

# Log Cabin Writing Desk

Rustic tradition meets modern style.



by Chris Cander and Mark Love



**COZINESS IS BUILT RIGHT INTO THIS DESK**, because it was inspired by a log cabin. Squint a bit and you'll see logs and chinking—the muck-and-straw mixture pioneers depended on to keep out drafts. Squinting isn't necessary to appreciate the desk's spacious writing surface and ample storage or its Arts and Crafts motifs and modern style.

Like a log cabin, this desk is heavily built; its legs are made from 8/4 walnut, its rails from 6/4 walnut and its figured maple top is fully 1" thick. (Thankfully, it's built using modern woodworking tools rather than traditional log cabin-building tools!) Figured maple splines fitted between the rails create the chinking.

## The legs

Mill the legs to final size as rectangular blanks (A1, Fig. A, page xx and Cutting List, page xx). Two of the legs go on the paneled front; three legs separate the drawers on

the back. The front legs have 1/2" wide mortises on the inside edge and the adjacent inside face. These mortises are stepped, so they don't intersect. The back legs have mortises on the inside face only. These 1/2" mortises are always spaced 11/16" from the leg's inside edge (Figs. B, D and E).

Lay out the mortises and rout them using a plunge router with a guide fence and a 1/2" upcut spiral bit (**Photo 1**). Complete each mortise by making a series of incrementally deeper passes. Rout the stepped mortises in stages. First, rout full-length to the shallow depth. Then adjust the plunge depth and rout the deep portion. Similarly, lay out mortises for the splines and rout them with a 3/8" upcut spiral bit. These mortises are always spaced 1/2" from the leg's inside edge. Square the ends of these mortises with a chisel.

Shape the legs (Fig. C). Cut the tapers a tiny bit wide to allow removing the saw marks by making a pass on the jointer or with a hand plane. Use a jar or a lid to draw the arcs on the feet. Then saw the curves and sand them smooth. Cut 3/8" deep x 3/8" square holes for the decorative buttons. A mortiser does the job in one step, but you can also drill the holes and square them with a chisel.

## The rails

Mill stock for the rails (A2–A4) and cut them to final dimensions. Note that 1) the rail tenons are always offset toward the outside face, and 2) when joint is assembled, the rail's inside face is always flush with the leg.

Use a dado set and a sled or a miter gauge with a stout support fence to cut the rail tenons (**Photo 2**). Position the rip fence to determine the tenons' length. Cut the inside cheeks first, matching their shoulder height to the 11/16" distance between the edge of the leg and the 1/2" mortises. Lower the blade to cut the outside cheeks. Start by making a shallow cut on one rail, so the tenon is too thick to fit the mortise. Then make addi-

**Rout mortises** for the rails and spline in the legs.



**Cut tenons** on the rails with a dado set. The tenons are offset from center, so cut one cheek and then adjust the blade height to cut the other cheek.



**The tenons** that go in the front legs are stepped to nest together. This creates a long tenon on each rail and a haunch for additional strength. The mortises are similarly stepped. Round the ends of the tenons to match the mortises.

