

Wall Cabinet

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1 Introduction

The following plans are based on plans published in *Fine Woodworking*, Issue 146, pages 108 - 113.

2 Plans

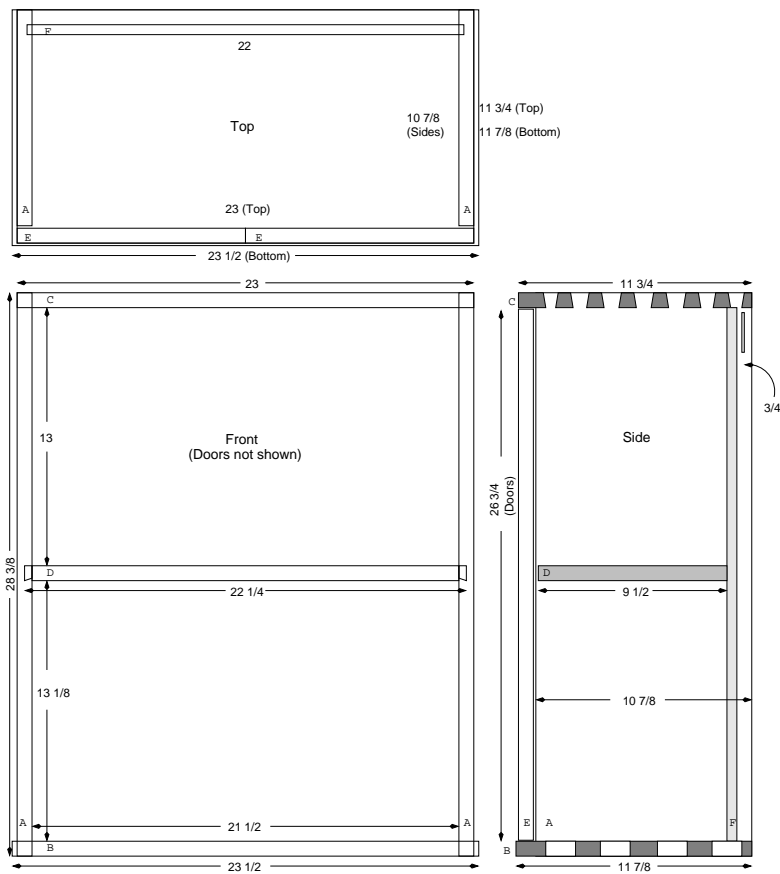


Figure 1: Carcase construction: Through dovetails connect the top to the sides and wedged through mortise and tenon joinery connect the bottom to the sides. The middle shelf is supported in a housed sliding dovetail joint. The back assembly is fitted into a 1/4" dado cut into the top, sides and bottom. Construction details for the door and back assemblies are in a separate figure.

