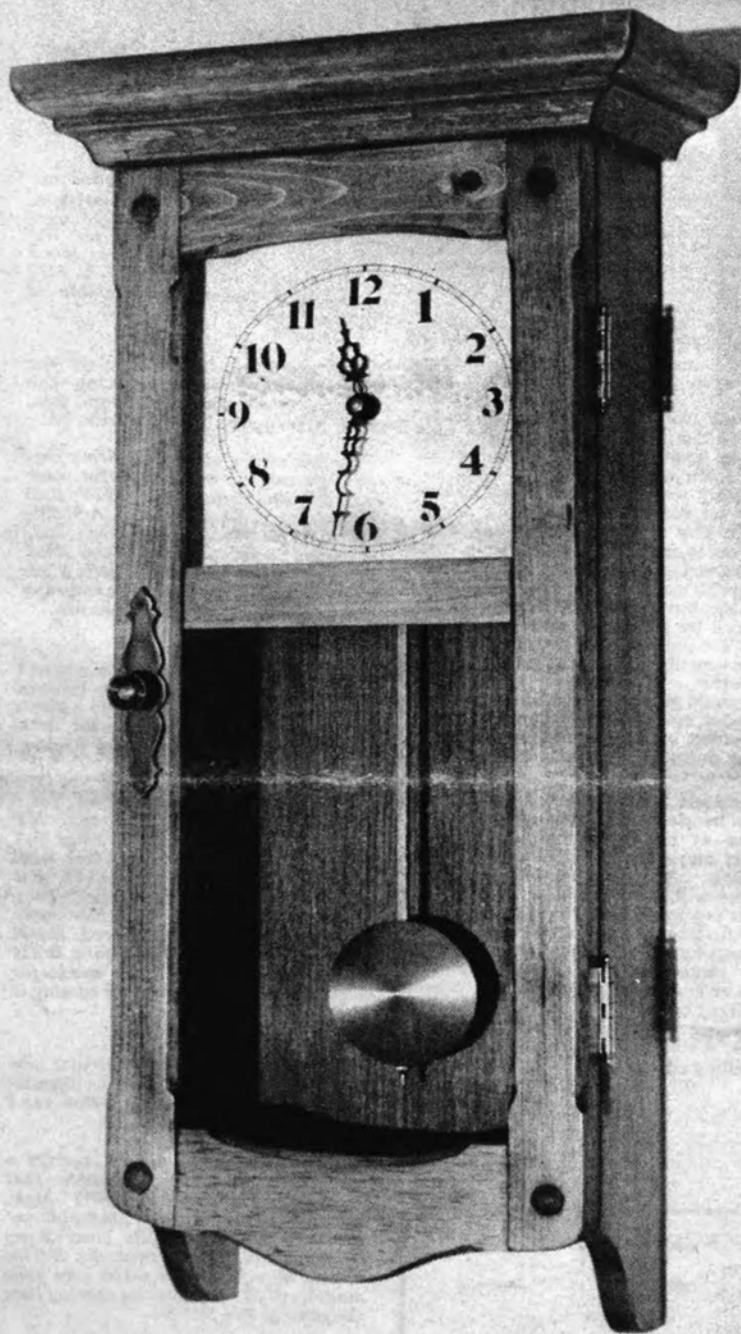


The Woodworker's Journal

VOL. 3, NO. 5

SEPTEMBER/OCTOBER 1979

16 PAGES \$1.50



In This Issue:

- **Traditional Wall Clock**
 - **Louvered Wall Cabinet**
 - **Shaker Table**
 - **Record & Tape Cabinet**
 - **Crocodile Pull Toy**
 - **Contemporary Tier Table**
- and much more...**

Shoptalk

In the July/August issue, I made the statement that there are only about two table saws being made in this country today that are suitable for the serious woodworker. In retrospect, that was a rather worthless and empty statement as no brand names were mentioned. Readers were thus left hanging so to speak, and a few were a bit annoyed by my apparent coyness in naming names.

The omission of brand names was not intentional because of an editorial policy. Rather, I was thinking mostly in terms of a comparison between manufacturing standards of some years ago versus today, rather than giving advice on specific brands.

Anyway, the two machines I had in mind are the Powermatic 66 produced by Powermatic Houdaille, Inc. of McMinnville, Tennessee 37110, and the Delta Unisaw by Rockwell International, 400 N. Lexington Ave., Pittsburgh, Pa. 15208. The manufacturers will provide a list of dealers, and often good, used machines can be obtained. Prices vary according to accessories, but both machines sell for a bit over a thousand dollars. These are substantial machines with cast, ground tables and hefty controls, and in my opinion should provide a lifetime of relatively trouble-free service for the average amateur craftsman.

I must stress the fact that I'm in no position to judge these machines on the basis of full-time production work for I've never been involved in such a business.

In a recent issue of *Fine Woodworking* a reader took issue with the quality of the Powermatic claiming it had all the faults of the cheap table saws at a much higher price. Yet, Thomas Moser, a well-known professional cabinetmaker, in his book *How to Build Shaker Furniture*, recommends the Powermatic as a machine which comes closest to meeting his specifications for a good table saw.

Let's face it...if necessary, a really skilled woodworker can turn out excellent work with a portable circular saw slung under a home-made table. Fine adjustments would be tedious but I wonder how many of you really trust

a calibrated fence or the blade tilt gauge. When making joint cuts don't you test each set-up on a piece of scrap first? You should...no matter how fine and accurate your machine is.

The features I look for in a table saw are the ease with which the blade can be tilted and the fence moved across the table. Fences in particular have aggravated me over the years, especially on Craftsman table saws. They have fallen apart after a year of use, and are not inclined to travel smoothly or stay parallel to the blade.

I also look for heavy-duty controls; large easy to grasp nickel-plated hand cranks...not the plastic or thin stamped "Mickey Mouse" controls you find on too many heavily advertised brands. Good balance of moving parts, and weight are important also. Who needs a table saw that vibrates itself across the room.

Many workers prefer a radial-arm saw for most of their cutting operations. I've always felt that the radial saw is superb for one operation...the crosscutting of framing lumber. It's a great machine for the house carpenter, but for the precision work required by a cabinetmaker, there are just too darn many moving parts and adjustments that can go wrong. Simple is better.

I could go on at great length on this subject, and probably will in the future provided some manufacturer doesn't send out a "hit" man to shut me up.

Putting this issue together was a bit of a hassle because we are in the process of moving subscription, editorial and shop facilities to a new location. The November/December issue will show our new address but don't worry about mail already sent to the Sunset Lane address. Arrangements have been made for that mail to be picked up for several years. It never ceases to amaze us how people will cut our ad coupon from magazines that are two or more years old. So you see, it's sort of hard to terminate one mailing address and switch to another.

Jim Mc Quillan

LETTERS

I am interested in firewood boxes but have not seen one in 60 years and have no idea on size, shape, etc. Where can I get plans, designs, or at least pictures of such an article, G. Sims, Mitchell, IN

We've included plans for a wood box in this issue...so you'll have plenty of time to get it finished before that serious winter weather sets in. We also did a rather nice Shaker wood box way back in the Jan/Feb 1977 issue. Back issues are available at \$1.50 per copy.

Can you indicate a source for the tools required to do sign carving with routers (pantographs, letter sets, etc.)? A Wegener, Blowing Rock, NC

We are aware of several firms that sell sign carving equipment for routers: Marlin Industries, 3224 East Willow Street, Long Beach, CA 90806, and Kimball Woodworkers Co., 2602 Whitaker Street, Savannah, GA 31401. Also Sears, Roebuck & Co. sells a lettering template set and a pantograph along with other router accessories.

Can I get some information where I can buy penholders...just the holders or funnels...that I can attach to a piece of wood, marble, or plastic for desk use? J. DeBlois, Guatemala, Guatemala

Albert Constantine and Son, Inc., 2050 Eastchester Road, Bronx, NY 10461 sells a standard (6 3/4" long) ball point pen and pencil set, black with wide gold platen band, black funnel and brass gold plated swivel. They also carry a short (5 3/4") set, black only with polished and lacquered metal funnel already assembled to a brass gold plated swivel. All are made for wood mounting. Cost of their catalog is \$1.00.

I am buying a portable circular saw and would like to mount it upside-down for use as a table saw. How can I do it? R. Tryon, Ardmore, PA

Sears, Roebuck, and Co. carries a heavy-duty circular saw table that measures 26 3/4" x 15 1/2" x 10 1/2" high. It includes a miter gauge and pull-on/push-off switch, and fits most Sears circular saws and other brands. Before buying though, better make sure your model will fit. Their latest catalog lists the price at \$44.50.

I am attempting to locate a pattern, or dimensions, information, etc. for making a standard size baby crib with a "drop" side, or one I could adapt for lowering one side. S. Caceres, Mississippi State, MS

Plans for a two-year baby crib with a hinged front gate that swings down for easy access can be found in the book "Woodworking Projects", a Sunset book by Lane Publishing Co., Menlo Park, CA

editor's note: When readers write to us in search of various hard-to-find sources of supply for their woodworking projects, we are usually able to offer at least some kind of helpful information. However, over the past few weeks, we've had several tough requests that have left us scratching our heads. We've decided to print a few of these letters, with the hope that some of our readers may be able to help us out. If you can come up with any answers, we'll be glad to print them for everyone's benefit in the next issue. Thanks.

...I am in urgent need of a source of supply for pointed stainless steel spikes used to hold meat on carving trays. P. Conrad, St. Louis, MO

...I am looking for a source of supply for case maker's glue. It comes in a jelly-like cake and is used for applying leatherette or vinyl coverings to custom-made cases. Thank you for any help you can offer. W. Wales, Grand Junction, CO.

...Recently I obtained some pieces of oak which I plan to use for making end tables for my living room. I have not had much experience with the lathe, so I was wondering if you could tell me if any companies sell oak woodturnings. Any information will be greatly appreciated. J. Regler, Loring AFB, ME

...I have been searching for 9/16" x 9/16" porcelain knobs for some spice cabinets. I need several dozen at a fair price. Could you please help me? R. Smith, Rushville, IL

...When I was in England, I saw what was called "linen fold" carving on panels, screens, and doors. This is indeed very decorative and original but I cannot find designs in any books. Could you please let me know if there is a book that explains how to do this type of carving. D. Powell, Buenos Aires, Argentina

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
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The Beginning Woodworker

DOVETAIL JOINTS PART I

The dovetail joint has been a hallmark of fine cabinetwork for hundreds of years...and for very good reason. In terms of strength and appearance it's a superb joint.

There are quite a few variations of the dovetail joint; each of which is suited to a particular application. In this article we will focus our attention on the use of traditional hand tools to lay out and cut the single dovetail in its many forms. The execution of multiple dovetail joints, which will be discussed in the next issue, will seem a much less formidable task once the novice has mastered the single form.

Practice the lay out and cutting of these joints on scrap stock first using both hard and soft woods. A few practice sessions will give you a feel for the work and the confidence to substitute these joints in a project where less efficient or attractive joints are shown.

Let's start with the basic single, large dovetail which is useful whenever two narrow boards must be joined at right angles (Fig. 1). As you can see, this joint can only be pulled apart in one direction, though with the addition of glue this becomes almost impossible. A locking pin driven through both members will secure this joint permanently without glue.

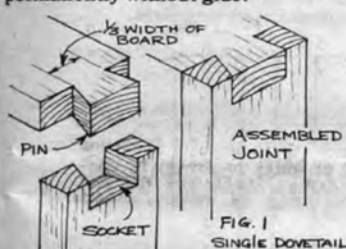


FIG. 1 SINGLE DOVETAIL

As in most other joining operations, you must start with boards that have been dressed flat and square. Begin by squaring a line around the end of the board that will have the pin or dovetail cut on the end. This line is scribed, using a sharp pencil, at a distance from the end equal to the thickness of the adjoining board plus 1/32 inch (Fig. 2). This little extra length allows for later dressing the pin exactly flush with the face of the mating board.

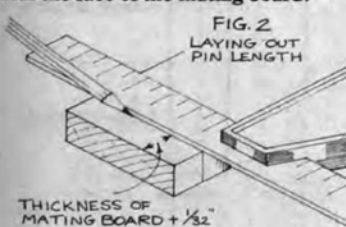


FIG. 2 LAYING OUT PIN LENGTH

In determining the shape and flare of a single dovetail, the narrow base of the pin is generally about one-third the width of the board as shown in Fig. 1. The flared sides of the pin are sloped 1 in 6 inches for hardwood or 1 in 5 inches for a bit more flare in pine.

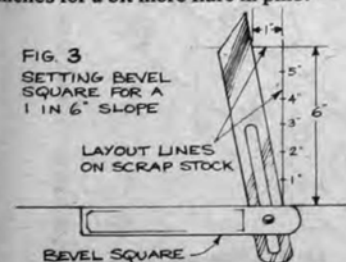


FIG. 3 SETTING BEVEL SQUARE FOR A 1 IN 6" SLOPE

LAYOUT LINES ON SCRAP STOCK

BEVEL SQUARE

Set your bevel square to a 1 in 6 or 5 inch slope by marking pencil lines on a piece of scrap and setting the blade to intersect both points as shown in

Fig. 3. Lock the blade and use the bevel square to mark the sides of the pin. Be sure to hold the pencil at an angle so that the point bears against the blade.

Next, use a try square to drop these lines down the end of the board, establishing the wide end of the pin. Mark an X on the two pieces of side waste to be cut away. It's not so important now, but with multiple dovetails even oldtimers have had an occasional lapse and cut on the wrong side of the line so it's a good habit to establish.

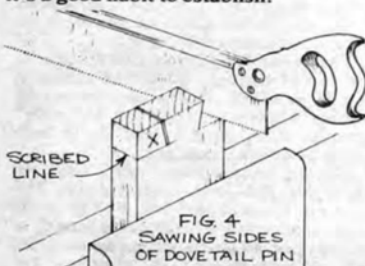


FIG. 4 SAWING SIDES OF DOVETAIL PIN

Clamp the board upright in a vise and use a small, fine-tooth backsaw to cut the pin sides as shown in Fig. 4. Be very careful to keep the blade in the blade in the waste wood; just grazing the lines. Saw down to the base line which was scribed first. Replace the board horizontally in the vise and saw the shoulders, again taking care to keep the blade in the waste wood (Fig. 5). That takes care of the pin which is the easiest part.

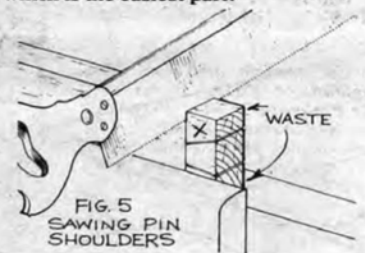


FIG. 5 SAWING PIN SHOULDERS

The socket in the mating board can also be laid out in the same way the pin was done but most craftsmen prefer to use the completed pin as a template to scribe the socket sides. The pin is held at a right angle on the socket stock, and a knife blade is run along the pin sides. With this method, the socket will correspond exactly to any minor inaccuracy of the pin. Again use the try square to bring the socket side lines down the face of the workpiece to the base line which is scribed to the exact thickness plus about 1/32 inch of the board which has the pin.

