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Heirloom Collector's Cabinet

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- Step by Step construction instruction.
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- Tips to help you complete the project and become a better woodworker.



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Heirloom Collector's Cabinet

Set aside a weekend and a few feet of clear maple lumber for building this old-fashioned collector's cabinet.

Among the many possible uses for this cabinet, it's ideal for storing small collectibles. If you like the country look you'll appreciate the mullioned door and the traditional choice of maple for the cabinet's construction. Maple was often used in early American country furniture (for tips on working with maple, see page 148), and glass paned doors were a common feature. If you don't have a supply of maple on hand, you'll get equally handsome results from pine, oak or cherry. This cabinet is such an eye-catcher that you'll probably end up building more than one.

Getting Started

To begin, select maple stock for the cabinet sides, top and bottom (pieces 1 and 2) and rip it to width. Now crosscut the pieces to length by stacking each pair and cutting them at the same time (see *Figure 1*). This practice helps to guarantee matching part sizes.

Next, using a combination square and a pencil, layout the dowel locations on the sides, as shown in the *Carcass Elevation* on the *Technical Drawings*, pages 146 and 147. To drill the dowel holes we recommend using a drilling jig or a drill



Figure 1: Stack any pieces that need to match and crosscut them to length at the same time. This will ensure a square cabinet assembly.



Figure 2: Lay out the dowel locations on the cabinet sides, then position your doweling jig. Slipping a stop collar onto the drill bit will limit the depth of the holes.



Figure 3: To transfer the dowel hole locations, insert steel dowel centers in the sides and press them into position on the top and bottom pieces.

press. The Dowl-it jig (shown in *Figure 2* and in the *tint box* below) is really helpful, because it's accurate and simple to use if you don't have a drill press. Before drilling holes in your actual project pieces, however, drill some $\frac{3}{8}$ " holes in scrap wood to make sure the dowels (pieces 3) fit properly. Then drill the four holes in the ends of each side piece with the help of the jig, as shown in *Figure 2*.

Transferring the hole locations from the sides to the top and bottom is extremely easy with the help of steel dowel centers (see *Figure 3*). To help position the sides, clamp a fence $1\frac{1}{2}$ " from each end of the top and bottom, slide the sides next to the outside edge of each fence and press down on the sides to form imprints with the dowel centers. Now use your drill press or drilling jig and the $\frac{3}{8}$ " bit to bore the holes. After completing this step, chamfer the rim of each hole with a countersink bit.

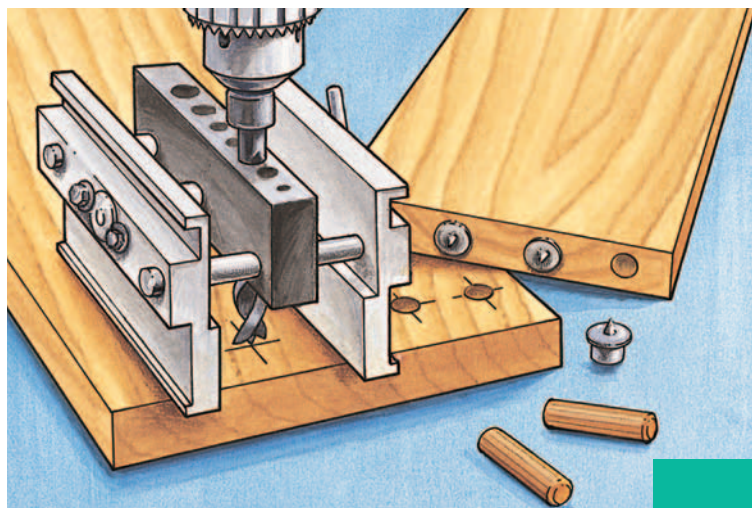
Prior to assembling the box, there are four small steps to complete. First, drill the $\frac{1}{4}$ " holes in each side for the shelf supports (pieces 4), as shown in the *Carcass Elevation* (see *Technical Drawings*). Second, layout the mortises for the

hinges (pieces 5) and use a chisel to clean out the waste (see "Chopping Hinge Mortises" technique on page 145). Third, drill the hole in the bottom, as shown in the *Carcass Elevation*, for the bullet catch (piece 6). And fourth, rout the ends and front edge of the top and bottom with a $\frac{1}{2}$ " roundover bit.

