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Cherry China Cabinet

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- Exploded view and elevation drawings.
- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.

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Cherry China Cabinet

Inspired by readers' requests, this china cabinet features classic clean lines, gentle arches and hidden hardware. It's amply sized to store all your finery, and the upper cabinet will proudly display its contents through glass doors. Made carefully, this could be the signature project for your dining room or a wonderful family gift.

Of all the readers' requests we've received over the years for furniture plans, the perennial leader has been for china cabinets. With that in mind, the design team at *Woodworker's Journal* developed this beautiful project that, with care and patience, is well within the abilities of any intermediate to advanced hobbyist. It calls for full 1"-thick solid cherry boards and 1/2" and 3/4" cherry veneered plywood, all of which you should source before heading for the shop.

The cabinet is made up of two distinct parts. The base houses five sliding shelves behind a pair of veneered doors. The upper section was designed to proudly display family treasures on its glass shelves, keeping them dust-free behind a pair of large glass doors.

Building from the Bottom Up

For the best effect, the upper and lower units of this cabinet should flow together visually. The way to achieve this is to run continuous grain all the way up the side panels. So, the first step in construction is to edge-glue enough hardwood to make these two panels, each large enough to yield both a lower and an upper side. Make each side blank 1" x 17½" x 86", and you'll have sufficient material for all the side pieces.

After the glue dries, sand the panels and begin your machining by cutting the base sides (pieces 1) to size. Then refer to the *Drawings* on page 44 to lay out the leg cutouts. Apply masking tape where the cut lines will be, to reduce tearout. On the tape, mark the locations of the two legs in each side, then cut away the waste with a jigsaw.

There is a horizontal divider (piece 2) above the bottom shelf (piece 3) in the base cabinet, and the next step is to rout stopped dadoes for them (using a straightedge as a guide) in each base side. The divider is cut from nominal 3/4"-thick stock: you may find it's actually a hair shy of that. Plow the dadoes for the horizontal divider and the cabinet bottom, and square up their ends with a sharp chisel. Both dado locations are shown on the *Drawings*. Next, with your straightedge clamped in place, plow a 3/4"-wide by 3/8"-deep dado across the top face of the horizontal divider—running from the front to back—to receive the vertical divider.

