# WOODWORKER'S JOURNAL downloadable plans:

"America's leading woodworking authority"™

## In this plan you will be getting:

- Step by Step construction instruction.
- A complete bill of materials.
- Exploded view and elevation drawings.
- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.

To download these plans, you will need **Adobe Reader** installed on your computer. If you want to get a free copy, you can get it at: **Adobe Reader**.

**Having trouble downloading the plans?**

- If you're using Microsoft Internet Explorer, right click on the download link and select "Save Target As" to download to your local drive.
- If you're using Netscape, right click on the download link and select "Save Link As" to download to your local drive.



**$7.95**

WJ132

# Arts and Crafts Hutch

Published in Woodworker's Journal "Woodworking Favorites: Top Projects and Techniques for Your Shop and Home"

## Planning Ahead: Arts & Crafts Hutch Project

*You can expect to spend about 100 hours building and finishing this reproduction hutch. You'll need a full array of tools, with a table saw, router and drill press proving to be the most essential. The recommended finish is Bartley walnut gel stain and three coats of varnish.*

- *45 bd. ft. of 1¼" quartersawn white oak*
- *13 bd. ft. of 3/4" quartersawn white oak*
- *10 bd. ft. of 1/2" quartersawn white oak*
- *15 bd. ft. of 1/2" poplar*
- *One sheet of 3/4" white oak plywood*
- *One sheet of 1/4" white oak plywood*

# Arts & Crafts Hutch

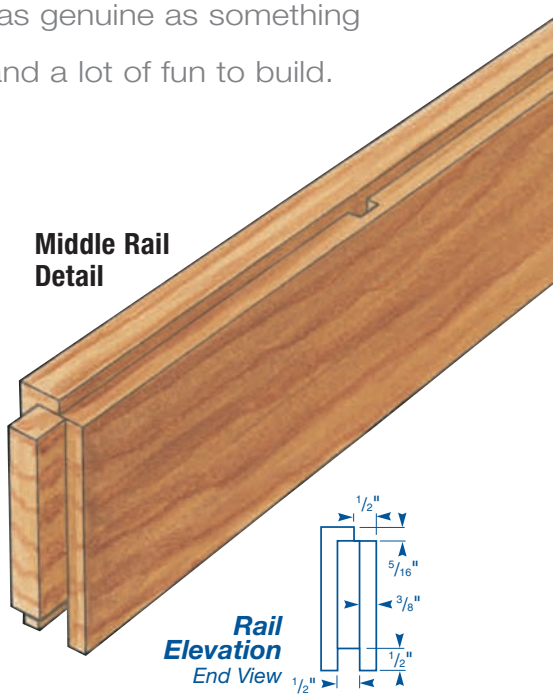
A large piece of authentic Arts & Crafts furniture like this one could set you back thousands of dollars, and you'd never have the satisfaction of building it yourself. From a construction standpoint, our hutch project is every bit as genuine as something Stickley would have built. It's far more affordable these days, and a lot of fun to build.

Few woodworkers have had more impact on furniture design in this century than the Stickley brothers. Their work emphasized simplicity, sturdiness and exposed joinery—what Gustav Stickley liked to call the "structural style." Even though the popularity of their furniture had faded by 1920, the innovations they introduced set the tone for the next several generations of furniture-making. These days, Stickley designs are showing up all over the place, and prices for their originals have skyrocketed. For instance, we recently saw a Gustav Stickley bookcase (without drawers) selling for $5,500 "firm."

If an original Stickley china hutch is out of your price range, why not try to build your own? Gustav Stickley liked to have his designs built by hobbyists and even wrote articles for amateur woodworkers outlining his construction and finishing techniques. Using examples from old Stickley catalogs, we've combined features from several cabinets to come up with this hutch design. It's not technically too complex if you have moderate woodworking skills, but you'll need a full gamut of shop machinery.

It's important for a reproduction project like this to have hardware that looks appropriate. Luckily, Arts & Crafts door and drawer pulls are now available that look just like the originals. They're not cheap, but we think they're important for the overall success of the project. In the long run, you probably won't regret the extra expense to have solid, hammered copper hardware adorning your hand-made hutch.

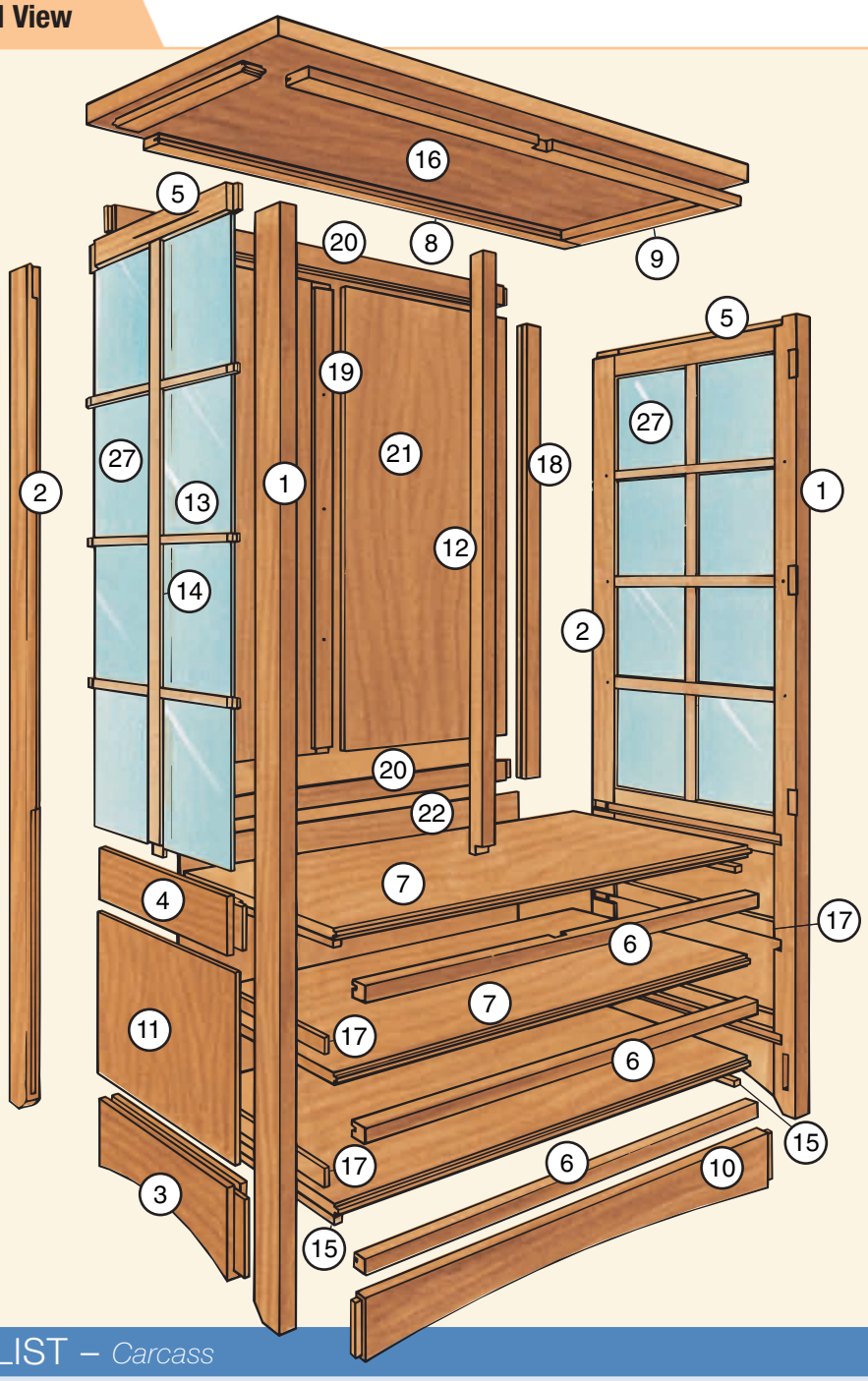
The Stickleys built nearly all their furniture out of quartersawn white oak, and we've stuck with this tradition. The distinctive ray patterns give the project a look that just can't be equalled with plain-sawn oak. As for the glass in the china hutch, look in your phone book to find a local supplier. For a small additional charge, they'll usually cut panes exactly to your specifications.