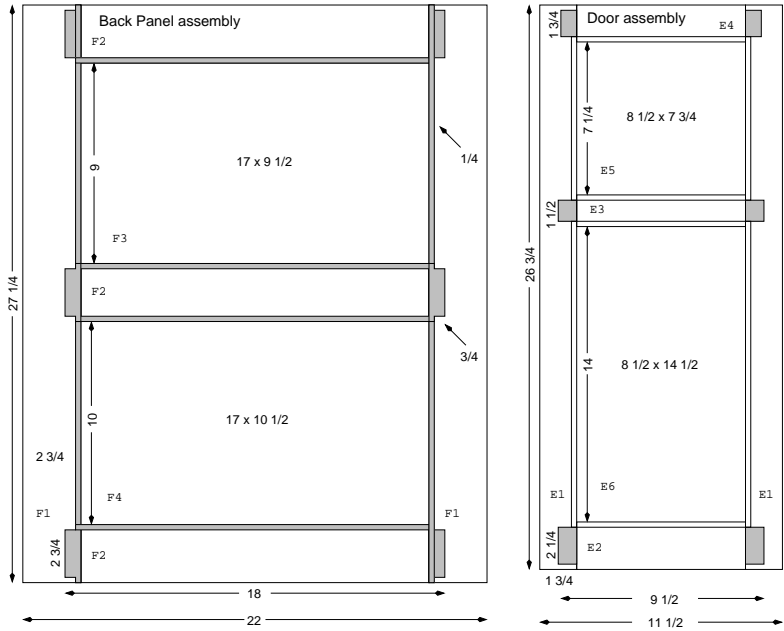


Figure 2: Frame panel assemblies: The back panel assembly consists of 1/2" thick rails and stiles, with centered 1/4" thick, 1/4" deep grooves in the edges to support the panels. The stiles have 3/4" deep haunched tenons that fit into mortises in the rails. The door panel assembly consists of 3/4" thick rails and styles, with centered 1/4" thick, 1/4" deep grooves in the edges to support the panels. The stiles have 3/4" deep tenons that fit into mortises in the rails. There is also a 1/4" wide, 1/8" deep rabbet running along the inside of the rails and stiles to provide some interest in the assembly where the supports meet the panels.

3 Cut List

Key	Qty	Description	T	W	L	Notes
A	2	Side panels	3/4	10 7/8	28 3/8	Dovetails cut into top of side, tenons cut into bottom, mortises for back assembly and French cleat, sliding dovetail for middle shelf
B	1	Top	3/4	11 3/4	23	Dovetails cut into sides
C	1	Bottom	3/4	11 7/8	23 1/2	Through mortises cut into sides
D	1	Middle shelf	3/4	9 1/2	22 1/4	Sliding dovetails cut into ends
E	2	Door assembly	3/4	11 1/2	26 3/4	
F	1	Back assembly	1/2	22	27 3/8	
E1	4	Door style	3/4	1 3/4	26 3/4	Mortised for rails, grooved for panels, decorative rabbet around outside edge
E2	2	Bottom door rail	3/4	2 1/4	9 1/2	3/4 deep tenons on ends, grooved for panels, decorative rabbet around outside edge
E3	2	Middle door rail	3/4	1 1/2	9 1/2	3/4 deep tenons on ends, grooved for panels, decorative rabbet around outside edge
E4	2	Top door rail	3/4	1 3/4	9 1/2	3/4 deep tenons on ends, grooved for panels, decorative rabbet around outside edge
E5	2	Top door panel	5/16	8 1/2	7 3/4	Back rabbeted to fit into grooves in rails and stiles
E6	2	Bottom door panel	5/16	8 1/2	14 1/2	Back rabbeted to fit into grooves in rails and stiles
F1	2	Back stile	1/2	2 3/4	27 1/4	Mortised for rails, grooved for panels
F2	3	Back rail	1/2	2 3/4	18	3/4 deep haunched tenons on ends, grooved for panels
F3	1	Upper back panel	1/2	17	9 1/2	1/4" thick 1/4" deep tongue on all four sides to fit into groove in rails and stiles
F4	1	Lower back panel	1/2	17	10 1/2	1/4" thick 1/4" deep tongue on all four sides to fit into groove in rails and stiles

4 Description

Begin by cutting the sides, top, and bottom to size and making sure each piece is square and flat, and that the two sides are the same. I used a crosscut and rip hand saw to size the boards. Squaring the end grain is best done with a good shooting board, but I simply planed to the square line using a #5 $\frac{1}{2}$ followed by a jointer plane. The other edges are squared with a jointer plane. I used a #5 $\frac{1}{2}$, #5, jointer plane, #4 and a smoothing plane to flatten the boards. Be sure to check for twisting using winding sticks.

Once you have the main carcass, mark out and cut the dovetails on the top corners of the case. I used a 1:6 ratio, with the narrower width of the tails at 3/4", spaced evenly across the edge. Cut the pins with a dovetail saw, chisel out the waste and mark the tails from the pins. Saw out the tails, remove the waste with a coping saw and chisel down the lines.

Next, form a long tenon on the bottoms of each of the sides by rabbeting away the material on both sides. The tenons should be deep enough that they will just extend past the bottom of the case. Next, remove some of the material to form three or four smaller tenons, evenly spaced across the side. Carefully mark the location of the mortises on the bottom using the tenons you've just cut. Finally, drill two small holes through the bottom of each tenon, and saw down to these holes – these gaps are where the wedges will go when we assemble the case.

