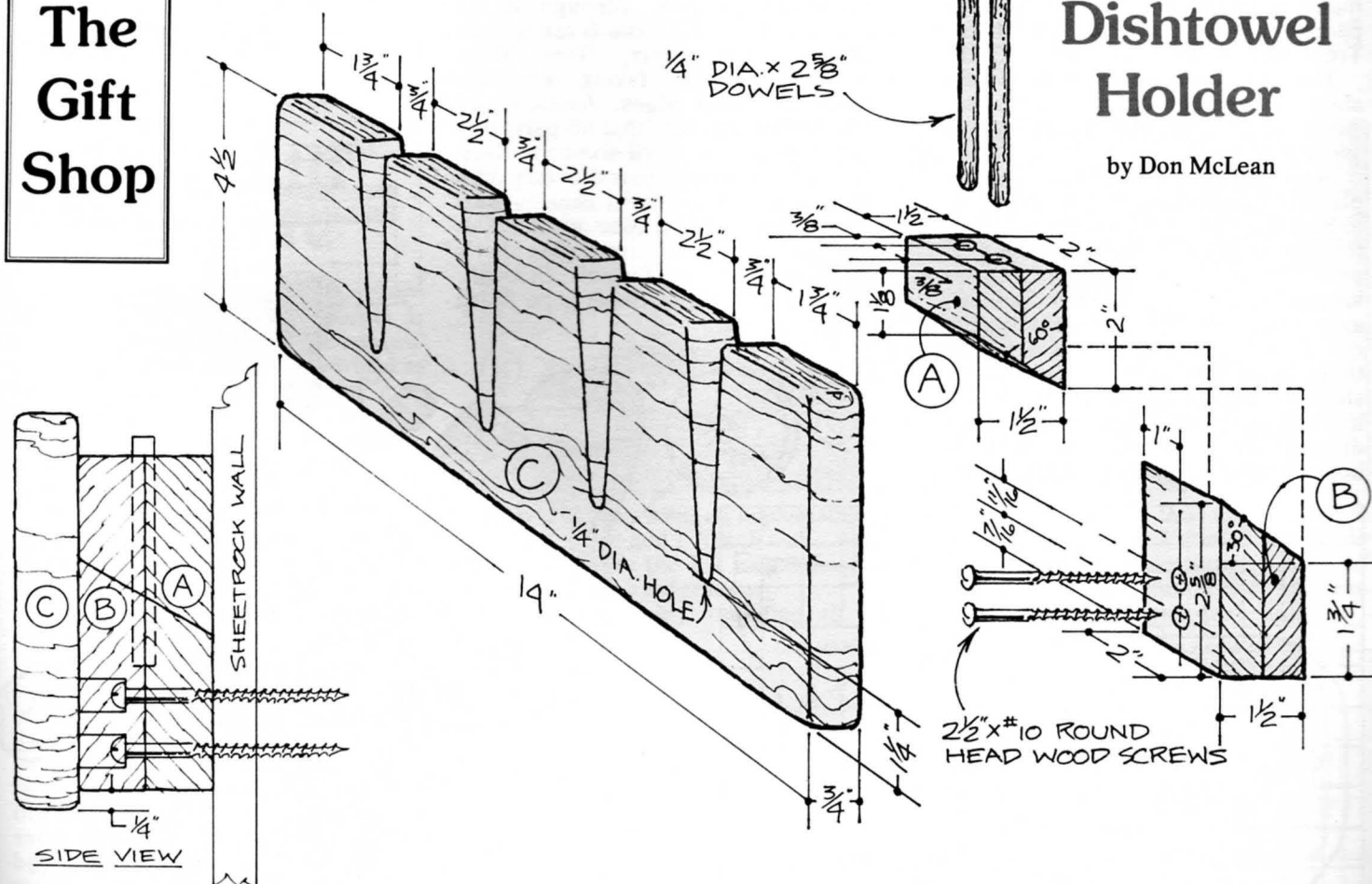
The tapered and pinned blocks (A&B) provide a rather unique hanging method, resulting in a board that appears to have no visible means of support.

To make the blocks, cut two pieces of $\frac{3}{4}$ inch thick stock to $3\frac{1}{8}$ inches (allows for saw kerf) wide by 2 inches long, then face glue and clamp the pieces together. For maximum glue strength, it's important that the grain run in the direction shown.

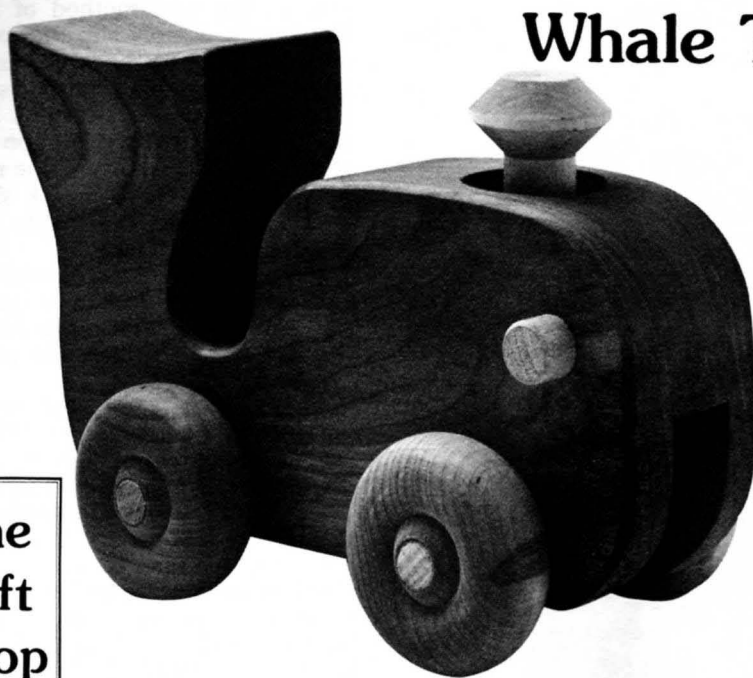
When dry, locate and drill the two $\frac{1}{4}$ inch dowel pin holes, then use a back saw to cut the block at an angle as shown. The front (C) is now made, then part A is glued and firmly clamped in place at a point $\frac{1}{2}$ inch down from the top and centered across the length.