Now join the top and bottom to the sides with glue and dowels. Tap the dowels into place, then close the joints slowly with clamps. Clamping too quickly, or hitting the dowels sharply with a hammer, could cause the wood to split as pressure builds in the holes. Check the box for squareness several times before letting the glue dry overnight by measuring diagonally from corner to corner. Adjust the clamps if necessary, until the diagonal measurements are the same.

Making the Back and Door

While the carcass sits in the clamps rip some $\frac{3}{4}$ " thick maple for the back and door frames (pieces 7 through 10). Cut the stock to length, once again stacking the pieces so you end up with identically sized parts. Next, lay out and drill the dowel holes, as shown in the *Door and Back Elevation Drawings*. Dry-fit the frames to check the joints

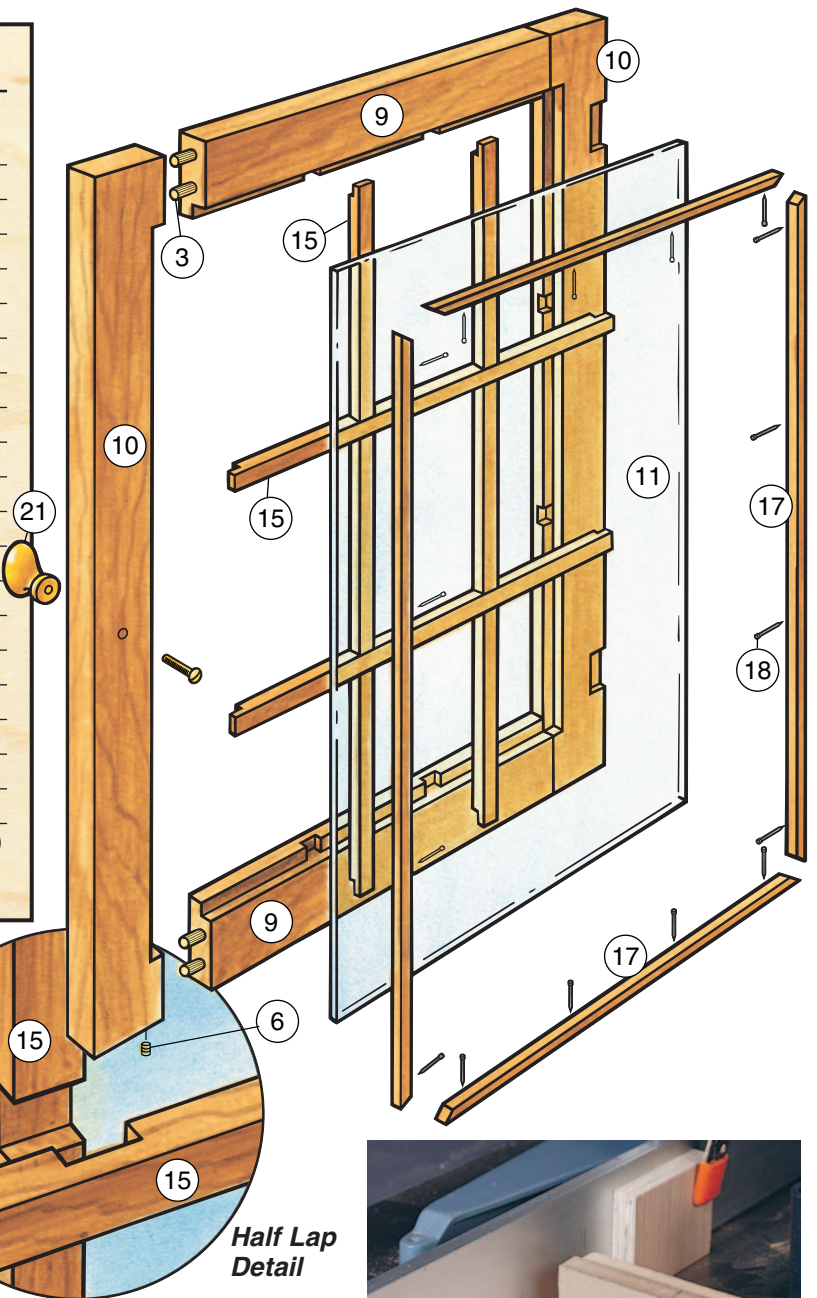


Accurate Holes Without a Drill Press

Don't have a drill press? This Dowl-it jig can be an inexpensive substitute, and it's sold through many woodworking suppliers. Spread the plates of the jig far apart to create a wide, stable base, and chuck your bit in your portable drill. Slip the bit into the appropriate hole in the jig and position the set-up precisely over your drilling location. Now you can bore accurate, straight holes that are perfectly square to the surfaces of part edges or faces.