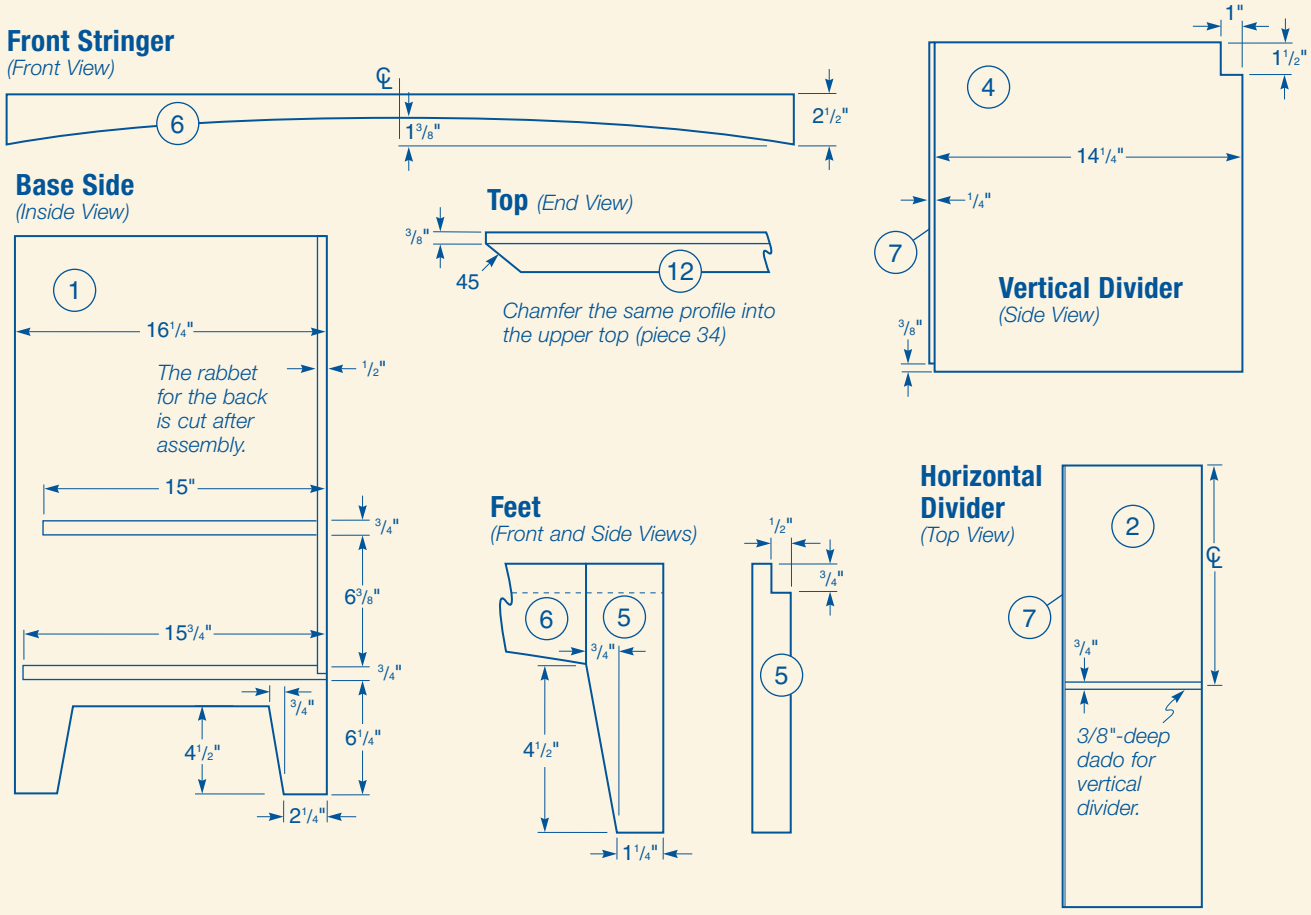
Dividers, Stringers and Feet

With the base sides completed, the next step is to lay out the vertical divider (piece 4) and notch its back corner. Cut the back and front feet (pieces 5) to size and shape next, and give them a thorough sanding without softening their edges. The front stringer (piece 6) is solid hardwood: lay out a gentle arc along its bottom edge by bending a piece of hardboard or 1/4" plywood along the arc, clamping it in place and drawing the line. Cut the arc on the band saw, then sand it thoroughly. A large drum sander in the drill press works best for this, or you can use part of the cutoff to make an arched sanding block. The back stringer (also piece 6) has no arc, since it's not visible. Trim the front edges of the dividers with 1/4" hardwood (piece 7) before you begin assembly.

Attach the feet to the stringers with biscuits, glue and clamps, then sand them thoroughly after the glue has cured.

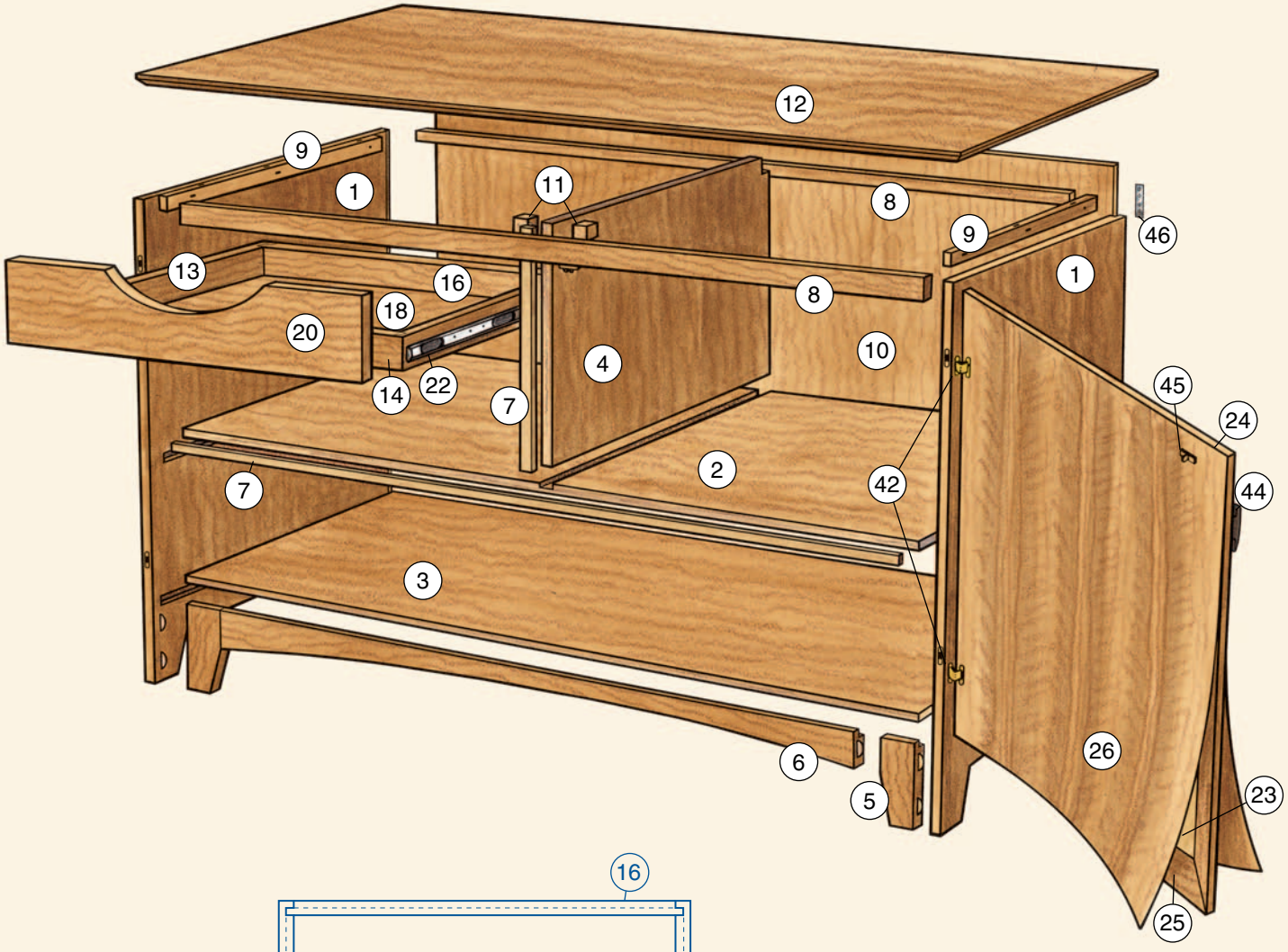
Jointing a dead-straight edge on the 1" thick glued-up side blanks is the first step in accurately machining the carcass.