Secure part B to wall with screws. Position part A over part B so that the holes line up, then insert unglued dowel pins. An application of Deftco Danish Oil completes the project.

Dishtowel Holder



The Gift Shop (Cont'd)



Whale Toy

Photo by Cherry Tree Toys

Although this friendly leviathan rolls rather than swims, it still "spouts" just like a real one. Actually, the "spout" is a shaped pin (part B) that moves up and down on a cam (part C) as the whale rolls along.

The company Cherry Tree Toys provided us with plans for the project. For a copy of their catalog, which lists many other toy plans plus various parts and wheels, send \$1.00 to Cherry Tree Toys, Belmont, OH 43718.

The whale can be made from just about any wood species, including pine, but for maximum durability maple is your best choice.

Make the body (part F) first. Cut a piece of 2 inch stock (1 3/4 inch actual) to 5 inches wide by 8 inches long, then transfer the profile shown on the grid pattern to the stock. Also, lay out the location of the two 7/16 inch diameter axle holes and the 1/4 inch diameter eye holes. Use a drill press to bore these holes before cutting part F to shape with a band or saber saw. Next, use the drill press to bore the 1 1/4 inch diameter by 3/4 inch deep countersunk hole for the spout (part B). Also, at this

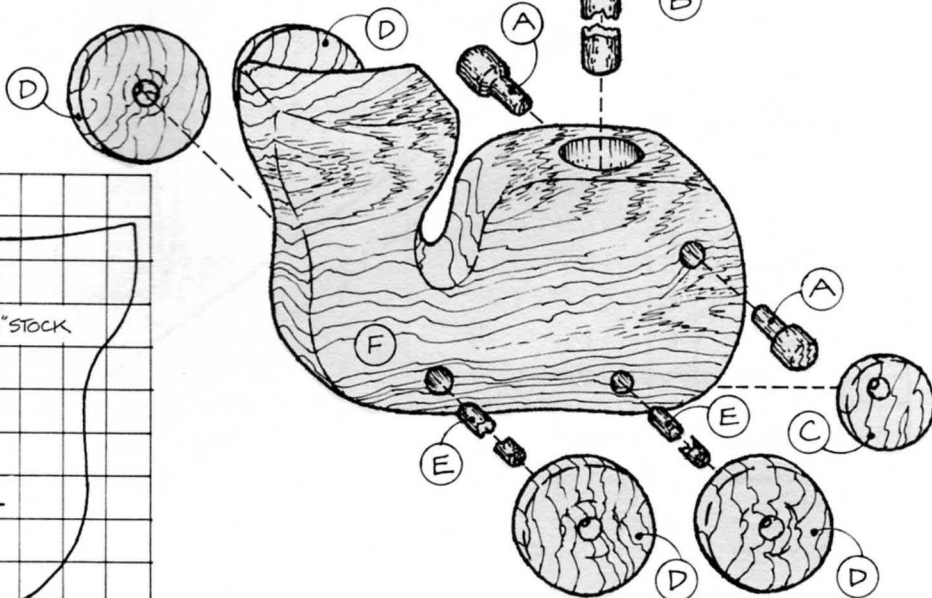
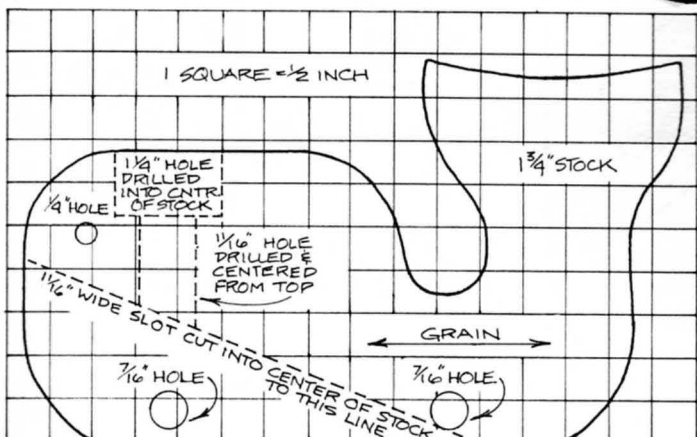
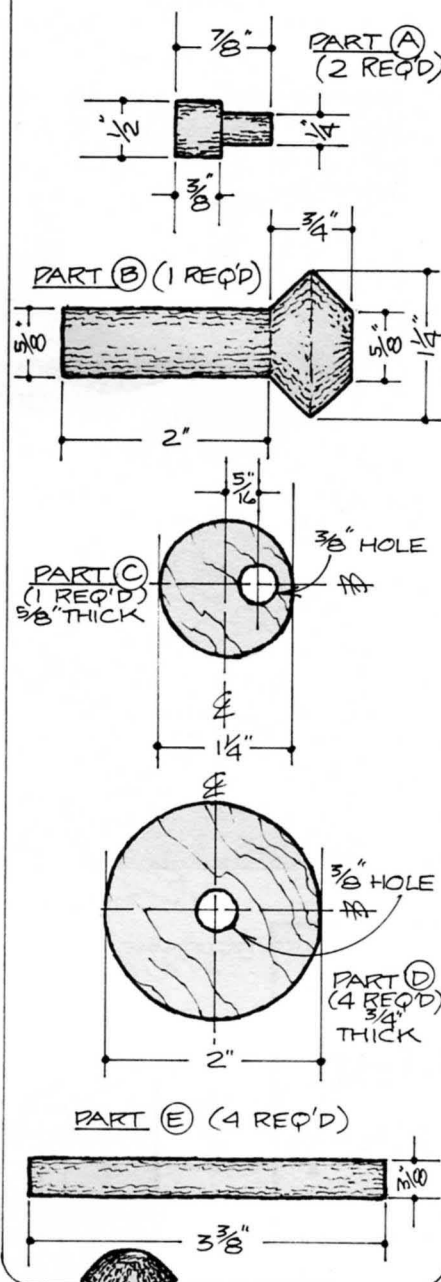
time, drill the 11/16 inch diameter hole through the center of the countersunk hole.