MATERIAL LIST

	T x W x L
1 Sides (2)	3/4" x 5 1/4" x 24"
2 Top and Bottom (2)	3/4" x 6 3/4" x 18"
3 Dowels (32)	3/8" x 1 1/2"
4 Shelf Supports (8)	1/4" pegs (brass)
5 Hinges (2)	1 1/2" x 1 1/2" (brass)
6 Bullet Catch (1)	1/4" diameter (brass)
7 Back Rails (2)	3/4" x 2" x 11"
8 Back Stiles (2)	3/4" x 2" x 24"
9 Door Rails (2)	3/4" x 2" x 12 1/2"
10 Door Stiles (2)	3/4" x 2" x 23 7/8"
11 Glass (1)	1/8" x 13 1/8" x 20 1/2"
12 Battens (4)	7/16" x 2 7/16" x 20 1/2"
13 Batten (1)	7/16" x 2 11/16" x 20 1/2"
14 Screws (6)	#8-1 1/2" (brass)
15 Mullions (4)	7/16" x 3/4" x 22"
16 Shelves (2)	1/2" x 4 1/4" x 14 7/8"
17 Retaining Strips (4)	1/4" x 5 1/16" x 22"
18 Brads (16)	#17 wire gauge
19 Flush Mounts (2)	1 1/2" x 1 7/8" (steel)
20 Bumpers (2)	1/2" dia. x 1/8" thick
21 Knob (1)	3/4" x 1 1/4" oval (brass)



and, with your router and a rabbeting bit, rout $\frac{5}{16}$ " x $\frac{5}{16}$ " rabbets on the back of the door frame for holding the glass (piece 11). Square the corners of the rabbets with a chisel, then take the frames apart.

Now chuck a $\frac{1}{4}$ " straight bit in your router table and prepare to rout grooves in the back frame pieces for holding the battens (pieces 12 and 13).



Figure 4: To resaw $\frac{3}{4}$ " stock, use a pushstick and make a number of $\frac{1}{2}$ "-deep passes until the blade pokes through the top edge of the stock.