### Building the Framework

One of the definitive features of Stickley furniture is the use of thick lumber, which contributes to its sturdiness and long life. Sort through your 1¼" stock and select some highly figured material for the side stiles and rails (pieces 1 through 5), and use less interesting wood for the dust panel rails

## Hutch Exploded View

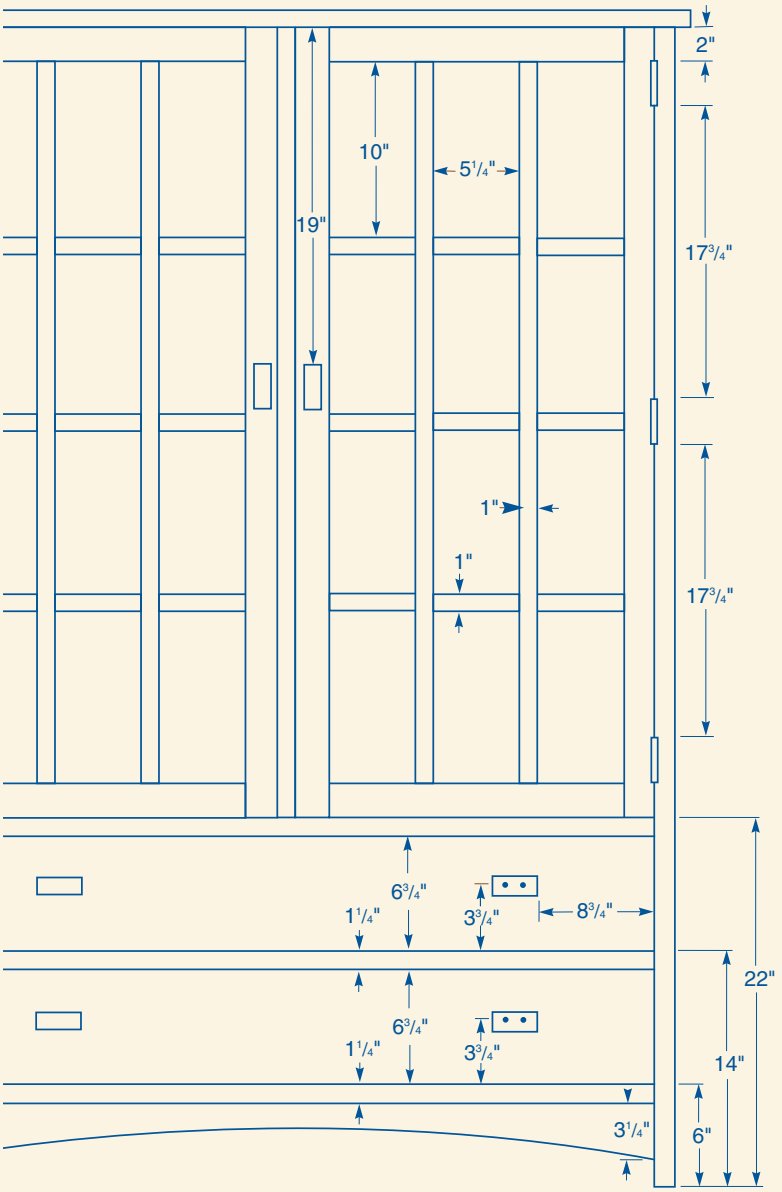



## MATERIAL LIST – *Carcass*

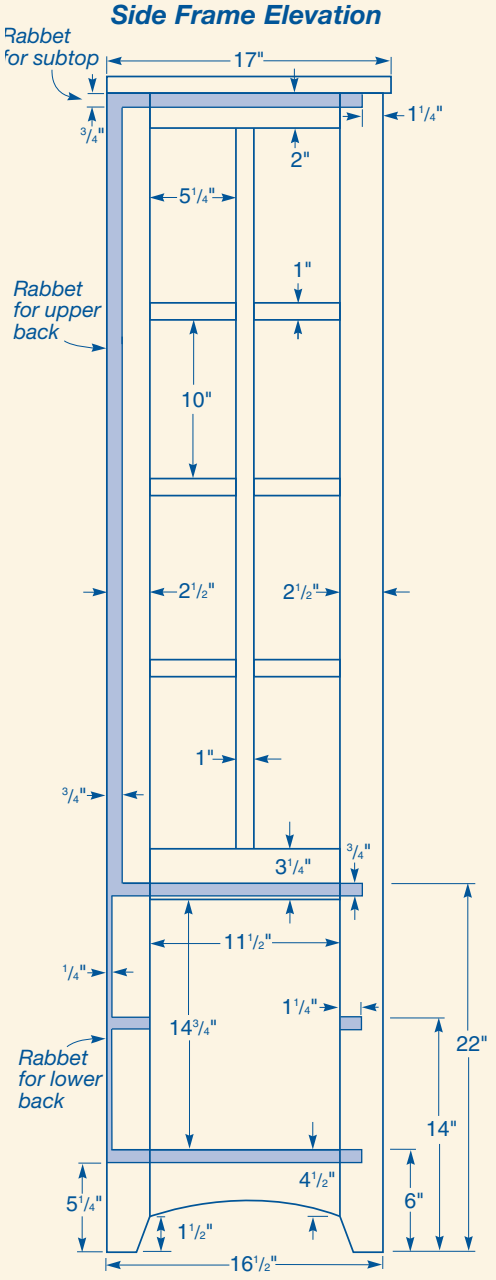
| | | T x W x L |
|---|---|---|
| 1 | Front Side Stiles (2) | 1¼" x 2½" x 69" |
| 2 | Rear Side Stiles (2) | 1¼" x 2½" x 69" |
| 3 | Bottom Side Rails (2) | 1¼" x 4½" x 12½" |
| 4 | Middle Side Rails (2) | 1¼" x 3¼" x 12½" |
| 5 | Top Side Rails (2) | 1¼" x 2" x 12½" |
| 6 | Dust Panel Rails (3) | 1¼" x 1¼" x 44½" |
| 7 | Dust Panels (3) | 3/4" x 15⅛" x 45¼" |
| 8 | Subtop Stiles (2) | 3/4" x 1¾" x 45¼" |

| | | T x W x L |
|---|---|---|
| 9 | Subtop Rails (2) | 3/4" x 1¾" x 12⅜" |
| 10 | Apron (1) | 3/4" x 3¼" x 45¼" |
| 11 | Side Panels (2) | 1/2" x 12⁵⁄₁₆" x 15⅝" |
| 12 | Center Divider (1) | 1" x 1¼" x 48³⁄₁₆" |
| 13 | Side Horizontal Muntins (6) | 1¼" x 1" x 13⅛" |
| 14 | Side Vertical Muntins (2) | 1¼" x 1" x 44⅝" |
| 15 | Support Cleats (4) | 1/2" x 1/2" x 14⅛" |
| 16 | Top (1) | 1¼" x 17" x 49" |