The 11/16 inch wide slot is cut by hand with a back saw or dovetail saw, making two parallel cuts to establish the width. The scrap is then removed using a sharp chisel.

The remaining parts are made to the dimensions shown, although if desired, parts A, B, C, and D can be purchased from Cherry Tree Toys.

Sand thoroughly, taking care to remove all sharp edges. Assemble as shown, making sure that all parts (except part B) are glued securely. Keep in mind that a small part that falls off a toy presents a potential choking hazard to a young child. Also, when building toys, it's best to use a glue that's non-toxic such as Elmer's Glue-All. And the safest final finish is no finish at all.

LIST OF PARTS WITH DIMENSIONS



The Gift Shop (Cont'd)

Laminated Shoehorn

by Sam Allen

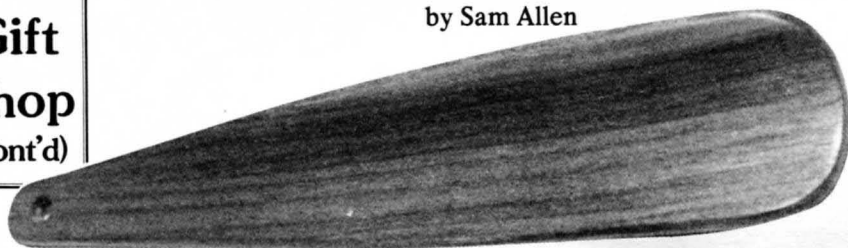


Photo by Author

This laminated shoehorn not only makes a nice gift, it's a great way to use up those postcard size scraps of veneer left over from your last project.

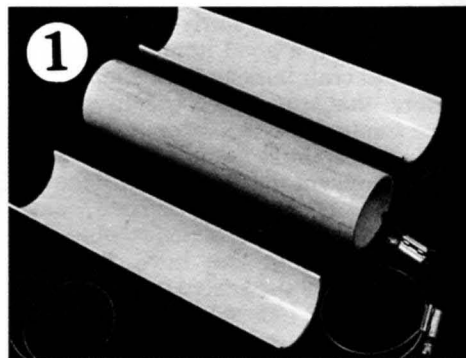
The laminating form is made from 1½ inch PVC water pipe with a wall thickness of approximately 3/32 inch. Although it is called 1½ inch pipe, the actual outside diameter is closer to 2 inches. Because of the thin wall thickness and the inherent spring of PVC, the same size pipe is used for both the male and female parts of the form.

Start making the form by cutting two 8 inch lengths of the pipe. Next, cut one piece in half, lengthwise. Use sandpaper to smooth out any irregular-

ities in the surface of the pipe. By using both halves of the form, you can laminate two shoehorns at once. Three worm-gear hose clamps (the type used on automobile radiator hoses) provide the clamping power (see Photo 1).

One shoehorn requires three or four pieces of veneer approximately 2 inch x 7 inch. The number of pieces depends on the veneer thickness; try for a finished thickness of around ¼ inch. Spread liquid-hide glue evenly on each piece of veneer and stack them in one of the half-pieces of pipe. Press the piece of pipe that was not cut in half into the form that contains the veneer. If you are only making one shoehorn,

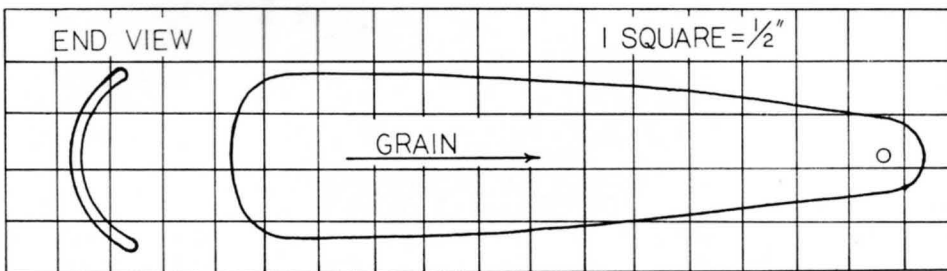
snap the other half of the pipe on opposite the half containing the veneer so that the clamping pressure will be uniform. If you're making two at a time, load the second half with veneer and place it opposite the first half.



Now slip the three worm-gear clamps over the form and tighten them until the veneer is uniformly pressed into the form (see Photo 2).



After the glue has cured, remove the lamination from the form and cut it to shape. Round the edges and drill a ⅛ inch hole in the small end. Give the project a thorough sanding, then apply an oil finish.

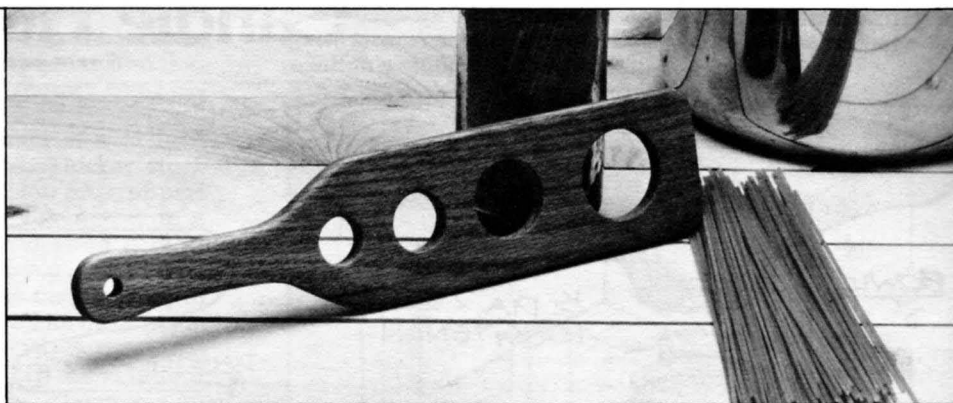


Spaghetti Measure

Trying to judge how much spaghetti to prepare for the family dinner is usually a guessing game at best, and more often than not the cook makes much more than anybody can ever hope to eat. Now here's help - a gauge that tells exactly how much spaghetti to serve for one, two, three, or four portions.