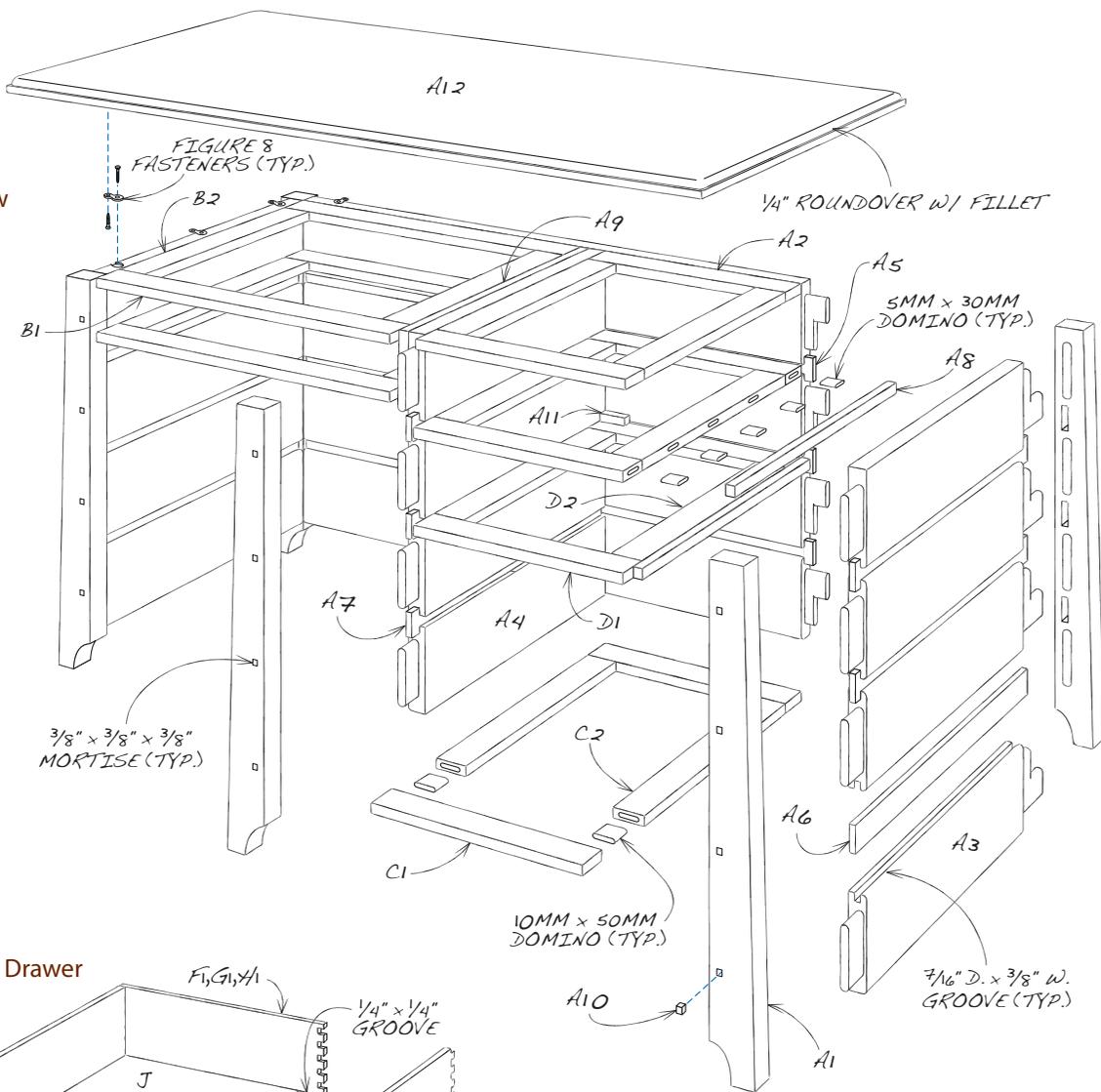


**Test fit all the panel assemblies.** The rails for the side panels (shown here) have wide tenons at the back and stepped tenons at the front.