Again, mark the waste portions to be cut away. Clamp board upright in the vise and saw the socket sides, this time keeping the saw *inside* the lines. The knife blade scribes a line slightly outside the pin so a cut along the inside of the line will insure a tight fit. It's the fine points such as this that make the difference between a perfect joint and an ill-fitting one. (Fig. 6)

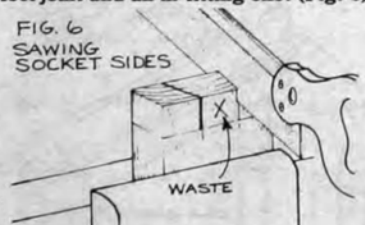


FIG. 6 SAWING SOCKET SIDES

The waste block from the socket is removed by chiseling halfway in from each side (Fig. 7). You've probably discovered in previous work that the flat side of a chisel crushes the wood

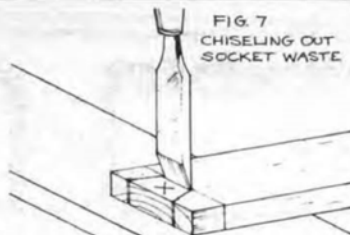


FIG. 7 CHISELING OUT SOCKET WASTE

back a bit if driven in right on the line, so keep this in mind when starting your chisel cut.

Use the widest chisel that will fit at the socket base, and hold it vertically to the workpiece. If you must chisel through heavy stock, the work can be eased considerably by using an auger bit to remove part of the waste first.

Use a protective block and wood mallet to drive the joint together for a test fit. If it's too tight, the mating parts can be eased a bit with a flat bastard file or chisel. If it's too loose... try again. It's hard to patch up a loose joint without spoiling its appearance.

If the joint fits together satisfactorily, spread glue on mating parts and reunite. Use a try square to check the squareness of the joint before the glue sets up. You'll recall that the pin was cut 1/32 inch longer than the thickness of the socket board and the socket was cut very slightly deeper than the pin thickness. This enables you to dress the joint perfectly flush after the glue has dried. Use a plane at an angle for a skew cut and work in from the edges to avoid splintering.

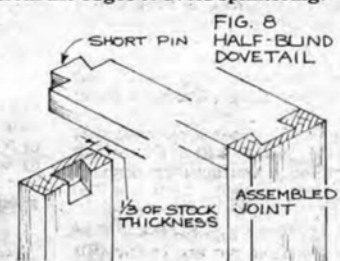


FIG. 8 HALF-BLIND DOVETAIL

Fig. 8 shows another useful version of the single dovetail. In much fine furniture work, it is preferable to hide the end grain of the pin. The half-blind single dovetail is an excellent choice for such situations. Use it for joining rails to stiles or legs.

Lay out the flared pin so it extends two-thirds to three-quarters the thickness of the member receiving it. The remaining web conceals the end grain

Cont'd on page 16



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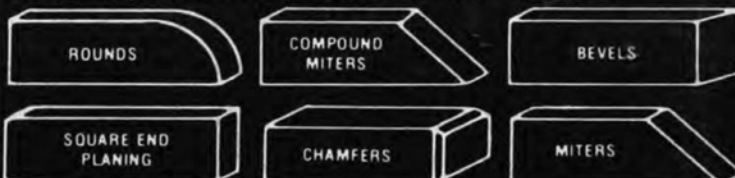
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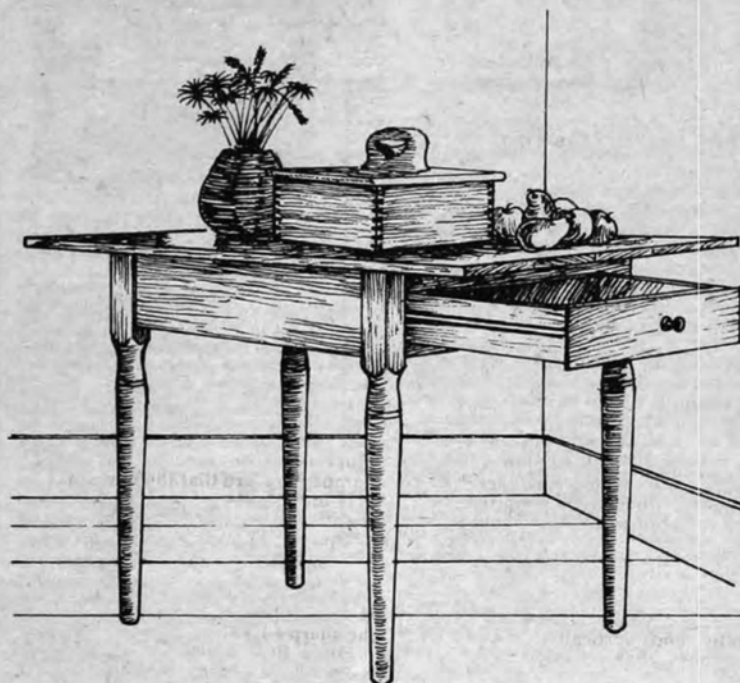
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Shaker Table



A small table is always useful and this Shaker design will harmonize with most furniture. Taken from a design originating in the early 19th century, this piece will prove to be a fair challenge for the woodworker of moderate skill.

Shakers often mixed woods in tables of this type. A common combination was a pine top with cherry or maple legs and rails. Whatever woods you choose, it's best to use a good turning hardwood for the legs.

The top (A) is edge-joined from several $\frac{3}{4}$ inch boards with the grains alternated. Glued edge joints can be reinforced with $\frac{1}{4}$ inch dowel pins but it's not absolutely necessary so long as care is taken when jointing and gluing.

While the top is clamped, cut rails C, D, E and F allowing for a $\frac{1}{8}$ inch tenon at each end. On parts C and D, tenons can be $\frac{1}{4}$ x $\frac{1}{4}$ x 4". As shown in the detail, the tenon ends should be mitered to clear each other.

The tenon for drawer rail E runs to the top of the leg, while the tenon of rail F is blind. If the top mounting method shown is used, run $\frac{1}{4}$ x $\frac{1}{4}$ grooves along rails C and D, $\frac{1}{2}$ inch down from the top edges.

Having tenoned the rails, next rip stock for the four turned legs. The turning blanks are $1\frac{1}{4}$ x $1\frac{1}{4}$ x 28 inches; allowing a bit of extra length at the top end so mortises can be chiseled out without danger of splitting. Locate mortises, using completed tenons to scribe their outlines and chisel out.

Turn the legs as per the detail. Use a gouge to cut the transition from square to cylinder. Note that the legs flare out a bit from the square to a point $2\frac{1}{4}$ inch down, then gradually taper to the $\frac{1}{4}$ inch diameter feet. Use a piece of wire to score the two rings near the top. Sand legs to finish, then burnish

with a handful of hardwood shavings.

You can now dry fit rails and legs and if all is well, assemble with glue and use four pipe clamps to square the assembly.

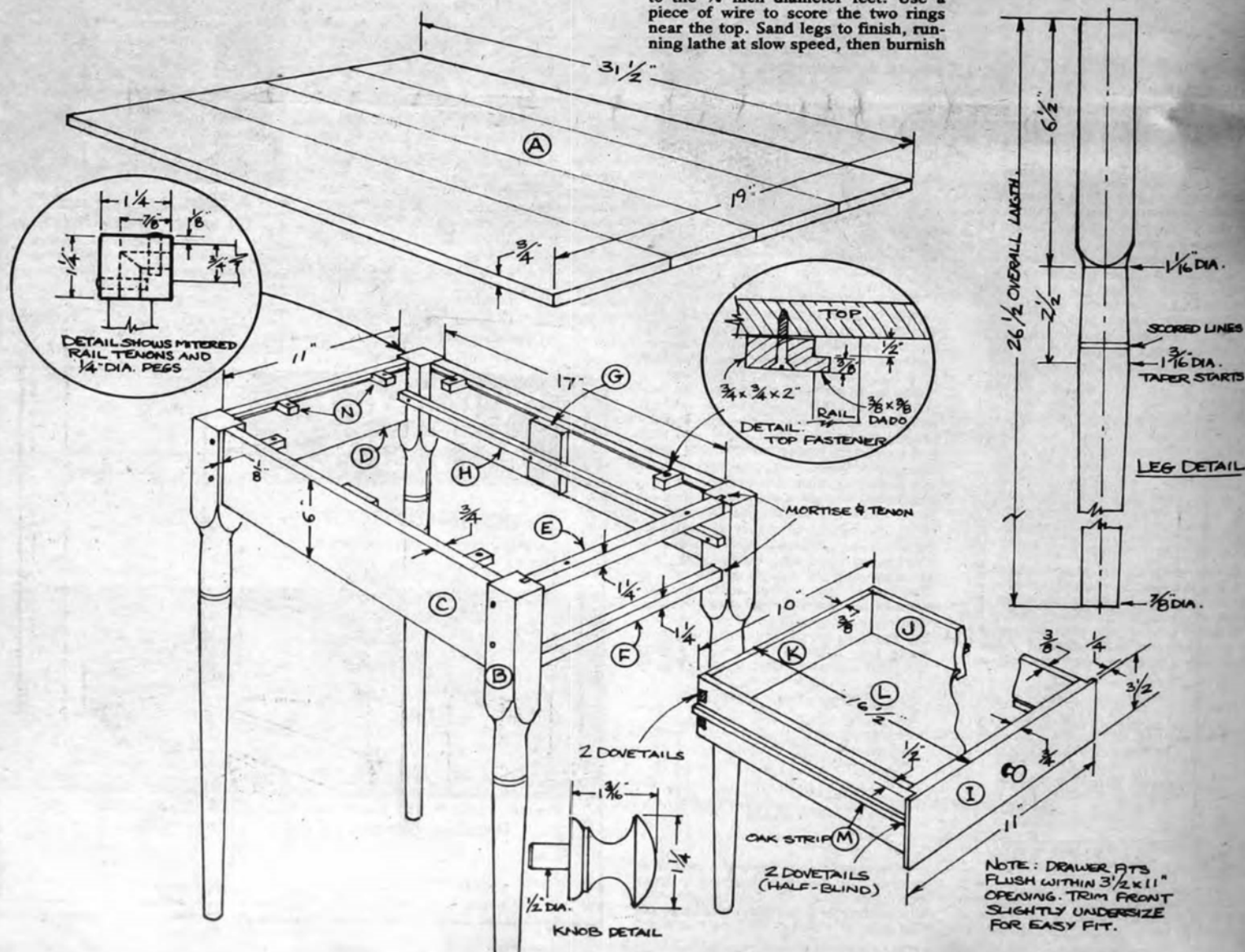
Drill 1 inch deep holes through legs and tenons for $\frac{1}{4}$ x 1 inch pegs. These are glue-coated and driven almost, but not quite in; allowing about $\frac{1}{16}$ inch to protrude.

Next, cut $\frac{3}{4}$ x 2 x 5 inch filler blocks (G), glue and clamp to rails about at their midpoints. Drawer guides (H), which are preferably of oak, are cut to $\frac{1}{2}$ x $\frac{1}{2}$ x $18\frac{1}{2}$ inches and screwed to filler blocks and legs. The guide should be inset $\frac{1}{4}$ inch from faces of front legs to allow for drawer front (I) which is lipped.

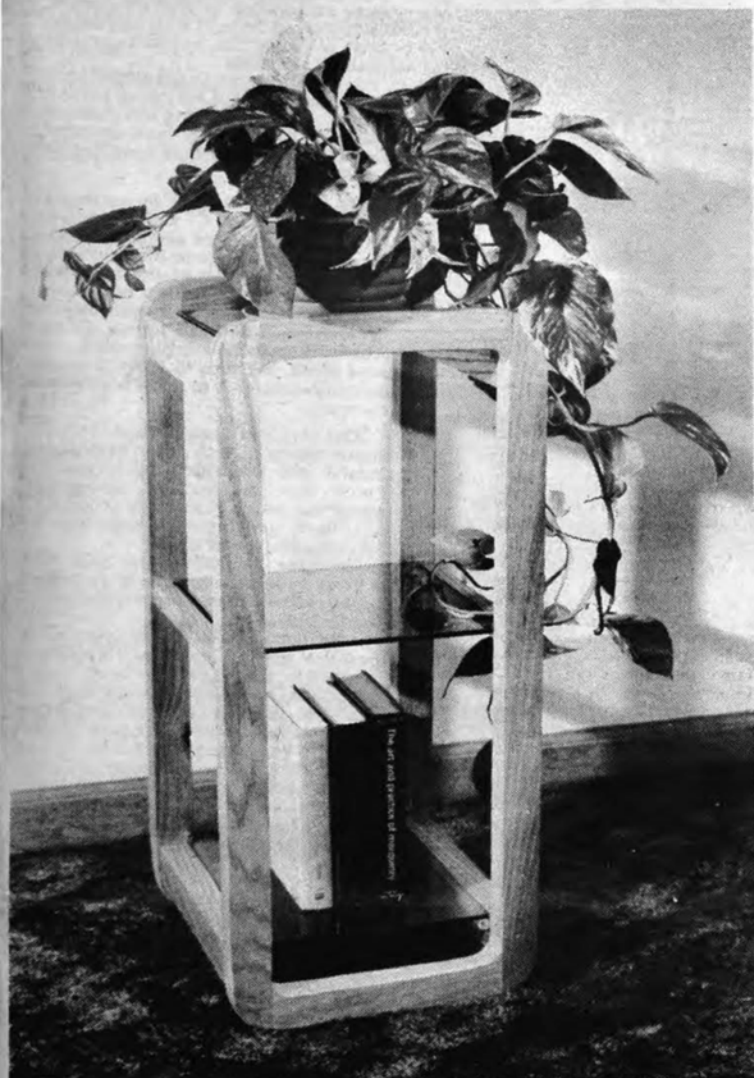
Drawer sides, front and back are grooved to receive a $\frac{1}{4}$ inch plywood bottom (L). Shakers invariably dovetailed drawer joints and generally, earlier pieces had larger dovetails. The oak strips (M) are cut to $7/16$ x $7/16$ and fastened with glue and countersunk $\frac{1}{4}$ inch screws.

Cut top fasteners from hardwood, to fit the rail grooves. Note that the $\frac{1}{2}$ inch tongues of fasteners fit into grooves which are $\frac{1}{2}$ inch down from rail tops. When the fasteners are screwed to the top, a wedging force is exerted to pull the top flat and tight. Use $1\frac{1}{4}$ inch screws to secure the top. A nicely turned drawer knob completes the woodworking.

Finish the piece with a light honey-toned stain and a couple of coats of penetrating oil finish such as Watco Danish Oil or Minwax Antique Oil. These are easy to apply and will provide the soft luster seen on naturally finished Shaker originals.



Contemporary Tier Table



Pleasant curves and clean lines, complimented by the rich look of natural finish oak and smoked glass, result in this handsome three tier stand. Use it to highlight your favorite curios, books, and perhaps that special flowering houseplant.

The exposed mortise and tenon joints add both strength and interest to the overall design. Five-quarter inch red oak stock is used throughout.

Make the front and back frames first. Note that each frame is made up of two stiles and two rails joined by exposed mortise and tenon joints at each corner. Cut the stiles to $5/4" \times 1\frac{1}{2}" \times 30"$, then carefully lay out and cut the $3/4" \times 1\frac{1}{2}"$ mortise. To make this cut, we used a table saw tenon jig, setting the saw blade depth to $1\frac{1}{2}"$, and ran the stock (on end) through the blade. About three passes are needed to get the $3/4"$ wide mortise.

Next cut the frame rails to $5/4" \times 2\frac{1}{2}" \times 12"$. The rail thickness must be $2\frac{1}{2}"$ to account for the $1"$ radius at each frame corner. The excess stock will be cut out later. Lay out and cut the $3/4" \times 1\frac{1}{2}"$ tenons on each frame rail end. This joint is going to show, so use care here, making sure each tenon fits tightly with its mating mortise.