Ours is made from red oak, but just about any wood from your scrap box can be used. It's an easy project to make, so if you are looking for something to sell at craft fairs or gift shops, you may want to consider this one.

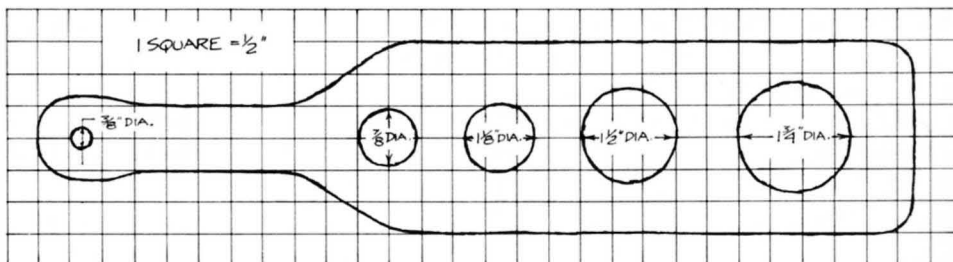
You'll need a piece of ½ inch thick stock that measures about 3½ inches wide by 15 inches long. If you don't have ½ inch material, resaw ¾ inch stock on the table or band saw. Transfer the profile from the grid pattern to the stock, then cut out with a band or saber saw. Lay out the hole location before drilling the holes to the diameters shown. We used a spade bit to



cut the ⅞ inch hole, an expandable bit to cut the 1⅛ and 1½ inch holes, and a hole cutter for the 1¾ inch hole. Also add a ⅜ inch hanger hole.

Sand thoroughly, rounding all cor-

ners and edges. An application of Behlen Salad Bowl Finish (available from Wood Finishing Supply Co., 1267 Mary Drive, Macedon, NY 14502) provides an attractive non-toxic finish.



Candles will often make lovely additions to a festive occasion, especially if attractive holders are used. The one shown is made from walnut, although any hardwood that's suitable for turning can also be used. With a little practice this becomes a fairly easy turning job, making it a good item to consider for sale at craft fairs and gift shops.

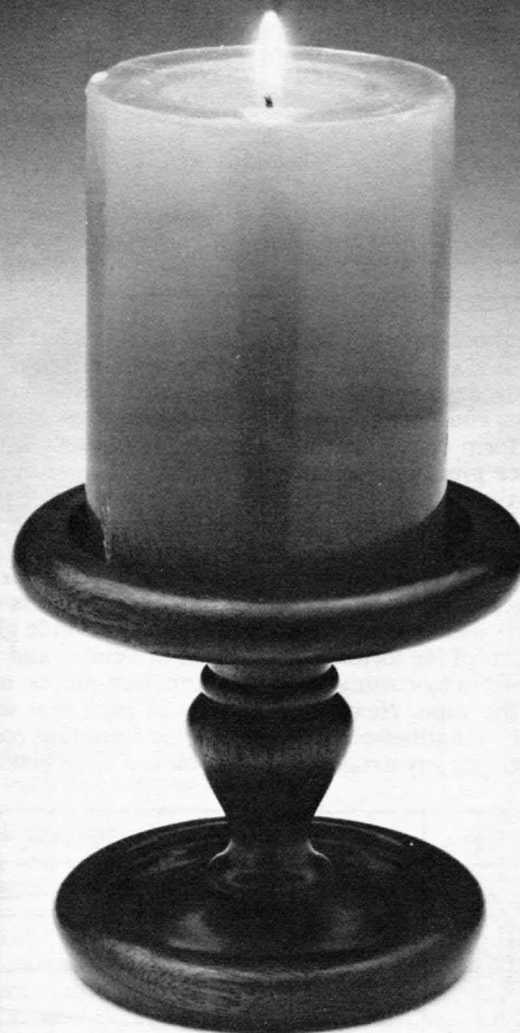
Note that the project consists of three separate parts, a base, stem, and bowl. The stem is spindle turned and should present no special problems. The base is faceplate turned, and again no special problems should be encountered. For the bowl though, there are a few suggested procedures.

Normally, 2 inch nominal ($1\frac{3}{4}$ inch actual) stock is used to make the bowl. Secure the stock to the faceplate, then turn the top half of the bowl, including the $\frac{5}{16}$ inch deep by $3\frac{3}{16}$ inch candle well. This includes a $\frac{1}{8}$ inch diameter pilot hole for the bottom of the spike. Sand thoroughly before removing from the faceplate. Carefully center a small faceplate in the candle well and fasten with short screws. The bottom half of the bowl can now be turned and sanded. After removing the faceplate, the screw holes in the well are filled with a mixture of sawdust and glue.