### *Front Elevation*




### *Side Frame Elevation*




## MATERIAL LIST – *Carcass*

| | T x W x L | | T x W x L |
|---|---|---|---|
| **17** Drawer Slide Shims (4) | 3/8" x 1¾" x 11½" | **23** Ball Catches (4) | 1/4" x 1¾" Brass |
| **18** Upper Back Stiles (2) | 3/4" x 2½" x 47¼" | **24** Shelves (3) | 3/4" x 13⅝" x 44⅜" |
| **19** U. B. Center Stile (1) | 3/4" x 2½" x 43" | **25** Shelf Banding (3) | 3/4" x 3/4" x 44⅜" |
| **20** Upper Back Rails (2) | 3/4" x 2½" x 43¼" | **26** Glass Retaining Strips (16) | 5/16" x 5/16" x 96" |
| **21** Upper Back Panels (2) | 1/4" x 19⅞" x 43" | **27** Side Frame Glass (16) | 1/8" x 5¾" x 10½" |
| **22** Lower Back Panel (1) | 1/4" x 16¼" x 45¼" | **28** Shelf Supports (18) | 1/4" Peg (brass) |

(pieces 6). Make sure the lumber is straight and flat, then joint one edge and rip the pieces to width. As long as you're at the table saw and jointer, size plywood for the dust panels (pieces 7), cut 3/4" stock for the subtop frame and apron (pieces 8, 9 and 10), and machine some figured 1/2" stock and glue it into the side panels (pieces 11).

Now lay out the mortises, grooves and rabbets on the side stiles and rails after studying the *Elevation Drawings* on pages 98 and 99. Begin machining the pieces by installing a 1/2" straight bit in your router table and routing the 1/2"-deep grooves in the stiles, middle rails and bottom rails for holding the side panels, then adjust your fence and rout the 5/16"-deep x 1/2"-wide rabbets in the stiles, the middle rails and top rails for holding the glass. Square the ends of any stopped grooves and rabbets now with a sharp chisel.

To form the 1/2"-deep mortises in the middle and top rails (see the *detail drawing* on page 97) and stiles (see *Technical Drawings* on page 102), use a mortising attachment and your drill press (see *Figure 1*). If you don't have a mortising attachment, use a drill bit to remove most of the waste and clean up the rest with a chisel.

After forming the mortises, switch to a 1/4" straight bit in your router table and rout 1/4"-deep grooves in the dust panel rails, as shown in the *Dust Panel Elevation* on page 102. In addition, rout 1/2"-deep grooves in the subtop stiles (see *elevation* on page 102). Select the nicest dust panel for use as the shelf above the top drawer and rout a 1/2"-wide by 3/8"-deep rabbet along its top back edge for holding the upper back frame in place.

To form all the tenons in this project, use your table saw, a 1/2" dado blade and your miter gauge. Make sure the miter gauge is square to the blade and, for safety, clamp a set-up block to your fence so the stock can't bind as it passes through the blade (see *Figure 2*). Cut the tenons on the side rails, subtop rails and apron, as shown in the *elevations*. Next, flip one subtop stile and one dust panel rail on edge and cut the notches (see *elevations*) for the center door divider (piece 12). Glue the subtop frame together.

Now mount a 1/4" dado blade in your table saw and form a tongue on the front edge of each dust panel (see *Dust Panel Joint Elevation* on page 102). Glue the dust panels to the rails, making sure to glue the notched rail to the top dust panel. (Chop the tongue out of the notch with a chisel. Note: the panels should extend 3/8" beyond each end of the rails.) Sand the side panels and cut them to size, then dry-fit all the parts for the side assemblies to check the fit of the joints. Now is the time to refine the fit, if needed.

**Figure 1:** *A mortising attachment equipped with a 1/4" hollow-point chisel will form all the mortises for the carcase and doors.*

**Figure 2:** *It's easy to cut tenons with a table saw using a miter gauge to support the stock and a set-up block to establish the length of the tenon.*

## Stickley Muntins

Muntins are one of the most distinctive features on many Stickley pieces, giving cabinets like this one a stately, well-constructed appearance. Step-by-step instructions for making the muntins are described in the *sidebar* on the next page. Make an extra muntin or two to use as test pieces for cutting the joints.

Once the muntins are completed, assemble the muntin frames without glue to check the fit of the half laps, then slip the muntin frames into the side frame assemblies to check the overall fit. If everything fits properly, take the side assemblies apart and spread glue on the joints. Work on one side at a time, first putting the muntin frame together and then building the rails, stiles and panel around it. Don't forget to check each assembly for squareness.

## Connecting the Side Frames

Believe it or not, you're close to seeing your cabinet come together, but first you need to rout several dadoes and rabbets in the side frames in preparation for the assembly. Lay out the stopped dadoes for the dust panels, as shown in the *Side Frame Elevation*, and chuck a 3/4" straight bit in your router. Clamp a straightedge jig like the one shown in *Figure 3* on page 105 along each layout line, and rout 3/8"-deep dadoes (avoid cutting into the side panels). Follow the same routing procedure to cut a 3/4"-wide rabbet at the top of each side assembly for joining the subtop frame to the sides. Use a chisel to square the stopped ends of all the dadoes.

Rabbet the back edge of each side frame for installing the back assemblies (see *Side Frame Elevation*, page 99). Since the upper back assembly is 3/4" thick and the lower back is 1/4" thick, the 3/8"-wide rabbets must be cut at two

different depths—an easy job for your router and its accessory fence. Be sure to square the stopped end of the deeper rabbets with a chisel.

To reinforce the top and bottom dust panels, we installed support cleats (pieces 15) under each one, as shown in the *Exploded View* on page 100. Cut your cleats to size and set them aside until you're ready to assemble the cabinet.

Now cut out the full-size patterns of the apron and bottom side rails as found in the *Technical Drawings*, and trace the shapes onto your stock. Use a jigsaw to cut the gradual curves, and smooth the cuts with your drill and a drum sander. Now you are ready for some major assembly.