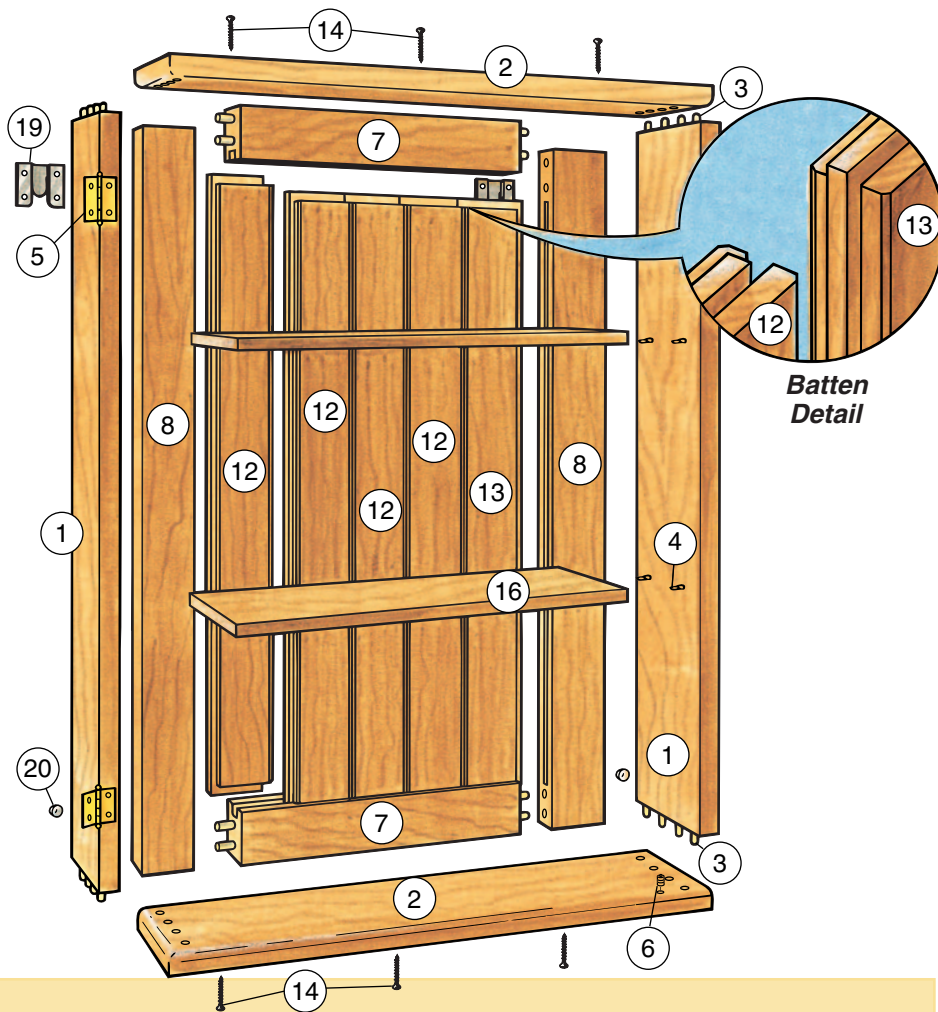
Draw starting and stopping locations on the router fence for routing the stiles, then plow all the grooves.

The stock for the battens and mullions is $\frac{7}{16}$ " thick. If you have a planer, mill some $\frac{3}{4}$ " material to the right thickness. If you don't have a planer, you can resaw thicker stock using a bandsaw or table saw, as shown in *Figure 4*, at left. Once the pieces are properly sized, install a $\frac{1}{4}$ " dado blade in your



Figure 5: After cutting the mullions to length for your door, cut exactly half way through your stock with a $\frac{5}{16}$ " dado blade to form the tenons.

table saw and form the $\frac{1}{4}$ " x $\frac{1}{4}$ " tongues on one edge and both ends of four battens, as shown in the *Back Assembly Detail* (see *Technical Drawings*). One batten (piece 13) is slightly wider than the others and fea-



tures a tongue on both edges. After forming the tongues, reset your blade and fence to plow a groove in the second edge of the appropriate battens.

For decoration, chamfer the edge shoulders of each batten, as shown in the *Batten Detail*, at left. Cut the chamfers with a standard table saw blade tilted 45° and set low enough to avoid nipping the tongues. When the back frame is assembled the chamfers will form V grooves — a feature on many old cabinets.