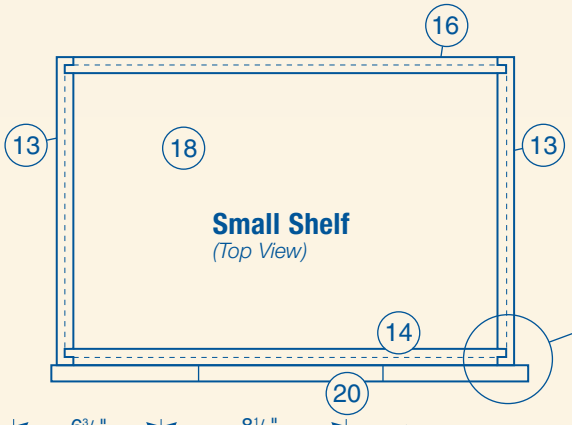
Lower Cabinet Exploded View

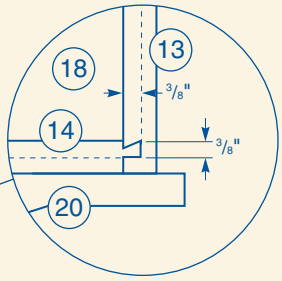


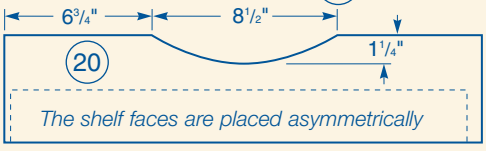
MATERIAL LIST – *Lower Cabinet*

		T x W x L
1	Base Sides (2)	1" x 16¼" x 29"
2	Horizontal Divider (1)	3/4" x 14¼" x 46"
3	Bottom (1)	3/4" x 15¼" x 46"
4	Vertical Divider (1)	3/4" x 14¼" x 15¼"
5	Feet (4)	1" x 2" x 7"
6	Front and Back Stringers (2)	1" x 2½" x 41"
7	Divider Trim (1)	1/4" x 3/4" x 62"
8	Top Stringers (2)	1" x 1½" x 45"
9	Top Supports (2)	1" x 1½" x 13¾"
10	Back (1)	1/2" x 46" x 22"
11	Glue Blocks (2)	1" x 1½" x 1½"
12	Top (1)	1" x 19⅛" x 51"
13	Sliding Shelf Sides (10)	3/4" x 2½" x 14¼"
14	Small Shelf Fronts (4)	3/4" x 2½" x 20⅜"
15	Large Shelf Front (1)	3/4" x 2½" x 43¼"
16	Small Shelf Backs (4)	3/4" x 2½" x 20⅜"
17	Large Shelf Back (1)	3/4" x 2½" x 43¼"
18	Small Shelf Bottoms (4)	1/4" x 13½" x 20⅜"
19	Large Shelf Bottom (1)	1/4" x 13½" x 43¼"
20	Small Shelf Faces (4)	3/4" x 5¾" x 22⅜"
21	Large Shelf Face (1)	3/4" x 5¾" x 44⅞"
22	Drawer Slides (5 pairs)	Full extension
23	Base Door Panels (2)	3/4" x 21½" x 22"
24	Door Side and Top Trim (1)	3/4" x 1" x 150"
25	Door Bottom Trim (2)	3/4" x 2½" x 22"
26	Veneer (4)	1/32" x 24" x 27"

