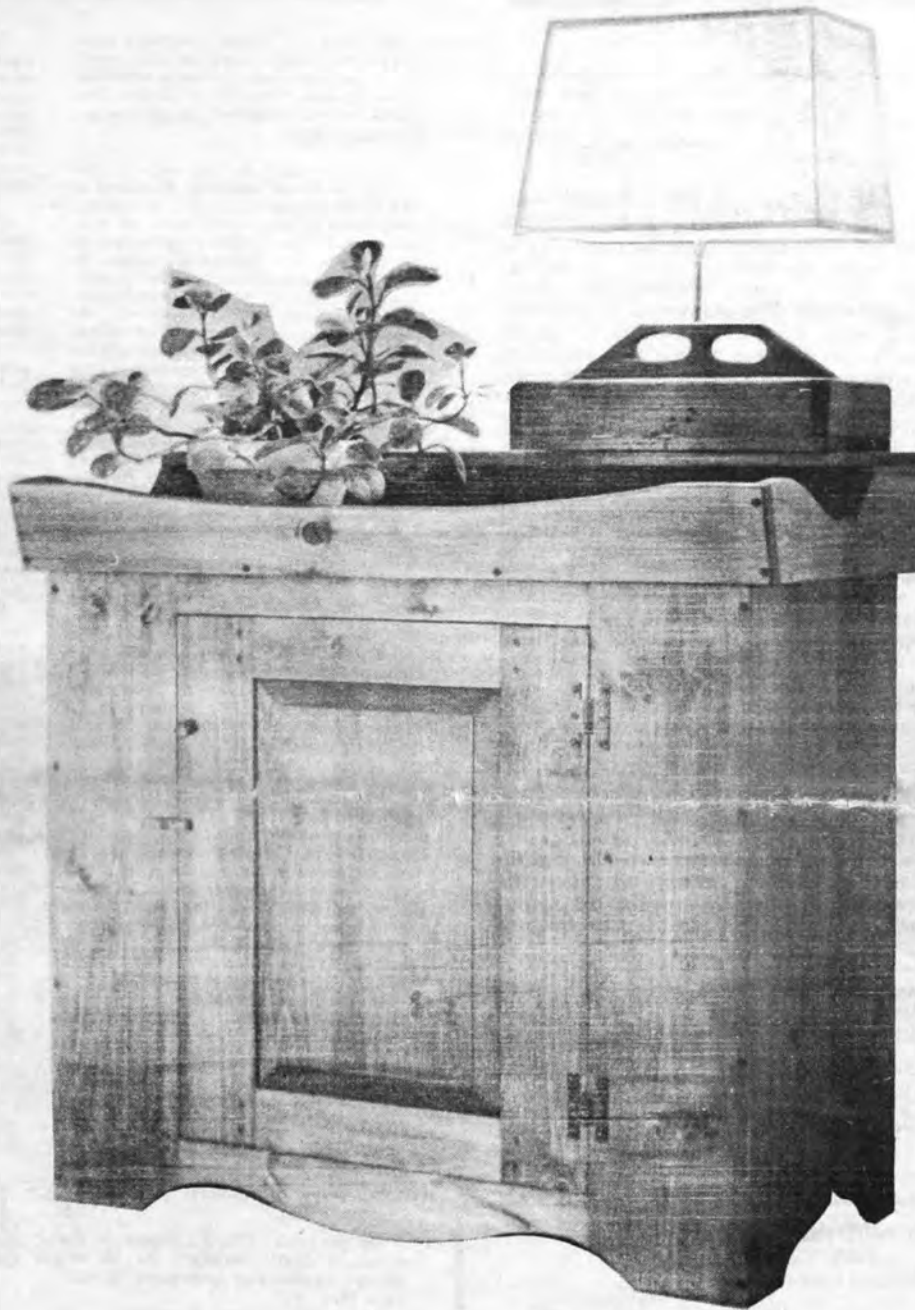


The Woodworker's Journal

VOL. 3, NO. 3

MAY/JUNE 1979

16 PAGES \$1.50



In This Issue

- **Pine Medicine Cabinet**
- **Patio Settee**
- **Spanish Chair-side Chest**
- **Fishing Rod Rack**
- **Child's Wall Rack**
- **Cherry Dressing Mirror**
- and much more...**

Shoptalk

The longer we work in this business, the more cautious we become when it comes to making positive statements concerning woodworking procedures. If this sounds a bit like an attempt on our part to weasel out of accepting a role of authority, you're right. Maybe we're getting too timid in our old age.

The wide variety of woods and their vastly different characteristics with respect to hardness, stability, grain structure and other factors precludes the possibility of laying down a neat set of hard and fast rules for working wood. As an example; one day we got into a rather lengthy discussion concerning the seasoning of wood. The point was mentioned, here in the office, that it would be a good idea to do an in-depth article describing the procedures involved in reducing and otherwise dealing with moisture content in lumber prior to using it for fine furniture.

The more we discussed the matter, the more we became entangled in variables until it seemed as if we could hardly make a definite statement about anything.

Aside from the differences in native woods themselves, consider the great difference in climate across this country. High moisture content and extreme shrinkage due to central heating is certainly more of a problem for a woodworker in Providence Rhode Island than it is for another in Tucson Arizona. How does one give advice that's valid for all?

And so it goes, from seasoning to cutting, joining and finishing. There are many different approaches but not many that can be applied universally. Which makes us sometimes think of woodworking as a black art.

Successful furniture building is the result of a lot of skill born of experience...along with plentiful doses of patience, caution, luck and perhaps a bit of wizardry.

The point of this is: if you catch us starting to pontificate, and you disagree...think it over for awhile. Perhaps our method is also valid. But if we're wrong, or you've got a better way, then we surely would like to know.

Good woodworkers are proud of their skills and rightly so for they take a long time to develop. So long as this pride doesn't result in pig-headedness when it comes to accepting new ideas, woodworking can be a vital life-long process of discovery and growth.

We discovered a small hidden cache of July-August 1977 back issues. There's about a couple hundred or so, but if you miss getting one...don't worry. We will be re-printing more later this year.

THE WOODWORKER'S JOURNAL

Sunset Lane
Washington Depot, CT 06794

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Published bi-monthly by The Madrigal Pub. Co., Inc.
Sunset Lane, Washington Depot, Ct. 06794. Address
all mail: Subscriptions, change of address to The
Woodworker's Journal, Sunset Lane, Washington
Depot, Ct. 06794

Second Class Postage paid at
Washington Depot, CT 06794

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Subscription Rates:
1 yr. (6 issues) \$7.00
2 yrs. (12 issues) \$13.00
Foreign rates: add \$2.00

LETTERS

Enclosed are jointer shavings from the boards that made a packing crate for a machine tool I recently received from Taiwan, Republic of China. Can you tell what wood it is? J. Gascoyne, Annapolis, MD

We forwarded the shavings to the Center for Wood Anatomy Research of the U. S. Department of Agriculture and asked if they could come up with an answer. We received the following reply from Dr. Robert Koeppen, in charge of the center: "The jointer shavings sent to me for examination are identified as belonging to the duriar group of timbers. This south-east Asian group of woods are similar to the "Philippine mahoganies" in that several genera are included and sold under a single market name. Included in the duriar group are the genera Durio, Coelostegia, and Neesia. If we had larger pieces of these woods we may be able to be more exact, but the jointer shavings are just too thin and small to lend themselves well for the anatomical examination necessary to make a more exact determination."

Editor's Note: The Center for Wood Anatomy Research provides a wood identification service for anyone having difficulty identifying a particular wood. There is no charge for this service (provided the number of samples submitted is reasonable). Send samples to: Center for Wood Anatomy Research, U.S. Forest Products Laboratory, P.O. Box 5130, Madison, WI 53705.

In answer to the letter from Mr. C. Beatty of Ontario; Canada about man-powered equipment; The March/April 1979 issue of Workbench magazine has an article on building a treadle powered fretsaw for marquetry. (Their address is 4251 Pennsylvania, Kansas City, MO 64111.) Also, the March/April 1979 issue of Fine Woodworking contains two articles on man-powered lathes. (Their address is 52 Church Hill Road, Newtown, CT 06470.)

Hope this will be of some benefit to anyone interested. E. A. Nazelrod, Pennel, PA.

No doubt it will be helpful. Our thanks to you and to the many other readers who passed this information along to us.

Do you know of a source where I can buy plans for Chippendale or Queen Ann style furniture? M. Jonas, Houston, TX.

Try the book "Fine Furniture for the Amateur Cabinetmaker" by A. W. Marlow, published by Bonanza Books, New York, NY.

Also "Heirloom Furniture" by Franklin Gottshall, again published by Bonanza Books.

One of my next projects is to build a sewing desk in which the machine rests on a tray which pulls out of the right section and raises to the level of the desk top like a typewriter pulls from a secretarial desk. I am having a problem locating a source for the hardware for this tray. D. Kirkland, Newville, AL.

Based on your description, we believe that the hardware you are looking for is available from Constantine, 2050 Eastchester Road, Bronx, NY 10461. It's called mixer shelf hardware and the cost is \$29.95. According to Constantine, "This mixer shelf hardware is designed to swing a small appliance storage shelf up out of the cabinet and lock it securely at a convenient working height. The spring tension is adjustable to accommodate varying weights on shelf such as electric mixers, toasters, waffle irons, sewing machines, etc. It is recommended for use with shelf widths from 10" to 36". Minimum vertical clearance required inside cabinet is 22 1/2". Cost of the catalog is 50¢ and a photo of the hardware is shown on page 71.

From Cranberry country...regarding the Cranberry Scoop Magazine Rack project in the March/April issue; Floaters (floating berries) are not picked with a scoop but by an endless belt. Also the actual scoops were not made of pine but either birch or maple. Pine would not stand the wear. F. Dittmar, Plymouth, MA.

We certainly won't argue cranberry production with a reader from the Bay State. Please though, keep those delightful little red berries growing because we just love them.

...I guess I spend as much time in my workshop as anyone having this hobby. The other night my wife (married 38 years) said, "I think I will make a 'clone' of you. One of you can spend all of your time in the shop and the other can sit and keep me company." Thought you'd get a kick out of that statement. C. Searles, San Francisco, CA

Yes we did, Mr. Searles, and we thought our readers would too. Thanks for your story.

I am looking for some plans for a child's doll rocking cradle. Do you have any? Cost? A. Harlan, Trout Creek, MT.

Plans for just such a cradle are in our Sept/Oct 1978 issue. Back issues are available at a cost of \$1.50/copy.

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M/J

The Beginning Woodworker

Sanding Techniques

Most woodworkers dislike sanding and generally consider the process as a tedious but necessary step in the process of building furniture. As a result of this attitude, most of us have been guilty, at one time or another, of rushing the process or taking shortcuts. Veteran woodworkers have learned, through painful experience, that hasty sanding almost always leads to very disappointing and sometimes disastrous results.

More time should be spent in sanding than in performing any other operation in the cabinet shop. There's simply no substitute for a careful job when it comes to building something you may want to live with for years to come.

Blotchy, uneven staining, darkened dents and fine dark scratches are due to uneven or incomplete sanding and satisfactory repair can be almost impossible.

Basically, we sand to remove minor dents and bruises and the marks caused by hand or machine tools. We also sand so that the beauty of the grain may be fully brought forth and to provide the smoothness needed for a reflective surface and pleasant feel.

There are a number of different kinds of sandpaper, or more properly, abrasive paper, and each kind comes in a range of grades or grit sizes. The chart in Figure 1 lists the five commonly available kinds of abrasive papers. There are other characteristics such as the type of backing; whether cloth or paper, stiffness of backing paper and whether the paper can be used wet or dry.

In this article we shall only concern ourselves with the types of grits available and the grades or grit sizes.

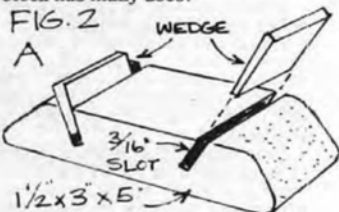
The chart shows the types of paper how they are graded and how the grades are related. Some form of grading is almost always printed on the back of each sheet or on the package containing a number of sheets.

Flint paper, which is shown on the chart for reference only, has fallen into general disuse among experienced craftsmen and is not as available as in previous years. The reason for this is that flint is the slowest cutting of the group and the grains do not adhere to the backing for very long.

Garnet, a sharp natural abrasive, has been around a long time and is a favorite with old-timers. It is a good paper to use with respect to performance and cost. Aluminum oxide and silicon carbide are man-made abrasives. Both are sharp, fast cutting and resistant to wear. They are sometimes referred to as "production" papers and are generally used for machines such as belt sanders as well as being available in sheet form.

To obtain uniform cutting with any type of sandpaper on flat surfaces, a hand-sanding block or portable

electric sander should be used. Two easily made hand-sanding blocks are shown in Figure 2. Block A is used without a felt or cork pad and is useful for cutting down ridges caused by planing or edge-gluing narrow boards to form wider ones. A cabinet scraper will do this job nicely and of course a belt sander will do it in a few moments. Still, this humble sanding block has many uses.



Block B is a good general purpose sander which is fitted with a 1/4 inch thick felt pad and can be used for hand sanding from start to finish...except for cutting down ridges.