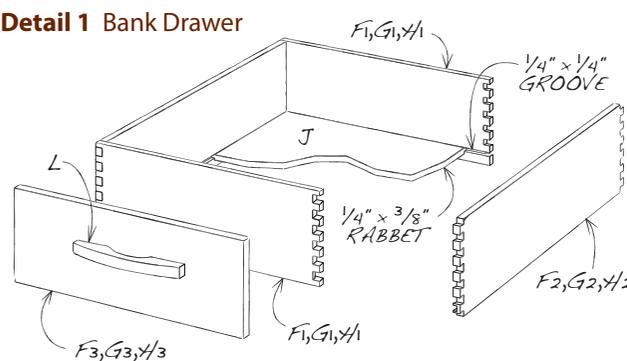


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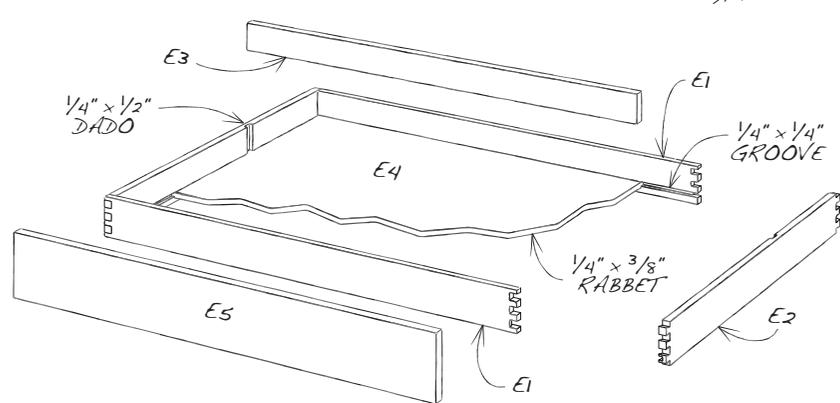
**Fig. A**  
Exploded View



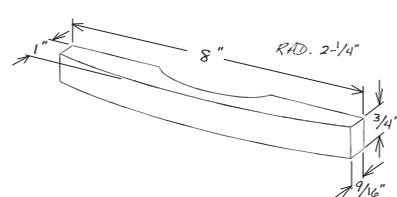
**Detail 1** Bank Drawer



**Detail 2** Pencil Drawer



**Detail 3** Drawer Pull



tional passes, raising the blade in small increments until the tenon fits without binding or wobbling. Only the corner of the tenon will fit into the mortise at this point, so it's a good idea to verify the correct thickness with a dial caliper. When you've dialed in a perfect fit, finish cutting all tenon cheeks.

Reposition the blade and stand each rail on edge to cut the end shoulders. Next, use the band saw equipped with a fence to cut the stepped tenons. Then round the ends of the tenons to fit mortises (Photo 3).

### The panels

Leave square the inside edges of the drawer bank rails and the top edges of the four top rails. Round over the rest of the rail edges.

Cut centered grooves for the decorative spline on the appropriate rail edges. Mill the figured maple spline stock to fit the grooves and then cut the splines (A5–A7) to length and width. Apply one coat of finish to the splines.

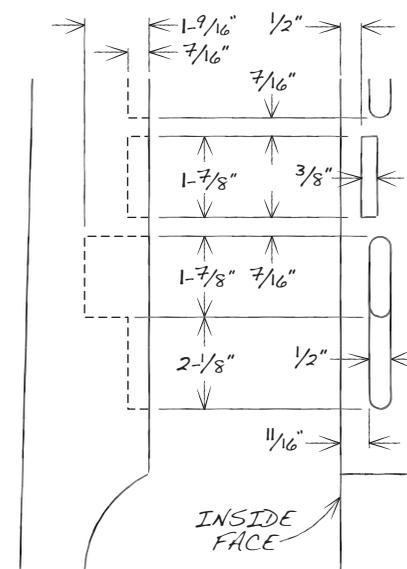
**5** **Rout mortises** for the inside panel's rails and splines with in the front panel, which is clamped together without glue. The inside panel's rails have wide tenons on both ends.



**6** **Assemble the web frames** with loose tenons. A Domino joiner works like a biscuit joiner, but it creates mortises rather than slots.