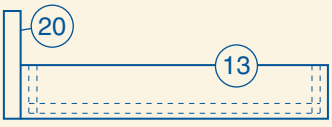




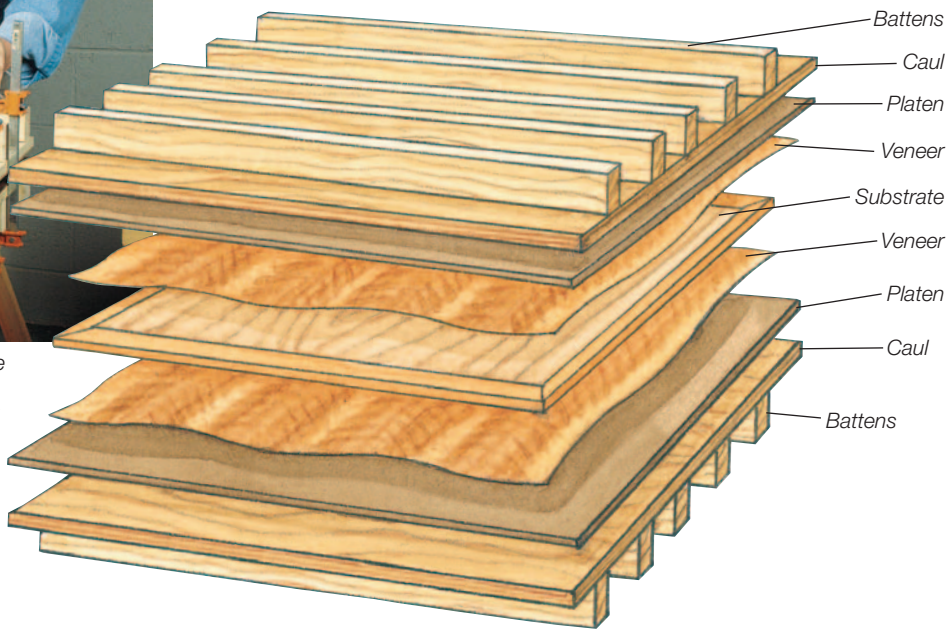




Small Shelf *(Front View)*



Small Shelf *(Side View)*



Laminate the door layers in a shop-made veneer press. The waxed platens resist glue and the clamping cauls and battens transfer pressure to the glue-up. You can gently crown the battens or just glue a small section of veneer at the center of each batten.

We used two different size biscuits on this project. If your biscuit joiner won't accommodate the small biscuits, substitute dowels or pocket hole joints instead.

Move to your router table and cut the rabbets (see the *Drawings*) on the inside edges of the bottom stringer and foot subassemblies. Your next preparation step is to make a frame that nestles inside the upper perimeter of the lower cabinet. Cut the top stringers and supports (pieces 8 and 9) and join them at the corners, using a pocket hole jig, to create a rectangular frame. On the drill press, pre-drill and countersink elongated holes in the top supports for the screws that will hold the top in place. Bore countersunk holes across the bottom edge of the back top stringer; these screw holes will also be used to secure the top.

Assembling the Base

Now you're ready to assemble the base. It's a good idea to have some help for this. Begin by notching the trim and gluing the vertical divider into its dado in the horizontal divider. (It's easier to do this now than later, after the base is assembled.) Next, cut the biscuit slots into the side and feet as seen in the *Exploded View*.

After the glue sets, dry-fit the base together. When everything works, glue and clamp the leg subassemblies to the sides, along with the bottom and horizontal divider. Drop the top stringer and support subassembly in from the top. Make sure the assembly is square as you tighten the clamps. Drive screws through the top supports into the base sides.

After the glue dries, use a rabbeting bit to reveal the 1/2" x 1/2"-deep rabbet for the base back (piece 10). Square the corners of the rabbet with a chisel, then use a pencil to mark the location of the horizontal divider's dado on the back edge of each cabinet side. Install the back with 1" panel nails, using your pencil marks to locate the centerline of the horizontal divider. Two glue blocks (pieces 11) are now snugged and glued into place where the vertical divider meets the front top stringer.

Building the Base Top

We decided to go with an edge-glued solid hardwood top (piece 12) because it increases the overall quality of the project. Have a local cabinet shop run the top through their wide belt sander before you trim it to size: they won't charge much and you'll get very uniform results. Use your table saw to form the 45° chamfers on the bottom edge, along the front and both ends, then sand the top. Install the top by driving screws up through the top supports and the top back stringer.

Adding Sliding Shelves

All five sliding shelves are built in a similar fashion: only the dimensions change. Move to the table saw, install a 3/8" dado head and attach an auxiliary fence to the miter gauge. Cut dadoes on the sides and rabbets on the fronts and backs. Note: the 3/8" locking joint uses the same set-up to mill both the dadoes and the rabbets on the shelf sides and fronts (pieces 13 through 17). All these dimensions can be found on the *Drawings* on page 44.

Reconfigure your dado head to form 1/2"-wide by 3/8"-deep cuts for the bottoms, and plow the grooves for the shelf bottoms (pieces 18 and 19) in the fronts, sides and back. Assemble the shelves, gluing and clamping the corners while letting the bottoms float freely in their grooves to account for wood movement.

Trim the shelf faces (pieces 20 and 21) to size, double-checking these measurements with a dry-fit in the assembled base cabinet. Following the layout on page 45, band-saw the arc-shaped handle openings and drum-sand the saw marks smooth.

Install the drawer slides (pieces 22) and the shelves according to the slide manufacturer's instructions. With the shelves installed, locate the faces so there is a 1/8" gap between the pairs of

small ones, and screw all five in place from the back through predrilled, countersunk holes.

Making the Base Doors

The base doors are plywood panels (pieces 23) with hardwood trim (pieces 24 and 25) wrapped around the top and side edges. Miter-cut, glue and clamp these solid-wood strips in place. Sand the doors after the glue dries, then veneer both the front and back faces with cherry veneer (pieces 26). (It's essential to veneer the back faces to achieve balance and avoid warping.) Use a shop-built veneer press like the one shown at left.

After the glue has cured, lay the doors on their openings and scribe the arcs onto their bottom edges. Band-saw the curves, then sand all the edges gently and set the doors aside.

Constructing the Upper Carcass

Remember those two large boards you glued up for the sides? Make sure to trim the correct edge of each to make the upper sides (pieces 27) so the grain pattern is carried through from the base. After they're trimmed, you use a straightedge and a dovetail bit chucked in your router to plow four sliding dovetails across the inside face of each (see the *Drawings* on page 48 for locations and the *sidebar* on page 50 for details). Note that these are stopped dovetails.