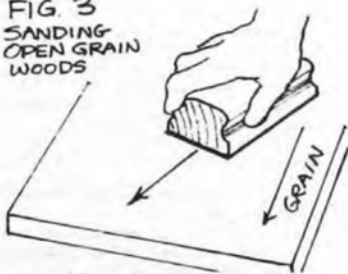
It's an easy task to make your own hand sander. A simple block of wood will do. If the sides are coved, it will be easier to grip the edges of the paper. Size your block as shown to use a quarter-sheet of paper (they come in 9 x 11 inch sheets). If you buy a hand sander, avoid the types that use a special size of paper or roll of paper. It's cheaper and more convenient to cut your own paper using an old hacksaw blade (not scissors) as a straight-edge and cutting blade.

In the sanding process, it's vitally important to use the proper grit size as you progress from rough to finish sanding. Sandpaper creates small scratches on the surface; each abrasive grain leaving a tiny groove as the material is removed. Successively finer grits continue removing wood and leave increasingly smaller scratches until the surface feels smooth and the scratches are too tiny to be seen.

It's not necessary to go through 5 or 6 grit sizes in sanding bare wood. Generally, most cabinet lumber is fairly smooth so that initial sanding can be done with a #100 or 2/0 paper. Use your hand sanding block or orbital sander and always sand with the grain. Sand across the grain and you'll have to sand many strokes with the grain to remove the scratches caused by one stroke across. As usual, there are a

couple of exceptions to the rule, and one is when sanding coarse open-grained woods such as red oak, you should sand at an angle to the grain. If sanding follows the grain, each bit of abrasive will tend to enlarge the tiny elongated pores, leaving the surface rough. Sanding at an angle of about 20 degrees to the grain will help prevent this. (Fig. 3)

FIG. 3
SANDING
OPEN GRAIN
WOODS



Another exception is when sanding down the ridges at glued edge joints. These are more quickly removed if the sanding is done at an angle of about 45 degrees to the grain. Once the ridges are leveled, start sanding with the grain.

To produce a true flat surface with a hand-sanding block, sand with uniform pressure in short, straight strokes of about 12 inches. Run the paper along the workpiece, overlapping the strokes by about 3 inches. When sanding to an edge, do not extend the block more than an inch beyond the edge at each stroke unless you want to round off the edge.

After initial sanding is complete, move up to a finer grit such as #150. Repeat the process and then finish sand with #220. Finer grades such as #320 or 400 can be used after oil or varnish is applied, to give a satiny hand-rubbed finish.

The above grit sizes are merely suggestions; each project is different in the amount of sanding required, so you'll have to use a bit of judgment as to what grit to use. For example, the wood may be a bit rough to start so you may want to start sanding with a relatively coarse grit such as #60 or 1/2. In this case, consider using #120 for the second step. Normally though, you will not need to use more than 3 different grades of paper in any sanding job, so long as each grade is used thoroughly.

Although it may seem an obvious point to some, it's worth mentioning that as much sanding as possible should be done before assembly. It's much easier and more efficient to work on flat surfaces before they are joined at right angles to other parts. Pre-assembly sanding should be carried as far as #120 grit. After assembly, outer surfaces can be given a finer sanding while inner surfaces are left as is, or sanded further depending on the design and importance

(Please turn to Page 16)

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FIG. 1		GARNET &	ALUM. OXIDE
GRITS	FLINT	ALUM. OXIDE	SILICON CARBIDE
VERY FINE			400
		10/0	360
		9/0	320
		8/0	280
		7/0	240
FINE	4/0	6/0	220
	3/0	5/0	180
	2/0	4/0	150
		3/0	120
MEDIUM	1/0		
		2/0	100
COARSE		1/0	80
	1		
	1 1/2	1/2	60
		1	50

Cherry Dressing Mirror

The female members of the household will be especially delighted with this slim and elegant free-standing dressing mirror. You'll find it a very rewarding piece to build. We used 10½ board feet of 5/4 inch cherry at a cost of \$22.00. The 14" x 54" mirror was purchased at a discount store for \$8.00 and stripped of its cheap plastic frame. Including finishing materials and hardware, the cost shouldn't run much over \$35.00....a very reasonable price for such a handsome addition to your furnishings.

Start construction with the base by enlarging the squares on template stock and transferring the shape of the feet. Lay out the wide dados and cut with repeated passes of a dado cutter. Next, the feet can be band-sawed to shape. Cut them slightly oversize to allow for slight irregularities and final shaping.

The tenon at the lower end of the upright supports is the widest point on the supports. Cut this for a snug fit in the foot dado and leave the tenon at least ½ inch long, to be trimmed flush with the foot bottom after the joint is secured.

Locate the 5/16" diameter holes in uprights through which the ¼ inch bolts will pass. Use a drill press or doweling jig to bore these holes as it is very important that they be bored true. Sand the uprights and feet then glue and clamp them together. When dry, use a surform rasp or cabinet file to shape a smooth curve from feet to uprights, and give a generous radius

to all sharp edges.

The base crossmember is cut from 5/4 inch stock and both crossmember and feet are bored for four ¾ x 1½ inch dowel pins. The top edge of crossmember is exactly flush with the top edge of feet. Glue and clamp crossmember between feet and keep the assembly square by clamping a piece of scrap, exactly the same length as the crossmember between the upper ends of the uprights. Use a try and framing square to make certain that all parts are squarely joined.

The four parts of the mirror frame are cut to length and notched for a half lap joint at the corners. Join the frame with glue and woodscrews driven from the back as shown, or drive screws in from the front, counterboring them for insertion of decorative plugs. The mirror rabbet on the back of the frame is easily cut with a router and ¾ inch rabbet bit and pilot. The rounded corners are then squared off with a chisel.

In keeping with the clean contemporary lines of the base, the front inner edge of the frame is not molded but rather simply rounded off as shown in the frame section detail. This can be done by hand or with a router.

To locate the holes in the frame for the adjusting bolts, place a piece of ¼ inch thick scrap along the top of the crossmember and rest the mirror on it. Use a pencil through the upright holes to mark frame sides for drilling. Again, use a drill press or doweling jig to insure that the holes are bored true.

Drill ⅜ inch holes deep enough to take ¼-20 threaded inserts. These have an inside thread for a ¼ inch bolt, and sharp outside threads to cut into the wood. A screwdriver slot in one end provides the means of inserting them. They can be purchased in some hardware stores or by mail from Brookstone Co., 127 Vose Farm Rd., Peterborough NH 03458.

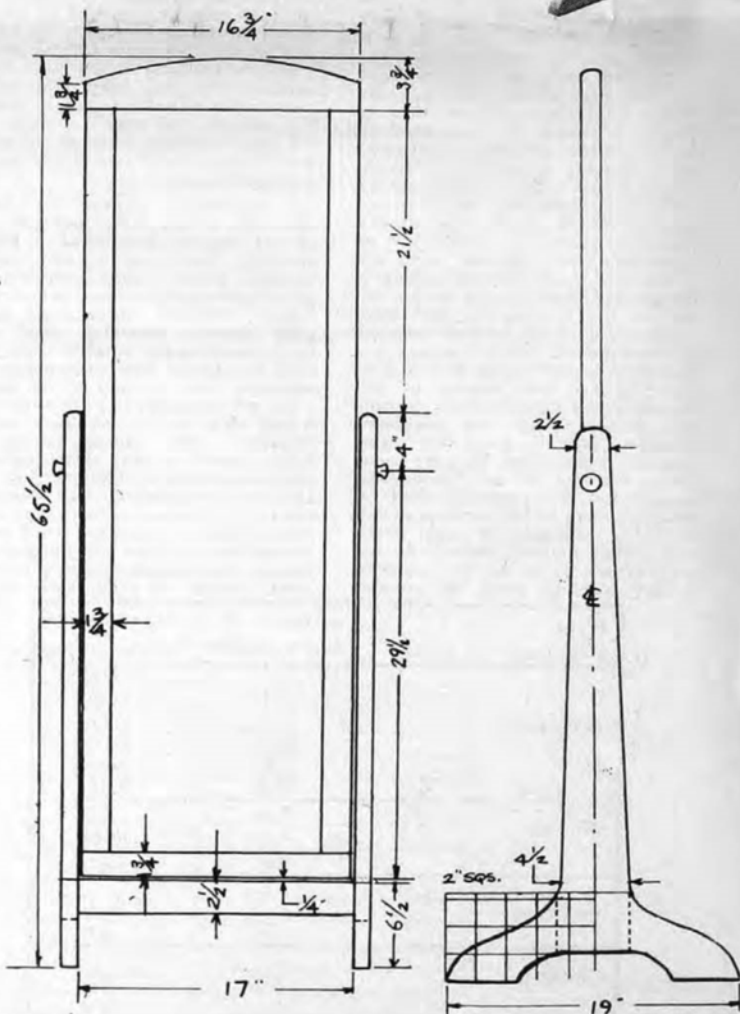
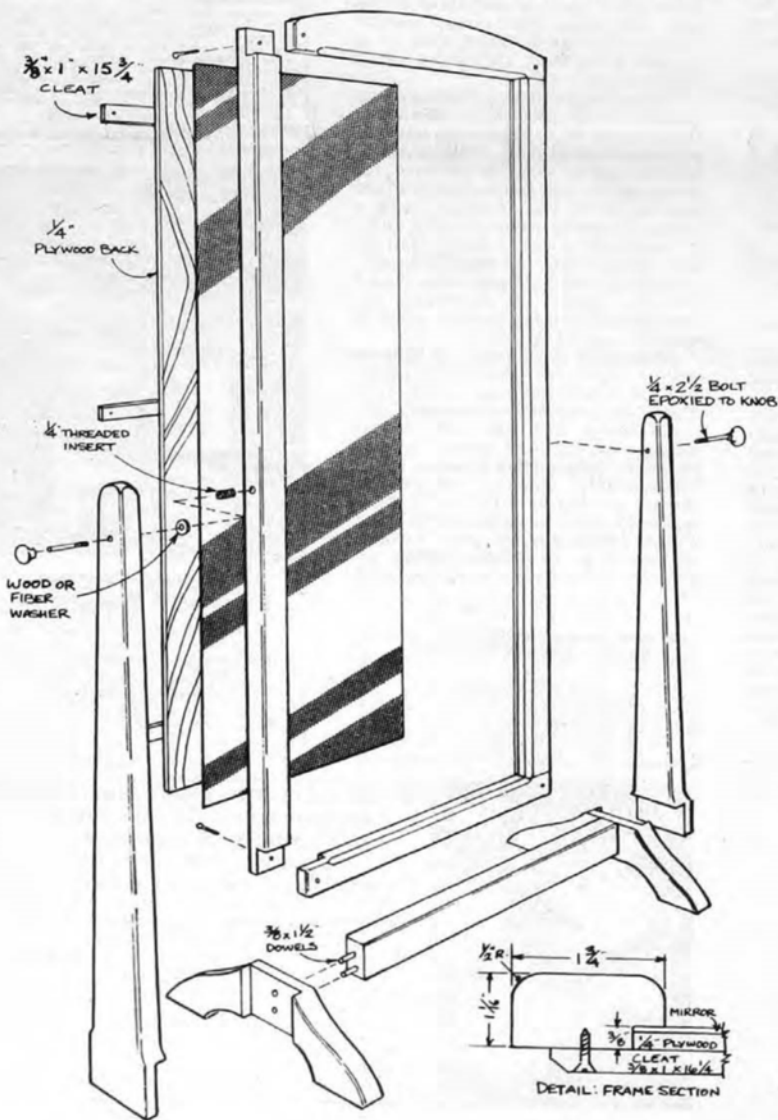
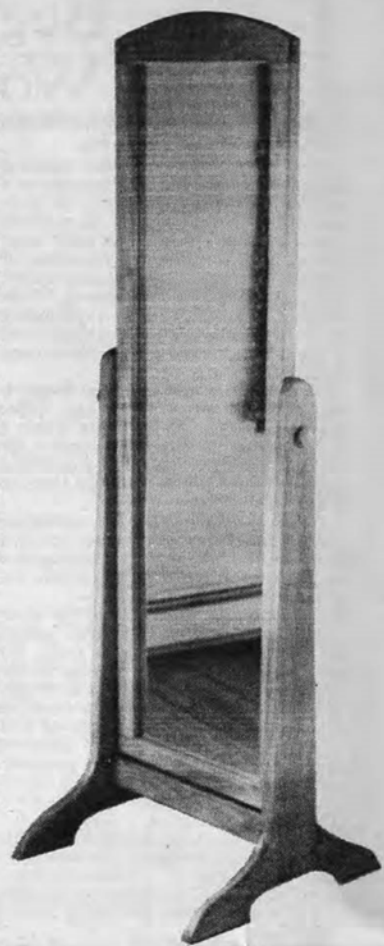
The adjusting screws are made from 2½ inch carriage bolts with their heads cut off and inserted into 1½ inch diameter wood drawer pulls. Drill the pulls for a tight fit on the end of the bolts and dab a bit of epoxy on the bolt before twisting into the pull.