After all mortise and tenon joints have been cut, the stiles and rails can be joined to make the frame. Apply a thin layer of glue to all surfaces of each joint, then assemble and check for squareness. Apply clamps both horizontally and vertically, recheck for squareness, then set aside to dry thoroughly.

Next, cut the four top and bottom side rails to $5/4" \times 2" \times 10\frac{3}{4}"$. A $3/16" \times 3/4"$ rabbet is cut along one edge of

each piece.

The two center rails ($5/4" \times 1" \times 10\frac{3}{4}"$) can also be cut now. Each center rail also has a $3/16" \times 3/4"$ rabbet.

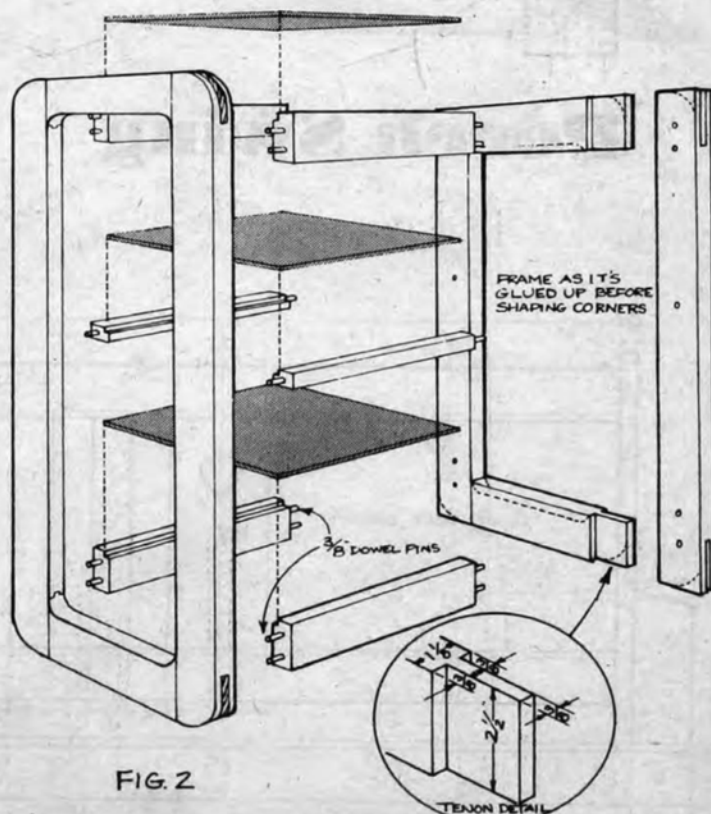
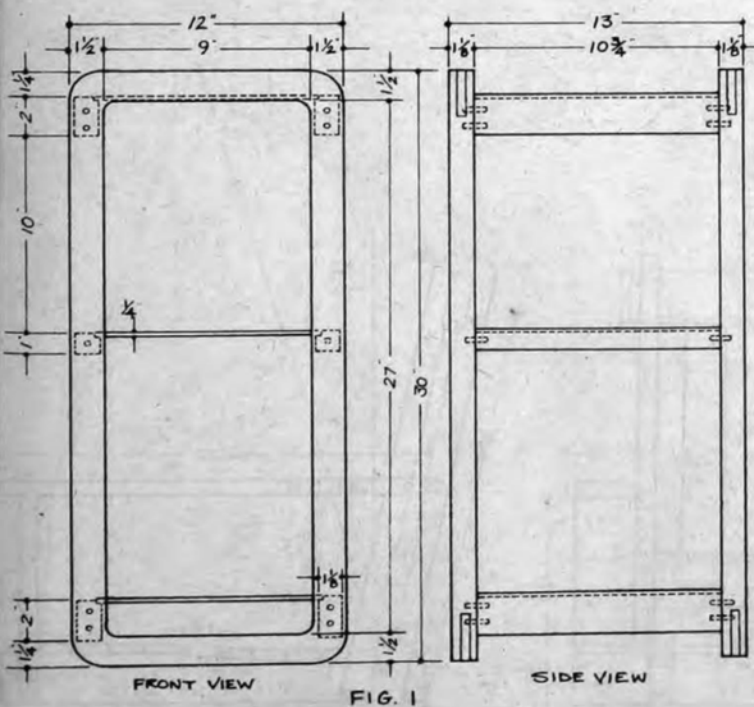
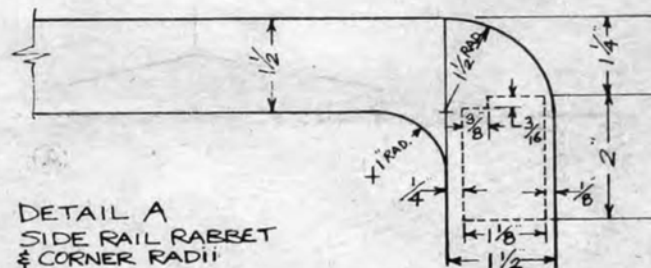
When the frame has thoroughly dried, remove the clamps, then lay out and drill holes for all $3/4" \times 1\frac{1}{2}"$ dowel pins as shown in the drawing. Note that the top and bottom side rails each have two dowel pins while the center rails have one. Be sure to keep in mind that the rails are inset $1/4"$ (see detail A).

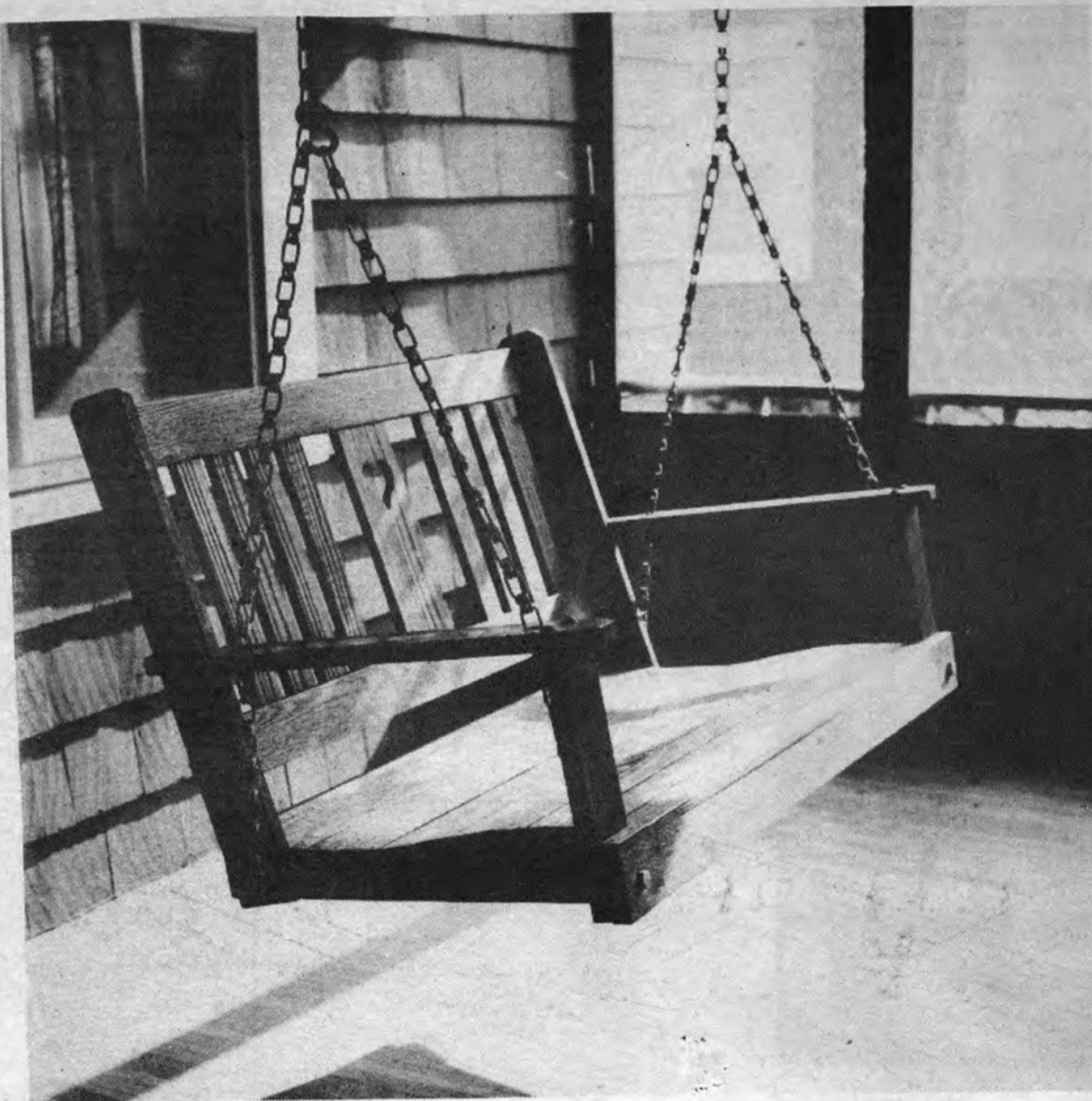
Next, use a compass to lay out and mark the $1\frac{1}{2}"$ outside and $1"$ inside radius on each corner of the front and back frames. A bandsaw, saber saw, or coping saw can be put to use to make the curved cut. Try to make each cut as clean and square as possible.

Before final assembly, thoroughly sand both frames and all side rails. Use special care on the curves, as these provide an especially pleasing quality to this piece. Use fine sandpaper to lightly round all edges.

To assemble all components, glue and clamp the six side rails to the front and back frames, again checking for squareness. Be sure to use enough clamps to insure that the joints will be tight and it's always a good idea to use clamp pads to protect the wood surface. The $1/4"$ smoked glass is available, and can be cut to size at most glass dealers. We paid \$9.00, or about \$2.50 a square foot, for the three pieces cut $10\frac{3}{4}" \times 10\frac{3}{4}"$. Make sure they remove the sharp edges.

For a final finish, we applied two coats of pure tung oil finish. After thorough drying it was rubbed down with 4/0 steel wool.





For durability and an antique look, oak was chosen, but whatever wood is selected, the porch swing will generate a lifetime of comfort and interest, reminiscent of days that need not remain bygone.

The project is begun by cutting to size parts A, B and C, which comprise the seat frame. Care should be taken in sawing out the three pieces labeled C since they will determine the shape or contour of the seat. Butt rails A and B to rails C and join them with pairs of 1½ inch No. 8 flathead screws. Counter-bore ¾ inch holes, plug them and sand flush. Be sure to leave 3 inches on either side of A to allow for the arm stumps.

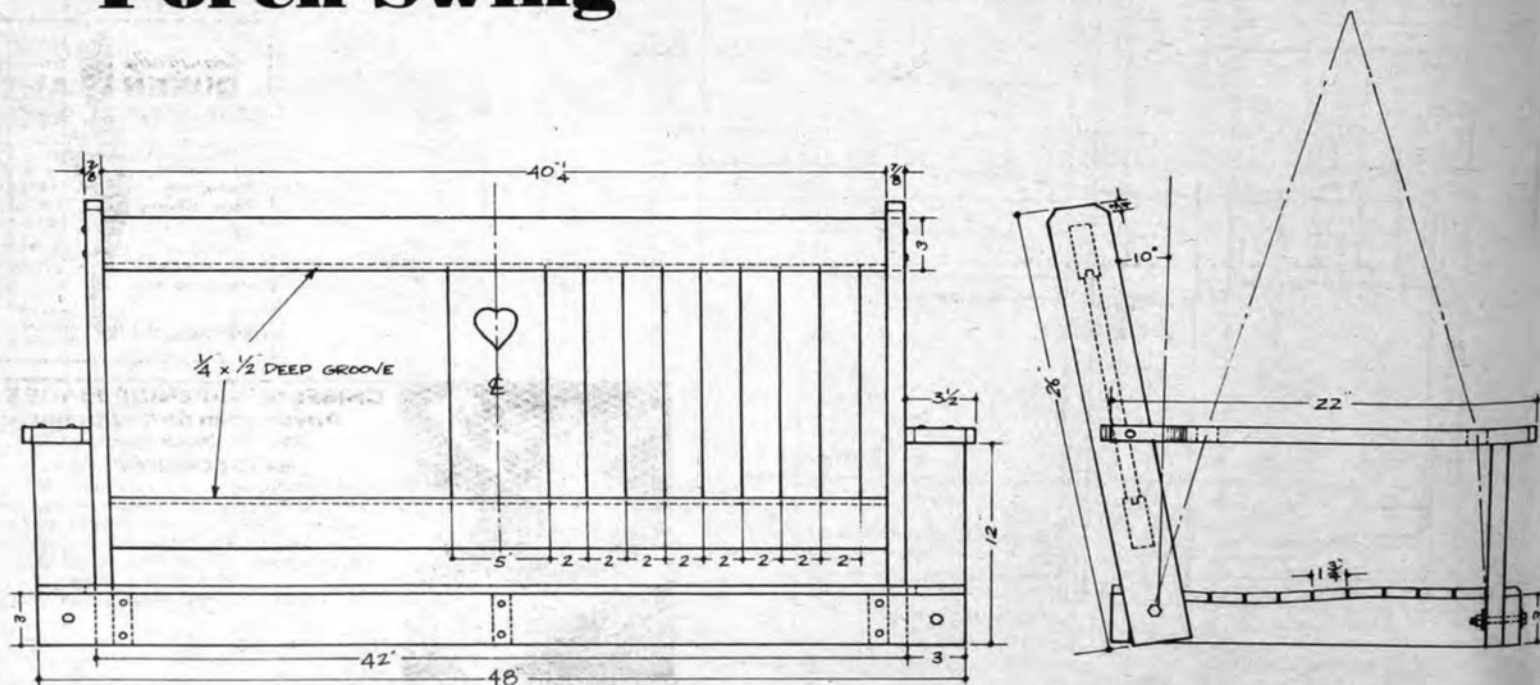
The seat slats can be nailed to the frame using 1 inch wire brads hammered into predrilled holes and set below the surface. The dimensions given for parts J will allow about a 1/16 inch gap between each slat for swelling and water runoff.

Continue by making the back. Cut a $\frac{1}{4}$ by $\frac{1}{2}$ inch deep groove the length of the rails E. Then cut the corresponding tenons on slats F and G. Don't forget to cut out the heart design; or perhaps one of your own choosing. Assemble the back rest with waterproof glue, taking care that it does not run onto exposed surfaces, and clamp the assembly. While clamped, if time is not to be wasted, the assembly can be joined to the upright supports using wood screws in counterbored holes that are again plugged and sanded flush. The upper rail should be positioned 1 inch from the top of the uprights.

Join the uprights to the seat frame with $\frac{1}{2}$ inch by 3 inch bolts and hex nuts, the nuts being on the outside. Drill $\frac{1}{2}$ inch holes $1\frac{1}{2}$ inches from the back of side rails C and $1\frac{1}{2}$ inches from the bottoms of uprights D.