The three shelves that hold the glass in the upper cabinet are simple frame construction. Cut tenons on the ends of the six shelf ends (pieces 28), using your table saw's miter gauge and a dado head. Use a 1/4" bit in your router table to create an open saddle mortise on the end of each shelf rail (pieces 29) and square up the mortise (see the *Drawings*).

Assemble the shelves with glue and clamps. Machine their long dovetailed shape on the ends (see *sidebar*, page 50) and cut them back to match the stopped dovetail slots in the sides. Use a bearing-guided rabbeting bit to create the lip for the glass inserts (pieces 30), squaring up the corners with a sharp chisel.

Cut the cabinet bottom (piece 31) to size from solid hardwood, then form the dovetailed ends as you did with the shelves. Band-saw the arc on the bottom edge of the lower stringer (piece 32) and front upper stringer (piece 33). Sand out the saw marks.

Dry-fit the shelves and the cabinet bottom to the upper sides. Cut biscuit slots to attach the stringers to the cabinet sides (with the curved ones to the front). When you're satisfied with the fit, disassemble the upper cabinet, sand all parts thoroughly, and then reassemble it with glue and clamps. With a project of this size, don't hesitate to have a buddy give you a hand during assembly and glue-up.

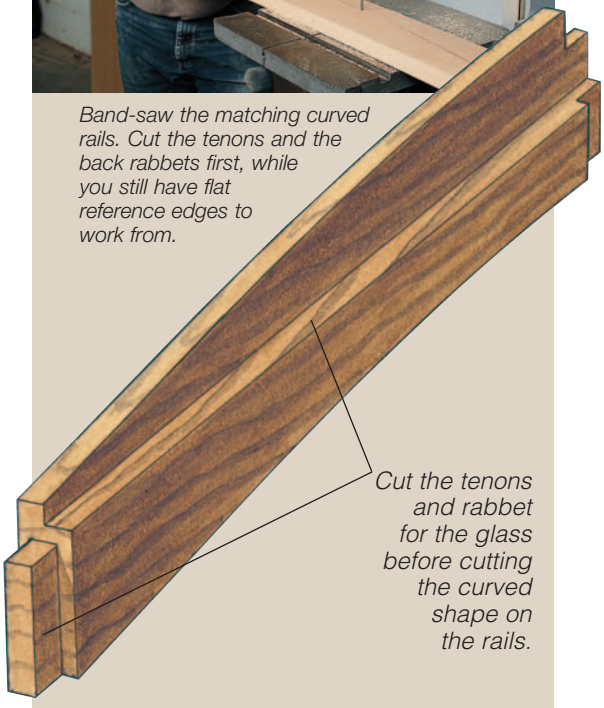
Forming the Upper Top and Back

The upper top (piece 34) is another edge-glued solid hardwood board like the top of the base cabinet. Cut it to size and form the 45° chamfer on the bottom lip of its front and side edges. To install it, pre-drill slightly oversized holes (to allow for wood movement) and countersink for screws that are driven down through the top into the sides and the upper stringers.

Follow the same procedure used earlier to create the rabbet for the upper back (piece 35), then chisel out the corners and nail the back in place.

CUTTING CURVED DOOR RAILS

Band-saw the matching curved rails. Cut the tenons and the back rabbets first, while you still have flat reference edges to work from.

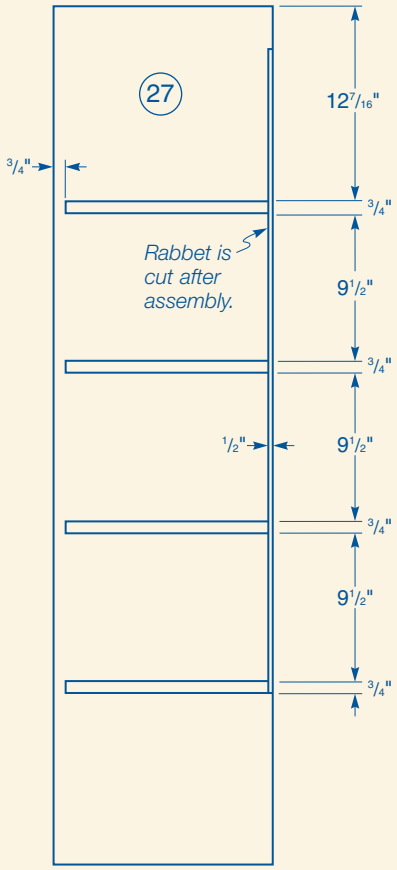


Cut the tenons and rabbet for the glass before cutting the curved shape on the rails.

