

WOODWORKER'S JOURNAL

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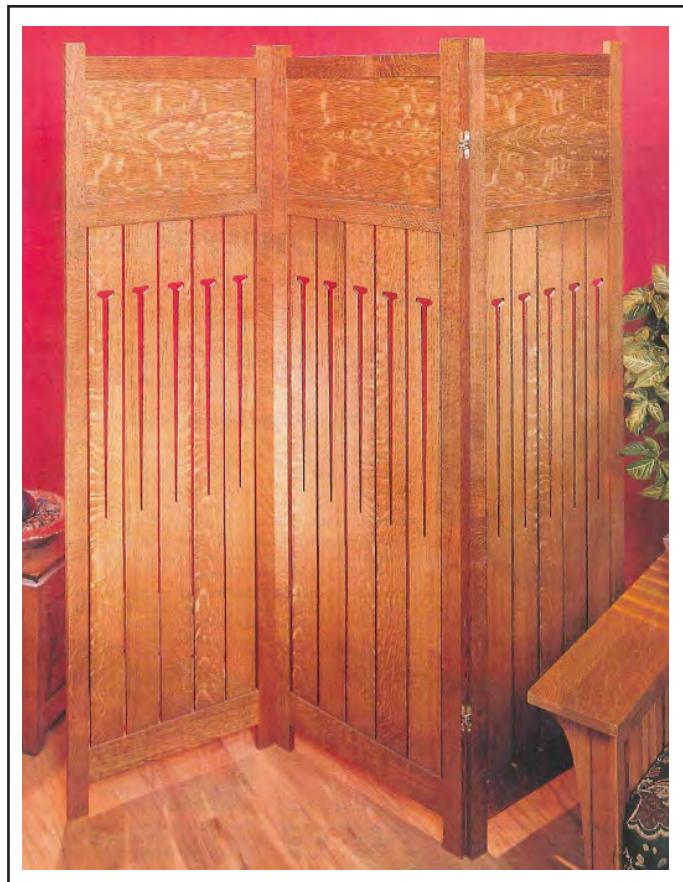
Classic Plan


In this plan you'll find:

- Step-by-step construction instruction.
- A complete bill of materials.
- Construction drawings and related photos.
- Tips to help you complete the project and become a better woodworker.

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CRAFTSMAN-STYLE PRIVACY SCREEN

It's hard to rival the designs of Gustav Stickley for understated (rather than overdecorated) elegance. Yet, this piece has enough visual appeal that it draws the eye even if placed in a dimly lit corner.

Before You Start

For authenticity's sake, we built our screen from quartersawn white oak and applied an oil/stain finish to simulate the fumed look of Stickley.

To avoid the stability problems that can result from planing white oak to smaller thicknesses, we veneered medium-density fiberboard (MDF) for the slats and panels.

If you'd prefer to use solid stock for these parts, plane it to thickness, then sticker and weight it for a week or so while it acclimates.

We used a horizontal spindle mortiser to mortise the rails and stiles for loose tenons. If you don't own a mortising machine of any kind, we suggest adding 1½" to the length of the rails (D, E) and then cutting tenons on the ends to fit the stile mortises as dimensioned on the Exploded View drawing. To do this, cut the shoulders using the table-saw and miter gauge, then cut the cheeks using a tenoning jig (or band-saw and rip fence). Rout the stile mortises using the same technique you'll use to form the panel grooves, then square the ends with a chisel.

Start With the Veneered Parts

Step 1. Cut three 18x50" pieces of ¼"-thick substrate for the slats. (We used medium-density fiberboard.) For the panels, cut three 12½x19" pieces. You'll veneer these oversized pieces, then cut the slats and panels to final size after veneering.

Step 2. Veneer both faces of all substrate pieces with quarter-sliced white oak. Note: Book-match both faces of the panels.

After the glue has dried, belt-sand the veneer to 120-grit to smooth it and remove any squeeze-out.

Step 3. Cut 15 slats (A) to the dimensions listed in the Bill of Materials. Trim the three panels (B) to final size.

Step 4. To rout the cutouts in the slats, first make a template and fixture as described in "Making the Routing Template and Fixture" on page 4.