### Assembling the Cabinet

Since this assembly is so large you might want help putting it all together. First, have your helper hold the side frames on their back edge while you clamp the top dust panel into its dadoes. Next, hold the cleats in position so you can drill pilot holes for screwing them to the dust panel and side rail. Once the pilot holes are drilled, spread glue on the cleats, in the dadoes and in the apron mortises, slip the apron and top dust panel into place and screw the cleats to the assembly. At this point we recommend clamping the subtop frame to the sides, without glue, to keep the assembly square. Now glue the middle dust panel to the sides, then add the bottom dust panel and two more cleats (be sure to glue the top edge of the apron to the bottom dust panel). Check the structure for squareness.

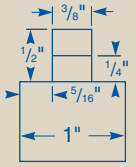
Measure your cabinet for the center divider (piece 12) and cut a piece to fit. Form a 1"-long tenon on its lower end and slip the divider into the top dust panel mortise. Now drill a countersunk pilot hole through the subtop's front stile and into the divider (see *Subtop Elevation* on page 102), and drill several angled pilot holes through the subtop into the side frames. Remove the subtop frame and drill the counterbored pilot holes for screwing the top (piece 16) to the carcass. Drill standard pilot holes in the subtop's back stile and elongated holes in the front stile (see *Subtop Elevation*) to allow for wood expansion.

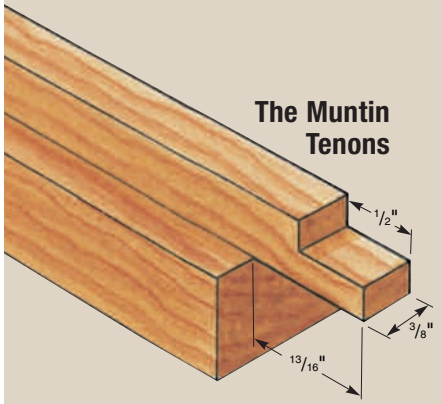
Glue the center divider and subtop frame into the cabinet, and drive screws to secure the subtop to the side frames and the divider.

There's one more item to take care of while you're still dealing with the main carcass. The drawer slides must be mounted flush with the inside edges of the stiles, so you'll need a shim (pieces 17) for each slide. Cut the stock to fit against the side panels in your cabinet, then drill oversized holes in the shims for mounting them to the panels. Go ahead and screw them into place, but don't use any glue or you'll restrict the movement of the panels.

## MAKING THE MUNTINS

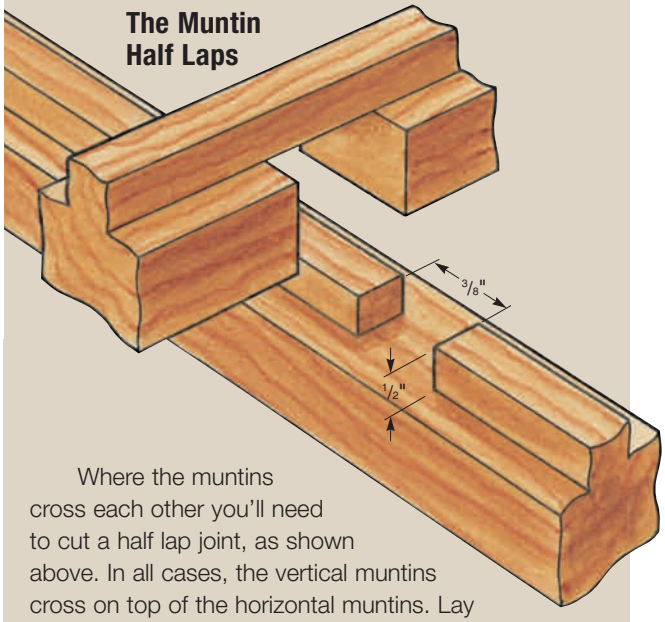
Begin making the side frame muntins (pieces 13 and 14) by ripping rabbets along two edges of your stock, as shown in the *elevation* at right.



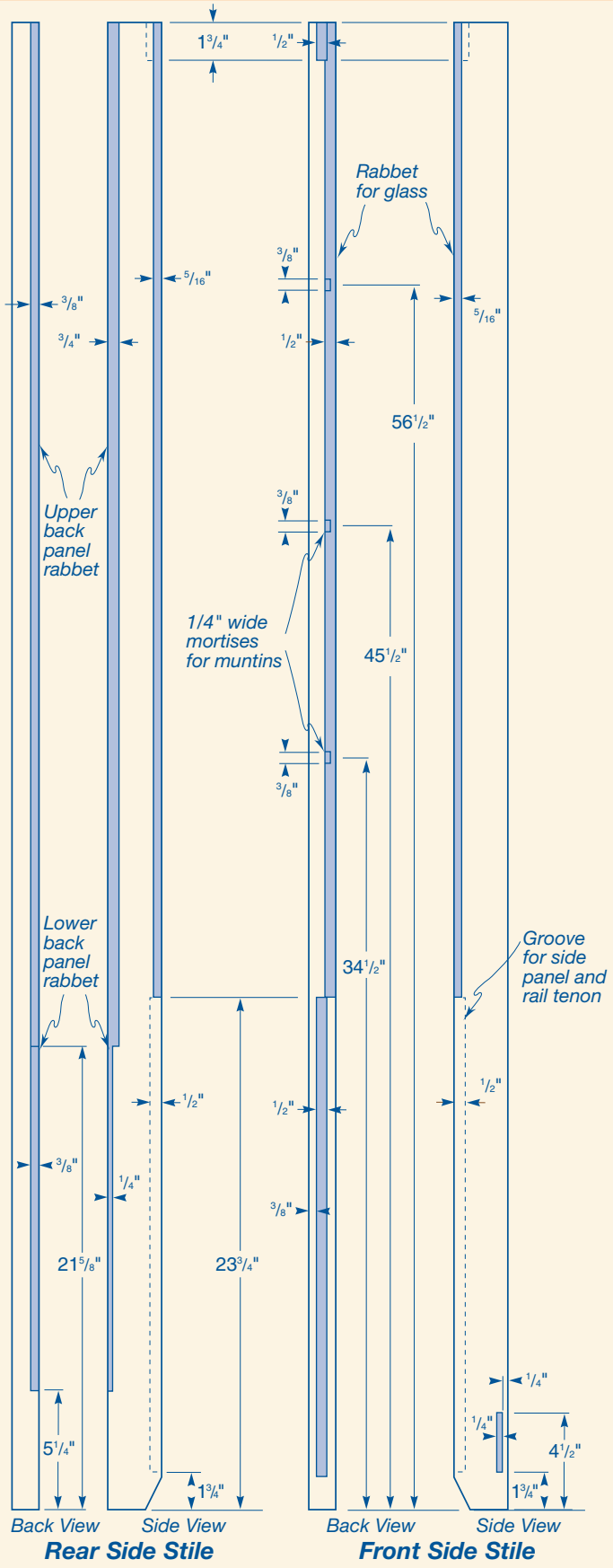

*Cut all the front faces of the tenons first, then adjust the set-up and cut all the back faces.*

After cutting the rabbets, measure your side assemblies to get the muntin lengths you actually need, making sure to include the tenons. Cut your muntins to length, then form the tenons, as shown in the *detail* above.