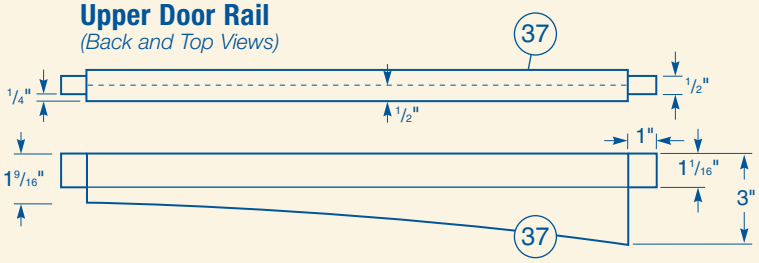
The curved door rails on this cabinet are an important visual design element. With these rails, the key to success is to complete as much machining as possible while they are still rectangular, then cut the curves on a band saw, as shown above. Remember, once they are curved, they become left and right upper and lower rails.

Upper Cabinet Exploded View

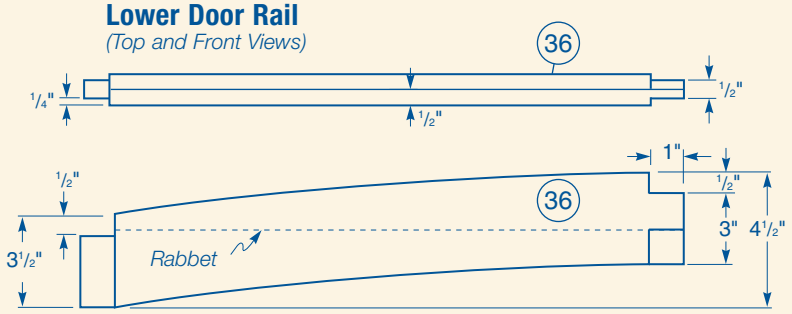
Upper Side *(Inside View)*

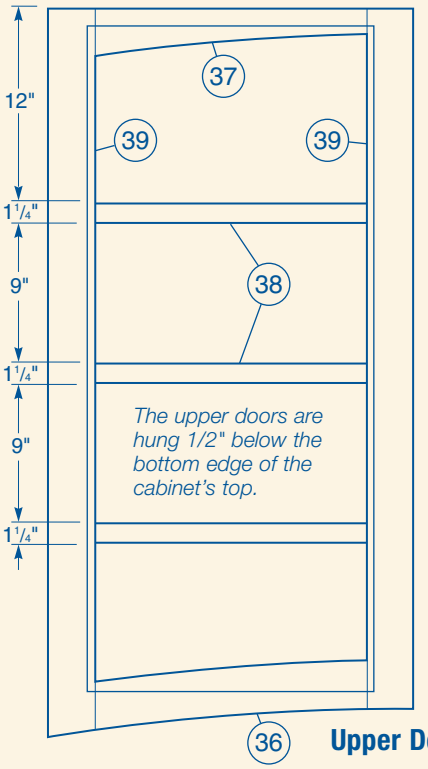


Upper Door Rail
(Back and Top Views)



Lower Door Rail
(Top and Front Views)