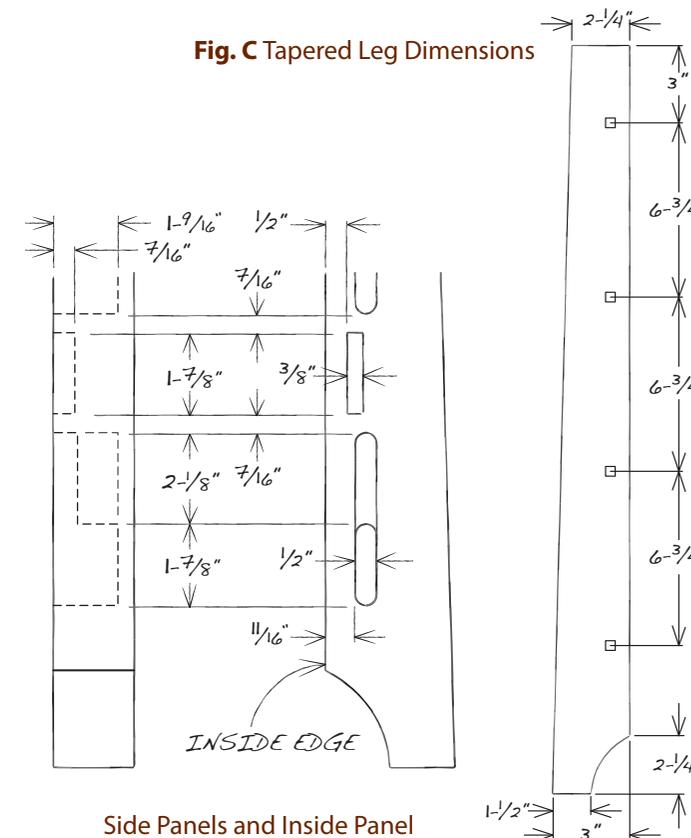


**Fig. B** Leg Mortise Dimensions



Front Panel

**Fig. C** Tapered Leg Dimensions



Side Panels and Inside Panel



Learn about figured wood at  
[AmericanWoodworker.com/WebExtras](http://AmericanWoodworker.com/WebExtras)

Learn about spiral router bits at  
[AmericanWoodworker.com/WebExtras](http://AmericanWoodworker.com/WebExtras)



**7** Install small **Dominoes** in both sides of the assembled web frames. They'll position the frames in the case.



**8** Burnish the web frames so the drawers slide smoothly. Melt paraffin wax into the wood with an iron. Allow the wax to cool, then vigorously rub the surface with an abrasive pad.

Test-fit each panel assembly without glue (**Photo 4**). Mark the top edges of the two middle rails on the panels that form the drawer bank (four rails, total). Disassemble the panels and carefully glue cleats (A8) on the marked top edges (Fig. F). These cleats allow installing the two middle web frames. Finish sand all the parts to 220 grit.

Rout mortises in the front assembly for the inside rail tenons and splines (**Photo 5** and Fig. D). Clamp the assembly square and make sure each rail is correctly positioned. Use a T-square and measure from the assembly's leg to locate the 1/2" mortises. Make sure these mortises perfectly align with the mortises you've already cut on the leg that fits the inside rails. Position a straightedge to guide the router, then plunge-rout the mortises. Repeat the procedure to rout the 3/8" mortises.

### The web frames

The web frames support the drawers, provide structure for the case and continue the chinking detail (note that the two middle web frame stiles are made of curly maple). Make each frame about 1/8" oversize in width, so it can be trimmed to fit just before installation. Use Dominoes or biscuits to join the stiles and rails (B1-B2, C1-C2, D1-D2 and **Photo 6**). Glue and clamp, making sure every frame is square and flat. Mill centered mortises for Dominoes (or biscuit slots) in both sides of each frame. Install the Dominoes (**Photo 7**). Then sand the frames to 180 grit and burnish their top surfaces with paraffin (**Photo 8**).

### The sides

Glue the legs and rails together to create the two side panels (**Photo 9**). Make sure the rails are spaced exactly 3/4" apart. Using the same spacing, glue the inside rails to the middle back leg—this creates the inside panel. Then glue on the spacer (A9). The spacer builds out the top rail for attaching the pencil drawer face frames. Its bottom edge should be flush with the outside

edge of the leg; its top edge will protrude slightly, because of the leg's taper. Install the inside panel splines without glue.

The top, bottom and middle web frames fit between one side panel and the inside panel form the drawer bank. Transfer the mortise locations from these web frames to the side panel and the inside panel. Then cut the mortises in the rails and cleats (**Photo 10**). Burnish the inside surfaces with paraffin to help the drawers slide easily. (Keep wax away from the open joints and the leg fronts.) Repeat the process to rout mortises for the two pencil drawer web frames.