Step 5. Fit your plunge router with a ¼" straight bit and a ⅝"-o.d. guide bushing. Set the bit to cut

BILL OF MATERIALS

PART	T	W	L	MTL.	QTY.
SCREEN A Slats*	⅝"	3 ¼"	47 ⅞"	VF	15
B Panels*	⅝"	11 ⅞"	18 ⅞"	VF	3
C Stiles	¾"	2"	70"	O	6
D Rails—top/middle	¾"	2"	18 ⅞"	O	6
E Rails—bottom	¾"	3 ¼"	18 ⅞"	O	3

*Parts cut to dimension during construction. Please read all instructions before cutting.

MATERIALS LIST

VF—veneered fiberboard
O—white oak

SUPPLIES

Quarter-sliced white oak veneer; stain; hardening oil finish. (For other supplies, see Source on the last page of the article.)

through the slat and just a bit deeper, then install a slat in the fixture. Starting near the "point" (bottom end) of the template, plunge the bit to depth as you move to the point. At full depth, rout around the template in a clockwise direction. After completing the cutout, remove the waste piece and dust. (There will be plenty of the latter.) Then, lightly repeat the clockwise cut, in case dust buildup prevented the bit from cutting a full profile on the first pass.

Prepare the Frame Parts

Step 1. Face-joint and plane your frame stock to ¾" thick. (We used quartersawn white oak.) From this, rip and crosscut six stiles (C), six top rails (D), and three bottom rails (E) to dimension. Arrange the stiles and rails into three frames according to the best grain match. Then, mark each piece for identification (frame no. 1, front face, inside edge, and so on).

Step 2. Mount a ¼" dado head on your tablesaw, and cut a panel groove along the inside edge of each top and bottom rail. Note: To cut a centered, ⅝"-wide groove with this setup, set the fence a scant ¼" (15⁄64") from the blade. Make one pass, turn the rail end for end, then make a second pass.

Step 3. Lay out rail locations along the inside stile edges where dimensioned on the Exploded View. Next, lay out and rout stopped grooves for the panels along the same edges. To do this, fit your table-mounted router with