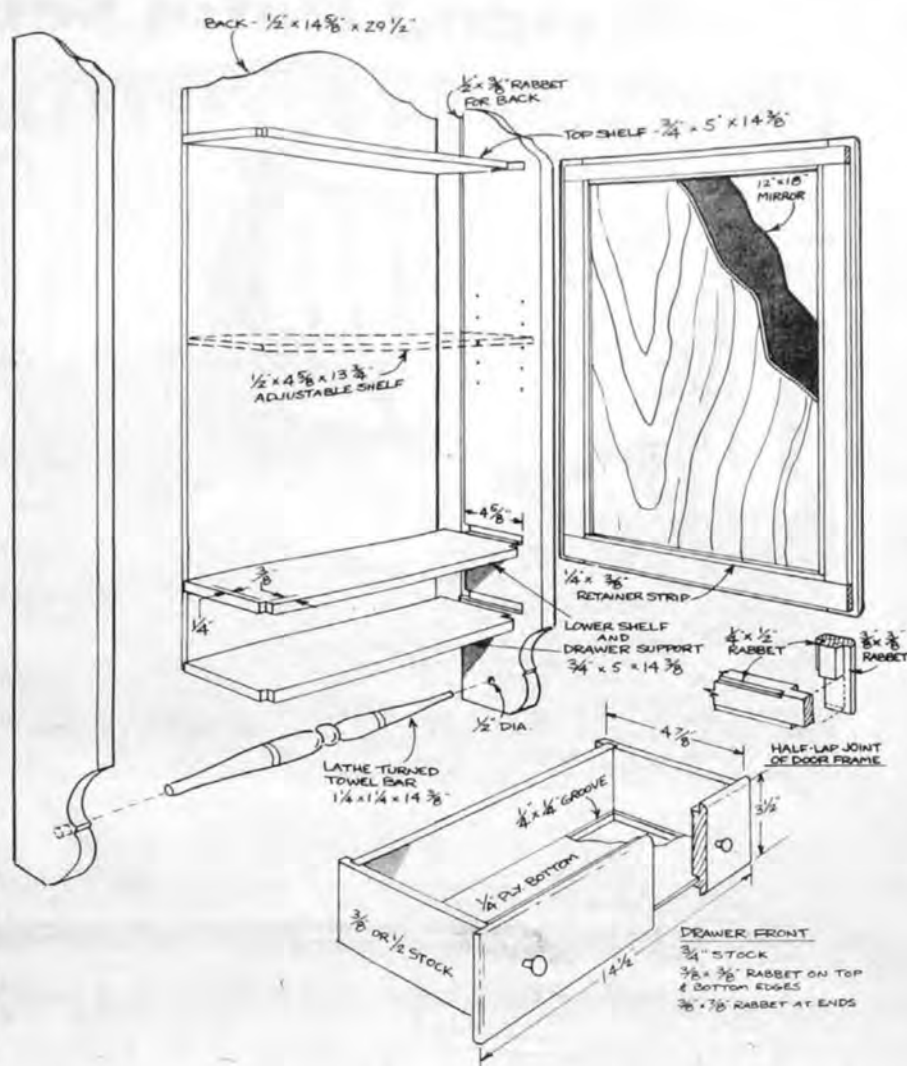
There will be about ⅛ inch space between frame sides and uprights. This is taken up with a thin hardwood washer cut by hand or with a holesaw and electric drill. Fiber washers can also be used.

The mirror may have a cardboard backing glued to it. Do not try to remove it as you'll surely scratch the silvering and spoil the mirror. Strip the commercial frame from the mirror and insert mirror into frame rabbet. It should fit easily.

If it's tight, ease the rabbet a bit. Cut a ¼ inch plywood back for the mirror. This is held in place with three thin cleats screwed at each end to the frame.

Finishing is a matter of preference. We gave our mirror a very light coat of walnut stain to accentuate the grain, and finished up with three coats of Watco Danish Oil which is a penetrating sealer and leaves a soft hand-rubbed glow.





Pine Medicine Cabinet

If you're adding a bathroom, or remodeling an old one, here's a wall mounted medicine cabinet that's low in cost to build and has far more charm than most in-wall metal cabinets commercially available. The size was based on the use of a 12" x 18" mirror purchased for \$4.00 and stripped of its plastic frame. This particular cabinet, which will not span the studs usually located in back of a lavatory, was firmly attached with two toggle bolts through the cabinet back and into a paneled plasterboard wall.

The cabinet back was made from glued up 1/2 inch pine. Plywood can be used but when stained, the curved top will be noticeably different than the rest of the cabinet unless it is covered with a pine veneer.

Cut sides to width and length and lay out curves, back edge rabbet and dados. If desired, the dados can extend completely across the sides. Stopping them short of the front edges and notching the shelves is extra work but is a more refined technique. Don't forget to drill a series of spaced 1/4" holes for an adjustable shelf. This can be of glass or 1/2" pine and supported on four pegs pushed into the holes.

The towel bar is turned from a length of pine but if you lack a lathe, square or dowel stock can be used. Drill 1/4" deep sockets in both sides to hold the towel bar.

Assemble cabinet sides, shelves, back and towel bar, using glue in the dados and small box nails to fasten

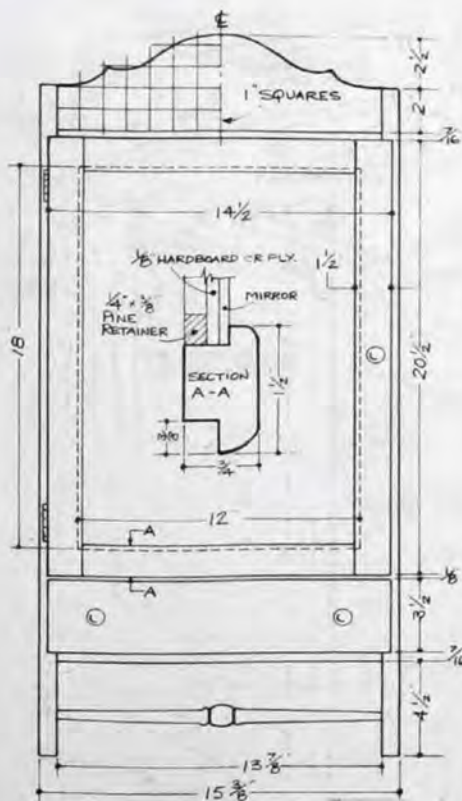
the back. With the case assembled, you can get an exact measurement of the door and drawer openings.

The door parts are cut to size, rabbeted to form the door lip and notched for the half-lap joints at each corner. The front edges of the frame are rounded off as shown in the sectional view A-A.

Glue and clamp frame together on a flat surface and after glue dries, use a 1/4 inch router bit with pilot to run the 1/4" x 1/2" rabbet around the back of frame to hold mirror, backing and retaining strips. Use a chisel to square off rounded corners of the routed rabbet.

Cut 1/4" plywood or hardboard backing to fit easily into rabbet and rip pine retaining strips which are bradded in place. The lipped drawer front is cut from 3/4" stock. Drawer construction is as illustrated, with the sides being glued and nailed or pegged to the drawer front rabbet.

The cabinet in the photo was stained with one coat of walnut oil stain and given three coats of low-luster urethane varnish rubbed down between coats with 4/0 steel wool. The door was fitted with a 1" dia. wooden knob and magnetic catch. Drawer pulls are 3/4 inch diameter and can be of wood, brass or white porcelain.



Divided Patio Settee



That anxiously awaited warm weather will soon be here...and this attractive outdoor settee can make those long, lazy days of summer even more enjoyable. You'll find this a sturdy, well-built piece of outdoor furniture that will last for years.

Either pine, fir, or redwood can be used for this project. We selected redwood for ours because it needs no preservatives, does not rot, and is generally unaffected by the elements.

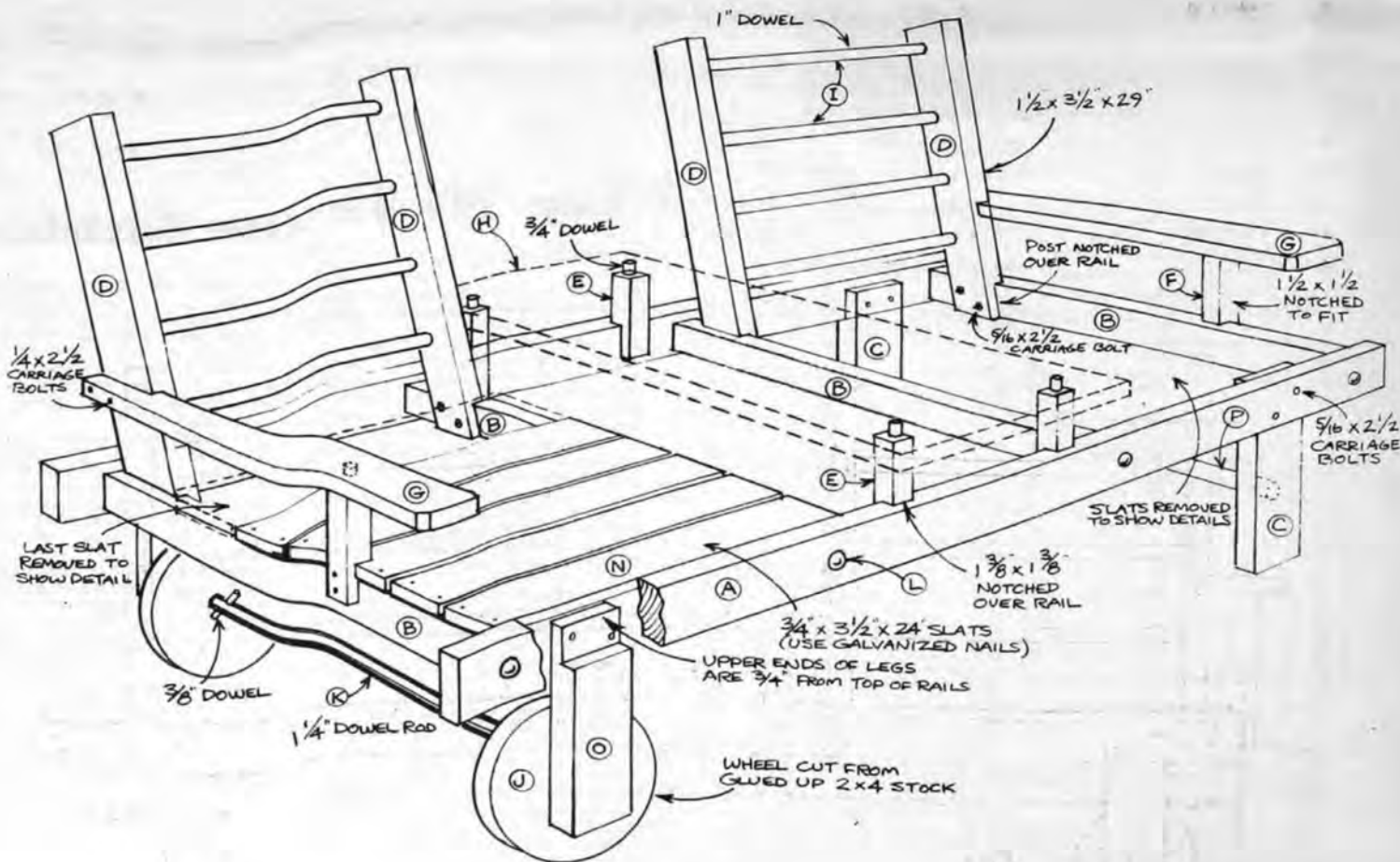
No matter what kind of wood is used though, be sure to use plated carriage bolts and galvanized nails. Unprotected hardware will quickly rust out. Also it's important to use water resistant glue for all glue joints.

The first step in construction will be to assemble the base frame consisting of the two front and back long frame rails (A) and the four short frame rails (B). This base serves as the foundation for all other members of the settee, so try to use lumber that's free from splits, checks, knots, and warp.

Cut the front and back long frame rails (A) to length, then lay out and drill 1" diameter holes for the short rail tenons (L) shown. When drilling the holes, be sure to keep the drill bit good and square so that later the round tenon will fit up without difficulty.

Now, cut the four short frame rails (B) to length. On each end, lay out and drill a 1" diameter x 2" deep hole...and as before, keep the drill bit square. The short rail tenon (L) is made from 1" diameter closet pole cut to a length of 4" and inserted in the frame rail ends. (See Detail "A") Be sure to use sufficient water resistant glue.

Now, the four short frame rails (B) with tenon ends can be inserted into



Technical drawing of a mechanical assembly, likely a pump or engine component, showing a side view with dimensions. The drawing includes a central horizontal shaft with a 7-inch diameter pulley at the left end. The shaft is supported by bearings and has a central section with a 14-inch length. The total length of the assembly is 66 1/2 inches. The drawing also shows a vertical section with a 26-inch height and a 18-inch width. Dimensions are given in inches and fractions of an inch.

Early American Dry Sink



The dry sink is truly a classic early American furniture piece. Its charm and simplicity is timeless. We think the project shown here is a fine example of the basic dry sink design of the 18th century.

The uses for a dry sink in today's home are almost limitless. We use ours for a favorite reading light and to display a variety of potted plants. The lower cabinet collects almost anything you can think of.

Except for the back panel, which is $\frac{1}{4}$ inch plywood, this project is made entirely of 1 inch ($\frac{3}{4}$ inch actual thickness) pine.

Begin construction by first making the two sides (parts A). You'll notice that they are $15\frac{1}{4}$ " wide and since pine boards of that width are pretty rare; it will be necessary to edge-join at least two narrower boards. For construction of this size, it's advisable to reinforce the edge joints with dowels or splines. Allow the glue to dry overnight, then cut the sides to length and width. Next, cut the $\frac{1}{4}$ " x $\frac{1}{4}$ " rabbet (see detail) which runs along the back of each side. Now, referring to the drawing, lay out and cut the $\frac{1}{4}$ inch deep dadoes for the shelves. Using the grid pattern provided, lay out and cut the bottom curve.

The upper and lower shelves (parts B) can be made next. Like the sides, the shelves are rather wide so narrower boards must be edge-joined. After gluing and drying, cut the shelves to the dimensions specified.