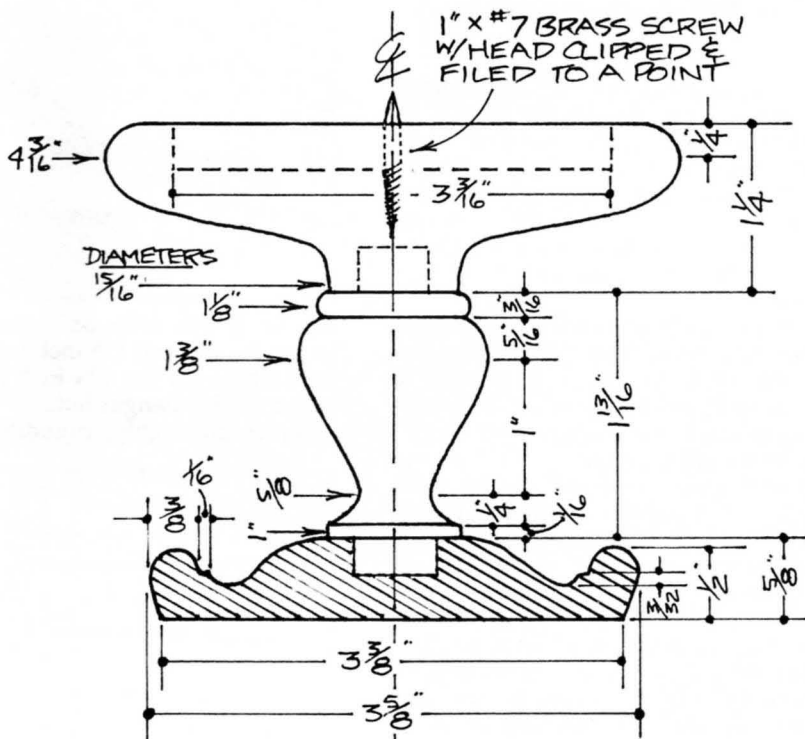
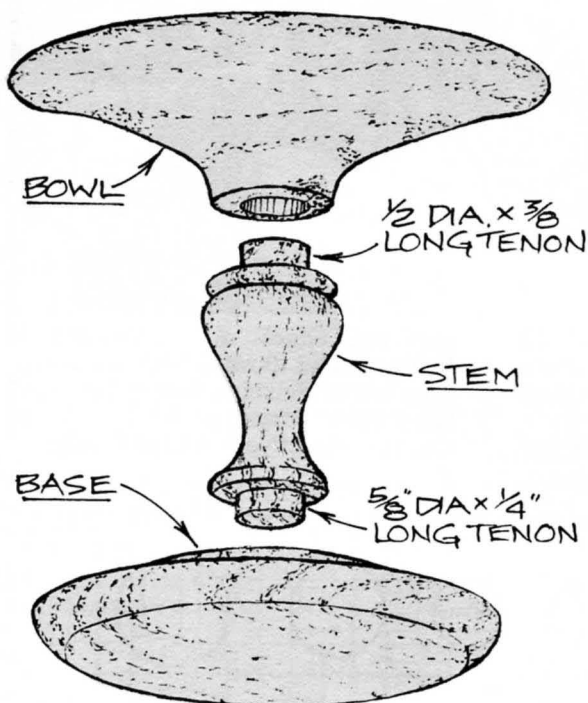
A center spike will add some stability to the candle and can be made using a 1 inch x #7 brass wood screw. Turn the screw into the pilot hole, then remove. Cut off the screw head and file this end to a point. Now, with a pair of pliers holding the pointed end, turn the screw into the bowl.

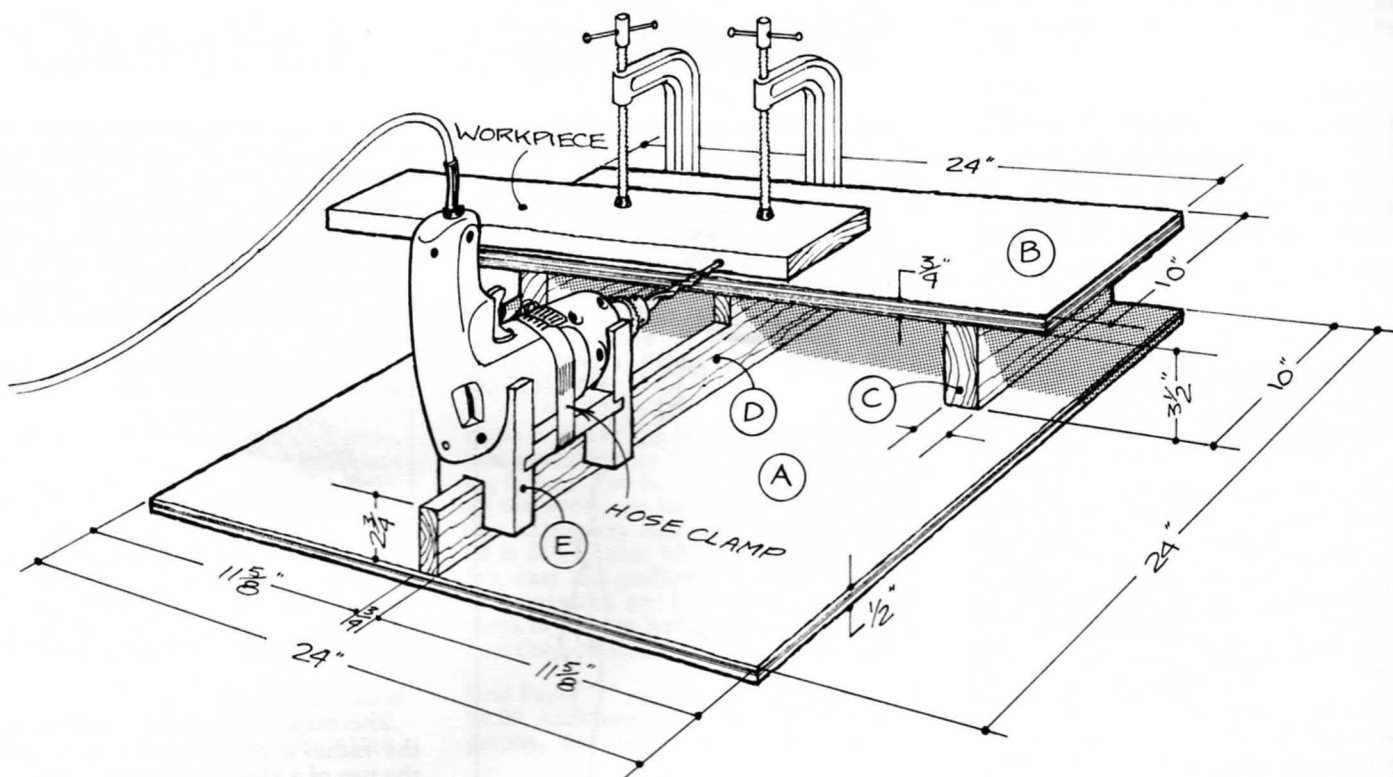
Apply glue to the spindle tenons and assemble the three parts. Several coats of Watco Danish Oil will provide an attractive final finish.