### The case

Assemble the front panel rails and splines without glue. Square this assembly and then glue and clamp the inside panel to it (**Photo 11**). As before, don't glue the splines. Make sure the inside panel is square to the front panel. Note: This unusual assembly will be somewhat unstable as the following steps are completed.

Apply glue and slide the drawer bank web frames into position against the inside panel. Similarly, apply glue and slide on the drawer bank side (**Photo 12**). Make sure everything's aligned and square; then clamp. Repeat the process to install the pencil drawer web frames and the remaining side panel.

Create the decorative buttons (A10) from a length of wenge milled just over 3/8" square. Create facets on the end using a disc sander with a worn-out 220 grit disc. Clamp a fence to the table, facing the disc about 10° from perpendicular. Set the wenge on the fence and gently push it forward to touch the belt. Turn it, and repeat the process three more times. Cut off the end to create a button that's about 3/8" long. Ease the rough-cut corners by dragging the plug at an angle across a piece of sandpaper. Dab a bit of glue inside the hole and gently tap in the button, using a piece of leather between the hammer and the button to prevent marring.

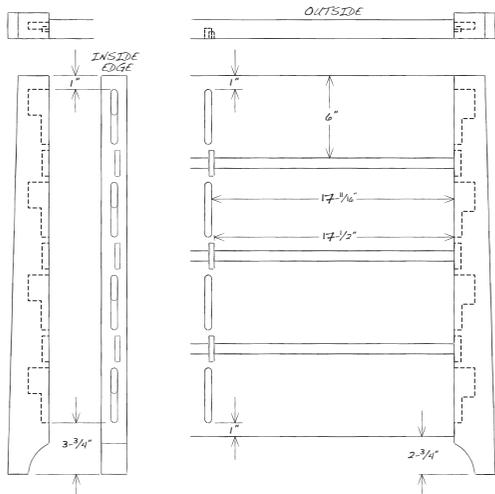
**9** Glue the side panels together. Apply glue to the large mortises in the legs and to the rail tenons. Don't glue the splines—they float between the rails to disguise seasonal movement.



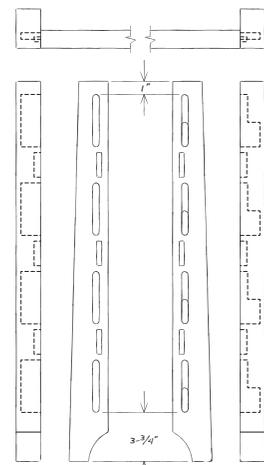
**10** Cut mortises for the web frames in the side panels and in the inside panel.



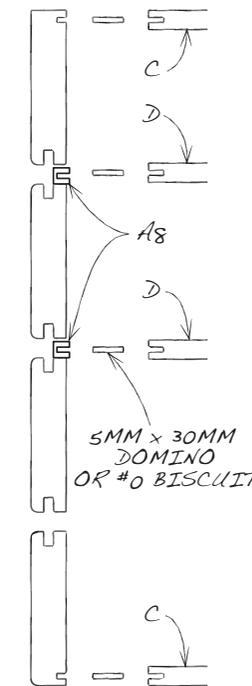
**Fig. D** Front Panel Mortise Layout



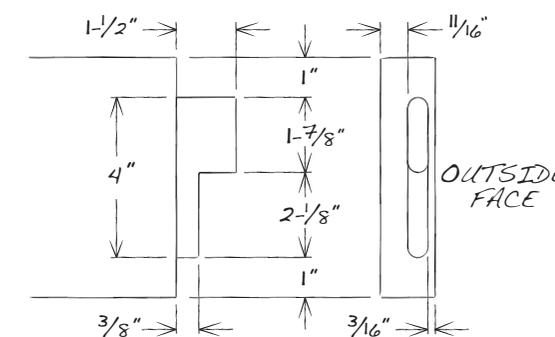
**Fig. E** Side Panel Mortise Layout



**Fig. F** Web Frame Locations



**Fig. G** Tenon Dimensions





**11** **Glue the inside panel assembly** to the front panel rails, which are assembled without glue. Before clamping, make sure the front assembly is square.