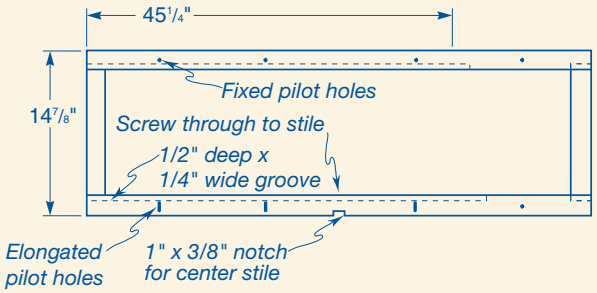



Where the muntins cross each other you'll need to cut a half lap joint, as shown above. In all cases, the vertical muntins cross on top of the horizontal muntins. Lay out the joints so you get the openings shown in the *Side Frame Elevation* on page 99, and complete your machining on a table saw equipped with a dado blade, a miter gauge and a set-up block. When you get to the doors in this project, you can follow the same steps for making their muntins.

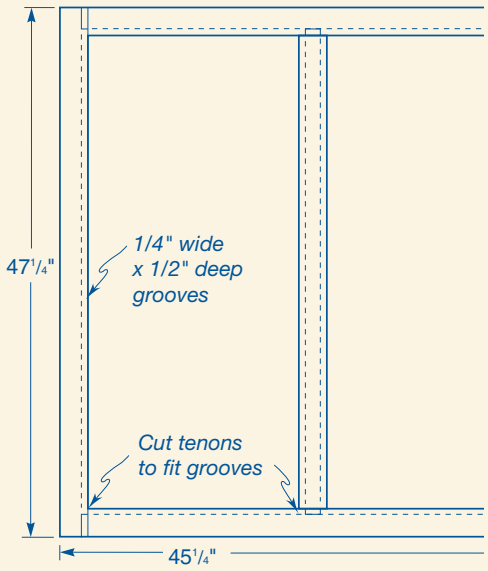
## Technical Drawings



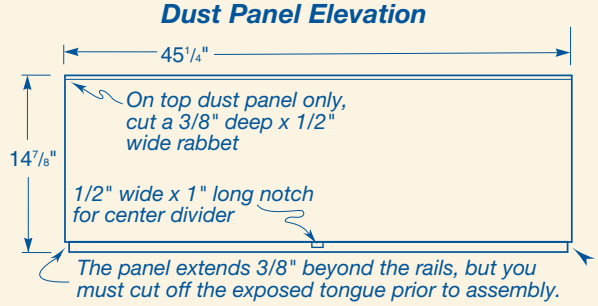

### Subtop Elevation



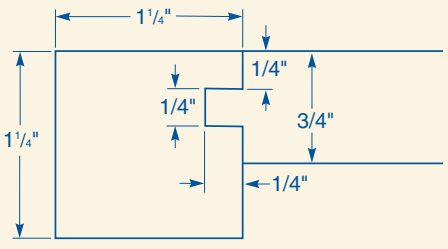

### Upper Back Elevation



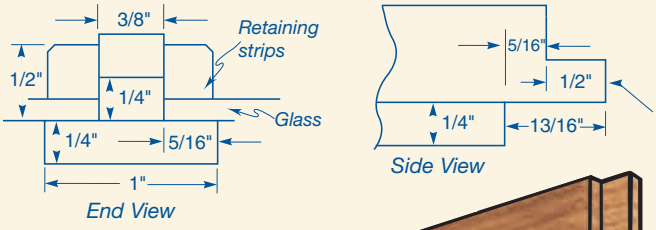

### Dust Panel Elevation



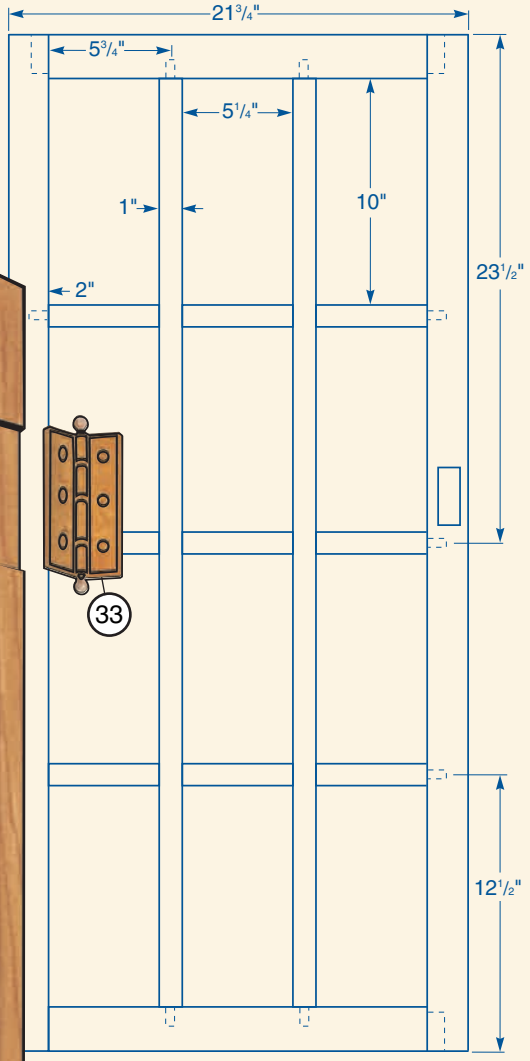

### Dust Panel Joint Elevation

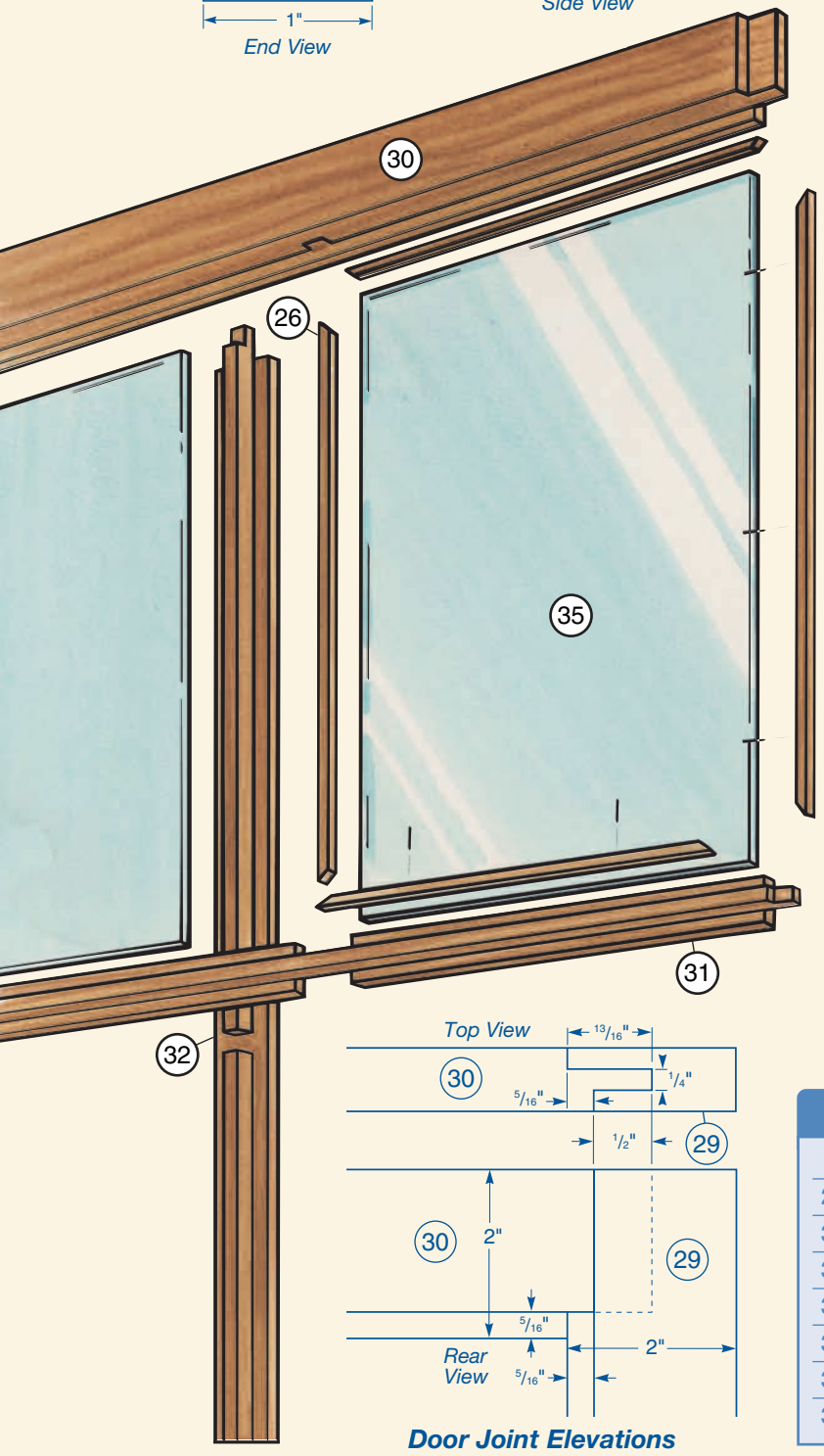


### Door Muntin Elevations




### Door Frame Elevation





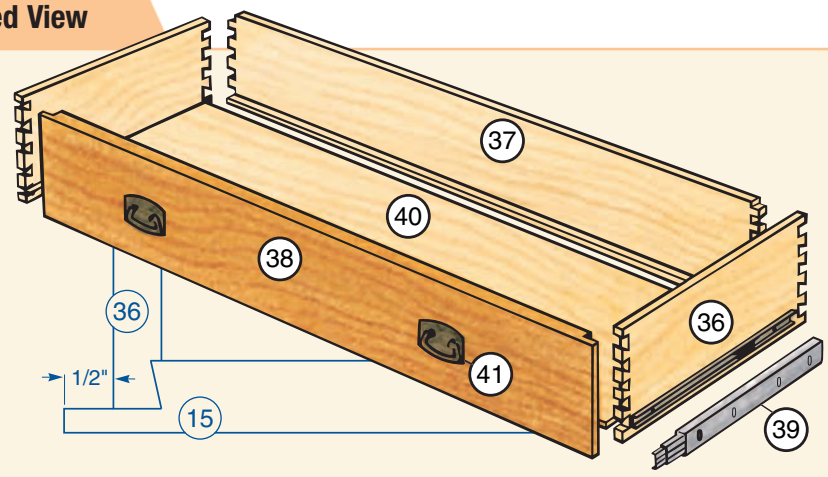


### Door Joint Elevations

## MATERIAL LIST – *Doors*

| | | T x W x L |
|---|---|---|
| 29 | Door Stiles (4) | 3/4" x 2" x 47" |
| 30 | Door Rails (4) | 3/4" x 2" x 19⅜" |
| 31 | Horizontal Door Muntins (6) | 3/4" x 1" x 19⅜" |
| 32 | Vertical Door Muntins (4) | 3/4" x 1" x 44⅝" |
| 33 | Hinges (3 pairs) | 2" x 2½" (antique finish) |
| 34 | Door Pulls (2) | 1¼" x 3¾" (cast copper) |
| 35 | Door Glass (24) | 1/8" x 5¾" x 10½" |

## Drawer Exploded View




### MATERIAL LIST – *Drawers*

| | T x W x L | | T x W x L |
|---|---|---|---|
| **36** Drawer Sides (4) | 1/2" x 6⅝" x 15½" | **39** Drawer Slides (2 sets) | 14" Accuride |
| **37** Drawer Backs (2) | 1/2" x 6⅝" x 43½" | **40** Drawer Bottoms (2) | 1/4" x 15" x 43" |
| **38** Drawer Fronts (2) | 3/4" x 6⅝" x 44½" | **41** Drawer Pulls (4) | 1⅞" x 3¾" (cast copper) |

### Adding the Top, Back and Doors

Joint and glue up several 1¼"-thick boards for the top (piece 16). While the top is in the clamps, build the back assemblies. We made the upper back assembly a frame and panel structure because you can see it though the glass doors. A piece of 1/4" plywood is adequate for the lower back since this piece is hidden.