Cut the mortises by drilling out most of the waste with a brace and bit (or breast drill) and chiseling to the lines. After the mortises are cut square, use a guide block cut at an angle to chop the bevel in the edge of the mortise. Be sure to do this from the bottom of the case so the mortise is larger at the bottom than the top. The wedges will be hammered into the slots in the tenon and will fill the tapered mortise to form a joint similar to a dovetail joint that will secure the bottom to the sides.

Don't assemble the case yet! The next step is to cut the stopped, sliding dovetail for the middle shelf. I cut this by chiseling out the front of the slot so that I can run a dado plane into the front of the slot without blowing out the front of the case. The slot should be narrower than the shelf. After the slot is completely cut, use a side rabbet plane set at an angle to slowly bevel the bottom edge of the dado inward, forming the female end of a sliding dovetail. Once you are satisfied with the angle, this angle needs to be cut into the edge of the shelf. One way to do this is to cut the edge with a stairsaw or a backsaw with a batten affixed to it, and then chisel at an angle down to the saw kerf. If the shelf is still too thick to fit, you can cut a rabbet on the top edge of the shelf. You'll also have to cut a notch in the front of the shelf so it will fit past the stopped dado.

Next, begin assembling the back assembly. Cut, square, and flatten the rails, stiles and the frames. Next, cut the grooves in the interior edges of the rails and stiles (and on both sides of the middle rail. I use a #45 for this operation. At the top, middle and bottom of each stile, cut a deeper mortise into the grooves for the rail tenons. These tenons are formed with a back saw. Cut a haunch in one edge of the tenons for the top and bottom rails. Finally, rabbet the back and front edges of the frames so they will fit into the grooves. Dry fit, and then glue the rails and stiles together, leaving the panels to float. Make sure this assembly is square in the clamps!

Now cut the grooves in the back of the case for the back assembly you have just finished. Again, a #45 is up to this task. Also cut a small mortise at the top of each side piece, just behind the groove, for the French cleat. Cut this piece from some scrap wood so it will fit into the mortises, with a bevel facing the front of the cabinet. Finally, route out the mortises for the knife hinges you'll use to install the doors.

Finally, we're ready for the assembly. It is complicated, so be sure you have run through the order of operations before doing it with glue. First, bring the French cleat up to the mortises in the sides, and carefully attach the sides to the top by fitting the dovetail joints together. Be sure the French cleat is installed correctly as you connect the top to the sides.

Next the middle shelf needs to be slid into the sliding dovetail. After it is in place, slip the back assembly into the grooves in the back of the case. Finally, fit the side tenons into the mortises in the bottom of the case. Turn the case upside down and hammer the wedges into the slots in each tenon. Be sure the bottom is completely seated and clamped before hammering the wedges home.

Now can let the glue dry. Remove the clamps, cut off the wedges and plane the tenons and dovetails flush with the adjoining surface.

While the case dries, build the two doors using the same methods used to construct the back assembly. The only difference with the doors is that the grooves for the panels do not run all the way to the ends of the stiles (so you can't see the groove from the top and bottom once the doors are assembled). There is also a decorative rabbet cut into the interior edges of the rails and stiles. If you really want to do it right, cut the corners of this detail at a 45 degree angle and miter these corners together. The panels have a rabbet on the back side so they fit into the grooves.

The final assembly is to affix the knife hinges to the door and the case, and connect the two. You can construct door handles from scrap wood or buy some hardware.

For the finish on my cabinet, I painted all of the pieces except the door panels with an iron oxide / vinegar solution (rusty metal dissolved in white vinegar). This blackened the red oak I was using to a dark gray color. I used super blond dewaxed shellac over this, rubbed it down to a satin sheen and finished it with paste wax. The door panels were made from hard maple to contrast the dark wood of the case. They were finished with boiled linseed oil followed by super blond dewaxed shellac.

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