The Gift Shop (Cont'd)



Candle Holder — by Robert A. McCoy





Horizontal Boring Jig — by L.A. Simonson

A well-built homemade horizontal boring jig won't sit idly in the workshop, it's a tool that will be put to use over and over again. The sliding carriage (E) permits it to edge-drill holes easily and accurately, with little set-up time required.

Although there are a number of specific dimensions shown on the drawing, they are offered more as general guidelines rather than rigid requirements that must be strictly adhered to. The shape of the carriage saddle (parts AA and BB) is left undimensioned since readers will need to cut it to the contour of their own electric drill. A $\frac{3}{8}$ inch Rockwell drill was used with the jig shown in the sketch. Readers with drills that have a different shape may find that even the general carriage dimensions may require some revision.

The jig is designed to edge-drill the center of a $\frac{3}{4}$ inch thick board, the size most commonly used. Thicker stock can be drilled by adding a spacer along the top edge of part D where the carriage (part E) rides. Cut the spacer to a thickness that will position the drill to the desired height.

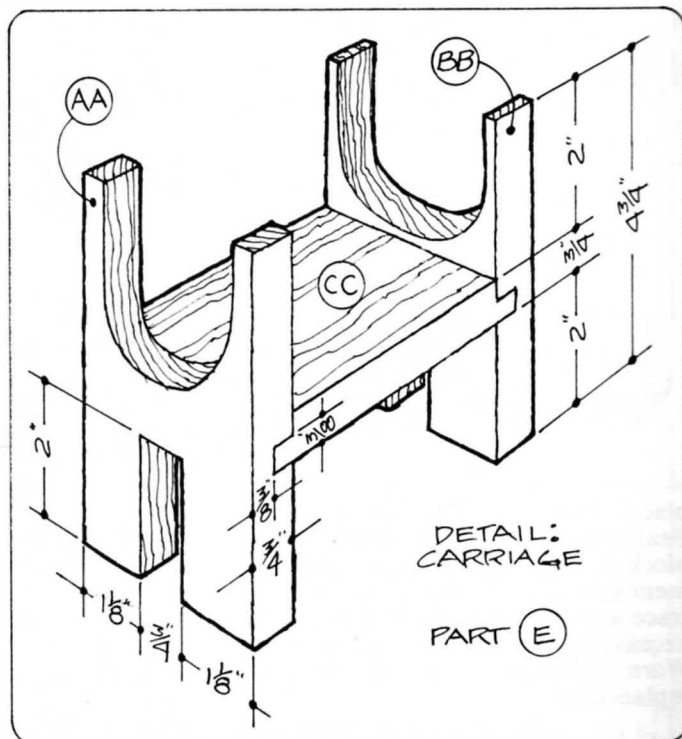
Construction of most of the jig is relatively straightforward, however, keep in mind that in order for this tool to have any value it must be made accurately. The base (A) is $\frac{1}{2}$ inch hardwood plywood while the table (B) is the same material only $\frac{3}{4}$ inches thick. The supports (C) are standard 2 x 4 stock cut to a 10 inch length. The guide (E) is made up of a $\frac{3}{4}$ x $\frac{3}{4}$ x 10 inch strip glued to a piece of stock measuring $\frac{3}{4}$ x $2\frac{3}{4}$ x 24. Before assembly, lay out all parts carefully. Make sure that the corners of part B are cut square and also that part B is perpendicular to part D. Assemble with $1\frac{3}{4}$ x #8 countersunk wood screws.

Cut cradles AA and BB to size, then apply the $\frac{3}{8}$ x $\frac{3}{8}$ dado. To transfer the profile of your electric drill, wrap a short length of soft solder around the drill, then use the solder as a template to mark the shape on the cradle. Since drill profiles will differ from front to back, you'll need to make two templates. Use a band or saber saw to cut just inside the line, then add a drum sander attachment to the drill press and sand down to the line. Position the drill in the two cradles and check to be sure it is level.

Cut the spreader (CC) to dimensions shown, then glue to the two cradles. To cut the $\frac{3}{4}$ inch by 2 inch notch, set the

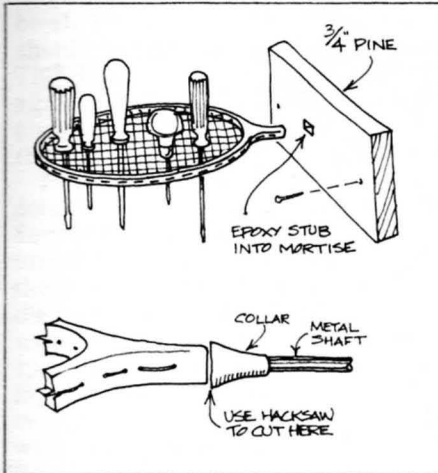
table saw blade to a depth of 2 inches, then locate the rip fence to make a $1\frac{1}{8}$ inch wide cut. Using a push stick, and with the side of the carriage (E) bearing against the rip fence, run the carriage over the blade. Turn the carriage so that its other side bears against the fence and make the same cut. This establishes the $\frac{3}{4}$ inch wide groove. Now, move the fence about $\frac{1}{8}$ inch further from the blade and repeat the process. Continue this until all waste stock is removed from the groove.

Secure your drill to the carriage with a hose clamp of adequate size. A small amount of wax added to the carriage will result in a smooth sliding action.