Rip the stiles and rails for the upper back (pieces 18, 19 and 20) and cut 1/4" plain-sawn white oak plywood for the two upper panels and the lower back (pieces 21 and 22). Next, rout 1/4" x 1/2" grooves in the appropriate edges of the upper back frame pieces and form tenons on the ends of the rails and center stile, as shown in the *Upper Back Elevation* on page 102. Glue the pieces together for the upper back and fit the frame into the cabinet.

By now the top panel is ready for planing and sanding. Once this is completed, position the top on the carcase with a 1/2" overhang on the front and 1" overhangs on the sides. Extend the pilot holes from the subtop into the top and screw the top to the cabinet.

Constructing the doors is much like making the sides, except that they call for 3/4" stock instead of the heftier 1¼" material. Rip nicely figured oak for the door stiles, rails and muntins (pieces 29, 30, 31 and 32), and cut the rails and stiles to length. Next, rabbet the inside edge of the rails and stiles and lay out the mortises, as shown in the *Door Elevations* on page 103. This includes both the rail-to-stile mortises and the muntin-to-frame mortises. Form the mortises with your drill press mortising attachment and cut the tenons on the rail ends with your table saw.

Put the door frames together without glue and measure for the muntin lengths (remember to add the tenons). Cut your muntins to length, then rabbet the edges and form the tenons just like you did earlier on the side frame muntins (see *Door Muntin Elevations*).

Glue the door parts together, making sure each assembly remains square and perfectly flat. Clean up the glue just after it sets and, once the glue dries completely, sand the frames smooth. Fit the doors to the cabinet and lay out the mortises for the hinges (pieces 33), as shown in the *Front Elevation Drawing* on page 98. Carefully chop out the mortises with a chisel and install the doors in the hutch.