The back (part C) is made of $\frac{1}{4}$ " plywood and can be cut next. The plywood grain should run vertically and care must be taken to make sure that all cuts are square.

Tackle the front frame next. It's important that this frame be flat, so try to select boards that are free from warp.

It's also important that the frame be square, so make all measurements and cuts accurately. Cut the legs and rails to size, then lay out and drill dowel holes as shown. Glue and clamp the frame assembly and allow to dry overnight. Finally, lay out and cut the scrollwork.

The door assembly is next. Start with the center panel (part I), gluing up stock if you don't have a $12\frac{1}{2}$ " wide board. After cutting the panel board to proper length ($20\frac{1}{4}$ ") and width ($12\frac{1}{2}$ "), use the table saw, or radial arm saw or shaper to make the panel raising cut.

Cut the two door rails (part G) and the two door stiles (part H) to size as shown in the bill of materials. Refer to the tenon detail on the drawing for all dimensions. Next cut the $\frac{1}{4}$ " x $\frac{1}{4}$ " groove (see detail) on the inside edge of the four panel parts. Before gluing, assemble the frame to check for proper fit, squareness etc. Also, at this time, drill holes for the $\frac{1}{4}$ " tenon pins.

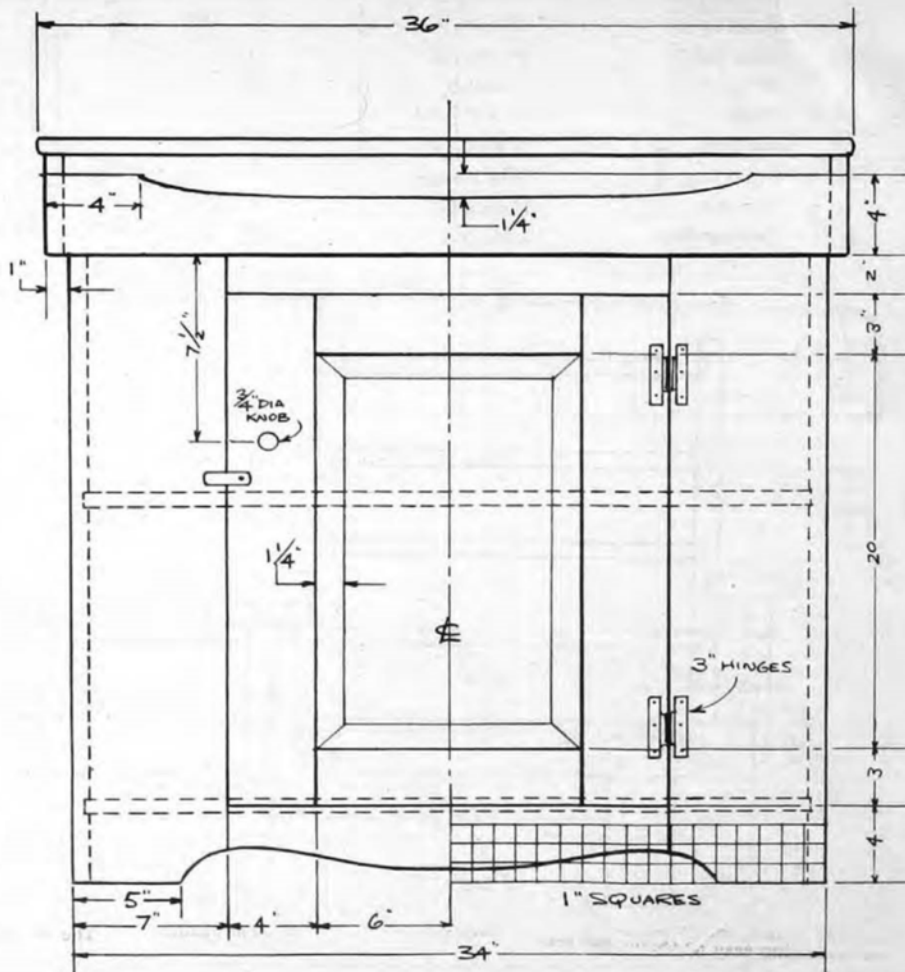
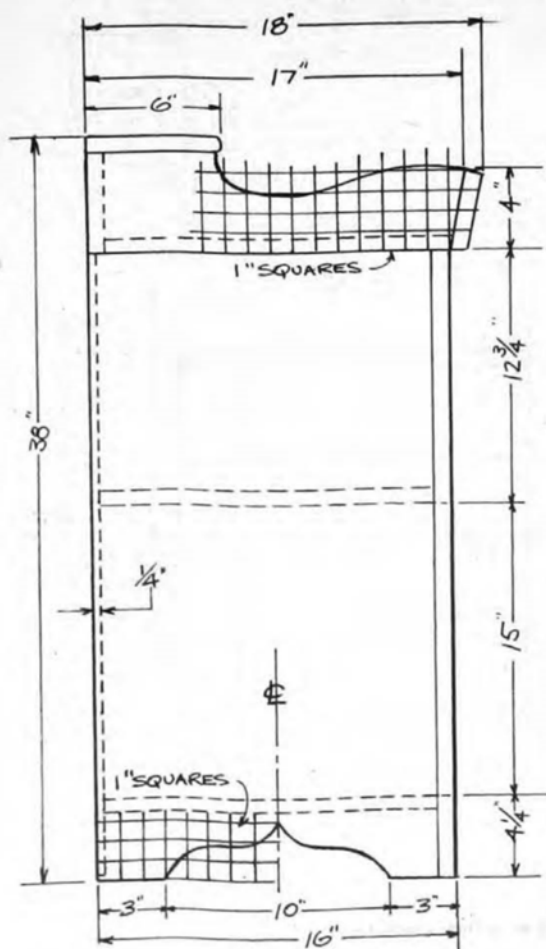
Now, glue and clamp the two rails and two stiles around the center panel. Do not glue the panel in the grooves. Complete assembly of the door panel and frame by cutting and gluing in the $\frac{1}{4}$ inch tenon pins.

The components for the top tray can be cut next. Start with the tray bottom (part J), cutting to the length and width shown in the bill of materials. Next cut the two top tray sides (parts L), then lay out and cut the curves as detailed on the grid pattern.

The top tray back (part K), front (part M) and top (part N) can be done next.

Begin assembly of the base by joining the left and right sides to the front frame. Drill and countersink holes for $1\frac{1}{2}$ " x #8 flat wood screws.

Slide the top and bottom shelves (B) into the dadoes. If this is a very snug fit, do this before joining the sides to the front frame. Now attach the ply-



wood back with 2p box nails.

Begin assembly of top tray by beveling the front end of part J to match the front angled cut of parts L. Also bevel the top and bottom edge of part M to match the angles as shown.

The tray bottom can now be attached to the base. Attach part J to base by drilling and counterboring for 1½" x #8 fl. screws. Use wood plugs to fill the holes. Employ the same method to attach all other parts of the tray.

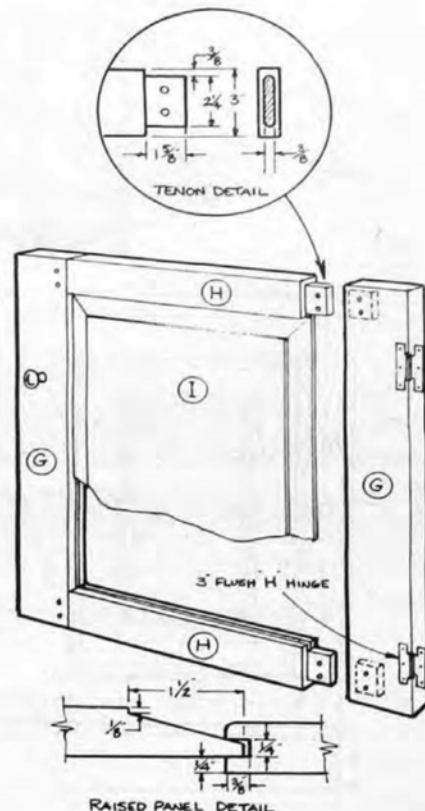
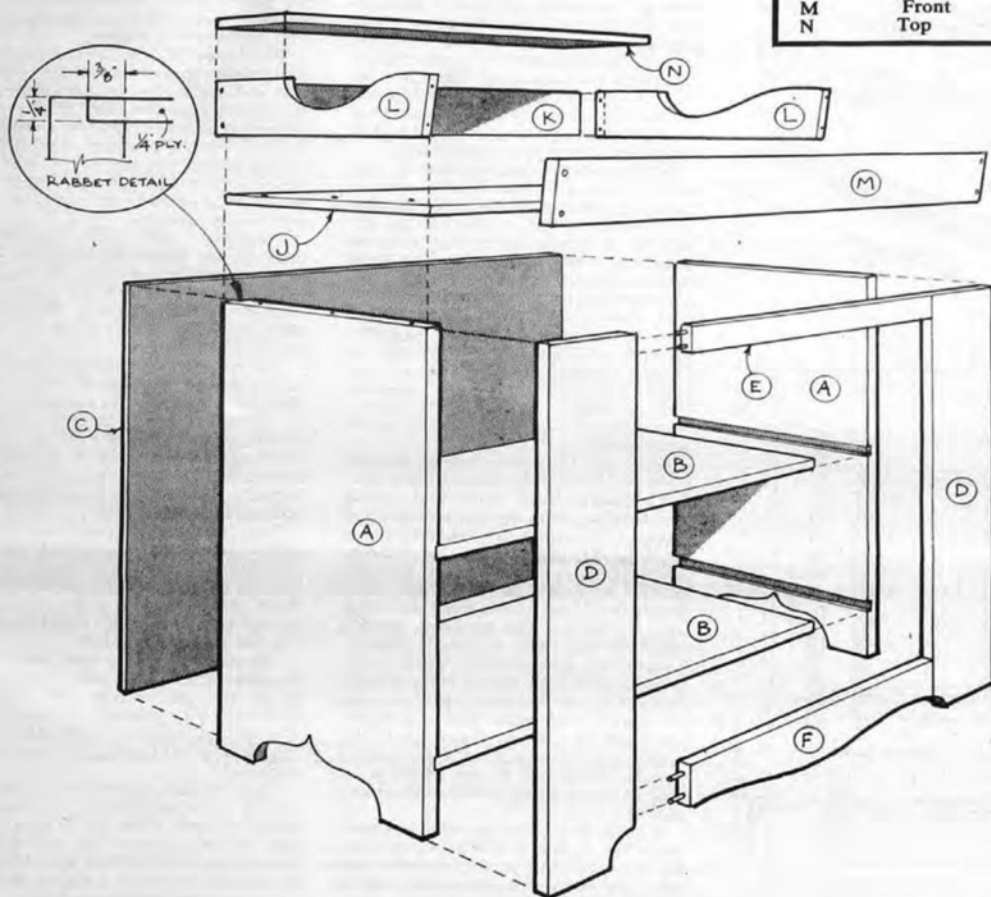
Fit the door and attach with two 3" "H" hinges as shown. A ½" x ½" x 1½" turnbutton was carved and at-

tached by drilling and counterboring a ¼" x #6 fl. screw. The screw is then covered with a wood plug.

Attach a ¼" dia. wood knob to door frame and plug all counterbored holes with wood plugs before finish-sanding all surfaces.

We stained our sink with two coats of Minwax special walnut. After 48 hours, we applied two coats of Minwax Antique Oil finish, allowing 24 hours between coats. A soft cloth was used to hand rub the finish to a soft luster.

BASE		BILL OF MATERIALS	
Part	Description	Size	Pcs. Req'd.
A	Side	1 x 15½ x 32	2
B	Shelf	1 x 15 x 33	2
C	Back	¼ x 33½ x 31½ plywood	1
D	Leg	1 x 7 x 32	2
E	Top Rail	1 x 2 x 20	1
F	Bottom Rail	1 x 4 x 20	1
DOOR			
G	Door Rail	1 x 4 x 26	2
H	Door Stile	2 x 3 x 15½	2
I	Door Panel	1 x 12½ x 20½	1
TOP TRAY			
J	Bottom	1 x 15½ x 34½	1
K	Back	1 x 34½ x 5½	1
L	Sides	1 x 5½ x 17½	2
M	Front	1 x 5 x 36	1
N	Top	1 x 6 x 36	1



Restoring Antiques

By John W. Olson

The Saga of the Old Gunstock

Several years ago a fellow walked into my shop with a real stumper. An antique shotgun with a weatherbeaten split and warped walnut stock. He told me that he had found it in an old polebarn among some abandoned farm machinery. He asked me if I could restore it; my answer, as always, was yes but it will take time and patience.

I dismantled the gun and sent the barrel and lock to a friend who specializes in restoring antique guns. Then I took another look at the stock. Apparently, it had been carried around in a farm machine tool box. It was soaked with oil and grease and badly battered. The forestock was split into two pieces each curving in a different direction. How to remove the grease and oil and make the pieces of the forestock fit together again? This required some thought...but in a day or two the answer came.

Oil and grease are viscous hydrocarbons and as such are soluble in the lighter and more volatile hydrocarbons. Which one to use? It had to be something easy to obtain and rea-

sonably priced. Kerosene and varsol fit these parameters but are just a little too heavy and would require several weeks or even months to evaporate completely, leaving the wood clean and dry. How about gasoline, an excellent solvent, highly volatile, easy to obtain and reasonably priced? A five gallon can with a removable lid held the buttstock and forestock. This can was set outside under a leanto to protect it from the sun. Since the weather was warm, the cleaning action of the gasoline; aided by a brief period of agitation everyday, was comparatively rapid. In less than a week, all traces of oil and grease had been leached out. A thorough washing with strong soap and hot water not only removed the last traces of gasoline, but also caused many of the dents to disappear.