Cut the arm rests and arm stumps to size; parts H and I. If done according to the plan, they will allow the back to tilt approximately 10 degrees from the perpendicular. These two pieces are butted together and held with wood screws covered with wood buttons. The end of the arm should extend 1½

Porch Swing



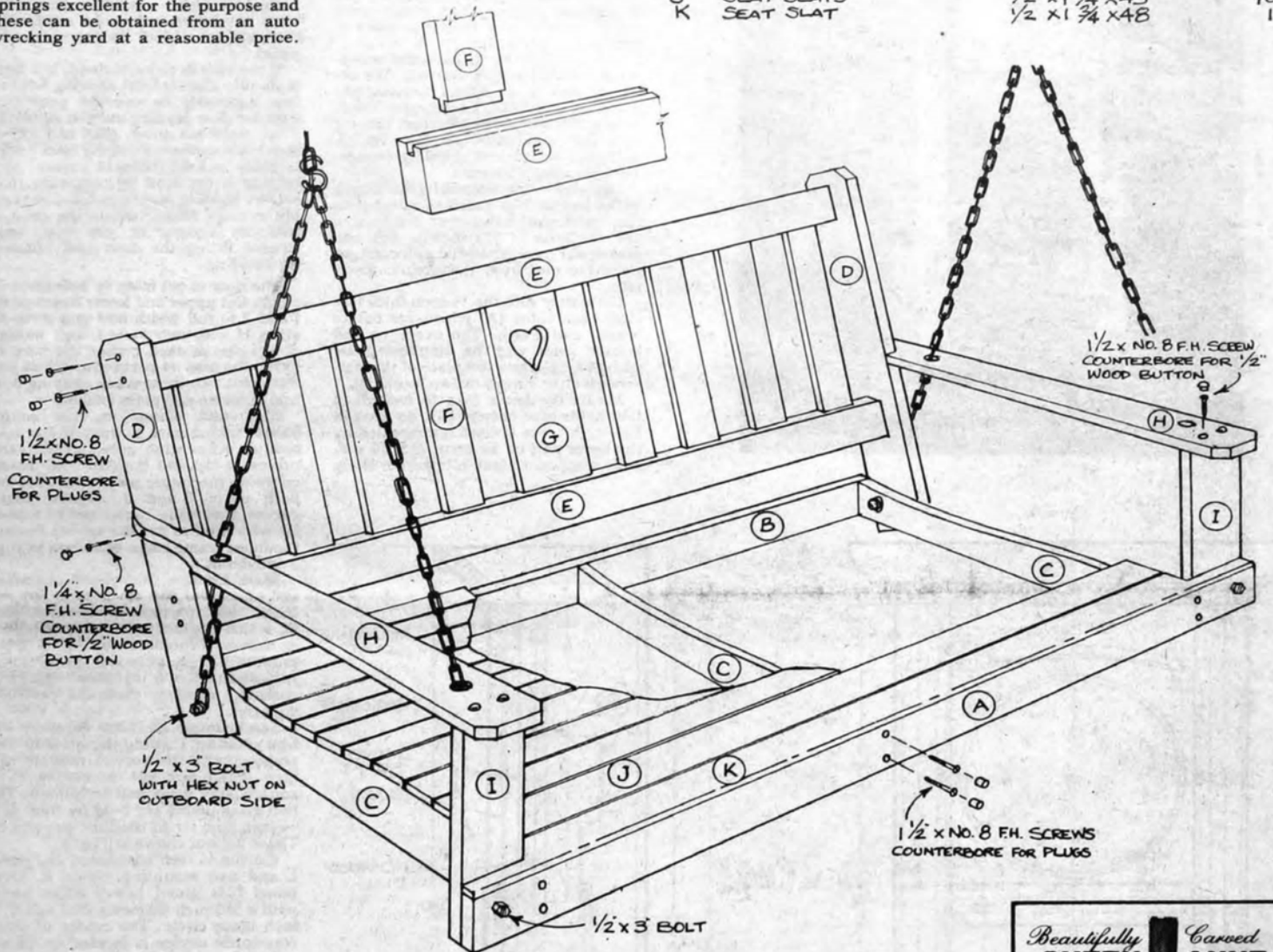
inches beyond the edge of the stump. The other end is screwed to the uprights. The arm stumps are held to the frame with 1/2 inch by 3 inch bolts.

Twenty feet of double-looped chain will suffice, with the shorter pieces that attach to the arm stump-seat frame bolts about three feet in length. "S" hooks will hold the two lengths together. To remove any stress on the roof of the porch, springs should be used. I discovered automobile hood springs excellent for the purpose and these can be obtained from an auto wrecking yard at a reasonable price.

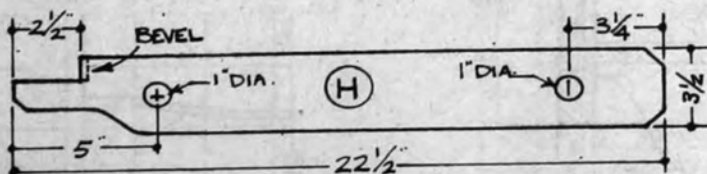
The swings I have built are finished with my own mixture of a wood preservative such as McCloskey's Rot Fyter and a brown enamel. Mixing will take some experimentation, but if done properly, this treatment will seal the wood, stain it and give it a gloss in one operation.

BILL OF MATERIALS

PART DESCRIPTION	SIZE (INCHES)	NO. REQ'D
A SEAT RAIL (FRONT)	7/8 x 3 x 48	1
B SEAT RAIL (REAR)	7/8 x 3 x 42	1
C SEAT RAILS (SIDES, CENTER)	7/8 x 3 x 19 1/4	3
D UPRIGHT SUPPORTS	7/8 x 3 x 26	2
E BACKREST RAILS (TOP & BOTTOM)	7/8 x 3 x 40 1/4	2
F BACKREST SLATS	1/2 x 2 x 14 (INCL. TENSORS)	8
G CENTER SLAT	1/2 x 5 x 14 "	1
H ARM RESTS	7/8 x 3 1/2 x 22 1/2	2
I ARM STUMPS	7/8 x 3 x 12	2
J SEAT SLATS	1/2 x 1 3/4 x 43	10
K SEAT SLAT	1/2 x 1 3/4 x 48	1



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a drafting compass. The numerals, either roman or arabic can be inked by hand or transfer-type numerals can be purchased at art and drafting supply shops. Paper dials can be purchased from the Mason and Sullivan Company, 39 Blossom Avenue, Osterville, MA 02655. They cost about 50 cents.

When you've completed the dial panel, drill a $\frac{1}{8}$ inch hole through the dial center. The movement is placed against the back of the panel with the hand shaft extending through the hole. A brass threaded bushing screwed on the shaft from the front, locks the movement in place. Our movement had a plastic mounting flange at the bottom which we screwed to a $\frac{1}{4}$ x $\frac{1}{4}$ x 4 inch pine strip glued to the back of the dial panel to provide additional anchoring of the movement. The hands are a friction fit on the shaft which is capped with a small knurled nut.

The panel-movement assembly rests on and is screwed to cleats E which are glued to case sides. These cleats are located about $\frac{1}{4}$ inch in from the case front. The end of the hand shaft should

just clear the door glass.

Now add the molding. We show two styles, A and B. If you build your case from pine, you can probably pick up a short length of bed molding at the lumberyard. If a fine hardwood is used, special crown moldings in cherry oak and walnut can be ordered from Craftsman Wood Service Company, 2727 South Mary Street, Chicago, IL 60608.

Before adding molding, glue a stained filler strip (F) flush with the top front of the case. The molding is then finished and mitered to fit around the case.

A door pull of your preference or of the type shown, a small magnetic door catch and loose pin butt hinges are added. Mortise the door frame to a depth equal to the thickness of the hinge barrel. The hinge leaf on the case side is surface mounted. Use a couple of small brass mirror hangers to mount the clock level on the wall. Instructions packed with the movement will help you get your movement started and regulated.

BILL OF MATERIALS

PART	DESCRIPTION	SIZE	NO. REQ'D.
A	Side	$\frac{1}{2}$ x $3\frac{1}{4}$ x $22\frac{1}{4}$	2
B	Bottom	$\frac{1}{2}$ x $3\frac{1}{4}$ x 8	1
C	Top	$\frac{1}{2}$ x $3\frac{1}{4}$ x 8	1
D	Back	$\frac{1}{4}$ x 8 x $19\frac{1}{4}$	1
E	Cleats	$\frac{1}{2}$ x $\frac{1}{2}$ x 8	2
F	Filler Strip	$\frac{3}{4}$ x $\frac{1}{2}$ x 8	1
G	Movement	Constantine No. 78C32	1
H	Stiles	$\frac{3}{4}$ x $1\frac{1}{4}$ x $20\frac{1}{4}$	2
I	Upper Frame Rail	$\frac{3}{4}$ x $1\frac{1}{4}$ x 6	1
J	Lower Frame Rail	$\frac{3}{4}$ x $2\frac{1}{4}$ x 6	1
K	Muntin	See Detail	1
L	Dial Panel	$\frac{1}{4}$ x $7\frac{1}{2}$ x 8	1
M	Front Molding	As required	1
N	Side Molding	As Required	2

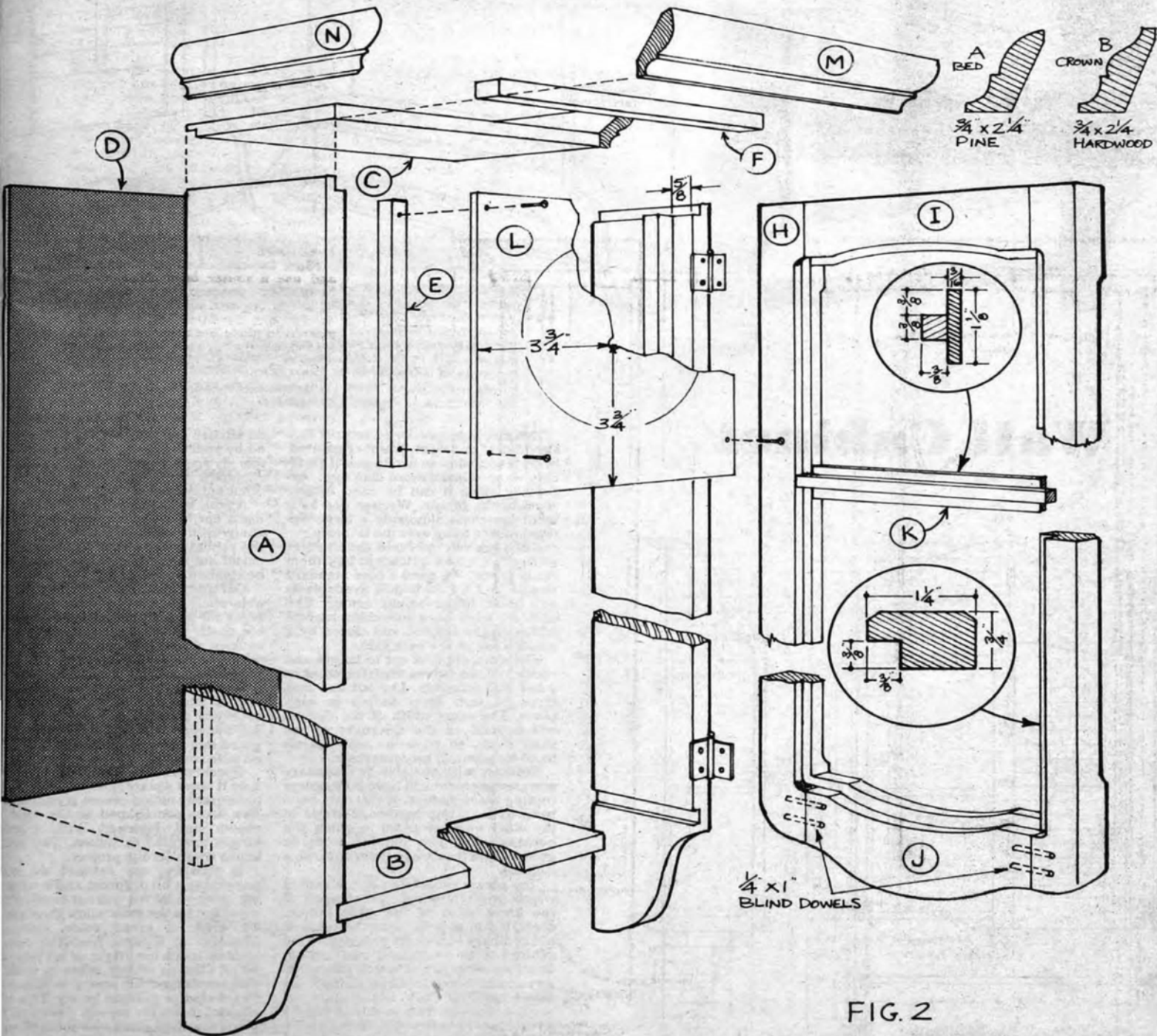
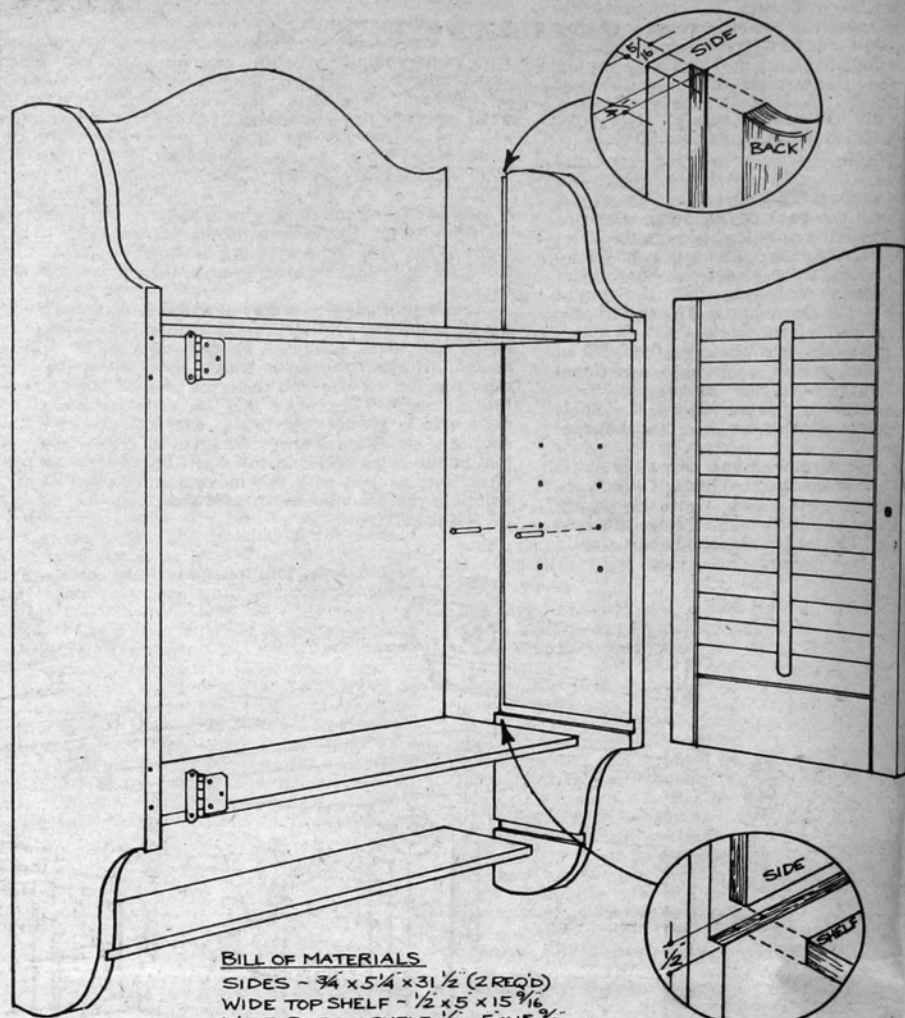
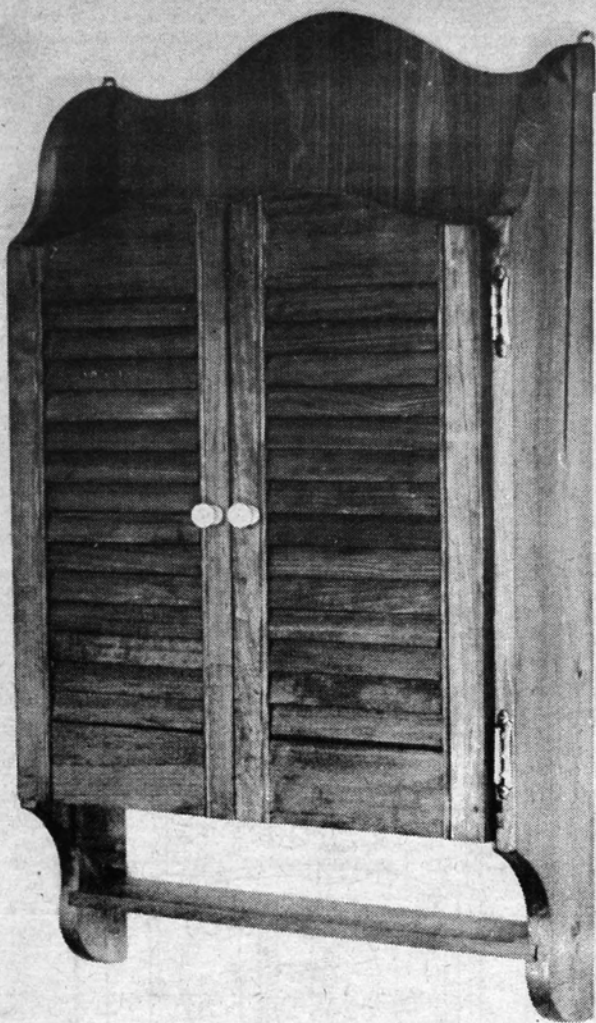