Now glue the back frame around the battens, leaving the battens unglued to allow for wood expansion. While you're at it, glue-up the door frame as well. After the glue dries, trim the back frame to fit into the cabinet, drill three countersunk pilot holes through the top and bottom into the frame and drive brass screws (pieces 14) into the pilot holes.

Chopping Hinge Mortises by Hand

A sharp chisel and a steady hand can make short work of chopping out a mortise for a hinge, and it's more efficient than setting up a router and jig if you only have a few mortises to do. Begin by holding the hinge in position and outlining the mortise with a utility knife (Step 1). Next, use a chisel to make chamfering cuts around the outline that define the depth of the mortise (Step 2). Wrap up the procedure by making a number of vertical chopping cuts to loosen the waste, and cleaning out the mortise to the depth of the chamfers (Step 3).



Step 2: Chamfer the mortise outline to relieve the edges and define the mortise depth.

Step 3: Chop the mortise with a mallet and chisel, then pare off the waste.



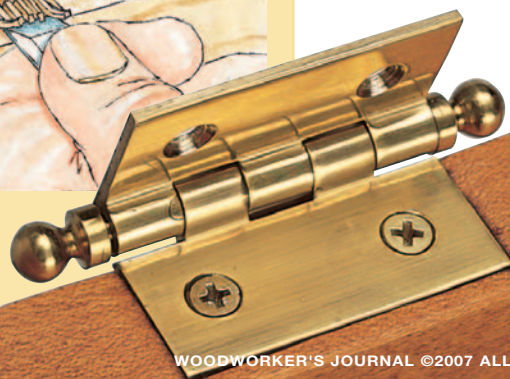
Step 1: Make several passes around the hinge with a knife to cut deep lines.



Making the Mullion Frame

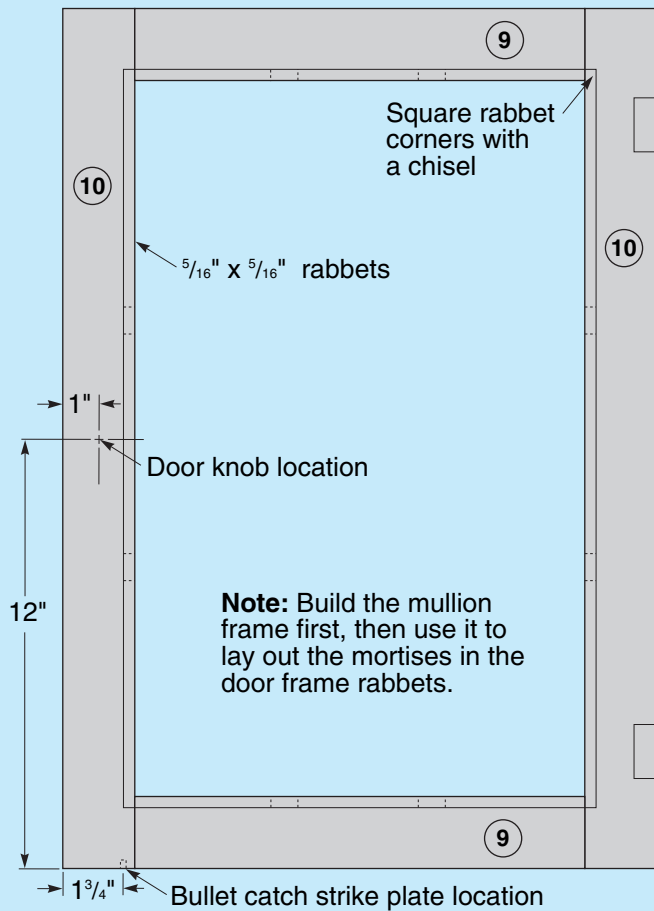
Use the rest of your 7/16"-thick material for the mullions (pieces 15), ripping the stock a little wider than the *Material List* calls for, then hand-planing the edges down to the 3/4" dimension. Check your planing progress often so the edges remain square.