The next problem was how to straighten the warped pieces of the forestock so as to make them fit together again. Since the wood, which was walnut, was dry and brittle, its moisture content was very low. Additional moisture just might soften the warped pieces and make them pliable

enough to be straightened.

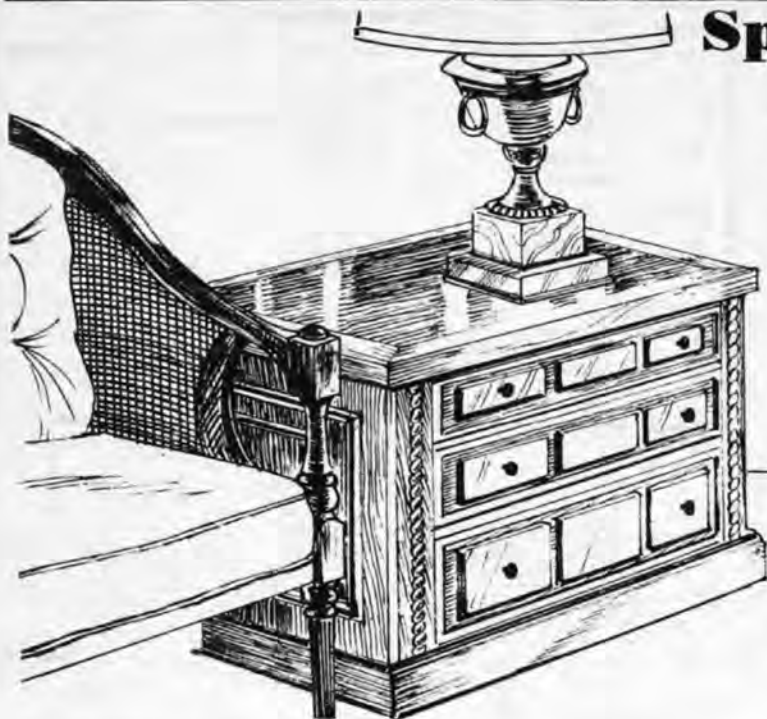
The five gallon can used for the gasoline soak would also hold enough water to soak the forestock. A couple of stones kept the wood covered with water. It took about two weeks for the wood to begin to show signs of being pliable enough to be bent.

The two pieces were clamped together near the center of the curve, and tied at each end with large, strong rubber bands cut from an inner tube. The ends, at this stage, missed touching each other by an inch or so. The forestock was returned to the water can and again left to soak. Very gradually, over a period of about ten days, the constant tension of the rubber bands drew the warped pieces together. When a close match was obtained, it was found that the pieces didn't quite fit. A few splinters were missing, and the effects of the moisture had slightly changed the contours of the mating surfaces here and there. A bit of judicious scraping and very minor cutting, while the wood was still wet rectified this situation to a marked degree.

The two pieces were then clamped together and any minor misfit disappeared as the wet wood fibers accommodated themselves to the pressure. After another ten days, the wood was dry and had set firmly. The two pieces were then glued to-

gether with an epoxy especially formulated for wood. This type of epoxy has the fortunate quality of adhering to moist surfaces and filling small voids. Only moderate clamping pressure was used as epoxy requires a definite glue line to form an enduring joint.

Some scraping and minor cutting was necessary to refit the repaired stock to the barrel and lock. This was followed by repairing the worst dents and gouges as has been described in previous articles. Finally, came a very careful sanding. An object of this type should be smoothed only enough to make it useful and presentable. The remaining signs of age and use add character to the antique and are known as the patina of age. Smoothing and sanding was followed by the application of a danish oil finish. There are many of these preparations on the market and they all yield a satisfactory finish if the manufacturers instructions are closely followed. I prefer the type that enters into the pores of the surface layers and then polymerizes to form a solid hydrocarbon. This action, in effect, case hardens the surface layers of the wood to form a tough resistant finish. A coat or two of carnauba wax formed a smooth, glistening and easily renewed finish.



Spanish Chair-side Chest

A hallmark of Spanish furniture is the use of boldly molded and carved panels. Although, at first glance, this small table-chest may appear to be a formidable project, it's really fairly simple to build.

Basically, it consists of a case made up of three plain panels and drawers embellished with applied moldings and trim. Since the chest is finished on all sides, it can be used to advantage as an end table alongside an easy chair or as a pair flanking a sofa.

Unless you intend matching the chest to other furniture, red oak is probably the best choice of wood for all parts if a stained or natural finish is desired. An antiqued enamel finish is very striking and will hide grain irregularities and other defects. Another visually exciting method is to combine a stained and enameled finish. In this case the panels and drawer fronts can be stained while the trim is enameled in dark red, green or any color that harmonizes with other furnishings.

Begin construction by jointing and edge-gluing sufficient $\frac{3}{4}$ inch stock to form the two end panels and rear panel. To achieve flat, stable panels, it's best to use fairly narrow boards of no more than 4 inches in width. The chest is not subjected to heavy use so it's not necessary to reinforce the edge joints with dowel pins or splines, though many paratricular craftsmen may prefer to do so. If the edges of boards are jointed properly in full contact and care is taken not to overtighten clamps thus squeezing out most of the glue, a bond stronger than the wood itself can be achieved.

Glue up all three panels slightly oversize; later trimming to final size. It's probably more convenient to add the molding trim to the well-sanded panels at this stage. The nose and cove molding (O) shown in detail A, is a standard type found in most lumberyards. Experienced craftsmen may prefer to cut their own from matching oak. If you use pine molding, sand it carefully and stain a sample length. Commercial pine molding varies widely in its ability to take a stain evenly. Some of it is so filled with pitch streaks or of such wild grain that staining is unsatisfactory. If you plan to paint the molding as a contrast with the stained panels, there will be no problem as long as the molding is well sanded and sealed.

A table saw miter jig such as detailed in Vol. 3, No. 2, will prove invaluable for achieving perfect mitered corners. All vertical sections of molding can be held with glue and brads. Horizontal moldings, which cross the grain

of the panels, should be fastened only with brads. The panels will shrink and expand slightly in their width so it's best not to restrain this movement.

The two trim strips (E) are cut to length and stopped dadoes are laid out for the two front drawer dividers as shown in Fig. 4. Cut these dadoes by hand with a chisel or use a router. Upper and lower rails F and G are joined to the trim strips with glue and dowel pins as shown in Fig. 5. When clamping this frame assembly, be sure to keep it flat and square.

Apply glue to front and back edges of the end panels, then add the back panel D and front frame assembly. Apply pipe clamps and brace the case with strips of scrap to maintain squareness while the glue dries.

The drawer dividers J, and front and rear drawer supports I and K are cut to size and assembled as units with glue and dowel pins. Note that the front dividers are notched for a good fit in the dadoes cut in trim strips. Counterbore side supports to a depth of $\frac{1}{2}$ inch and screw them to end panels with $1\frac{1}{2}$ inch round-head screws. Do not glue supports to end panels.

Finishing nails can be driven through rear panel and into rear drawer supports or the supports can be counterbored and screwed in the same manner as side supports. If finishing nails are used, set them so the holes can be filled later.

Six $\frac{3}{4}$ x $\frac{3}{4}$ inch drawer guides (L) are cut to length and fastened to drawer supports with glue. Do not glue guides to the end panels. The three cleats around the top edge of case (M and N) are screwed to panels flush with top edges. Before fastening, drill slightly oversize holes for $1\frac{1}{2}$ inch R.H. screws to fasten the top.

Base trim H is shaped from $\frac{3}{4}$ x 3" x 8 ft. oak as per detail C. This can be cut with a router and beading bit. The trim is mitered and fastened to chest front and back with glue and screws driven from the inside. End trim strips are just screwed in place.

The top is glued up from four or five lengths of $1\frac{1}{2}$ inch oak, trimmed to finish size and edged with $1\frac{1}{2}$ x 1 inch oak strips mitered at the corners. Fasten long strips with glue and finishing nails. Short edging is fastened with nails only.

Drawers are constructed of oak; using $\frac{3}{4}$ or $\frac{1}{2}$ inch stock for sides and back, $\frac{3}{4}$ inch stock for drawer fronts and $\frac{1}{4}$ inch plywood for bottoms. All drawers are flush fitted in openings so it's best to cut fronts a bit oversize and later trim them for an exact fit.

A dovetailed joint between front and

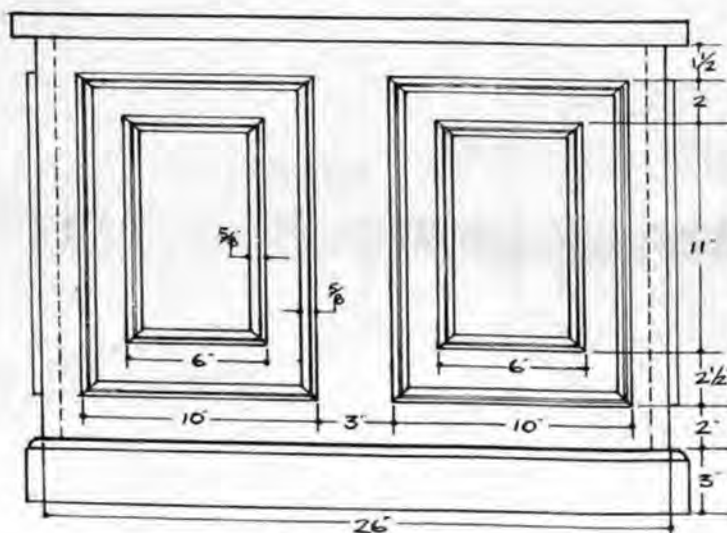


FIG. 1 REAR VIEW

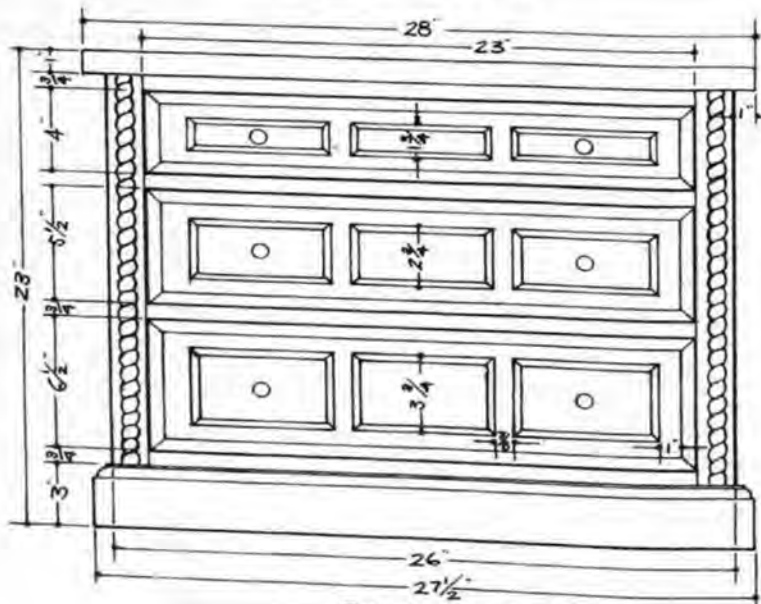


FIG. 2 FRONT VIEW

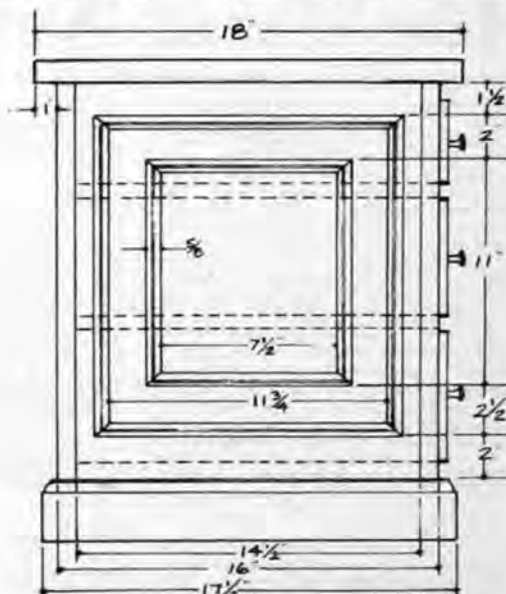


FIG. 3 END VIEW

sides is the preferred method of joining; however, the rabbeted and doweled joint shown in Fig. 6 is both strong and good-looking. Note that drawer bottoms are held in grooves cut in front and sides and are nailed to the bottom edges of backs.

Cut beveled trim panels from $\frac{1}{2}$ inch oak as per detail B and fasten to drawer fronts with small brads. Then add nose and cove molding around drawer front, flush with the edges and with the coved portion of the molding facing in.

Two small $\frac{1}{2} \times \frac{1}{2} \times 2$ inch hardwood stop blocks are glued to each rear drawer support to prevent drawers from butting against the rear panel. They are glued to the supports about $\frac{1}{2}$ inch from the rear panel and 2 inches in from each guide. Fit the finished drawers in place and then determine exact location of stop blocks.

The carved rope molding can be obtained from Craftsman Wood Service Company, 2727 South Mary Street, Chicago, IL 60608. This is trimmed to fit between top and base trim and glu-

ed in place.