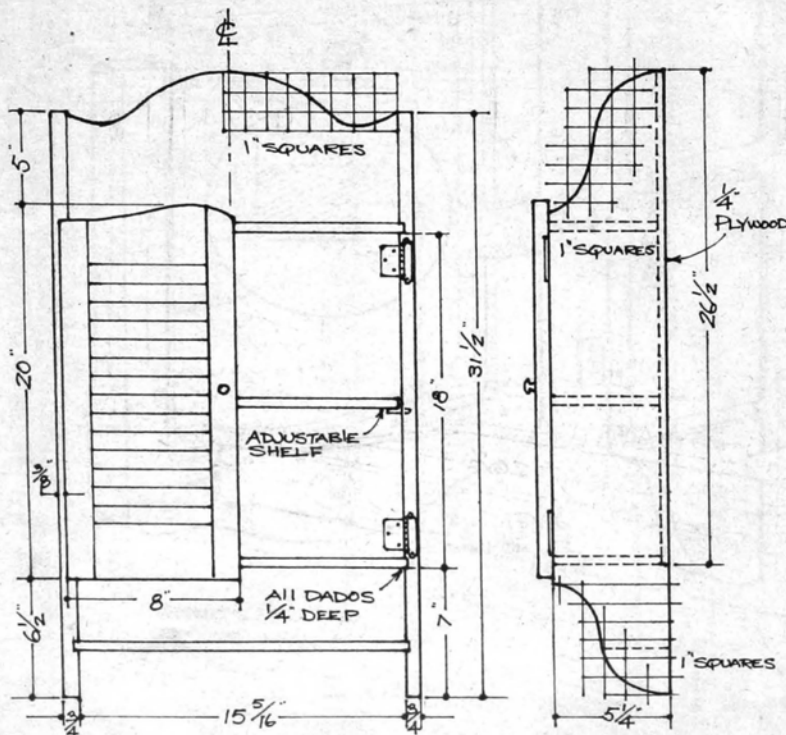
FIG. 2



BILL OF MATERIALS

SIDES - $\frac{3}{4}$ x $5\frac{1}{4}$ x $31\frac{1}{2}$ (2 REQ'D)
 WIDE TOP SHELF - $\frac{1}{2}$ x 5 x $15\frac{9}{16}$
 WIDE BOTTOM SHELF - $\frac{1}{2}$ x 5 x $15\frac{9}{16}$
 ADJUSTABLE SHELF - $\frac{1}{2}$ x $4\frac{1}{2}$ x $15\frac{9}{16}$
 SMALL BOTTOM SHELF - $\frac{1}{2}$ x $3\frac{3}{4}$ x $15\frac{9}{16}$
 BACK - $\frac{3}{8}$ x $15\frac{9}{16}$ x $26\frac{1}{2}$ PINE VENEERED PLYWOOD
 DOORS - $\frac{3}{4}$ x 8 x 20 PINE SHUTTERS (2 REQ'D)
 HINGES - OVERLAY TYPE, $1\frac{3}{4}$ BARREL (2 PR. REQ'D)
 $\frac{3}{4}$ PORCELAIN KNOBS (2 REQ'D)

Wall Cabinet



This nicely proportioned cabinet has a good deal of charm, whether painted or stained and is so useful you'll probably want to make more than one...especially since it can be used in any room of the house. We use one as a medicine chest alongside a large antique mirror hung over the lavatory.

Although you can build the shutters yourself, it's a lot quicker to buy them ready-made. We used a pine standard size of $\frac{3}{4}$ x 8 x 20 inches available at any home improvement center. The ones we used have moveable louvers which can be opened and closed by a wooden bar on the back side.

The sides are first cut to length and width and the curves transferred from a full size template. Lay out and rout three $\frac{1}{4}$ inch deep dadoes in each piece. The exact width of the dadoes will depend on the thickness of the shelf stock, so have the material on hand for accurate measurement.

Workers with portable or stationary power equipment will have no problem routing these dadoes. If you only have hand tools, clamp hardwood strips to the stock and use them to guide the backsaw. Cut two parallel kerfs or grooves and then clean them out with a chisel.

The plywood back fits into a rabbet which properly should be stopped at the lower edge of the wide bottom shelf. If you plan to paint the cabinet, use ordinary $\frac{1}{4}$ inch fir plywood. If the cabinet is to be stained and sealed, don't use fir plywood which almost always looks horrible when stained. Instead use $5/16$ inch knotty pine veneered plywood. This is sold in full 4 x 8 foot sheets at about \$28.00 per sheet, but half sheets or smaller pieces can usually be obtained wherever unfinished

ed kitchen cabinets are sold, or ordered by your local supplier. Incidentally, this plywood is very useful for paneled cupboard doors, case backs and many other applications.

Again, if you have just hand tools, use a hardwood guide strip to guide a sharp utility knife and score the side of the rabbet with repeated passes, then chisel out the waste. The bottom can be cleaned up with a flat bastard file.

Cut three stationary and one adjustable shelf and drill a series of small holes for pegs to support the adjustable shelf. Sand all parts working with at least three grits of papers starting with medium and working down to very fine.

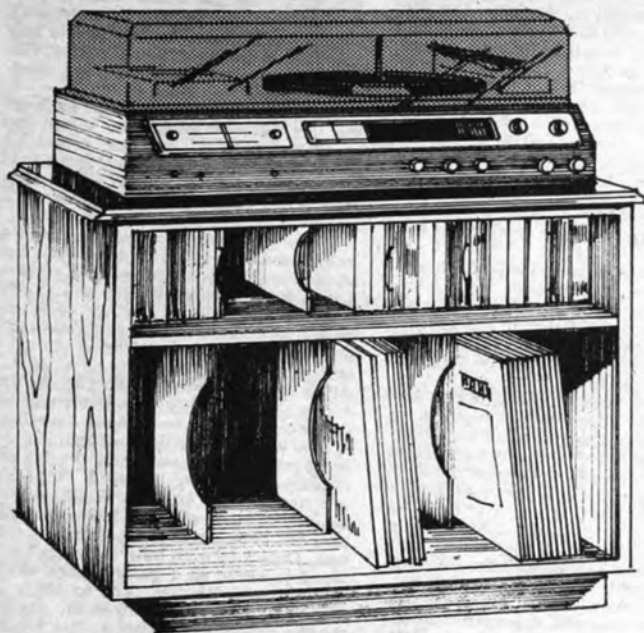
If you plan on staining the piece, it's best to stain first before assembly to avoid the problem of glue drips causing uneven staining. The shelves are glued into place and the back is fastened with small nails.

Check the case carefully to make sure it stays square, and use clamps or temporarily nailed braces if necessary. The doors are shaped at the tops as shown and fastened with overlay hinges mounted as shown. Two small knobs complete the project.

In finishing our cabinet we tried something a bit different and it worked out quite well. We wanted to color the piece but let the grain show through so we chose a green color stain by Minwax. As it came from the can, it seemed much too bright so we mixed a bit of Minwax walnut stain in with it. The resulting color was a very attractive muted or antique green. This was allowed to dry for several days and the piece was then given two coats of satin finish urethane varnish.

Record & Tape Cabinet

by Ted J. Pagels



BILL OF MATERIALS

PART	DESCRIPTION	SIZE	PCS. REQ'D.
A	Side	$\frac{3}{4}$ x 13 x 20	2
B	Shelf	$\frac{3}{4}$ x 12 $\frac{3}{4}$ x 25 $\frac{3}{4}$	3
C	Top	$\frac{3}{4}$ x 13 $\frac{3}{4}$ x 27 $\frac{3}{4}$	1
D	Tape Compartment Back	$\frac{1}{2}$ x 4 $\frac{1}{2}$ x 24 $\frac{1}{2}$ (plywood)	1
E	Glue Blocks	$\frac{3}{4}$ x $\frac{3}{4}$ x 24 $\frac{1}{2}$	2
F	Back	$\frac{1}{4}$ x 25 $\frac{3}{4}$ x 20 (Hardboard)	1
G	Tape Dividers	$\frac{1}{8}$ x 4 x 5 $\frac{1}{2}$ (Hardboard)	5
H	Record Dividers	$\frac{1}{4}$ x 6 x 13 $\frac{1}{2}$ (Hardboard)	3
I	Front & Back Base	$\frac{3}{4}$ x 2 x 22 $\frac{1}{2}$	2
J	Base End	$\frac{3}{4}$ x 2 x 9 $\frac{1}{2}$	2

Here's a useful cabinet that provides a convenient place to store both record albums and tapes. The spacious storage area will hold almost 100 record albums while the tape rack neatly accepts either eight-track or cassette tapes. There's also plenty of room on top, so it accommodates most any size or style stereo system.

There are a variety of woods that can be used for this project. Maple, birch, walnut, oak, even pine, are all appropriate choices. Select the one that best appeals to your needs, interest, and of course, your pocketbook. You'll note that the dividers and back are hardboard.

Begin construction by making the two sides (A). In order to get the 13" width, it will be necessary to edge glue two or more boards. Glue and clamp the joint, then allow to dry overnight. After drying, cut the sides to final length and width. Referring to the drawing, lay out and cut the $\frac{3}{4}$ " x $\frac{3}{4}$ " rabbet for the top and bottom shelf; the $\frac{3}{4}$ " x $\frac{3}{4}$ " dado for the center shelf; and the $\frac{1}{4}$ " x $\frac{3}{8}$ " rabbet for the back.

Next, make the three shelves (B). Again stock will have to be edge glued to get sufficient width. Cut to length and width after drying. In order to accept the record and tape dividers, $\frac{1}{4}$ " wide x $\frac{1}{4}$ " deep stopped dados are cut into the shelves as shown. This is best done with a router using a $\frac{1}{4}$ " straight bit. Lay out the dados carefully and make the cuts from the back so they don't show in front.

The top (C) can be done next. Edge glue stock as required, then cut to size. Use a router with a $\frac{3}{8}$ " cove bit to cut the decorative molding on three edges.

Cut both the tape compartment back (D), the glue blocks (E), and the back (F) to size. Take care to make sure the

back is cut square. The tape dividers (G) and the record dividers (H) are cut from $\frac{1}{8}$ " hardboard. Referring to the drawing, lay out and cut the radius for each part as shown. Now cut out the base back and front (I) and the base sides (J).

Before starting assembly, give all surfaces a thorough sanding. This step will make it much easier to final sand after assembly is complete.

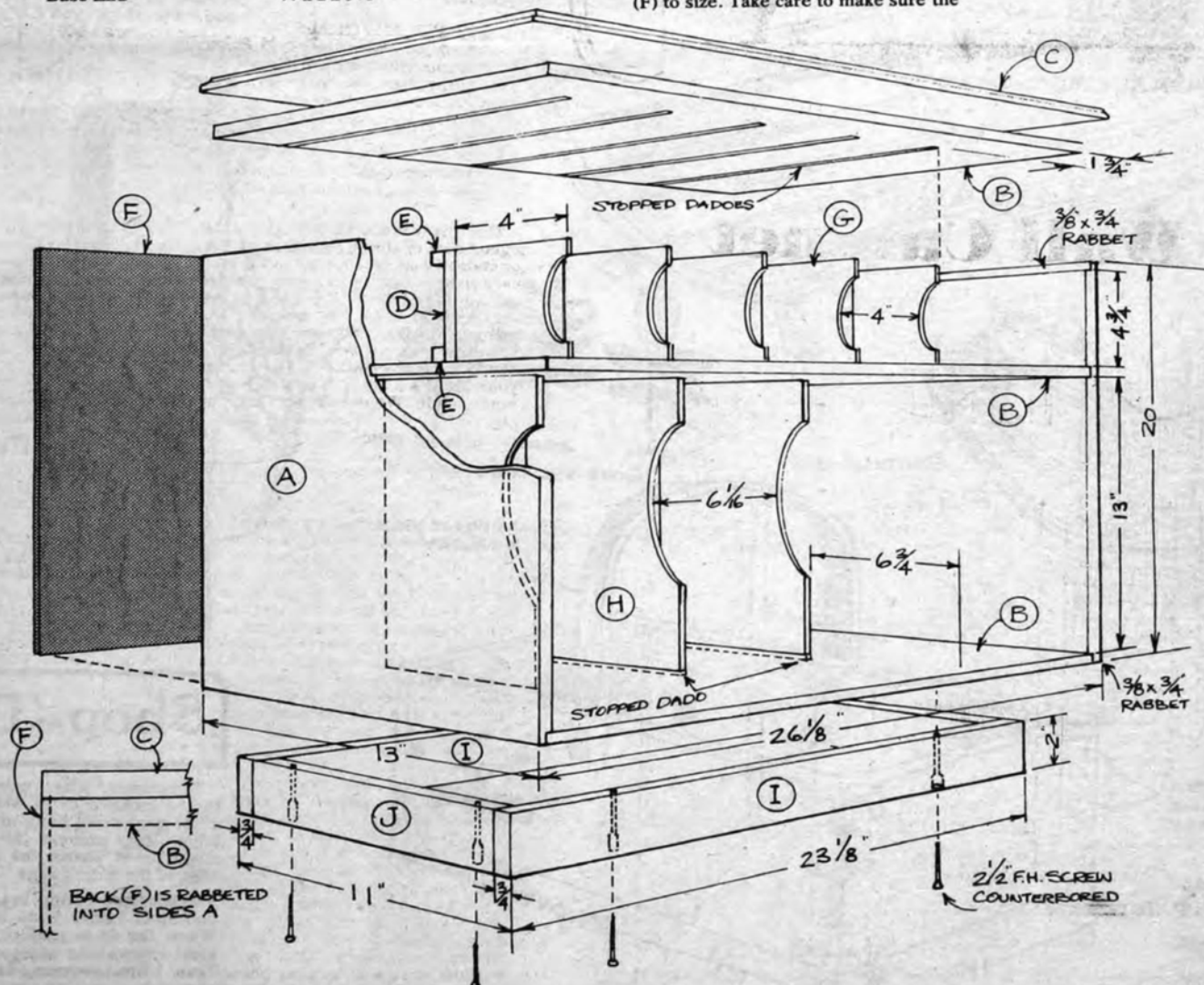
Assemble the three shelves (B) to the sides (A), using adequate glue to insure a good bond. Drill and countersink holes for 1 $\frac{1}{2}$ " x #8 fh wood screws. The holes will be plugged later.