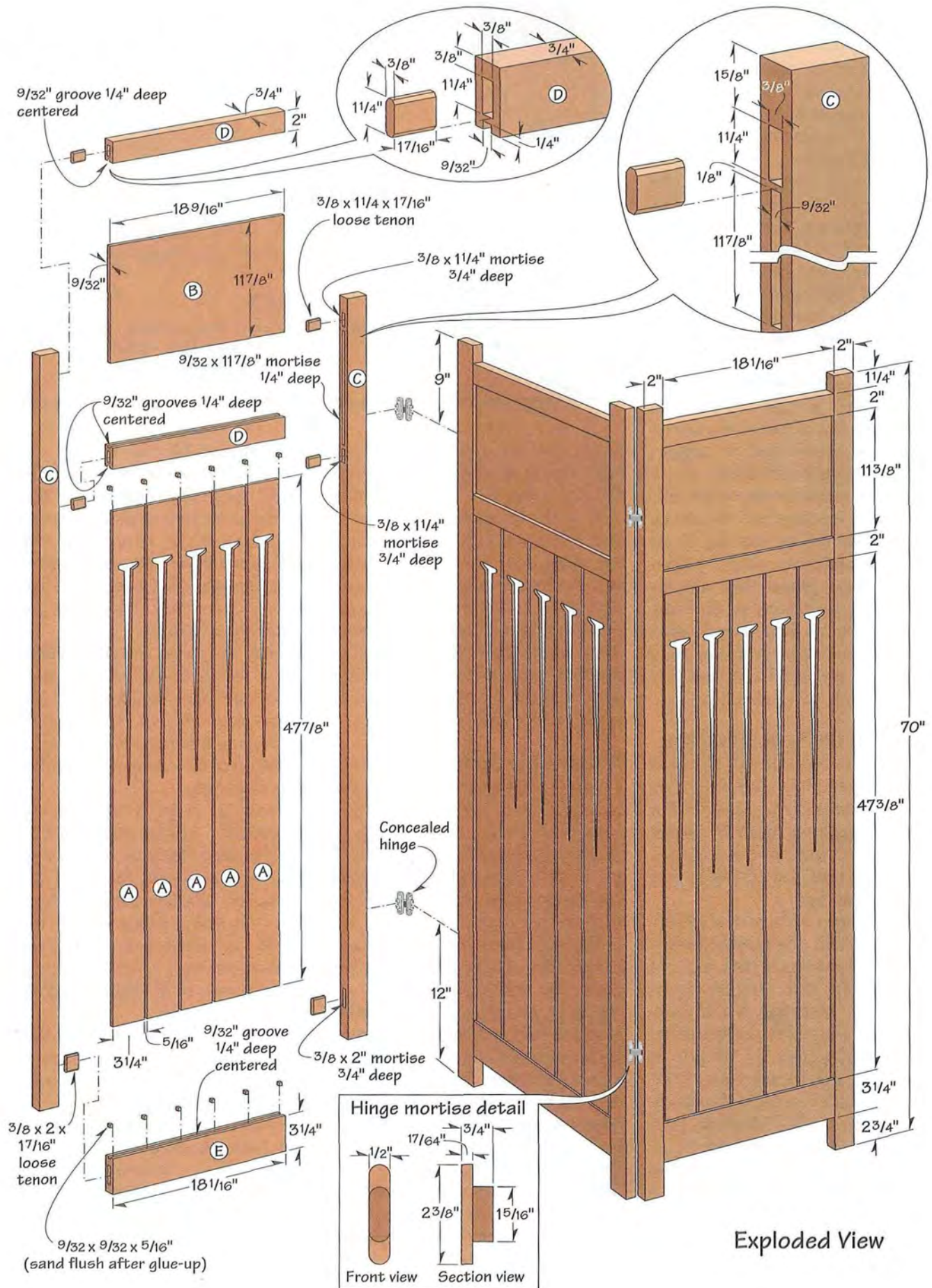
a ¼" straight bit. Set the fence a scant ¼" (15⁄64") from the bit's cutting edge. Mark the profile of the bit near the top of the fence, then mark corresponding stop lines on the outside edge of each stile. As with the rails, make one pass, turn the stile end for end, then make a second pass. Now, square the groove ends with a chisel.

Step 4. Lay out and cut mortises for loose tenons in the rail ends and the stile edges. (See the Exploded View for dimensions. We cut the rail mortises first using a horizontal mortiser, then transferred the rail mortise locations to the stile edges.)

Step 5. From ⅝"-thick hardwood stock, cut a 1¼x24" strip and a 2x12" strip to make the loose tenons. Note: If your mortises will be round at the ends, rout all edges using a ⅝" round-over bit and a table-mounted router. Next, cut twelve 1⅞"-long loose tenons from the 1¼"-wide stock and six loose tenons to the same length from the 2"-wide stock.

Step 6. Dry-assemble the frames and panels (using the loose tenons) to check for fit. Adjust as necessary, then disassemble.

Step 7. Lay out and cut mortises for the Soss concealed hinges on the stile edges where dimensioned on the Exploded View. To do this, use either a mortising machine, the Soss template and a router, or a routing fixture of your own devising. Note: Before mortising, see "Cutting Mortises For the Concealed Hinges" on page 5, regard-



less of which option you choose.

Fit the Rails and Stiles

Step 1. From $\frac{3}{32}$ "-thick white oak stock, rip and crosscut a $\frac{1}{2} \times 18$ " strip for making filler blocks to space the slats in the rail grooves. (See *figure 1*.) Tilt your tablesaw blade to 2° from perpendicular, then bevel-rip one edge of the strip to $\frac{5}{16}$ " wide.

Step 2. Before cutting the blocks to length, calculate a length for them that will leave the two outside blocks (when assembled in the groove with the five

slats and four inside blocks) overhanging the rail ends by $\frac{1}{32}$ ". (Our blocks measured $\frac{5}{16}$ " long.)