### Constructing the Drawers

The best drawers are constructed with dovetail joints, and this is certainly what the Stickleys would expect. We used a Leigh jig that makes the dovetails quickly, but they're easy enough to cut by hand if you don't have a jig.

Cut 1/2"-thick secondary wood, like pine or poplar, for the drawer backs and sides (pieces 36 and 37), and select highly figured 3/4"-thick white oak for the drawer fronts (pieces 38). Cut the fronts and rabbet their ends for accommodating the drawer slides (pieces 39), as shown in the *Drawer Exploded View*, above.

Now use your jig to rout the dovetails, then chuck a 1/4" straight bit in your router table and rout the grooves for the bottom panels (pieces 40). Cut the bottoms to size and dry-assemble the drawers to check the fit of the joints. If everything looks good, glue the

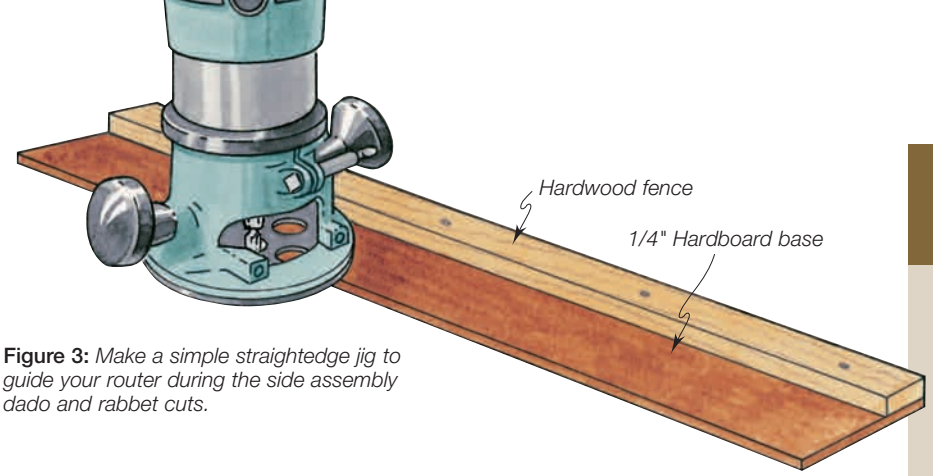



**Figure 3:** *Make a simple straightedge jig to guide your router during the side assembly dado and rabbet cuts.*

dovetails together to make the boxes.

Install the drawer slides in the cabinet and on the sides of the drawers. For consistent positioning of the slides in the cabinet, rip a narrow strip of wood (in this case about 1/8" thick) and slip it between the dust panels and each slide while you drill the pilot holes.

Drill the mounting holes for the door and drawer pulls (pieces 34 and 41), as shown in the *Front Elevation* on page 101. Install this hardware before doing the finishing, just to make sure the doors and drawers operate properly. Hopefully, this will save you from unexpected problems later.

Cut 3/4" oak plywood for the three shelves (pieces 24) and glue banding (piece 25) to their front edges. After the glue dries, plane the banding flush with the plywood and sand the shelves smooth.

Before moving on to the finishing stage, cut plenty of retaining strips (pieces 26) for holding the glass in the cabinet and door frames. To make the retaining strips, first cut a small chamfer on all four corners of four 3/4" x 3" x 96" boards, then kerf the edges on-center using a table saw. Next, rip off the edges of the board to yield strips roughly 5/16" square. Finish the strips now, just like you do the rest of the cabinet. Later, after the varnish dries, miter the strips to length for each glass frame in the hutch.

## Finishing Up

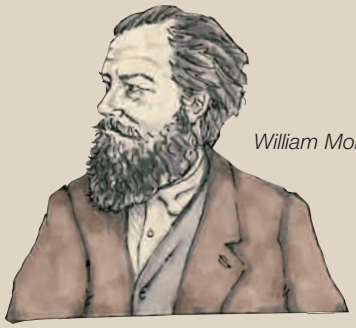
You can get as complicated as you want when finishing Stickley-style pieces. We simply used a quart of Bartley's walnut gel stain. One coat gave the look we were after, then we followed it with a coat of sanding sealer and two coats of satin varnish. Remember to sand lightly with 400-grit silicon carbide paper between each coat of varnish.

A couple of days after the last coat of varnish dries, begin installing the glass (pieces 27 and 35). Miter the retaining strips for the glass and nail them to the frames with brads. If any raw wood remains exposed after the installation, use a cotton swab to dab on a little stain and it will blend into the rest of the hutch.

Remount the hinges, pulls and slides, and screw the two backs to the cabinet. Next, drill the 1/4" holes for the shelf supports (pieces 28) in the side stiles, the center divider and the center stile on the upper back assembly. To position the holes, make a simple lay out jig. Cut a 1"-wide by 38"-long strip of scrapwood and drill a 1/4" hole 34$\frac{3}{16}$" from one end. Now hold this strip against each of the cabinet members listed above and drill the holes for the top shelf supports. Next, cut 11" off the undrilled end of the jig and drill the middle shelf support holes, then cut another 11" off and drill the lower holes. The shelf supports are positioned so the shelves line up behind the muntins in the doors and sides.

Install the ball catches (pieces 23) for holding the doors shut and set the shelves into the cabinet. This completes your Stickley reproduction. While your china hutch may not command the high price tag of the originals, it didn't cost you a year's salary to make either. And who knows? With time your piece may appreciate in value, too!