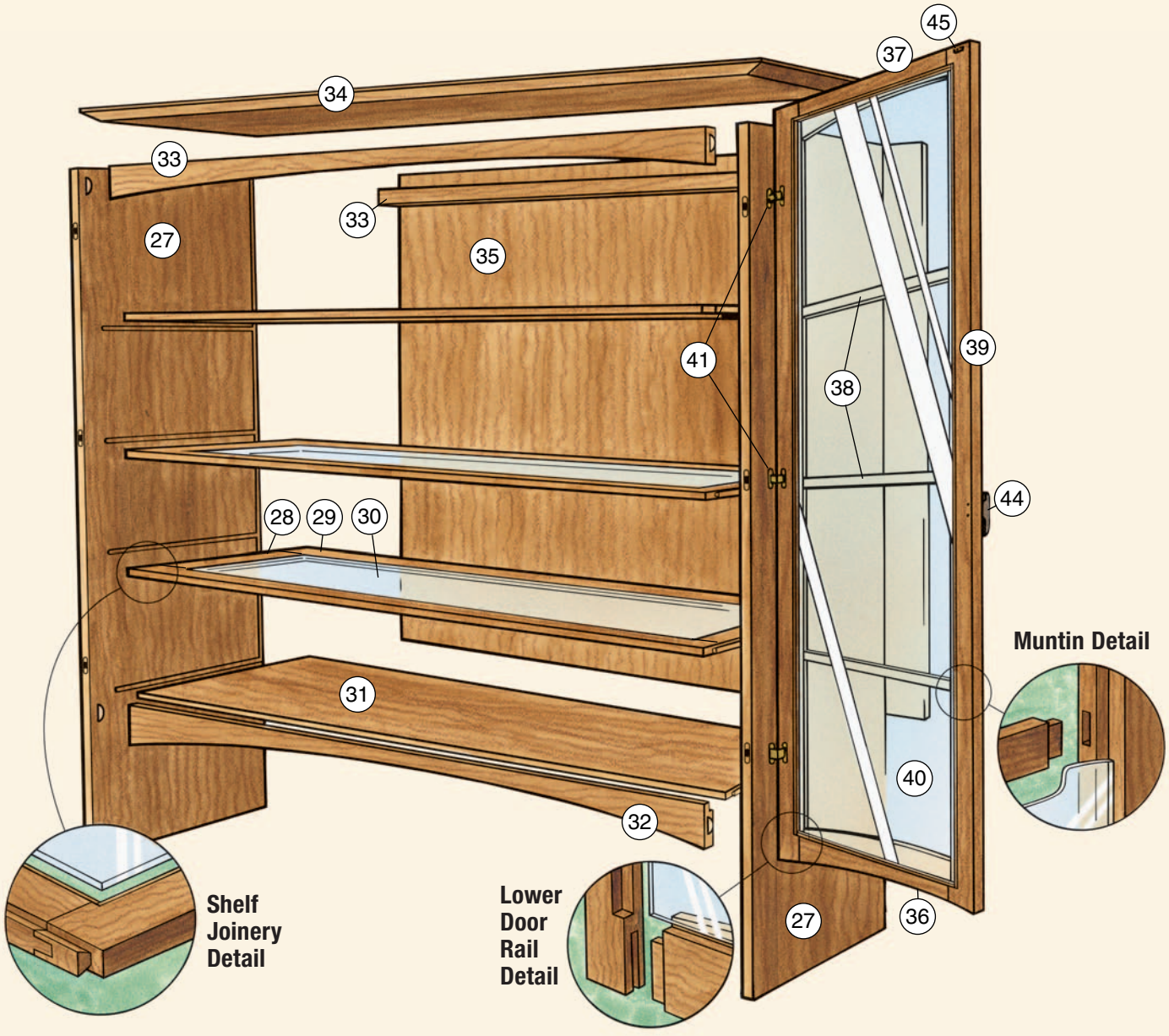




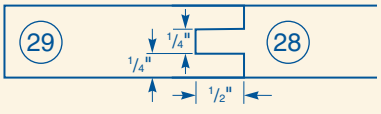
Upper Door *(Back View)*

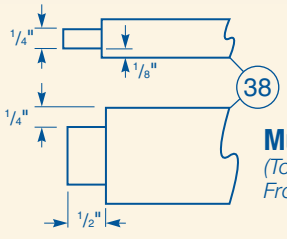
MATERIAL LIST – *Upper Cabinet*

		T x W x L
27	Upper Sides (2)	1" x 14" x 55"
28	Shelf Ends (6)	3/4" x 2 1/2" x 9 1/4"
29	Shelf Rails (6)	3/4" x 2 1/2" x 46"
30	Shelf Glass (3)	1/4", Cut to fit
31	Cabinet Bottom (1)	3/4" x 13 3/16" x 46"
32	Lower Stringer (1)	1" x 3 1/8" x 45"
33	Upper Stringers (2)	1" x 3 1/4" x 45"
34	Upper Top (1)	1" x 17 1/8" x 51"
35	Upper Back (1)	1/2" x 45 3/4" x 47 1/2"
36	Lower Door Rails (2)	1" x 4 1/2" x 19 1/2"
37	Upper Door Rails (2)	1" x 3" x 19 1/2"
38	Muntins (6)	1/2" x 1 1/4" x 18 1/2"
39	Door Stiles (4)	1" x 3" x 46 1/8"
40	Door Glass (2)	1/4", Cut to fit
41	Upper Door Hinges (3 pairs)	2 1/2" Brass
42	Lower Door Hinges (2 pairs)	1 3/4" Brass
43	Glass Retainers (1)	1/4" x 1/4" x 240"
44	Door Pulls (4)	3/4" x 1 1/2" x 4 1/4"
45	Door Catches (4)	Brass ball type
46	Anchor Strips (2)	1/8" x 3/4" x 3"



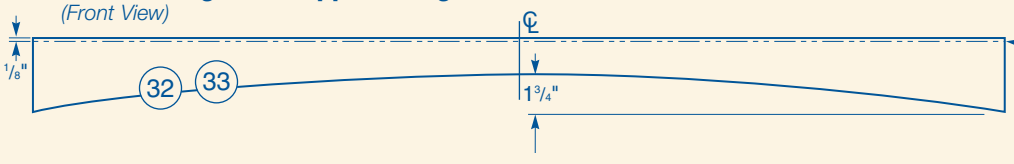
Shelf Joinery Detail
(Side View)





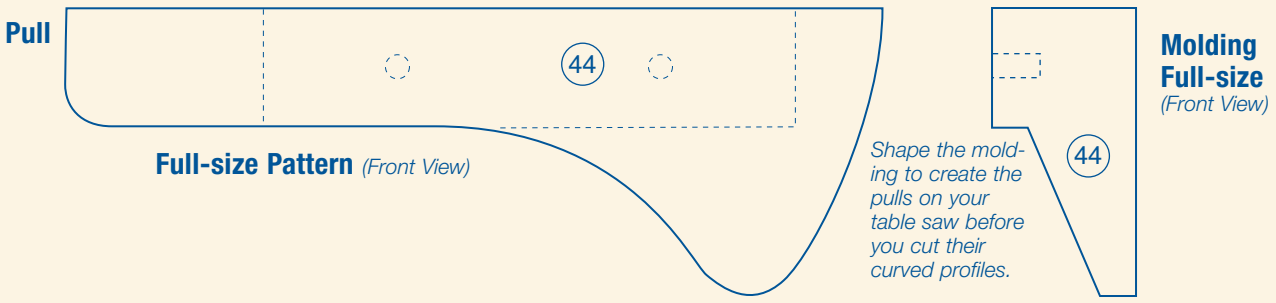
Muntin
(Top and Front View)

Lower Stringer and Upper Stringer
(Front View)



NOTE: The lower and upper stringers are 1/8" different in width but have the identical curve on their bottom edges.