Step 3. Cut a set of six test blocks on the bandsaw as shown in *photo A*. To do this, cut and square a feeding board from $\frac{3}{4}$ " scrap, then set the fence to cut your calculated block length. Note: Since the 2° bevel is hard to detect once you've cut the blocks, mark the top face of the strip before sawing.

Step 4. Dry-assemble five slats along with the six blocks in a bottom rail groove. Check the fit, then cut six sets of six blocks (36 total) to this adjusted length.



Photo A: Cut the filler blocks on the bandsaw using a piece of scrap as a feeding board.

MAKING THE ROUTING TEMPLATE AND FIXTURE

The template described here, has been oversized by $\frac{3}{32}$ " in all directions, for use with a $\frac{1}{4}$ " straight bit and a $\frac{7}{16}$ "-o.d. guide bushing. First, cut an 8×30 " piece of $\frac{1}{4}$ " MDF. Find and mark a lengthwise centerline, then scribe a perpendicular line across the piece 4" from one end to locate the top end of the template cutout. Lay out centerpoints for two $\frac{3}{4}$ " holes, to form the head of the "nail," and a $\frac{7}{16}$ " hole, to form the tip. (See the figure below.)

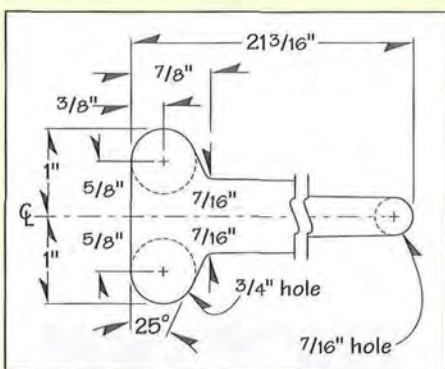
Before boring the $\frac{3}{4}$ " holes, clamp a scrap hardwood block to the template to serve as a stop. Align the block with the line you scribed earlier as shown *below right*. Use a Forstner bit to bore the holes, maintaining a slight pressure against the block to ensure alignment.

Using the three holes, lay out the remainder of the template. Carefully file to the line to complete shaping of the nail's head.

To cut the long tapers that connect the head with the

thickness as the veneered slats. From this, cut two $1\frac{1}{4}$ "-wide cleats. From scrap $\frac{3}{4}$ " plywood, cut a $6\frac{1}{2} \times 43$ " base for the fixture. Align a cleat with one edge and end of the base, and tack it in place. Using a slat for a spacer, position and tack the second cleat near the opposite edge of the base. Note: The cleats should grip the slat just loosely enough to permit sliding removal of it.

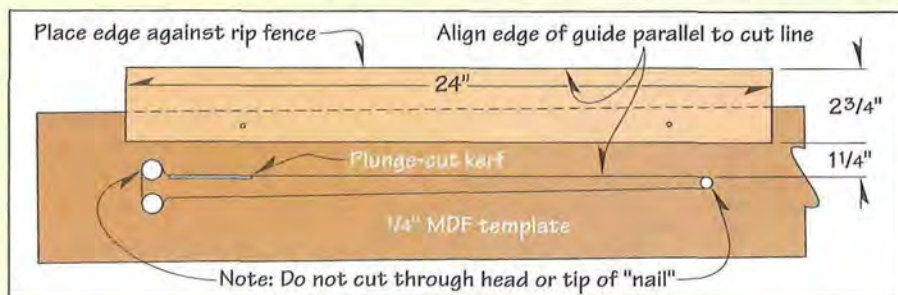
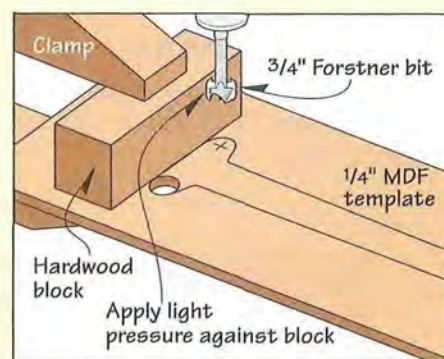
Attach a stop along the end of the base, aligning it with the cleat ends. Next, position the template on the cleats with the top of the cutout (head of the nail) located 6" from the end stop. Center the cutout between the cleats, then screw the template in place. Clamp one end of the fixture to your bench. Use a second clamp to secure the slat to the fixture and the bench.



tip, position and tack a $2\frac{3}{4} \times 24$ " straightedge guide parallel to one of the tapering lines. (See the figure below for location and dimensions.) Lower the blade on your tablesaw, then place this guide against the rip fence. Slowly elevate the blade to plunge-cut along the line.