Shop Tips

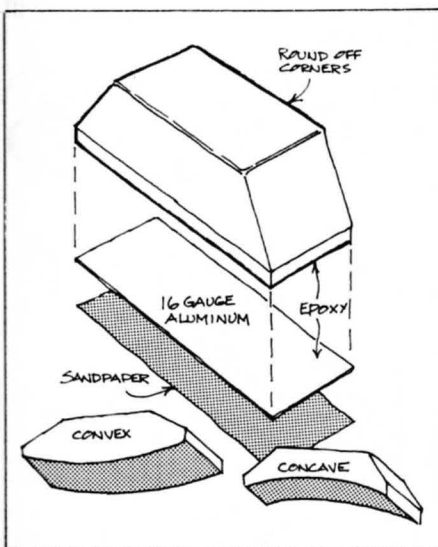
A discarded badminton racquet makes a handy organizer for screwdrivers, awls, rat-tail files and other small tools. Just cut off the handle at the point shown and epoxy the racquet



stub into a mortise cut in the mounting board. Better use a hacksaw when making the cut as the metal shaft may extend well into the wood. Mount the unit to the wall or toolboard with a pair of woodscrews.

Robert F. Gosnell, Plattsburgh, NY

I have made up sanding blocks in different sizes and shapes that work really well. With them it's possible to sand right up to tiny corners. The sandpaper lasts longer and is easily replaced when necessary. Cut blocks to suit and epoxy an aluminum backing in



place. Coat the backing with 3M Feathering Disk Cement and stick the block to a sandpaper sheet. The cement sets up right away. Use an awl to trace around the block to trim off the excess paper and you're ready to sand. Worn sandpaper strips off easily for replacement.

Jay Wallace, Ashland, OR

Many oil finishes, especially if they contain tung oil, will tend to harden once the container has been opened. To avoid this problem, transfer the oil to one of those plastic flip-top bottles that many hair shampoos come in. After using some of the finish, just



squeeze out most of the air and close the spout. Without exposure to air, the oil won't harden. Make sure the bottle is one that has a tight sealing top, otherwise air will seep into the container during storage.

Ross G. Roepke, Tullahoma, TN

The location of drawer pulls and door knobs can throw off the visual "balance" of a furniture piece. To get an idea of what the front should look like with the various arrangements, I use a hot melt glue gun.

I put a dab of glue on the knob stem or drawer pull back and place it where I think it should go. This allows me to "see" the finished look without drilling any holes. And clean up is easy. Just rub off!

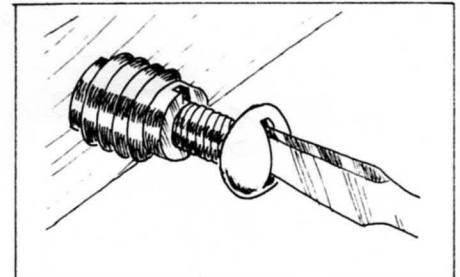
James Kearney, Minneapolis, MN

My shop uses felt on a daily basis making wood specialty products and I have found that the pressure-sensitive sanding disc cement (Sears #2220) works best. Since the glue dries completely before the felt is applied, the possibility of glue soaking through is eliminated. The applied felt need only be rolled and then trimmed to size for a durable, professional looking bond.

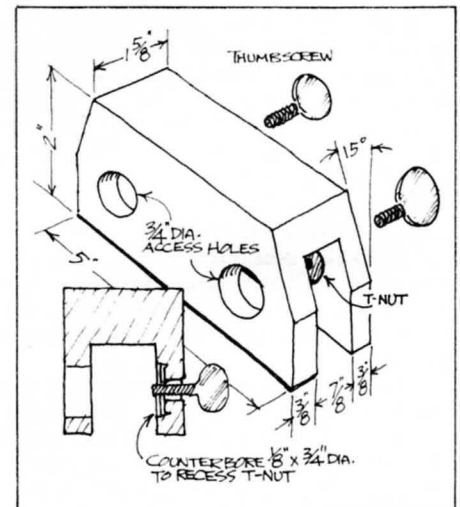
Criag Graybar, St. Francis, WI

Small scraps of exotic hardwoods such as ebony or rosewood should always be saved as they can be used to make beautiful wedges which contrast with the principal construction wood.

To drive a rosan nut (sometimes called a threaded insert) takes a wide bladed screwdriver and a fair amount of turning force. Even then, the slot will usually get pretty well chewed up. Here's an easier way. Shorten a bolt that matches the internal thread of the rosan nut, then use it to drive the nut as shown.



The major tool in my home shop is the radial arm saw and I have found the use of a stop-block very useful. It's quick and very dependable. I've also extended the fence beyond the end of the table about two feet with a leg to the floor for support. The stop-block



can be moved anywhere along the fence. The 3/4 inch holes on the side provide access to the inner part of the opposite side where the T-nuts are recessed into that side. The channel cut through the block can be of the dimensions shown to allow for easy operation and adjustment on any 3/4 inch saw fence. This block can be used either on the left or right side of the blade and is very solid when tightened to the fence.

Ron Toppenberg, Newton, IA

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

Classified

The Classified rate is 75¢ per word, payable with order. Minimum ad length is 15 words, and the deadline date is the 10th of the 2nd month preceding the issue (for example, 7/10 for the September/October issue). Send copy and check to **The Woodworker's Journal**, Classified Dept., P.O. Box 1629, New Milford, CT 06776.

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.

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.

Make Wooden Toys - Plans, hardwood wheels, parts, dowels, catalog \$1.00. Cherry Tree Toys, Belmont, OH 43718.

Toy Plans, complete for indoor/outdoor fun. Catalog \$1.00. The Toymakers, Box 3385, Stony Creek, CT 06405.

Drawings for woodworker's workbench (42" x 27½" x 30") with 2 pipe clamp vises. Send \$2.00, Weekend Enterprises, 12342 La Barca, San Antonio, TX 78233.

Save 50%+ on Bandsaw Blades, Sanding needs - screws - prompt service - small quantities. For pricelist send #10 SASE. Fixmaster, Box 15521-6, Atlanta, GA 30333.

Clock Plans - Make handcrafted clocks for gifts or profit. 6 plans \$4.00. Kent Anderson, 219 Beedle Dr., Ames, IA 50010.

Sconces. Series #10. Set of 10 plans and ideas: \$5.00. Candleholders. Series #20. Set of 10 plans and ideas. Some lathe work: \$5.00. Something Different, 1804 Old Hollow Road, Walkertown, NC 27051.