Apply a thin coat of glue to the tape (G) and record dividers (H). Slide in place from the back. You may need to sand the edges a little so they slide easily in the dados. Apply glue to back of tape dividers, then slide tape compartment back (D) in place. Fit glue blocks (E) in place and fasten with small nails. (Drive nails by holding hammer sideways) Next, the back (F) is attached with 2p nails.

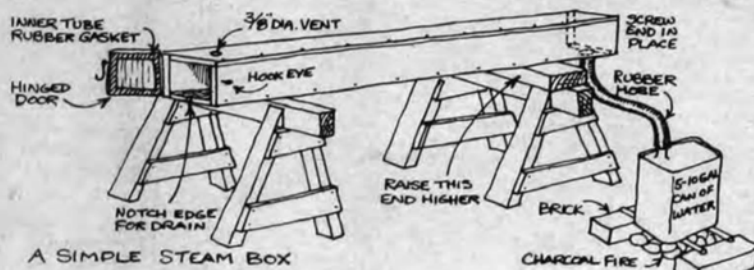
Assemble the base frame (parts I & J) and attach to the cabinet bottom with 2" x #10 rh wood screws counterbored to a depth of $\frac{1}{2}$ ". Finally, attach the top with countersunk 1 $\frac{1}{2}$ " x #8 fh wood screws.

Now plugs can be glued into all countersunk holes and sanded smooth. Give the entire project one more going over with fine sandpaper.

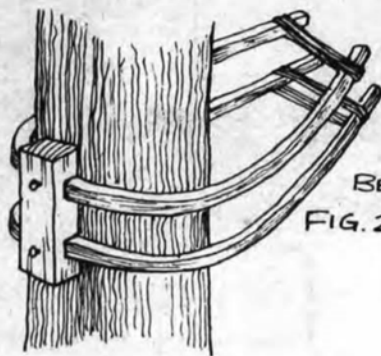
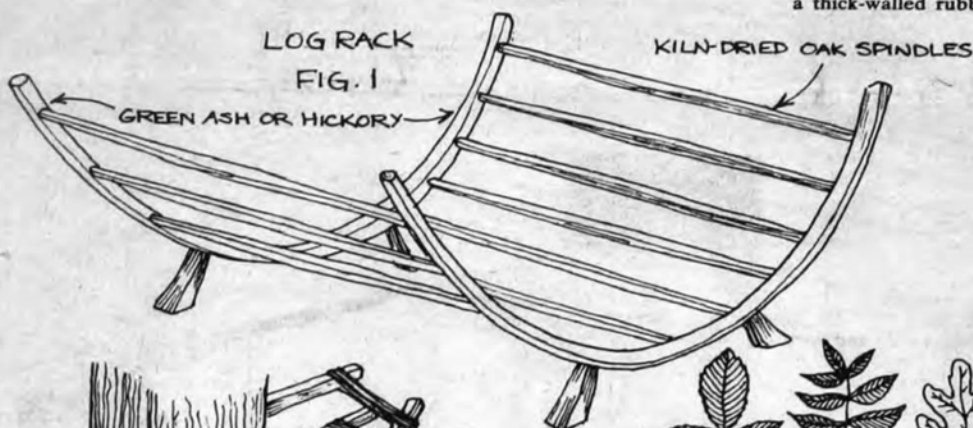
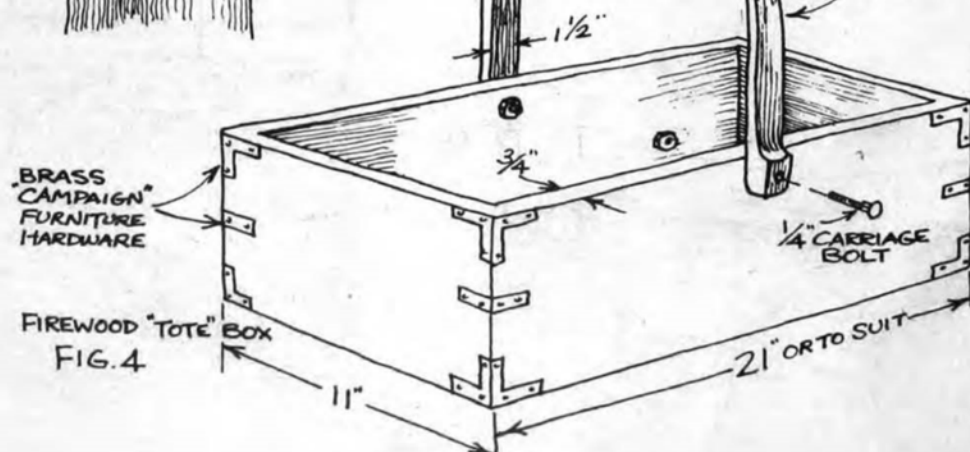
The final finishing method will depend upon the type of wood used, and to a large extent, personal taste. Our walnut cabinet was finished with two coats of polyurethane satin finish followed by a thorough rub down with 4/0 steel wool.



Steam Bending



A SIMPLE STEAM BOX

BENDING JIG
FIG. 2STEAM-BENT ASH
OR HICKORYFIREWOOD "TOTE" BOX
FIG. 4

The ability to bend wood opens up a whole new world of projects for the woodworker. Of the several methods employed in bending wood, steam bending is perhaps the oldest and most satisfactory, though much of the technology has been lost to the average woodworker. We shall attempt to describe an easy method of steaming and bending that doesn't require elaborate equipment or jigs. Three projects shown are attractive and useful, and should suggest other projects utilizing the same equipment and techniques.

Woods used in these projects should be green; that is freshly cut. Kiln-dried wood can be bent after steaming but the chances of fracture are greatly increased unless more elaborate bending jigs are used to provide support around the bend.

The best native bending woods are hickory, ash, most oaks and elm. In choosing bending stock, look for straight saplings of about two inches in diameter with no branches for the first six or seven feet. Somewhat larger trees can be used after splitting into quarters; the quarters then being drawnknifed to round or square sections. For the log rack, hew the saplings to roughly 1 1/4 inches square.

Build a steam box as shown, using 3/4" x 6" pine boards. A length of about 6 feet will handle most projects. Butt-join the boards and nail together at six-inch intervals using threaded nails. One end panel is screwed in place while the other end has a hinged door. Use a hook and eye to tightly close the door.

A small notch in the end of the floor will allow water to escape while a vent hole at the top allows steam to escape. You do not want a steam-tight unit. Fit a thick-walled rubber hose in a tight

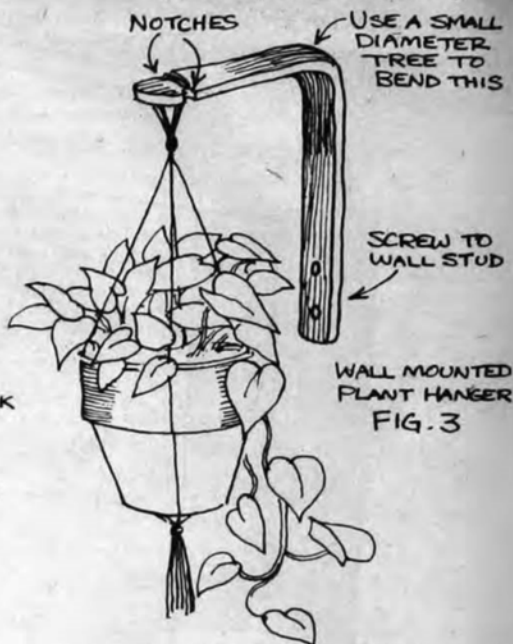
hole near the closed end of the box. Washing machine drain hose is perfect. Steel pipe can also be used with hose at each end. The "boiler" is any good can of 5 to 10 gallon capacity, filled with water and set over a hot charcoal fire.

Steam your stock for about an hour for each inch of thickness. While the wood is "cooking", prepare a dadoed block as shown in Fig. 2 and spike it to a tree of suitable diameter. For the log rack, a tree of 12 to 14 inch diameter is good.

When steaming is complete, enlist a helper and with gloves, remove the hot stock from the box. Immediately place a length centered in the jig and slowly start bending. Bend further than required as there is some springback after drying. Tie ends and bend the second piece, using the first as a guide. Allow the bent and tied stock to dry for a day. After drying, the bend can be opened up but not made smaller.

The log rack should be dimensioned to fit your hearth and hold the length of firewood generally used. Spindles are hewn from kiln-dried oak to 3/4" square. Taper slightly towards ends and cut shouldered 1/2" diameter tenons. Drill a 1/2 inch hole in scrap hardwood to serve as a gauge when shaping tenons with file. Try to keep all tenons a uniform tight fit in the gauge. As the green hoops shrink, the tenons will be squeezed firmly in their sockets. We spaced our spindles 4 inches apart but this can be varied. Use dried oak for the reverse-tapered feet but cut them of heavier section than the spindles, with 3/4 inch tenons. The rack can be stained and varnished or left natural after sanding. It's a nice rustic piece; surprisingly light, yet very strong.

The plant hanger and tote-box for wood-burning stoves are two more projects that will provide additional experience in the "feel" for bending wood. We think you'll find steam bending an enjoyable departure from the usual modes of woodworking.



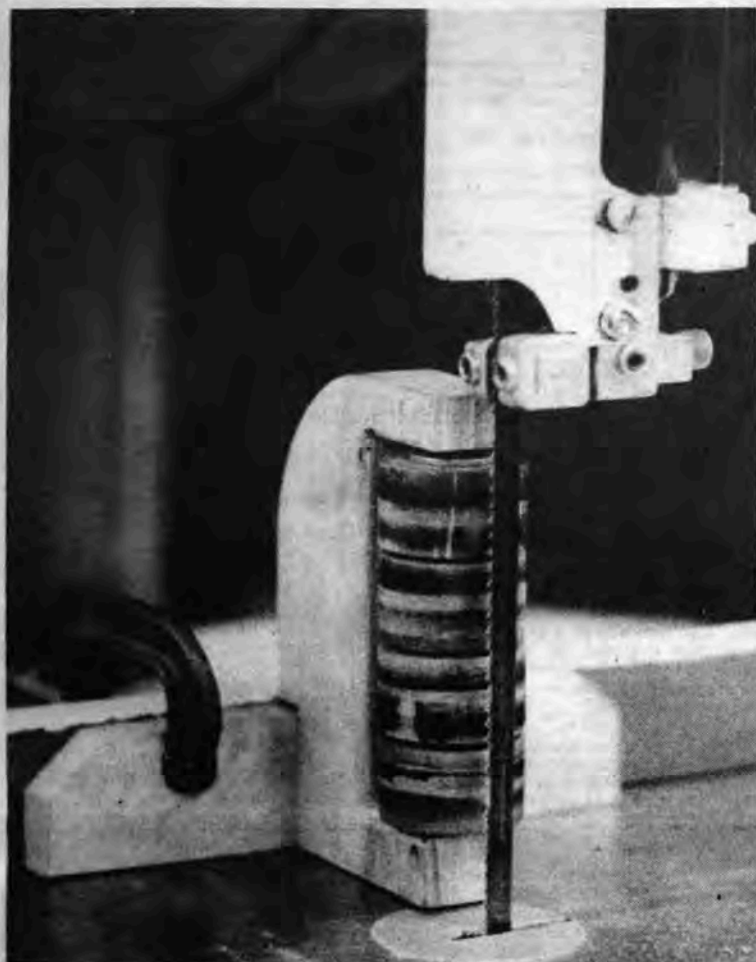
Shop-Tips

Sometimes, when using the table saw to crosscut extra wide stock, the miter gauge will hang up on the saw table. Help prevent this by filing a slight bevel across the bottom front edge of the miter gauge.

When trial fitting brass hardware, use steel rather than brass screws. When the fit is perfect, remove the steel screws and replace with brass. This helps prevent the soft brass screws from getting chewed up.

Woodworker's Jigs

by Don Kinnaman



Resawing Jig for Bandsaws

Resawing, as the term implies, is the operation in which a thick board is ripped into two or more thinner boards. Fairly narrow boards can be resawed with the tablesaw but the operation is not very safe or accurate.

The bandsaw is the best machine for resawing. In order to accurately slice a board along its edge, some sort of guide is needed. Bandsaw blades, unless sharp and in good condition, have a tendency to run off the resawing line. A slight pivoting of the feeding end of the board will bring the blade back into line. If a long fence is used to guide and support the board, it prevents the operator from making these small pivoting adjustments.

What's needed is some sort of pivot block against which the stock can be held and guided. This jig will do the job nicely and will prove a worthwhile addition to your bandsaw equipment.

As with most jigs, it's best made of hardwood. Cut the jig body as per the plan. The height is not critical nor is the thickness or number of rollers.

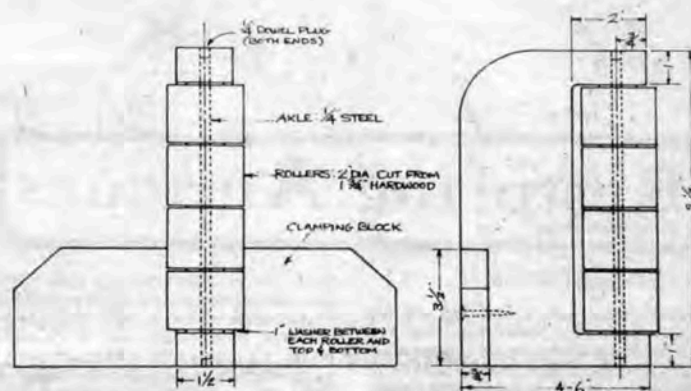
Notch the jig body for a 3/4 inch thick clamping brace which is fastened with glue and screws.

The rollers can be cut with a fly cutter and drill press, but any suitable wheels can be used including appliance rollers or even roller skate wheels provided they turn freely and are not a sloppy fit on the axle.

Lay out and drill jig for a 1/4 inch diameter steel axle which is cut just long enough to allow for dowel plugs at top and bottom. When assembling rollers on the axle, place large washers between them and between top and bottom of jig body.

The roller jig is set opposite the blade and at the proper distance from it to cut the required thickness. Use a "C" clamp to secure the jig to the regular fence as shown in the photo.

Scribe an easily visible cutting line along the edge of the board and use a coarse, sharp blade. Feed the work slowly at first to determine if the blade is tracking properly.