**12** **Install the web frames and the side panels.** The parts simply slide into position because all the joints are oriented the same way.



**13** **Fit each pair of drawer sides** to allow seasonal movement. Then cut the drawer fronts and backs to match.



**14** **Build the top.** It's the perfect place for extraordinary wood such as this curly maple. The same stock was used to make the splines that ornament the case.

## The drawers

Rough out the drawer box parts (E1–E4, F1–F2, G1–G2, H1–H2 and J) and let them sit overnight to stabilize. Then mill the parts exactly as wide as the height of the spaces they will fit into.

Use a dovetail jig to cut through dovetails in the box parts. Cut grooves for the drawer bottoms and rabbet the underside of the drawer bottoms to fit the grooves. Cut dadoes in the pencil drawer sides for the divider.

Mark each drawer side according to where it will go and slide it into the appropriate opening in the case (**Photo 13**). The sides will either fit very tightly or not at all. Joint the top edges (away from the dado) to create adequate room for seasonal movement between the drawer and the frame above it. The optimal amount depends on a number of factors, but a good rule of thumb is to allow at least 1/16" for the top two drawers and slightly more for the bottom drawer. Sand and finish the inside faces of all the drawer box parts. Assemble the drawer boxes and mark where the sides meet the fronts and backs. Then joint the fronts and backs to match the sides. Sand and finish the inside faces of the five main drawer box parts—tape off the glue joints before applying the finish. Then glue and clamp together the drawer boxes. Sand and finish the pencil drawer divider and install it.

Test-fit the boxes in the drawer openings. The fit is ideal if you can pull the box two-thirds out and then close it by pushing with a finger at the side of the front, rather than the center. If the fit is too tight, lightly plane or sand one side and try again. Burnish the outside faces and bottom edges of the drawer box sides with paraffin.

Cut, fit and install the drawer fronts (E5, F3, G3 and H3). The bank's top drawer front extends above the box to cover the web frame, its bottom drawer front extends below the box, and its middle drawer front is flush, so it fits between the middle web frames (which protrude farther than the

top and bottom frames). The pencil drawer front extends above and below the drawer box. Angle the end to match the slope of the inside panel's leg.

Cut blanks for the drawer pulls and shape the curves by sawing and sanding (Fig A Detail 3). Center the pulls on the drawer fronts and fasten them with screws from inside the drawer box.

## The top

Mill the top boards to within 1/4" of the finished thickness and let them stabilize overnight. The next day, mill the boards to final thickness. Planing figured wood such as the curly maple shown here is likely to cause substantial tearout, unless you know this nifty trick. Simply dampen the surface of the board with a sponge just before running it through the machine. Dampening virtually eliminates tearout and it won't harm your machine as long as you keep the tables waxed and dry off the cutterhead as soon as you're done.

Lay out the boards in a pleasing arrangement that's about 1" oversize in width. Then cut the boards to length (about 2" oversize). Joint the edges (get out the sponge again). Then glue and clamp the top.

Cut the top to final width and length and then sand it to 180 grit.

Create the edge profile using a 1/4" roundover bit with a smaller bearing installed to create the fillet. Rout slots about every 10" around the top of the case and install the figure 8-style desktop fasteners. These fasteners swivel to allow the top's seasonal movement. Center the top on the case and install additional screws through the fasteners to secure it.

## The finish

Remove the top. Sand all the parts to 180 grit—be sure to remove the scratches from the previous grit with each step up. Then apply your favorite finish. Tip: oil finishes look better when the surfaces are sanded to a higher grit. 🐿️

## SOURCES

Rockler Woodworking and Hardware, www.rockler.com, (800) 279-4441, Desk Top Fasteners, #21650, \$3.89 for 8.