Finish sand the piece, breaking all sharp corners. If oak is used, the open grain should be filled. There's some disagreement as to whether stain or filler is applied first. Many different effects can be achieved with the use of natural and tinted fillers. As always, it's best to experiment first on a piece of matching scrap.

In this case it's recommended that stain be applied first and when dry, a filler tinted to match the stain is brushed on. Work one panel at a time so the filler doesn't harden before you can remove the excess. Rub filler into the grain with a burlap pad; working first against the grain and then with it.

Allow filler to dry and then apply thinned sealer. After overnight drying, sand with very fine grit paper, working with the grain. After dusting carefully, apply two coats of a low-luster sealer. Seal inside the case and the bottom side of top before screwing the top in place. Finally, add black hammered finish drawer pulls.

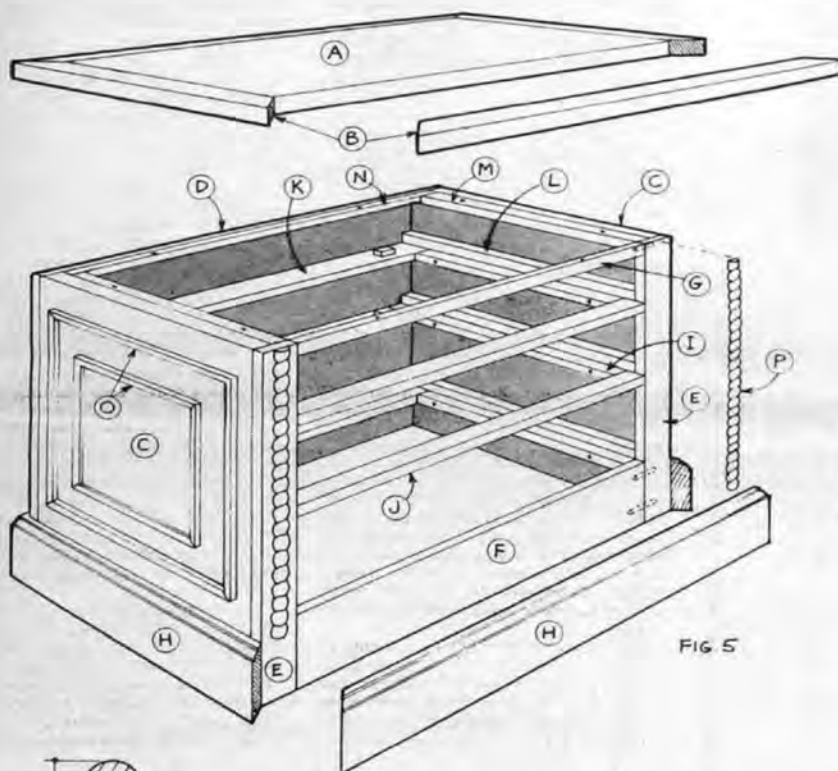


FIG. 5

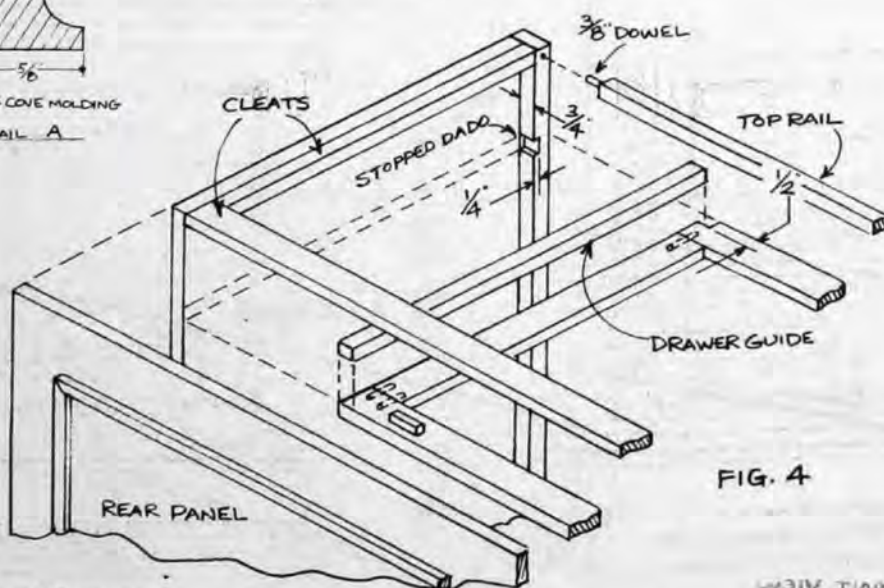
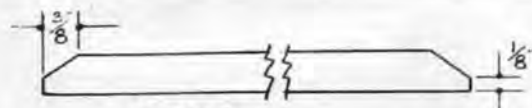
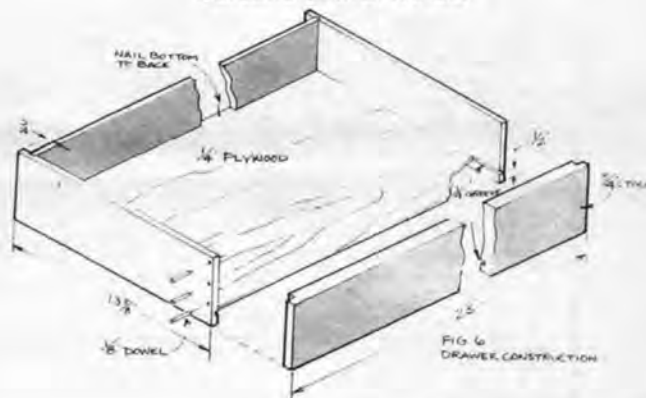


FIG. 4

BILL OF MATERIALS

Key	Part	Size	Pcs. Req'd.
A	Top	1 1/4" x 16" x 26"	1
B	Top Edging	1 1/4" x 1" x 8 ft.	1
C	End Panel	3/4" x 14 1/2" x 22"	2
D	Rear Panel	3/4" x 22" x 26"	1
E	Front Trim	3/4" x 1 1/2" x 22"	2
F	Front Lower Rail	3/4" x 3 3/4" x 23"	1
G	Front Upper Rail	3/4" x 3/4" x 23"	1
H	Base Trim	3/4" x 3" x 8 ft.	1
I	Side Drawer Support	3/4" x 1 1/2" x 12 1/4"	6
J	Front Divider	3/4" x 1 1/2" x 24 1/2"	2
K	Rear Drawer Support	3/4" x 1 1/2" x 24 1/2"	3
L	Drawer Guide	3/4" x 3/4" x 14 1/2"	6
M	Side Top Cleat	3/4" x 3/4" x 13 3/4"	2
N	Rear Top Cleat	3/4" x 3/4" x 24 1/2"	1
O	Nose & Cove Molding	1/2" x 3/4" x 40 ft.	
P	Rope Molding	3/4" x 3/4" x 4 ft.	

DETAIL B
BEVELING DRAWER PANELS

Shop-Tips

When turning small balls on the lathe, first round them approximately to shape, then use a sharpened and honed section of thin wall conduit to finish the job. The balls will be perfectly spherical when finished.

(D. Kinnaman)

To get a good, tight fitting dado joint, always cut the dado a hair smaller than the thickness of the mating piece. Then, after the mating piece has been thoroughly sanded, it will result in a snug, well-fitting joint.

Orbital sanders can often be a nuisance to load. Save time and trouble next time by pre-loading several sheets of sandpaper. Then, when a new piece is needed, just tear off or unclip the worn sheet and you're quickly back in business.

On occasion, almost every woodworker has a need for a special power tool that he or she doesn't own. Next time, instead of going out and buying the tool, check with your local rental center. Most tools can be rented for the day or even a few hours at a reasonable price.



Pine Fishing Rod Rack

Too often, fishing rods are left standing in a closet corner and inevitably, one is stepped on and badly damaged or ruined. Why not build this attractive rack that will display your rods and keep them up out of harm's way. The drawer provides handy storage for reels, lines, leaders and small lures.

The back can be cut from $\frac{1}{2}$ inch plywood or glued up from $\frac{1}{2}$ inch pine. Transfer the pattern squares to a piece of cardboard and enlarge the pattern for one half of the back. Cut out scrolled edge with scissors and trace the shape on your glued up panel. Then flop the template and trace the other half. Use a jig or coping saw to shape the scroll and sand the curved edges thoroughly.

The sides are laid out and cut from $\frac{1}{2}$ inch pine. Rabbet back edges and lower ends of sides to receive the back and bottom respectively; then cut the dados for the two shelves both of which are also of $\frac{1}{2}$ inch pine.

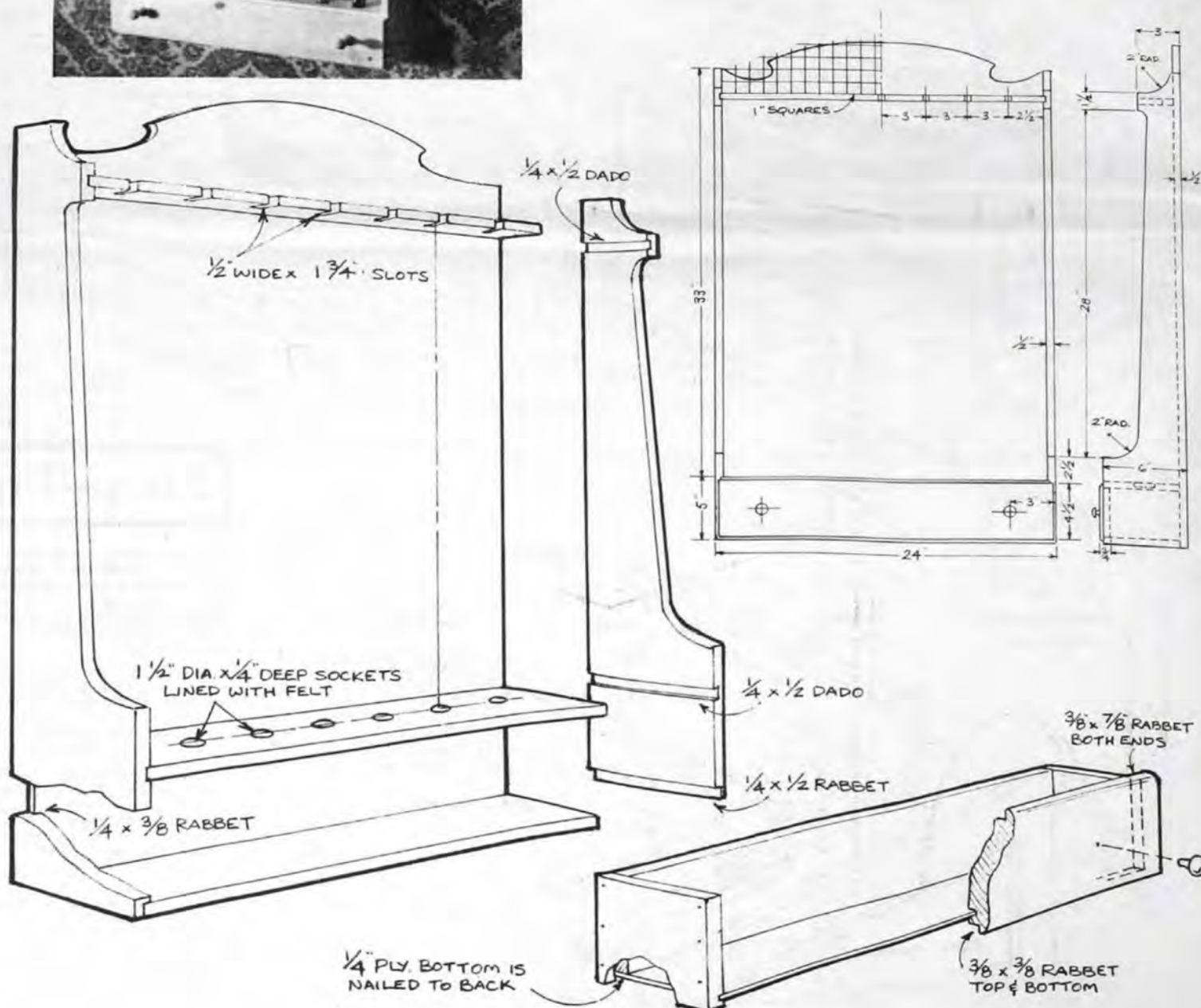
Lay out and cut $\frac{1}{2}$ x $1\frac{3}{4}$ deep slots in the top shelf, then use this shelf as a

guide for spacing the rod butt sockets in the lower shelf. The centerline for these sockets should be about 3 inches in from the front edge of the shelf. When in place, the fishing rods should lean back slightly. Use an expanding bit to bore the sockets and cement discs of felt or cork to the bottoms to cover the bit screw holes.

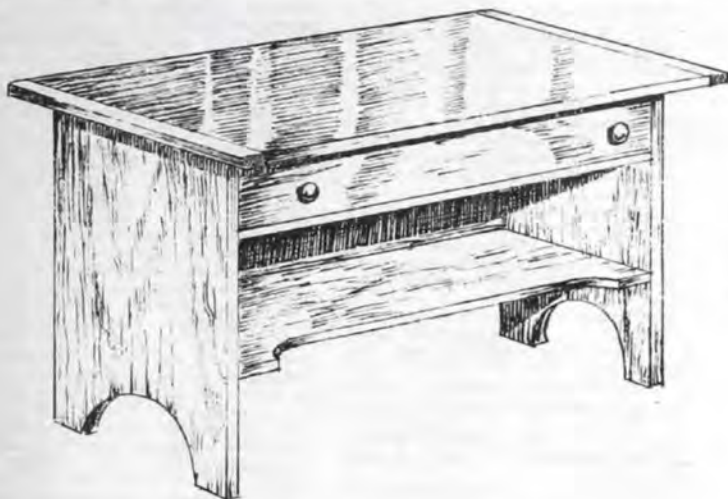
Sand all parts well then join back to sides with small nails and glue shelves into dados, making sure that the case is perfectly square before setting aside to dry.