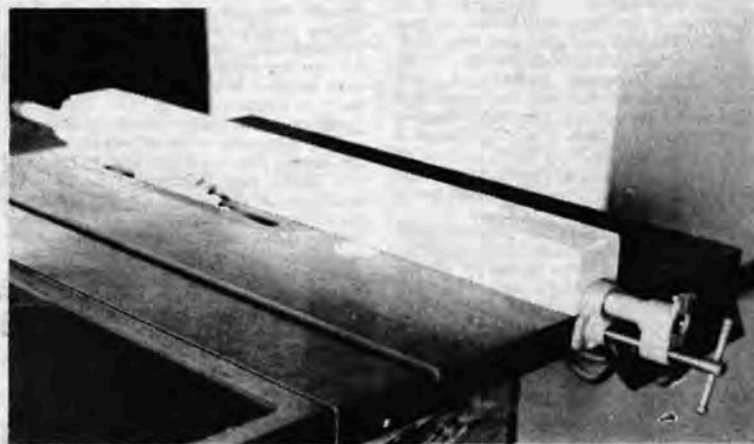
Replacement Fence

Good used shop machines such as tablesaws or bandsaws can sometimes be purchased at bargain prices but unfortunately, important accessories such as fences may be missing. Here's an idea for a good usable fence that can be easily made as a replacement or auxiliary fence, to fit the table of most woodworking machines. To make it all you've got to do is get a length of 1/2" black steel or galvanized pipe. Cut the pipe and thread it (or have it threaded) to take standard 1/2" pipe clamp fixtures.

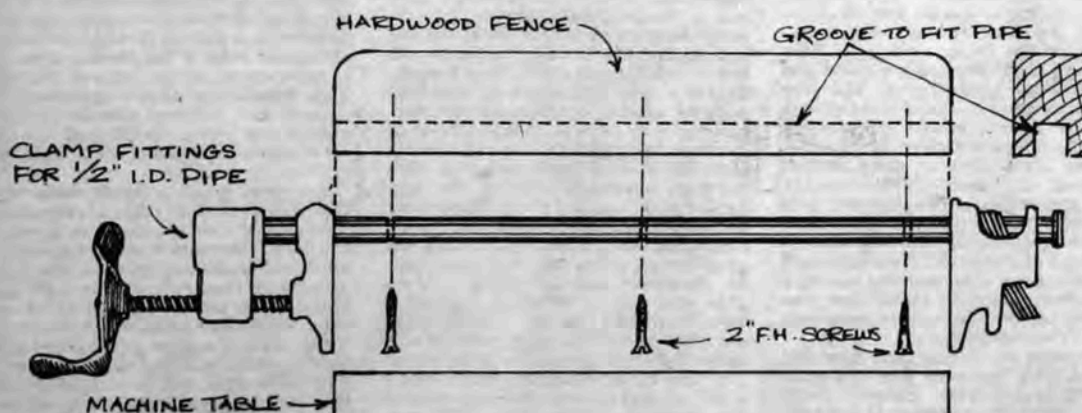
Cut a piece of 2 x 3 inch hardwood to a length equal to the table depth. Rout

a groove along the edge wide and deep enough to completely cover the pipe. Drill and countersink about three holes and secure the fence in the "tunnel" with flat head screws.

The fence is ready for use and normally it will align itself parallel to the blade. For added accuracy, use a framing square clamped to the table to score parallel lines in the machine top with a scratch awl. It's then a simple matter to line up your home-made fence on these scored lines. Just be sure that your lines are easy to see.



photos by Tom Sweet



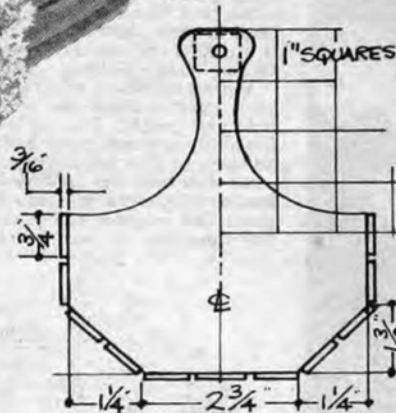
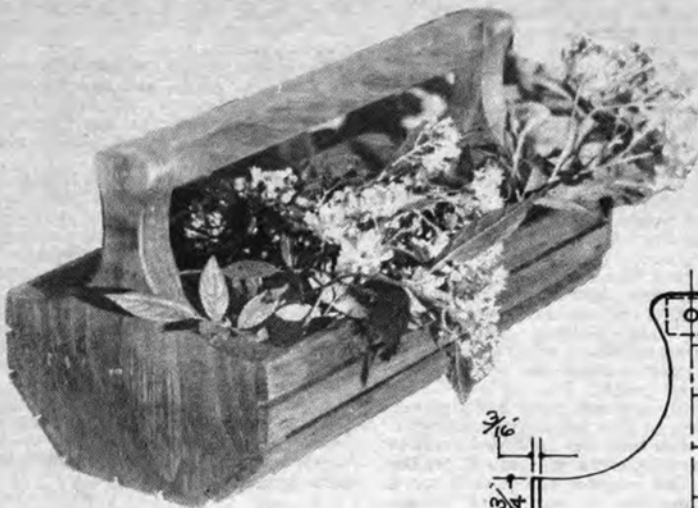
Shop-Tips

Very small dowels, approximately 1/16" diameter x 6" long, are available from your local pharmacist. Used as swab sticks, these are nice straight grain, ready to use birch rods. An entire box will cost only a buck or two. D. Kinnaman

A soft eraser is indispensable for removing pencil lines from wood. It does the job faster and easier than sandpaper, especially when you can't get close to your work with a power sander. D. Kinnaman

If you are preparing to varnish and still have on those dust-covered clothes you wore while sanding, it's a good idea to change to clean clothes. It will help keep dust to a minimum.

Clam Digger's Basket



A very popular gift shop item on Cape Cod, this miniature version of a clam digger's basket is a fine project for the young woodworker. Use it as a snack server or with cut flowers as a centerpiece.

Lay out the shape of one end on a piece of $\frac{3}{4}$ inch soft pine. Cut one end to shape and use it as a template to trace the other end.

The eleven slats are of $\frac{3}{16}$ x $\frac{3}{4}$ inch stock. These are ripped on the table saw from a length of pine board. If you lack a tablesaw, use a handsaw to rip slats, then plane them to uniform thickness.

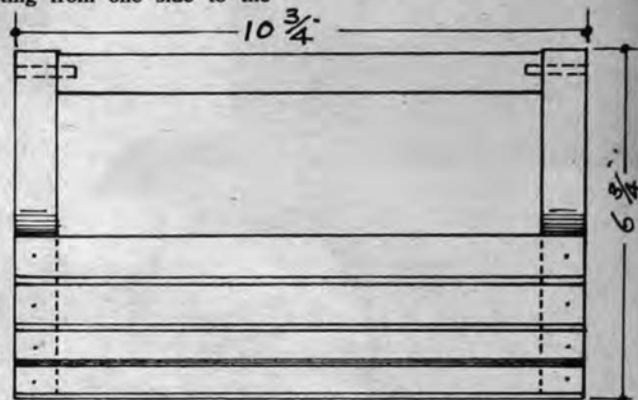
Alternating from one side to the

other, start fastening slats to ends; driving a small brad at each end and spacing the slats about $\frac{1}{4}$ inch apart.

The handle is a piece of $\frac{3}{4}$ x $\frac{1}{2}$ inch pine with edges well rounded. Clamp handle between ends and drill a $\frac{1}{4}$ inch diameter hole through ends and into handle. Coat $\frac{1}{4}$ inch dowel pegs with glue and tap them into holes.

Sand entire piece well and apply a dark stain. After stain dries, apply two coats of shellac thinned a bit with alcohol.

A larger version of the same basket makes a lovely planter for either indoor or outdoor display.



Restoring Antiques

By John W. Olson

A PRIMITIVE TABLE

Several years ago I restored an old fashioned pine drop-leaf table that had been made by some country carpenter. When it arrived in my shop it was in really sad, almost hopeless condition. Powder post beetles had destroyed better than half of the lower part of all but one of the legs and it was in bad shape. The top was split and very badly battered, altogether hardly worth restoring. However, an antique piece in this condition is a real challenge and authentic pieces are becoming harder and harder to find. I would hazard a guess that better than fifty per cent of the so called antiques on today's market are reproductions. However, more on this another time.

Through the years the original paint had almost disappeared. All that remained were a few brownish flakes and crusts on the legs and rails. The top was completely bare; its underside had never been painted. Consequently, the first step was to disassemble the table. The top was oval, in three pieces. Two really wide half-round leaves, each from a single board, 18" wide x $34\frac{1}{4}$ " long attached to a 17" wide x $34\frac{1}{4}$ " long center board. All three boards were roughly 1" thick varying from $31\frac{1}{32}$ " to $29\frac{1}{32}$ ". This variation is probably due to the original method used to bring the boards to thickness. The back sides bear the marks made by a jackplane having a rounded iron.

The half-round leaves were attached to the center board with 2" wrought iron hinges that appeared to have been hand made. These hinges were attached with nails having hand formed heads. Since this table came from the eastern shore of the Chesapeake Bay in Maryland, it is a safe bet that these nails, and probably the hinges too, were made by slave labor. The table itself was probably made for use in the slave quarters.

The center piece and the leaves were grease soaked and badly battered and scratched. The first problem was to remove the grease and this was done with a sawdust and paint thinner poultice. Approximately $\frac{1}{4}$ " to 1" of sawdust well soaked with mineral spirits or gasoline will remove grease and oil not only from wood but also

from concrete driveways. This operation should be carried on in a well ventilated area where danger from fire is minimal. Needless to say *don't smoke* or light up anywhere in the room or area while the poultice is being applied. This precaution is especially applicable to gasoline. Really, gasoline should only be used outside, as it is highly volatile and explodes violently. To minimize evaporation, a rag should be spread over the poultice. It may take several hours or even a couple of days to remove the grease. Keep the poultice moist with mineral spirits.

The appearance of a battered wooden object can be improved by raising the dents and depressed areas with moisture. If you are in a hurry, this can be done with a wet cotton rag and your wife's steam iron, an electric soldering iron, or even a piece of heated iron may be used. In the latter case, remove the iron from the heat source before it begins to change color. The iron applied to a wet cloth laid over the area to be raised, generates steam. The steam penetrates the wood fibers causing them to swell. The same effect can be gained by a sawdust and water poultice or even wet rags. Maximum effect takes but an hour or two. If this poultice is large and left too long, it may cause the board to warp. The cure is to apply moisture to the other side of the board (see *Woodworker's Journal*, Antique Restoration, July/August 1978). While the grease and dent removing poultices were at work, I disassembled the frame and legs. This table was built originally without the benefit of any kind of glue. The side and end rails are mortised into the legs with the tenons locked by wooden pins. The rails and legs are of pine but the pins are hickory or some related hardwood. They were whittled roughly round and being harder than the rails and slightly larger than the holes, their inherent irregularities are reflected by the shape of the holes. Normally such joints are never disassembled during a restoration, unless, as in this case, one or more of the connecting members needs to be replaced.

Removing the locking pins from this type of joint becomes a problem in itself. Through pins present fewer problems than those which do not fully penetrate both sides of the joint. In the

latter case, determine which end of the pin is larger and carefully drive the pin out. Use a punch of a slightly smaller size than the pin. Be careful not to damage the containing member. Sometimes it will be necessary to drill out the pin and this approach is imperative when the pin is in a blind hole. Use a drill bit at least $\frac{1}{4}$ " to $\frac{1}{16}$ " smaller than the pin and attempt to drill out the center of the pin. Be careful not to drill all the way through. The remaining splinters can be removed with a very small gouge or chisel. The joint should then come apart quite easily. This approach is the one I used in disassembling the table.

The grain of the wood in the pins runs at right angles to the grain in the legs, and as was customary when this table was built, the legs were made of comparatively green wood while well seasoned wood was used for the rails and pins. As the legs seasoned and dried, the green wood shrunk tight around the tenons in the mortises and around the pins. Over the years further shrinkage took place and when I began to remove the pins, some of them protruded one-quarter of an inch or more, so that I was able to pull them out. However, several broke and it was necessary to resort to the drill to clean out the holes.

One tenon was so tightly held that I had to cut the leg from around it. With the old legs removed, I was able to compare one with the other and make a reasonable guess as to their original appearance. I made a full scale drawing and from it a template of $\frac{1}{4}$ " masonite to guide me in turning four new identical legs. I happened to have some old $\frac{3}{4}$ " weathered pine on hand and used it to make the new legs. This was a comparatively simple job. Enough length was left on the top of the legs so that the mortises could be cut before sawing this end to final length. This is a neat woodworking trick that protects against splitting out the narrow top wall that is characteristic of mortises in legs for the top rail tenons. I cut the mortise snug and then with the joint assembled, drilled the legs for the pins. I scaled the location from the old legs and the rail tenons. Since I intended using a bit of glue to make a good strong joint, this was permissible. However, the old timers used no glue and had a different approach. They first drilled the pin holes through the mortise wall and then inserted and marked the hole position on the tenon. The hole in the tenon was then drilled $\frac{1}{32}$ " or slightly less off center toward the shoulder of the tenon. The pin, slightly tapered on the end to enter

the offset hole, then pulled the shoulder of the tenon tight against the mating piece. In this technique known as draw pinning, the tenon must be at least $\frac{1}{16}$ " to $\frac{1}{8}$ " shorter than the full depth of the mortice. My pins were made using a dowel plate and some pecan left from another job.

Before assembling the legs to the rails, I had sanded the legs in the lathe, but not to perfection. This is a primitive piece, a few irregularities and rough spots add to its appearance of authenticity. A few minor dents and scratches also help. The side rails and end frames were lightly sanded to remove the paint scales and the most obvious and ugliest dents were raised with steam as described above.

There is a drawer in one end of the table which required some tightening. The runners were worn out on one side and missing on the other. They were reproduced in hard wood and nailed and glued in place. The drawer pull was missing so I turned one from a piece of pecan.

The supports for the table leaves were somewhat wobbly, so I enlarged the pivot hole and installed slightly larger iron pins. These supports pivot in a slot in the side rails and gain rigidity by extending under the center portion of the top.

The top, meanwhile, was given minimal sanding and the worst of the gouges filled and repaired. The center portion was originally nailed to the end frames and had consequently split. I glued the split and pulled it together with bar clamps. After removing the bar clamps, I cut off the nails to a length equal to the thickness of the top and reinstalled them with some epoxy. Then the top was attached with blocks, glued and screwed to the side rails and screwed into the top through oversize, elongated holes in the blocks, oriented at right angles to the grain of the top. This installation allows the wood to expand and contract without experiencing any undue stress and usually eliminates the possibility of a table top cracking or splitting.

For final finish a spirit stain was used to give this old table a lovely deep brown color which helped hide some of the dark stains that couldn't be removed. Spirit stains are good for this type of work as they fade evenly with age and take on the appearance of an antique finish. The stain was followed by three coats of a good grade low-luster finish, which was rubbed down with fine steel wool and a carnauba base wax several days later. This treatment leaves a soft glowing patina characteristic of well waxed and polished furniture.

Crocodile Pull Toy



Maybe this fella doesn't cry crocodile tears, but he does act remarkably lifelike, rolling along snapping his great front jaw and wiggling that long tail. No matter how fierce his cousins may be, that big smile assures everyone that he's strictly warm and friendly.

Start with the body. Enlarge the grid pattern on cardboard, then transfer the profile to a piece of $\frac{3}{4}$ " maple or pine and cut to shape. Cut out the upper jaw along the dotted line shown.