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## Cutting List

Overall Dimensions: 60" L x 30" W x 30" H

Section	Part	Name	Qty.	Material	Th x W x L
Case	A1	Leg	5	Walnut	1-7/8" x 3" x 29" (a)
	A2	Front rail	4	Walnut	1-3/8" x 6" x 53" (b)
	A3	Side rail	8	Walnut	1-3/8" x 6" x 26-3/4" (c)
	A4	Inside rail	4	Walnut	1-3/8" x 6" x 26-3/4" (d)
	A5	Front spline	3	Curly Maple	3/8" x 1-3/4" x 50-11/16"
	A6	Side spline	6	Curly Maple	3/8" x 1-3/4" x 24-7/16"
	A7	Inside Spline	3	Curly Maple	3/8" x 1-3/4" x 23-11/16"
	A8	Web frame cleat	4	Walnut	5/8" x 5/8" x 23-3/4"
	A9	Spacer	1	Walnut	1" x 4" x 23-3/4"
	A10	Decorative plug	20	Ebony	3/8" x 3/8" x 3/8" (e)
	A11	Drawer stop	2	Maple	1/2" x 3/4" x 1-1/2"
	A12	Top	1	Curly Maple	1" x 30" x 60"
Web Frames	B	Pencil drawer	2	Maple	3/4" x 30-3/4" x 24-1/2" (f)
	B1	Stile	4	Maple	3/4" x 2-1/2" x 30-3/4"
	B2	Rail	4	Maple	3/4" x 2-1/2" x 19-1/2"
	C	Drawer bank top and bottom	2	Maple	3/4" x 17-1/8" x 24-1/2" (f)
	C1	Stile	4	Maple	3/4" x 2-1/2" x 17-1/8"
	C2	Rail	4	Maple	3/4" x 2-1/2" x 19-1/2"
	D	Drawer bank middle	2	Maple	3/4" x 17-1/8" x 24-3/4" (f)
	D1	Stile	4	Curly Maple	3/4" x 2-1/2" x 17-1/8"
D2	Rail	4	Maple	3/4" x 2-1/2" x 19-3/4"	
Drawers	E	Pencil drawer	1	Maple	4" x 30-5/8" x 24-5/8"
	E1	Box front and back	2	Maple	1/2" x 2-1/2" x 30-5/8"
	E2	Box side	2	Maple	1/2" x 2-1/2" x 24"
	E3	Divider	1	Maple	1/2" x 2" x 30-1/8"
	E4	Bottom	1	Baltic Birch	1/2" x 23-1/2" x 30-1/8" (g)
	E5	Drawer front	1	Walnut	5/8" x 4" x 31" (h)
	F	Top drawer	1	Maple	6" x 17" x 24-5/8"
	F1	Box front and back	2	Maple	1/2" x 5-1/4" x 17"
	F2	Box side	2	Maple	1/2" x 5-1/4" x 24"
	F3	Drawer front	1	Walnut	5/8" x 6" x 17"
	G	Middle drawer	1	Maple	6" x 17" x 24-5/8"
	G1	Box front and back	2	Maple	1/2" x 6" x 17"
	G2	Box side	2	Maple	1/2" x 6" x 24"
	G3	Drawer front	1	Walnut	5/8" x 6" x 17"
H	Bottom drawer	1	Maple	12-3/4" x 17" x 25-1/8"	
H1	Box front and back	2	Maple	1/2" x 12" x 17"	
H2	Box side	2	Maple	1/2" x 12" x 24"	
H3	Drawer front	1	Walnut	5/8" x 12-3/4" x 17"	
J	Bank drawer bottom	3	Baltic Birch	1/2" x 16-1/2" x 23-1/2" (g)	
L	Pull	3	Curly Maple	3/4" x 1" x 8"	

### Notes:

- a) Width tapers to 2-1/4" at the top; 2-5/8" radius cutout at bottom.
- b) 1-1/2" long stepped tenons on both ends.
- c) 1-1/2" long tenons on both ends; the tenons are stepped on one end.
- d) 1-1/2" long tenons on both ends.
- e) One end is faceted to form center point.
- f) Web frame width is 1/8" oversize; trim the assembled frame to fit the case.
- g) 1/4" x 3/8" rabbet all around bottom face.
- h) Cut length to fit.