Door Pull Pattern



Machining the Upper Doors

These doors are really what sets this china cabinet apart. They simultaneously enclose and protect the treasures within while offering them for display. The door style continues the gracious arcs used throughout the project and, while they look difficult to build, they really aren't.

With the parts already cut to the rectangular dimensions given in the *Material List*, begin construction by setting up a dado head in your table saw. Use it and the miter gauge to create tenons on the ends of all four door rails (pieces 36 and 37) and the six small muntins (pieces 38). Dimensions for these are given in the *Drawings*. On the rails, you have to cut the large rabbets before you cut their curved aspects. Now lay out the shape of the door rails and, using a band saw, create their gracious arcs (see the *sidebar* on page 47). Sand these pieces smooth.

Again referring to the *Drawings*, lay out the five mortises in each door stile (piece 39). If you do not have access to a dedicated mortising machine, use a Forstner bit in your drill press to remove most of the waste in these mortises, and finish up with a sharp chisel.

Glue and clamp the door parts, making sure the assemblies

SUPER EASY SLIDING DOVETAILS

Sliding dovetails are really just an upscale version of dadoes. The main advantage to the sliding dovetail is that it is a truly mechanical joint—its shape will not allow the joint to pull apart. Plow the dovetail as you would a dado, with a router and a straightedge. We used one of our favorite jigs because it has a built-in adjustable stop. It may be apparent, but it's important to note that you can't stop your router as you plow the dovetail: you must cut it in one pass with the dovetail bit. (Its shape makes this essential.) It is a good idea to remove some material first with a straight bit and follow behind with the dovetail cutter to keep from overloading and breaking the fragile bit. When you're done plowing the dovetail grooves, chuck the same bit into your router table and create the shoulders (tails) of the joint, one side at a time.

Plow sliding dovetail grooves with a router and clamped-on straightedge.

Create the matching tails on your router table after you've plowed the grooves so you can easily test the fit.

are absolutely flat and square. After the glue dries, sand each door.

Completing the rabbet in the back of each door stile for the door glass (piece 40) takes a little thought. Use a straightedge and a 1/2"-diameter straight bit for this operation. You'll need to stop the rabbet short and square your corners with a chisel.

Installing the Doors

To maintain the clean lines of this project, we chose Soss hinges (pieces 41 and 42) that are invisible when the doors are closed. Follow the manufacturer's instructions to create the two-level mortises (see *sidebar* at right) for these hinges, then dry-fit the doors. Be aware that the hinges are NOT adjustable, so you need to place them correctly the first time.

Do a final sanding of all parts, then apply three coats of clear satin finish, sanding between coats with 400-grit wet/dry paper. Don't forget to finish all four sides of the glass retainer strips for the upper doors (pieces 43). After the finish dries, install the glass. This MUST be safety glass: anything else presents a real physical danger to your family in the event of breakage. Also, never order the glass until you have your doors built. Miter the retainer strips to fit and secure them with 1/2" pin nails. Pre-drill the strips to avoid splitting.

Forming Ebony Door Pulls

We made the door pulls (pieces 44) from solid ebony. This cabinet will last generations and deserves the best details. You'll also notice that when the cabinet is closed up, there is no hardware visible...just wood.

The pulls start out as a piece of molding (see the *Drawings* on the facing page for the profile) and then are cut and sanded to their final shape. Cross-cut them to length and notch out their back to raise the mounting area of the pulls. Use a band saw and a disk sander to complete the shape. Polish them to 600-grit and apply a coat of penetrating oil for their finish. Wrap up by installing the brass door catches (pieces 45), as shown on the *Exploded View*, page 49.

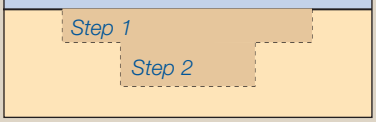
The last step is to cut a piece of 1/8"-thick, 3/4" metal bar stock to create the anchor strips (pieces 46). Counterbore four holes and use the anchors to secure the top and bottom units together. This is an important step to keep the tall upper cabinet from tipping during use.

With the final details completed, move the cabinet to your dining room and load it up with the good china. Let's just hope your painstaking work doesn't put the china to shame!

For the solid-ebony pulls, first create a molding as shown in the Drawings*. Complete the pulls' organic shape on the band saw and disk sander.*

INSTALLING SOSS HIDDEN HINGES

The unique construction of Soss hinges means you'll have to rout a two-step mortise.



Use a shop-made or commercially available jig to create the mortise for the Soss hinges. This china cabinet required two different sizes.

Tight-fitting and extremely strong, Soss hinges were the best solution to our design challenge.

Finding hidden hinges sturdy enough to hang these large, heavy doors was a challenge. The answer turned out to be Soss hinges—which are elegant to look at and very strong. We used a larger model on the upper cabinet doors than on the lower cabinet. They are undeniably tricky to install but well worth the effort. This style of hinge fits into a two-level mortise that is best created with a router and a jig. As with any tricky operation, practice your cuts on scrap lumber before milling the project parts.