Next, the table saw is used to split the tail lengthwise. Set the saw blade to a depth of about $2\frac{1}{2}$ " and adjust the fence so that it cuts the tail exactly down the middle. Feed the tail into the blade and stop the cut at the point where the tail ends and the body begins. Now, draw verticle lines to divide the tail into about nine equal parts (each about $1\frac{1}{4}$ " wide) and cut to length. Bevel the outside corners of each segment.

Trace the tail pattern on a piece of heavy cloth or as we did, use an old pair of blue jeans. Be sure to leave a long enough piece to fit into the section cut from the body. Since the cloth

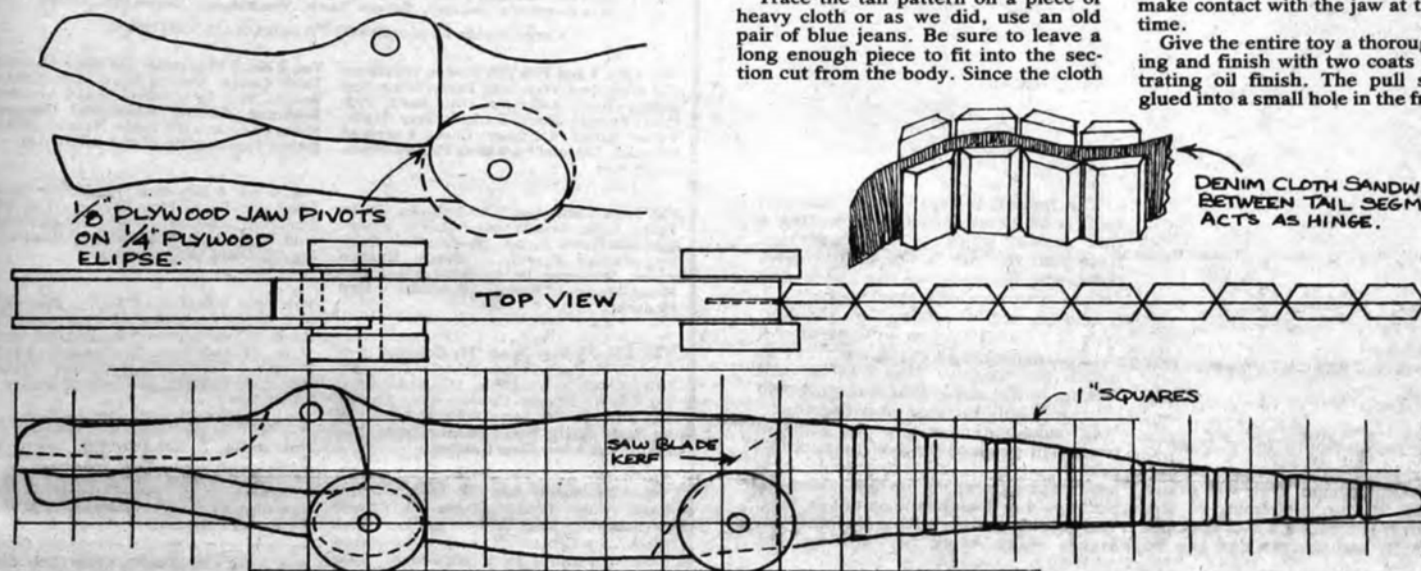
should not show, retrace the entire pattern freehand, but make it about $\frac{1}{4}$ " smaller in size. Cut the smaller profile out with a pair of sharp scissors.

Lay the tail pieces out in sequence, then apply a thin coat of glue to the inside surfaces and clamp firmly to the cloth. Allow to dry.

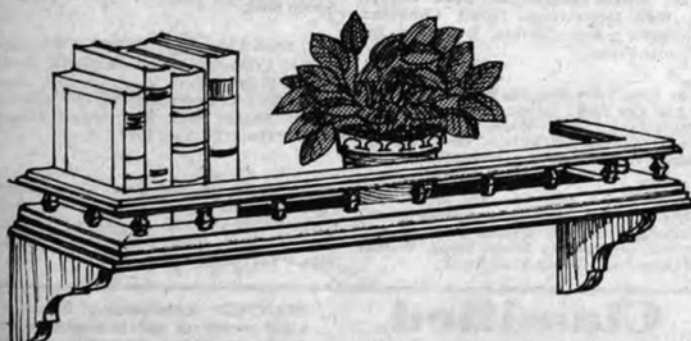
The movable upper jaw is sandwiched between two pieces of $\frac{1}{4}$ " hardboard. Lay out and cut to the profile shown. The jaw hinges at the eye on a $\frac{1}{4}$ " dowel. A $5/16$ " hole in the body allows room for a smooth hinge action.

Trim the excess cloth on the tail to fit the saw cut in the body. Apply plenty of glue to the cloth, then assemble and clamp overnight. Use a 2" hole saw to cut four wheels from $\frac{1}{2}$ " stock. Cut out the $\frac{1}{4}$ " oval wheels and glue to the two front wheels. Drill $5/16$ " holes in front and back as shown, then glue and assemble the wheels. Make sure the "ovals" are in alignment so they make contact with the jaw at the same time.

Give the entire toy a thorough sanding and finish with two coats of penetrating oil finish. The pull string is glued into a small hole in the front jaw.



Galleried Wall Shelf



With a rail that's sturdy and high-standing, this wall shelf is an ideal place to display your valued collectibles. Or, if you like, change a few dimensions and remove the brackets, and this unit will fit neatly on the top of a toilet tank...providing a handy storage place for those many bathroom items.

Begin by cutting the base (C) to size ($\frac{3}{4}$ " x $7\frac{1}{2}$ " x 23"), then use a router to cut the molded edge around both sides and front. Give the base a good thorough sanding, as this will save time and effort later when the shelf is assembled.

The bottom mitered frame (B) is made from a 42" length of $\frac{3}{4}$ " x $1\frac{1}{4}$ " stock. You can use a rasp, surfboard tool, or power router to cut the smooth radius along one edge as shown. Sand all surfaces thoroughly. Now, carefully make the mitered cuts, then glue and clamp the frame to the base (C). Make sure the mitered corners are good, tight fits. Allow to dry completely, then remove clamps and trim the frame sides flush with the back.

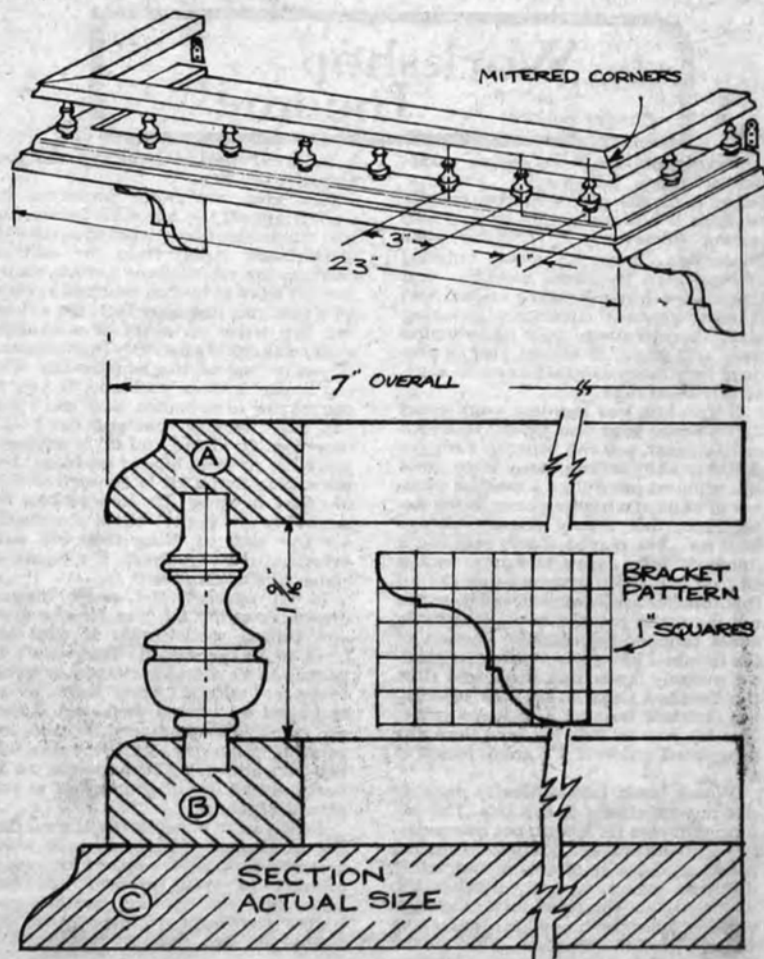
The top mitered frame (A) is also made from a 42" length of $\frac{3}{4}$ " x $1\frac{1}{4}$ " stock. The molded edge can be cut with the same method used to cut the bottom frame (B) molding. After molding, sand all surfaces, then make both mitered cuts.

The spindles can be turned on the lathe, or if you prefer, are available at a cost of 25¢ each from The Woodworkers' Store, 21801 Industrial Building, Rogers, MN 55374. Made of maple, they are sanded smooth and ready for finishing. Cost of their catalog is \$1.00.

Lay out and drill matching holes in top and bottom frames for spindle tenons as shown. Apply glue to each tenon, then assemble frames. Clamp securely and allow to dry.

Using the pattern provided, lay out and cut the two brackets from $\frac{3}{4}$ " stock. Sand completely, then join to base with two $\frac{1}{4}$ " x $1\frac{1}{2}$ " dowel pins.

Give the entire project one more light sanding, then stain to suit and finish with two coats of polyurethane varnish.



The Beginning Woodworker (cont'd)
of the pin. After marking the stock for the shortened pin, lay out and cut the sides as explained previously.

Partial cutting of the blind socket is done with the backsaw cutting diagonally to the bottom of the open face side and end (Fig. 9). The remaining waste is then chiseled out in a series of steps, working from both the fact and end of the stock (Fig. 10 A,B,C&D).

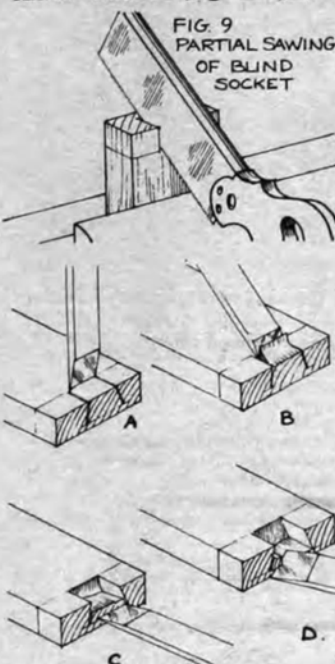


FIG. 10
CHISELING BLIND SOCKET

Another interesting version of the single dovetail is one that was much favored by Shaker craftsmen of the 19th century. It's called a half dovetail (Fig. 11 A,B) and the pin end can be

half-lapped and extended through the adjoining member (A) or be of full thickness and set in a blind socket (B). After having practiced the single full dovetails, you'll have no problem laying out and cutting these half versions.

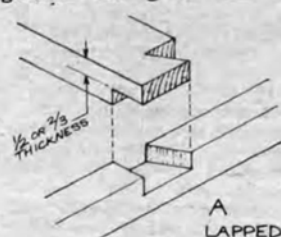
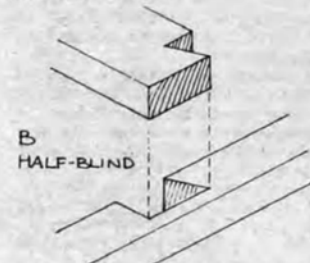


FIG. 11
HALF DOVETAILS



The lapped dovetail, both full and half, is an excellent joint for joining a thin drawer guide to a thicker rail. Note that the pin is one-half or two-thirds the thickness of the guide and sets in a corresponding rail socket.

The housed dovetail (Fig. 12) consists of a flared tongue on the end of a shelf; the socket being a dado cut to match the tongue. This joint is self locking in the sense that it requires no clamps to hold the assembly together.

In order to accurately cut a flared tongue or groove, the boards must be perfectly flat. Using hand tools, this joint is practical for narrow boards of perhaps 4 or 5 inches in width or less. The electric router with a dovetail bit makes easy work of cutting the

grooves on wider stock while the table saw and high fence or tenon jig is used to cut the flaring tongue. Bear in mind that the stock must be perfectly flat though...so the wider the board, the more likely it is for inaccuracy to creep in.

Like the other dovetail joints, the housed dovetail can be fully exposed or stopped in a blind groove in the same manner as a stopped dado used in fine bookcases.

That about covers the common single dovetail joints. Practice them and incorporate them into your work whenever possible. It's a very satisfying phase of woodworking. In part II we'll go into the spacing, proportioning and cutting of various multiple dovetails with hand tools and machines.

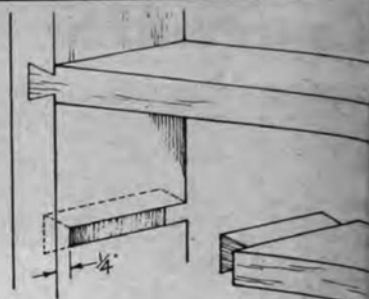


FIG. 12
HOUSED DOVETAILS
COMMON & STOPPED

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Workshop Income

Charles Burke

Making kits offers the selling woodworker many advantages. For one thing, it speeds up production greatly because it eliminates the gluing and joining processes. It reduces your production chores to mostly cutting, accompanied by some sanding, and that makes things go much faster. And in most cases it eliminates finishing also, accelerating your production pace still more. It allows you to produce very many saleable items in a relatively short time.

It also lets you increase your gross by reducing your unit price. Theoretically at least, you can bring in a bigger dollar total by selling many more units at a reduced price than a smaller number of units at a higher price. In my experience, this theory doesn't always hold up...but maybe that's because a finished, fully assembled item and a kit that will allow someone to make up that finished, fully assembled item are not the same product at all. The kit is not a reduced-price junior version of the finished item; it's a different product entirely, so selling it for less than the finished item is not like offering the finished item at a reduced price. The kit has to sell for less than the completed article if it's going to sell at all.

Which leads into difficulty number one in your efforts to sell kits. The potential buyers for kits do not necessarily form the market for your finished products. They're almost a completely different group, in fact. Neither the wholesale nor the retail buyers are the same people who buy your regular line of fully assembled items. This means that in order to sell kits you have to learn about and cultivate a substantial-

ly different market from the one you normally sell to.

Kits give you other problems as well. Right off the bat a kit forces you into the production of a set of assembly instructions. Apart from the cost of printing the instructions (which really doesn't have to be that much of a cost), let's face this unhappy fact: not everyone can write up a set of workable, understandable assembly instructions. If you're one of the somebodies who can't, you have a problem. If you're one of the somebodies who can't but you don't realize that you can't and therefore go ahead and do it anyhow, you have an even bigger problem. I'm not saying that a kit is doomed to failure just because it's instructions for assembly are faulty, but it's certainly not the kind of thing that will help sales...at the very least, it's bound to cause a lot of returns.

In my opinion, the single biggest drawback of the kit plan for the average selling woodworker is that kits have to be packaged. They can't be packaged in old shirt boxes or bread wrappers, either. They have to be packaged in printed packages if they are going to be displayed for sale, and printing packages can (probably will) run you into a big investment, an investment all out of proportion to your potential profits.

So if you're considering the marketing of kits as either your sole working-for-profit venture or as an adjunct to your present activities, make sure you consider both the good points and the bad points of the deal before you sink anything into it.

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