Be sure to measure the door opening before cutting your mullions to length. After cross-cutting the strips, install a 3/4" dado blade, raise it 7/32" and cut



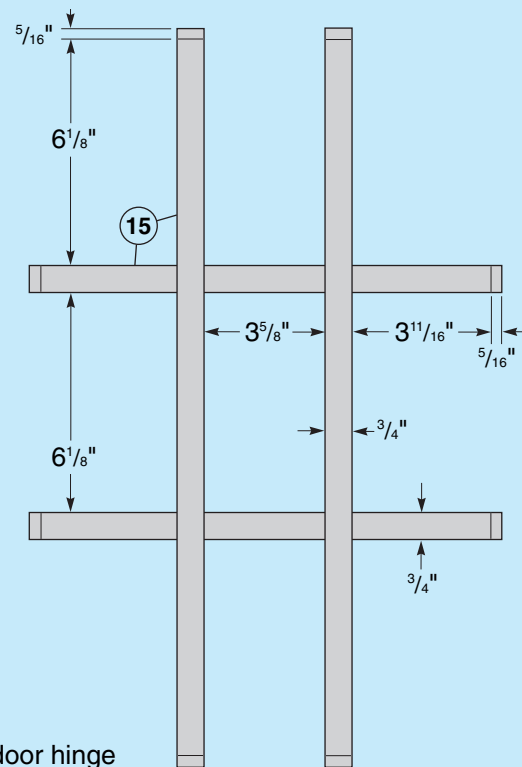
Door Elevations

Door Frame

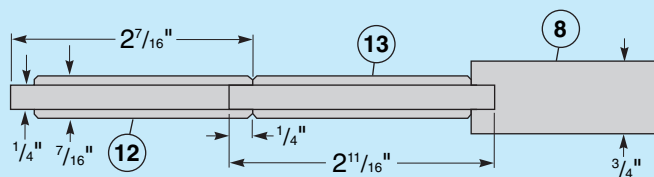


Mullion Frame

Note: Be sure to measure your door frame before cutting the mullions to length



Back Assembly Detail (Top View)





How to Work with Hard Maple

Maple's durability and abundance made it a popular choice among woodworkers during colonial days. In addition to furniture, it was used for farming equipment, shoe lasts, tool handles and other items that needed to withstand a great deal of wear. True to form,

Maple was used extensively on tool handles that needed to withstand lots of wear. Many of these items are now prized antiques.



many of these items can now be found in antique shops — little worse for the wear and featuring the rich patina we've tried to duplicate on this collector's cabinet project.

Working with maple requires very sharp, well-tuned tools. Nothing beats a planed maple surface, and stain will take to it easily. If you sand maple, we recommend stopping at 150 grit. Any finer sanding and you could polish the wood to a point where it won't accept stain well, especially oil stains. Water-based aniline dye stains are the most effective colorants for maple that we've found, because they aren't made of pigments like ordinary stains that are too large to lodge in the wood pores.

When fitting joints made of maple it's important to avoid forcing the pieces together. Because the wood is so hard and doesn't have much give, the pieces may crack to relieve the stress of

a tight joint. This happens particularly often with dovetail joints. The problem can be compounded after spreading glue on the joints, as yellow and white glues will swell the wood and make the joints even tighter. The solution is to cut the joints accurately for a slip fit — with a bare minimum of slop — before gluing them up.

One last suggestion for working with maple has to do with driving screws. Due to the wood's hardness, it's all too easy to break a screw as you drive it into a pilot hole, especially if it's a brass screw. To reduce this possibility, always find a steel screw that matches the brass screw in size and thread count and drive it into the hole first (after dragging it over a block of beeswax). Once you withdraw the steel screw, it creates a threaded hole so you can drive the brass screw easily without stripping or breaking it.