Tool Plans - Full-size plans and instructions. Wooden bit brace \$4.00 ppd. Adjustable plow plane \$5.00 ppd. Oak Leaf Designs, P.O. Box 3622A, Quincy, IL 62305.

Plane table tops etc. with router, make handy tools - old washer motors. Send \$5.00. C.J. Pine Shop, R. 6 Box 286C, Meridian, MS 39301.

Woodworkers - Frame pattern for Cross stitch. 25 best sellers. \$6.00. King Crafts, Box 1727-A, King, NC 27021.

Woodworkers! 8-fullsized patterns of cars and trucks from scrapwood. \$3.00. Tube-city Graphics, Box 322, Milton, MA 02186.

Solid brass threaded rod, hex nuts, wing nuts, washers. Ditto in steel, plus "T" nuts, thumb screws, hex cap screws, lock nuts. Strickland, 494 Old Post Rd., No. Attleboro, MA 02760.

Children's Old Fashioned Wooden Wagon. 5" wooden wheels. 9" x 17" bed. Plans \$3.00. Catalog of plans for wooden vehicles free with order. Woody's, 821 S. Logan, South Bend, IN 46615.

Free - Catalog of Wooden Toy Patterns - (cars, trucks, trains, etc.). Franks Plan Service (WJ-11), 1202 Second, Booneville, MS 38829.

Oak and Brass Antique Wall Telephone kit. All components included to make phone operational! With oak cabinet \$119. Without oak cabinet (plans included) \$79. Catalog - phones all types \$1.00. Telephones, Box 58, Beattie, KS 66406, 1-913-353-2231.

Build a Rustic Swingaway Mail Box Post now available with our patented self righting feature. You buy the kit with plans and all the necessary hardware to make your own swingaway mail post. The cost of the kit is \$12.50 plus \$2.50 for handling. It's fun, easy and profitable to build resulting in a beautiful and functional post. Send check or m.o. to National Swingaway Mail Post Corp., P.O. Box 57, Minoa, NY 13116.

Grid Paper. 1" squares. Size 27 x 32. 2 for \$4.00. Additional sheets \$1.00 each. Woodgraphs, Box 1411, Torrance, CA 90505.

Ceiling Hung Table - Hangers and table 100% wood. Very different - Conversation piece. Plans \$5.00. A. Martinson, 745 Garden Ave., Salt Lake City, UT 84106.

Will supply 100 year old salvaged antique Georgia heartpine for woodworking projects. Brochure with six pictures and specifications, price, and other information, \$1.00 with SASE to Sunbelt Antique Pine, Rt. 7, Box 41, Moultrie, GA 31768.

Buck Musical Instrument Products. A primary source for guitars, banjos, mandolins, violins, dulcimers, wood parts, books, records, tools, cases, etc. 150 page catalog \$3.50. P.O. Box 71A, New Britain, PA 18901.

Swedish Door Harp Plans, a most unique project. Easy to make. Plans \$4.95, Accessory kit \$5.95. Custom Woodworking, RD 4, Box 4294J, Mercer, PA 16137.

Attention PEG users! New lower prices for PEG. Books on PEG use also available. Write for our free catalog. WoodFinishing Enterprises, Box 10117, Milwaukee, WI 53210-0117.

Miniature Furniture Patterns. Dollhouse plans. Basswood, hinges, tools, books, wallpaper. 1" to 1' scale. Catalog \$1.00. Green Door Studio, Dept. WJ, Box 6200, St. Paul, MN 55118.

Unusual Folding Rocker using canvas, denim, or macrame seating. Pattern \$4.00. Leisure Seats, Box 9175WJ, Marietta, GA 30065.

Over 75 Patterns! Enjoy making profitable wooden gifts, toys, household accessories. Plus "Shop Secrets". Only \$5.00. Accents (J-92), Box 262, Danvers, MA 01923.

Lathe Plans, build your own 10" swing 32" between centers. \$6.00 check or money order to "Variety Woodcrafters", 9988 Ketch Road, Plain City, OH 43064.

Renew Wood Furniture with Easy to Mix formulas. For recipes send \$2.00 to Green Door Studio, Dept. WJ, Box 6200, St. Paul, MN 55118.

Colonial Rocking Horse....Graceful lines, sturdy construction. Full-scale pattern. Step-by-step instructions, \$3.50. (Satisfaction guaranteed!)....Catalog of home furnishings and toy patterns, \$1.50 (free with order). Country Craftsman, Box 67-WJ9, Dauphin, PA 17018.

Cabinetmakers' Supplies

As a service to our readers, **The Woodworker's Journal** periodically lists sources of supply for various woodworking products. In this issue we've included two listings: suppliers of cane and related products, and suppliers of wood finishing products.

Caning Supplies

Most of these companies also carry reed, splint, rush, rattan, and related materials.

Cane & Basket Supply Co.
1283 South Cochran Ave.
Los Angeles, CA 90010
Catalog: \$1.00

The Caning Shop
926 Gilman
Berkeley, CA 94710
Free catalog

Connecticut Cane and Reed Co.
P.O. Box 1276
Manchester, CT 06040
Brochure/Price list: 50¢

The H.H. Perkins Co.
P.O. Box A.C., Amity Station
Woodbridge, CT 06525
Handbook/Price List: \$1.00

WSI Distributors
1165 First Capitol Drive
St. Charles, MO 63301
Catalog: \$2.00

Ye Olde Village Workshop
Box 227
Mountain Home, PA 18342
Catalog: 50¢

Wood Finishing Supplies

Finishing Products and Supply Co.
4611 Macklind Ave.
St. Louis, MO 63109
Catalog: \$2.00

Industrial Finishing Products
465 Logan Street
Brooklyn, NY 11208
Catalog: \$2.50

WoodFinishing Enterprises
Box 10117
Milwaukee, WI 53210
Free catalog

Wood Finishing Supply Co.
1267 Mary Drive
Macedon, NY 14502
Catalog: \$2.00

Shop Notes