Remove the guide, then position and tack it along the opposite edge to cut the other taper. Note: If the cutout is not perfectly centered on the template, you'll need to adjust the rip fence. After you cut this second taper, file the remaining length of the tapers smooth and clean up any rough edges.

To complete the fixture, plane a 3×32 " piece of scrap hardwood to the same



CUTTING MORTISES FOR THE CONCEALED HINGES

We used our horizontal spindle mortiser to cut mortises for the Soss concealed hinges. To do this, we laid out a horizontal centerline for each mortise (as shown on the Exploded View) and started there, cutting an equal distance in both directions with a $\frac{1}{2}$ " spiral end mill. This made for rather a tight fit, so we filed down the casting flashing on the hinges to ease insertion.

We also tried mortising with the Soss template and a plunge router. (See the photo at right.) We found it necessary to add a $\frac{3}{64}$ "-thick shim between the template's locator pins and the workpiece to center the template on the edge of the stile. (Don't take our word for it, however; check your own template before routing.) To avoid marring the stock, we clamped the template to the stile rather than drive the nails that are intended to secure it in place. We also found that the nails allowed the template to rock slightly, whereas clamps prevented this from happening.

To position the template on the stile, mark one end of the template "top" and mark the stile to locate this end of the fixture. Or, use the top of the routing slot as the point of location. Allow for the difference between the slot length and the actual mortise length.

For the full-length (shallow) mortise, set the cutting depth at $\frac{5}{64}$ ". (This allows $\frac{5}{64}$ " for the template thickness.) To rout the shorter, deeper mortise, set your router to cut at least $1\frac{1}{16}$ " deep to achieve the necessary depth.



Soss routing jig

Step 5. Glue the first block into the groove in one rail, allowing it to protrude $\frac{1}{32}$ " beyond the end. Note: Apply the glue sparingly. Because of their beveled edge, the blocks can be wedged into position without clamping. Dry-fit the end of a slat into the groove, then glue and insert a second block. Continue until you've assembled all blocks and slats into a single rail. Now, carefully remove the slats, and allow the glue to dry.

Step 6. Repeat Step 5 for each top and bottom rail. After the glue has dried, sand the blocks flush with the edge of each rail. Next, sand or saw the blocks flush with the rail ends.

Assemble the Frames


Step 1. Finish-sand the panels and slats to 220-grit. Next, finish-sand the rails and stiles.

Step 2. Before assembly, stain the panels, slats, and inside edges of the rails and stiles. (We applied Watco Dark Walnut Oil Finish as a stain, allowed it to penetrate for 15 minutes, then wiped it dry.)

Step 3. After the stain has dried, assemble the frames. To do this, insert a set of five slats (without glue) into the grooves on the bottom and middle rails. Glue and tenon the rails to one stile, then insert the panel (without glue) into its grooves. Add the top rail, gluing and tenoning it to the stile but not to the panel. Glue and tenon the opposite stile to the three rails, then clamp and check for square. Repeat this procedure for the remaining frames.

Step 4. Sand the frame joints flush, then break all sharp edges. Now, finish-sand all parts that still need it to 220-grit.

Step 5. Stain the remaining parts as described earlier. After the stain has dried for 24 hours, coat the parts with a clear oil finish. (We used Watco Natural, wet-scrubbing it with a fine, flexible abrasive pad to lightly remove the stain from the surface. We wiped the finish dry, then applied a second coat after 24 hours. This time, we wet-sanded with 320-grit sandpaper, then wiped the parts clean and allowed them to dry.)

Step 6. Assemble the frames using the hinges. Make sure you orient them so the screen can fold up flat. 

Lead photograph: StudioAlex

Other photographs: Randall Sutter

Project design: Dick Coers

Produced by: Doug Cantwell