The drawer front is cut from $\frac{3}{4}$ inch pine with rabbeted edges to overlap the case. If you prefer, a flush drawer can also be used. Use $\frac{3}{4}$ or $\frac{1}{2}$ inch pine for the drawer sides and back and $\frac{1}{4}$ inch hardboard for the bottom which rides in grooves cut in front and sides.

The rack may be stained, painted or left natural as in the photo. Apply several coats of a clear sealer, rubbing each coat down with fine steel wool.



Utility Table



This small utility table can be put to use in an endless number of ways. It makes an ideal stand for plants, books, an aquarium or even a small portable T.V. Its uses are limited only by one's imagination.

To make this a fairly simple project for beginners, we designed it with simple butt joints. More advanced woodworkers may want to incorporate the use of dados and rabbets for added strength. No matter what your level of ability though, we think everyone can find this an enjoyable and rewarding weekend project...and after all, isn't that what woodworking is all about?

Begin construction by cutting the sides from $\frac{3}{4}$ inch stock to the dimension shown. If you can't get 12" (nominal) wide boards, you'll have to edge-join two or three to get the width. Lay out the $3\frac{3}{4}$ " radius, then cut out with a jig saw.

The bottom shelf is also made from $\frac{3}{4}$ " stock. After cutting to $10\frac{1}{4}$ " wide x 18" long, layout and cut the front cut-

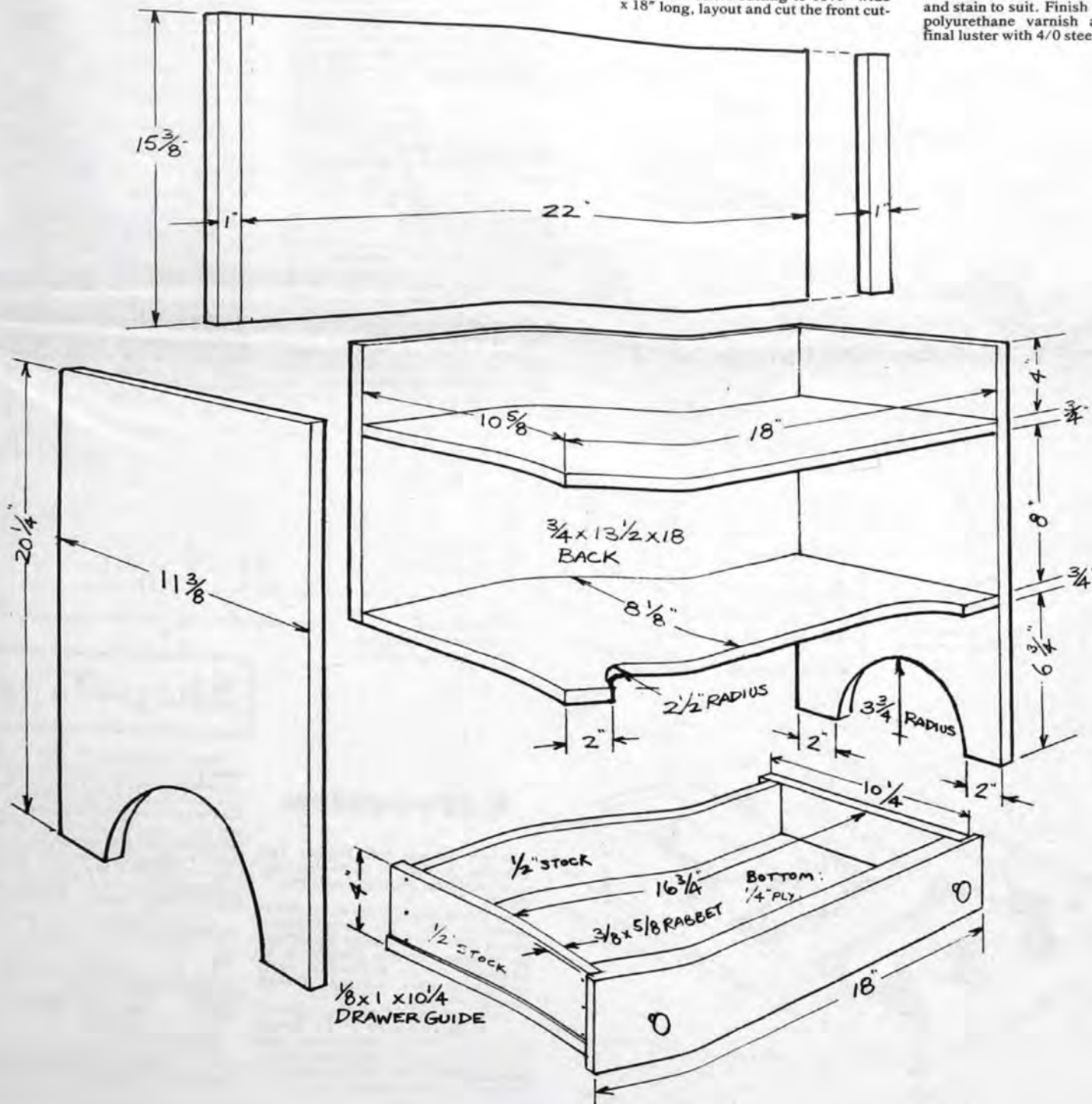
away section.

Make the back from $\frac{3}{4}$ " stock that's cut $13\frac{1}{2}$ " wide x 18" long. Here again you'll probably have to edge-glue stock to get enough width. The top is also made from glued up $\frac{3}{4}$ " stock. To cover the end grain, add 1" wide breadboard ends. It's best to cut these ends a little longer than necessary so that after fastening, they can be cut perfectly flush.

The drawer assembly can be made next. Note that the back and sides are of $\frac{1}{2}$ " stock and the bottom is $\frac{1}{4}$ " plywood. Cut all parts to size noting the $\frac{3}{8}$ " x $\frac{5}{8}$ " rabbet in the drawer front. Cut a groove in the front and sides to accept the plywood bottom.

Assemble all parts as shown on the drawing. Use finishing nails or $1\frac{1}{4}$ " #8 fh screws, drilled and counter-bored for all joints. Use wood plugs to fill all counterbored holes.

Finish-sand all surfaces thoroughly, and stain to suit. Finish with 2 coats of polyurethane varnish and rub to a final luster with 4/0 steel wool.



Hidden Maze Toy



by Charles Burke

One item which has always been an exciting yet simple project is the hidden maze. I have assigned this as a design problem to my students, and it is one that really goes over big. Basically it is nothing more than a simple closed box with a maze inside. There are two openings and a marble rolls around inside. The openings are blocked with either bars or plexiglass.

What made this problem so successful was that the students designed the maze, and each student had his own pattern. The design part is easy to do, and construction involves only a few steps.

First the maze itself has to be either picked from the examples or designed if you want to make up your own. Figure 3 shows five suggested types. Each depicts some concept which can be used to make the maze more difficult. The first (A), is a simple maze which requires the operator to tilt the box back and forth for the marble to pass through.

Design B shows the inclusion of blind alleys. If these are placed in strategic locations, the puzzle can become very tricky. The third maze (C) has a holed wall placed across the pathway. These are solid walls with a hole drilled someplace in it that is slightly larger than the marble used in the maze. Just rolling the marble to the right location will not insure its passage through the wall. To get it through, you have to tilt the box on end and shake it back and forth.

The fourth maze (D) includes a two-holed wall plus blind alleys. Actually, you can use any number of these tricks in any combination. Don't go overboard though because even the simplest puzzle becomes very difficult once the box is sealed closed. The last maze (E) has target openings. Thus it's necessary to roll the marble directly into a target which you can't see. In this case, blind alleys have been placed on either side, making it even more of a hazard.

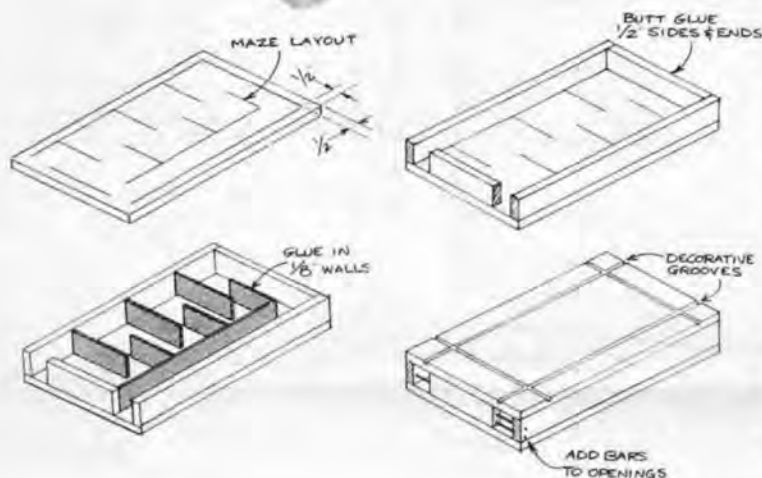
To lay out a maze, draw a 6" x 8" rectangle and divide it into 1" squares. Once you get the path laid out, just add 1/2" border all around, and you

now have the size of the top and bottom. At this point the maze should be transferred onto the face of the bottom piece. (Fig. 1A) A simple way to do this is to cut it out and just glue it in place. Care must be taken not to use a glue that will cause the paper to wrinkle or this will cause problems later.

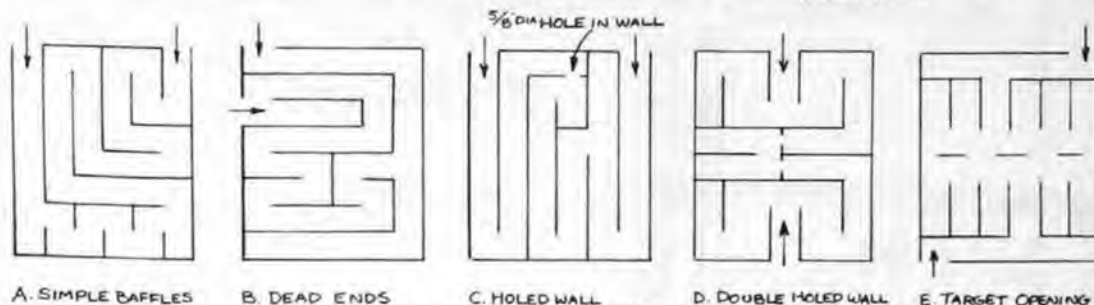
The next step involves cutting 1" wide strips of 1/4" hardboard and 1/2" thick wood which will become the sides. Do all of the cutting on your table saw at the same time. This will insure that the box will close up properly. Once the side pieces have been cut, glue them in place. (Fig. 1B) It is a good idea to file and sand the ends that will be located at the openings, for this makes it a much easier task. Clamping the sides in place can be simplified by just placing the top in position and adding a few clamps. Make sure there is glue only on the surfaces touching the bottom or else you will glue the box shut! Once the sides are in place, cut the maze walls and glue these into position. (Fig. 1C) There is no need to clamp these for very little pressure is applied to them. Just wipe on the glue and press into position.

When the maze is completed, give it a dry run with a marble to see if there are any problems. If you do find any, all that is needed is to break off the walls and start over again. When you are sure that everything is fine, then just wipe the entire bottom of the top piece with glue, position, and then clamp into place. (Fig. 1D) The exterior of the box is now ready to be filed, sanded, and decorated. Most of the ones we have made were decorated with a V groove, but anything can be used to enhance it.

Once the box is finished, the marble is placed inside and the openings sealed. The students used 1/8" brazing rods, but you can also cover the openings with plexiglass. (Fig. 2) If the rods are used, use a different number over each hole so that you can distinguish one from the other. Now that it is finished, it is suggested you give it a try, but do it alone. There is nothing quite as embarrassing as whipping out the puzzle in front of family and friends and then finding you can't do it!



DRILL FOR PRESS FIT OF 1/8" BRAZING RODS



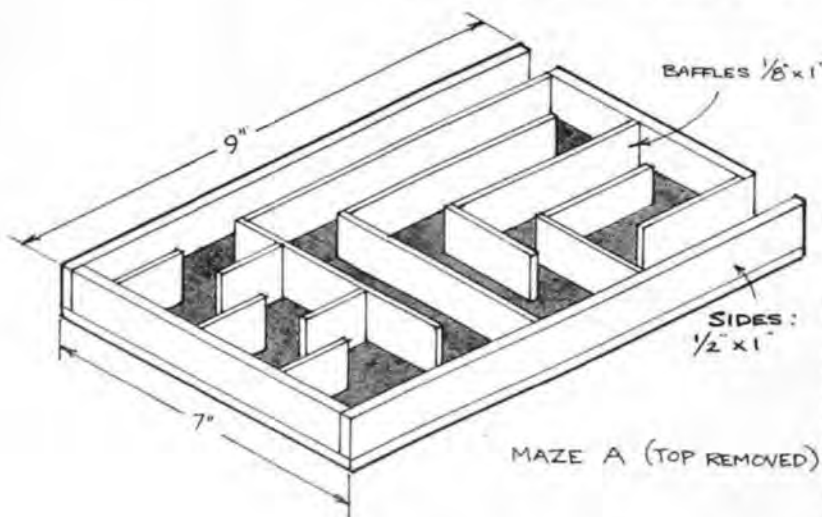
A. SIMPLE BAFFLES

B. DEAD ENDS

C. HOLED WALL
BAFFLE CROSSES PATH
BUT HAS HOLE DRILLED
IN IT

D. DOUBLE HOLED WALL

E. TARGET OPENING



MAZE A (TOP REMOVED)

Shop-Tips

Here's a small table saw jig that makes it easy to cut a glue escape slot in dowel stock. It will slot almost all size dowels except 1/4" diameter. It's held in place over the saw with clamps and the blade is raised or lowered, (depending on the size of the dowel stock) to cut a slot about 1/4" deep along the length of the dowel. Be sure to use a push stick to keep hands away from the blade. (Fernley Palmer)



Correction

In our roll top desk project, Part 1, in the Jan/Feb '79 issue, there are two corrections required on page 9, Fig. 4.