Following these tips will make working with maple more predictable and enjoyable. You're also that much closer to building projects that will rival the antiques in durability.

the half-lap joints (see the *Half Lap Detail* on page 144). Make test cuts in scrap stock and adjust the blade height until the joint is right on the money, then lay out and cut the half laps in your mullion stock, as shown in the *Door Elevation Drawings*. Next, use a $\frac{5}{16}$ " dado blade, the table saw's miter gauge and a set-up block clamped to the fence to cut the half-lap tenons (see *Figure 5*).

Assemble the mullion frame and use it to mark the mortise locations in the door. Trace around each tenon with a utility knife and clean out the mortises with a chisel.

Test the fit of the mullion frame in the door and make any corrections, then glue the frames together. A drop of glue in each mortise and half-lap joint is all it takes.

Hanging the Door and Shelves

Fitting an overlay door is much easier than fitting an inset door, which is one reason this project is so cabinetmaker-friendly. Plane the edges of the door flush with the sides of the cabinet, and trim the door's ends using the table saw to allow for $\frac{1}{16}$ " gaps between the cabinet and door. Using the table saw for this step only works if the doors and cabinet are exactly square. If your project is out of square you'll have to hand-plane all four door edges to fit.

Now use a square and a knife to transfer the hinge mortise locations directly from the cabinet to the door. Remove the waste following the *tint box* technique described on page 145, then mark and drill pilot holes for the hinge screws. Mount the door in the cabinet to check its swing and fit, then remove it for installing the glass.

Cut shelves (pieces 16) for your cabinet and rip retaining strips (pieces 17) for holding the glass in the door. Miter the retaining strips to length and drill pilot holes for the brads (pieces 18). Don't fool yourself into thinking the pilot holes are unnecessary — without them you're bound to split the strips or bend the nails.

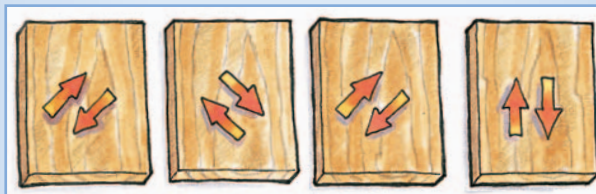
Finishing Up

Sand the cabinet to 150 grit, then select your stain and topcoat. To make the cabinet look like an antique, we colored the wood with Medium Amber Maple aniline dye stain. Mix the water-based stain full strength and apply it with a sponge. After allowing it to soak in for several minutes, wipe off the excess. If the color isn't dark enough for you, apply more stain. On the other hand, if the color is too

Quick Tip

Strategic Sanding for a Smooth Finish

Starting with a coarse grit (80 or 100), work successively up through finer grit sandpaper. Don't skip grits along the way. Use a pattern of sanding in alternating angles across the grain until you finish with 180 or 220 grit. Use garnet paper for the final pass, working with the grain.



dark, wipe the cabinet with a damp rag to remove some stain. Topcoat with four coats of an oil/varnish finish like Nordic Oil to give the project a "close to the wood" matte sheen.

Secure the back assembly in the carcass and install the flush-mount fasteners (pieces 19), as shown in the *Back Elevation*. To keep the cabinet hanging plumb after installing the flush mounts, we stuck a small adhesive bumper (pieces 20) to each bottom back corner. Now drill a pilot hole in the door for the knob (piece 21) and install the glass with retaining strips and brads.

Finally, wrap up construction by hanging the door. Reinstall the door hinges on the cabinet and tap a bullet catch into its hole in the cabinet. Drill a corresponding hole in the bottom edge of the door and install the strike plate for the catch (see *Door Elevations* on the *Technical Drawings*). Another approach to a door catch would be to install a pair of rare earth magnets into shallow recesses with epoxy.

As you can see, this is a simple cabinet, but to really do it justice the building process still requires care and time. Learning a few tricks of the trade on projects like this will make it easy to step up to more complicated projects later on.