## STICKLEY'S INSPIRATION

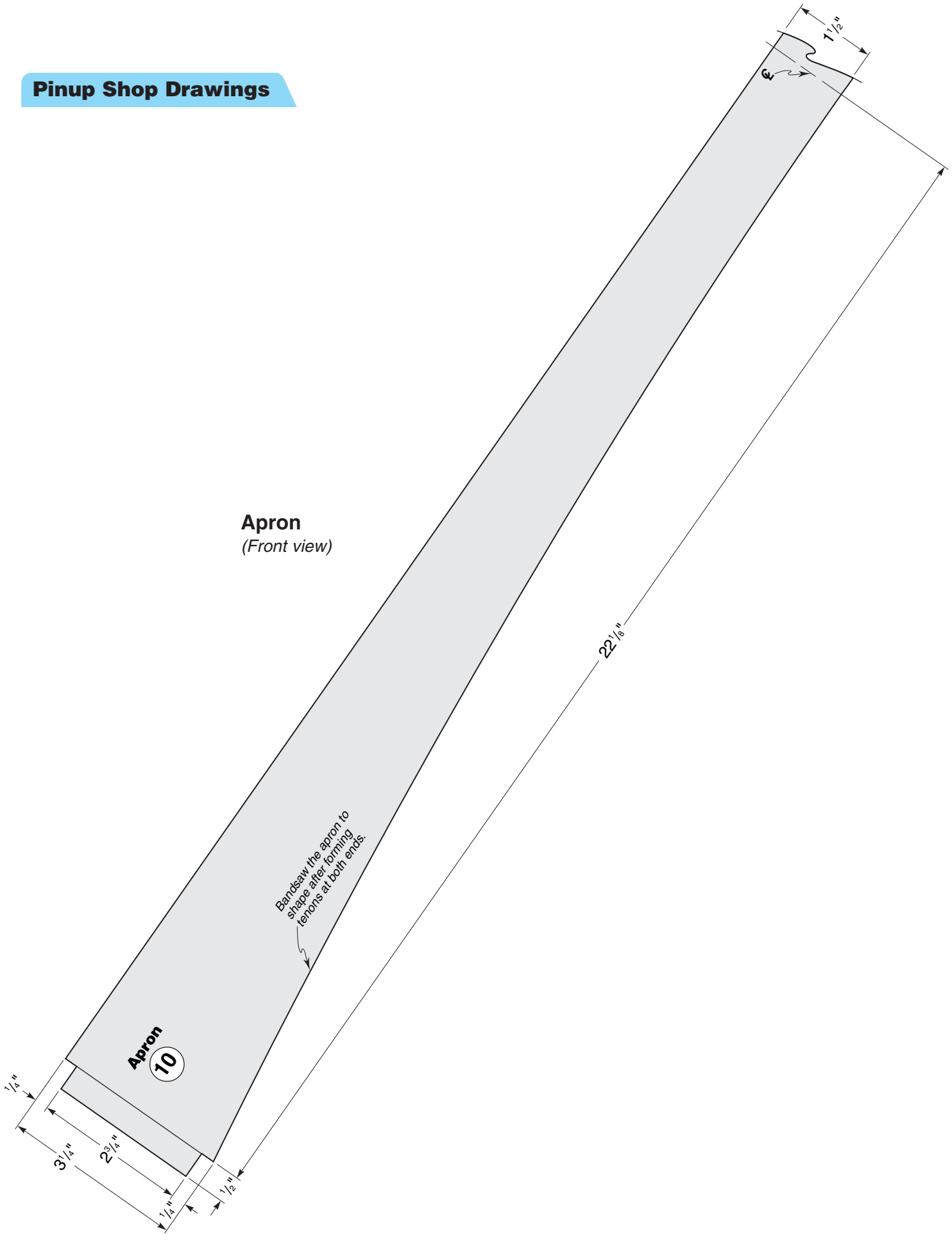


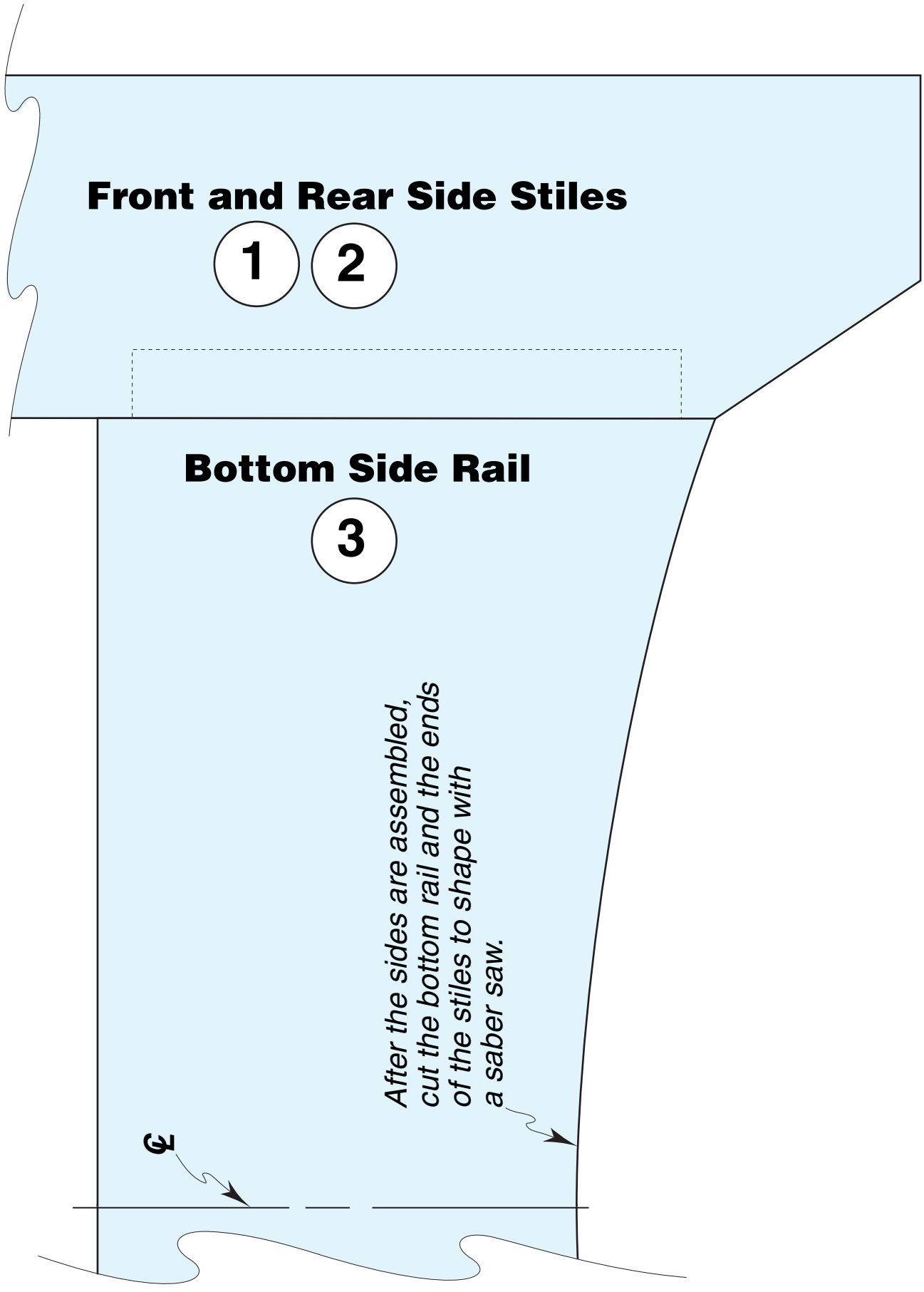
*William Morris*

The Arts & Crafts movement of the late 1800s developed as a rejection of Victorian values and decorating tastes. In Britain, movement leaders like John Ruskin and his disciple, William Morris, struggled to improve the oppressive factory conditions and railed against the ornate, poorly made goods they produced. As an alternative, they advocated the revival of medieval guilds, or cooperatives, made up of skilled artisans turning out high-quality, functional objects for use by the middle class. Morris, an architect, poet, and prolific designer of fabric, wallpaper and furniture, emphasized the wise use of machinery in combination with handwork—an idea that was very appealing to a young American woodworker named Gustav Stickley.

Working from Morris' model, Stickley began building "sensible" furniture for the common man. His simple designs relied on the beauty of the wood and exposed joinery for their adornment. Despite the short-lived success of his businesses, this approach to furnituremaking continues to be Stickley's legacy.

## Apron
*(Front view)*




Front and Rear Side Stiles
1
2
Bottom Side Rail
3
After the sides are assembled, cut the bottom rail and the ends of the stiles to shape with a saber saw.
℄