1.) The knee-hole width dimension is shown as 20 3/4". The correct dimension is 20 1/2". This change also affects the knee-hole drawer component dimensions (front, sides and back) shown in the bill of materials. Change these as required.

2.) The height of the large drawer (H3) is shown as 12". The correct dimension is 12 3/4". This change also affects the drawer component dimensions shown in the bill of materials. Change these as required.

Child's Wall Rack

When it comes to hanging up clothes, kids need a bit of prompting now and then. This friendly moose makes a delightful decorative addition to a child's room while providing a handy place to hang up jackets, belts and other articles of clothing.

A few dollars worth of pine and a few hours of work are all it takes to make this hanging rack and we believe this would be a very good item to sell through retail gift shops.

Start by enlarging the patterns full size on a 1 inch grid drawn on kraft paper or cardboard. If you plan to make more than one, use $\frac{1}{8}$ inch hardboard for permanent templates. Enlarge the drawings of head, ears, antlers and cut the templates.

Transfer the template of the head to $\frac{5}{4}$ inch pine ($1\frac{1}{8}$ inch actual thickness) and cut around the outline with a saber or bandsaw. The ears and antlers are cut from 1 inch pine ($\frac{3}{4}$ inch actual thickness).

The mounting plaque is of 1 inch pine and can be cut from a 1 x 12 or glued up from narrower stock. Sand all parts thoroughly, using a small diameter drum sander on the curves of the antlers.

The back of the head is notched to

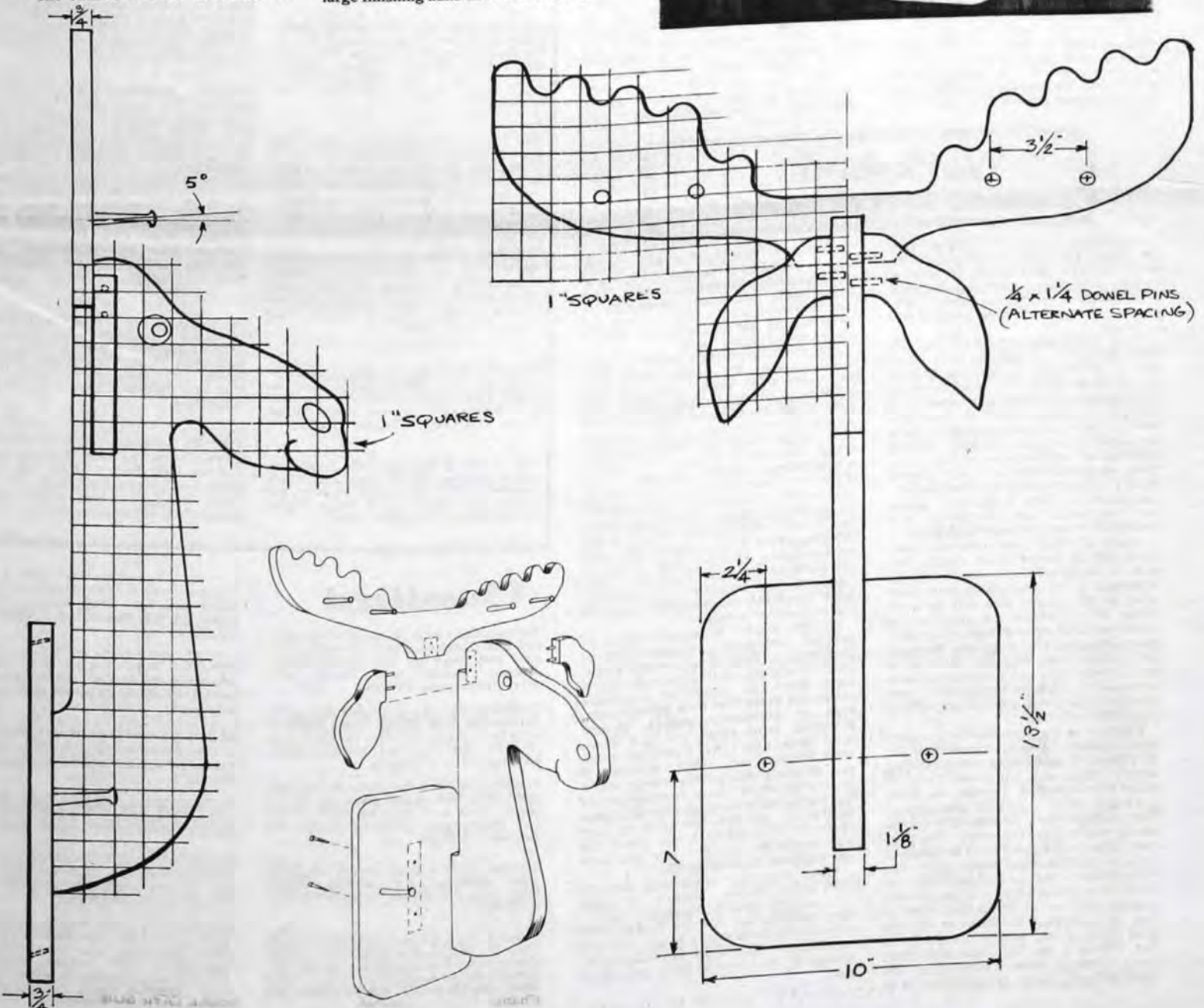
receive the antlers which are glued and screwed in place using $1\frac{1}{4}$ inch wood screws countersunk in from the back. The ears are held in place with dowel pins and glue. Note that the dowels are spaced to clear each other.

The head is butted to the plaque with $1\frac{1}{4}$ inch countersunk flat screws and glue.

Ordinary $\frac{1}{8}$ inch diameter dowel stock can be used for the clothes pegs but turned pegs give more of a professional finished look to the piece. These pegs can be lathe-turned or purchased from Woodcraft Supply Co. 313 Montvale Ave., Woburn, MA 01801.

The eyes, nostrils and mouth can be added on each side with black enamel or waterproof marking pen. We finished our rack with 3 coats of low luster urethane varnish rubbed down with 4/0 steel wool between coats.

The rack can be firmly mounted to a wall by drilling two holes 12 inches apart and one above the other, through the plaque near the neck. Wood screws can then be driven into a wall stud. An angled hole drilled near the top and bottom of the plaque will also hold the rack when pushed onto two large finishing nails driven into a stud.



The Beginning Woodworker (cont'd.)

of that particular project.

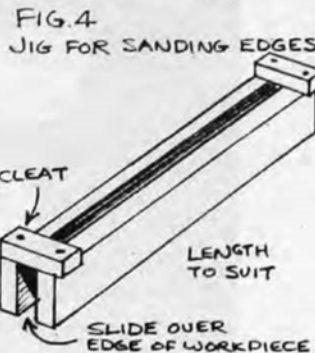
When sanding curved or molded surfaces, use a folded quarter sheet of paper backed up with a felt pad. Use your fingers to conform the pad and paper to the curves and maintain uniform pressure.

Lathe turnings are most conveniently sanded while still chucked in the lathe and revolved at slow speed. Work down to 220 grit and finish by burnishing the turning with a $\frac{1}{4} \times 1$ inch hardwood strip. The edges of the strip can be given a radius to work into coves. As with all turnings, moldings or carvings, take care not to dub off sharp corners.

Belt and orbital sanders are a great convenience for sanding flat surfaces and will do the work in a fraction of the time that it takes to do by hand. Belt sanders are powerful and very fast cutting, so care must be exercised when using them as they can quickly scoop out or gouge a surface beyond hope. Their greatest use is in quickly surfacing large slabs such as table tops that have been glued up from narrower stock. Use them for removing ridges and trimming down slightly protruding tenons or dovetail pins. In other words, they should be considered as initial surfacing tools and are not used as part of the three step process of sanding to a final finish.

For sanding bare wood, the orbital sander can be used with grit #120 up through 220. The swirling action of these machines does a fine job of removing material fast, but if coarse paper is used, small circular scratches are made which will be difficult to remove. The orbital sander is the workhorse of most small shops, and is capable

of performing most of your sanding jobs. When you decide to invest in powered sanding equipment, the orbital sander is the first machine you should consider buying.



When sanding edges with an orbital sander, use the simple jig shown in Figure 4. Just drop it over the edge of the workpiece so that the cleats rest on it; then run the sander along the jig and workpiece. This will enable you to achieve a true, almost perfectly jointed edge with sharp corners.

Drum sanders, which can be used with electric drills, lathes or drillpress, are very handy for smoothing down curves. Well-sharpened cabinet scrapers also do a beautiful job on curves with a radius wide enough to work but you must use care not to run the scraper off an edge or they will carry a good chunk of wood away.

Only experience will tell you when you have sanded sufficiently. Minor blemishes and scratches can be very

difficult to spot so it's necessary to dust the work completely after each sanding step in order to better view your progress. Holding the work so that the light hits it at different angles works well at times and helps you to spot the trouble areas that require further work. It's amazing how "invisible" blemishes will jump out at you after the stain has been applied. Then it's too late.

Dry spackle powder rubbed on the surface will cling in tiny scratches making them more visible and pointing out the need for further sanding. The best rule is to sand until you're sure the surface is perfect...then sand a bit more.

Some craftsmen do their finish sanding with a 220 grit paper, then dampen

the wood with a sponge to raise the grain. When dry, the tiny "whiskers" of raised grain are then cut off with very fine paper. This seems like extra work if the wood is stained and given a coat of thinned sealer. The sealer raises the grain again, and this is generally cut off with very fine paper before finish coats are applied.

It is hoped that this information will help the beginning woodworker develop an efficient sanding technique and help to convey the message that sanding is indeed a very important step in the woodworking process. If done efficiently and with care, it is not as tedious as it seems, and there is much satisfaction to be gained from bringing the wood from a rough to a beautifully smooth surface.

Workshop Income

Charles Burke

As a seller, you have to keep up with the times. You have to keep up with developments and learn how new styles, new fads, new trends, new everything. A behind-the-times seller is a non-competitive seller, and that's bad news.

As a seller who produces his own items for sale, you have to keep up to date on two fronts. In addition to selling developments, you also have to keep boned up on the development of new products that will make your production work more economical or more pleasurable or more efficient. Selling supplies to woodworkers is big business, so manufacturers invest lots of money in developing new woodworking products. New tools, new glues, new hardware, new abrasives, new decorations, new devices of all kinds.

Some of these new products succeed, but of course some don't. The point is that you'll never learn their existence if you don't keep your lines open to the people who sell the new items. Which means that you have to keep your lines open to mail-order sellers of woodworking supplies, because they're the ones with the most stock of the newest. You can't count on hardware stores, even really big ones; your best bet is the mail-order woodworking supplies specialists.

I know some woodworkers...good woodworkers...who are unaware of the existence of mail-order woodworking supply firms, and I just can't understand that situation. I mean, do these guys live under a rock or something? The woodworking supply firms certainly don't. The big ones, the ones with time in the game and diversified lines of merchandise, make sure that they get their names and addresses in front of woodworkers, and so do the smaller and newer firms that want to stay in business. So there is no big deal finding out where these firms live. There's no big deal obtaining their catalogs, either; send them the buck or half dollar or whatever it is

that they're looking for and they'll pop them into your mailbox. You'll get good reading for your money, and you'll learn about the existence of items that you can use but never would have looked for because you didn't know anyone made them.

For any woodworker, seller or not, these catalogs are dream stuff. You can pore over them and plot and scheme and dream and drool, and even if you never buy a thing you'll be secure in the knowledge that you'll be able to lay hands on what you want when the mood strikes you. That's a comforting thought right there, and if you've ever tried to obtain a piece of specialized woodworking paraphernalia by floating around hardware stores you'll know what I mean. Many woodworking items, even common ones, are unobtainable locally. And when it comes to really specialized items like hardware and decorative doodads you have absolutely no choice but to go to the mail-order people.

So my advice to woodworkers in general and selling woodworkers in particular is this: obtain every woodworking supply catalog you can. If you have none, get some; if you have some, get more. Get both general catalogs and specialized catalogs. Be omnivorous. And when you get them, read them. Don't just glance at them, read them. Study them carefully. If you're really into woodworking, you'll practically have them memorized by the time you're through. Most important of all, get the new ones as they come out. The old ones won't have the new products, and the new products are what you're looking for.

Once you buy something from a mail-order house there's a good chance that you'll regularly receive new catalogs as they're issued, but even if you have to pay to get the new catalogs, it will still be worth it to you. Being up to date will keep you up to par.

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