WOODWORKER'S JOURNAL

Shaker Useful and Beautiful Collection

Shaker Sewing Stand

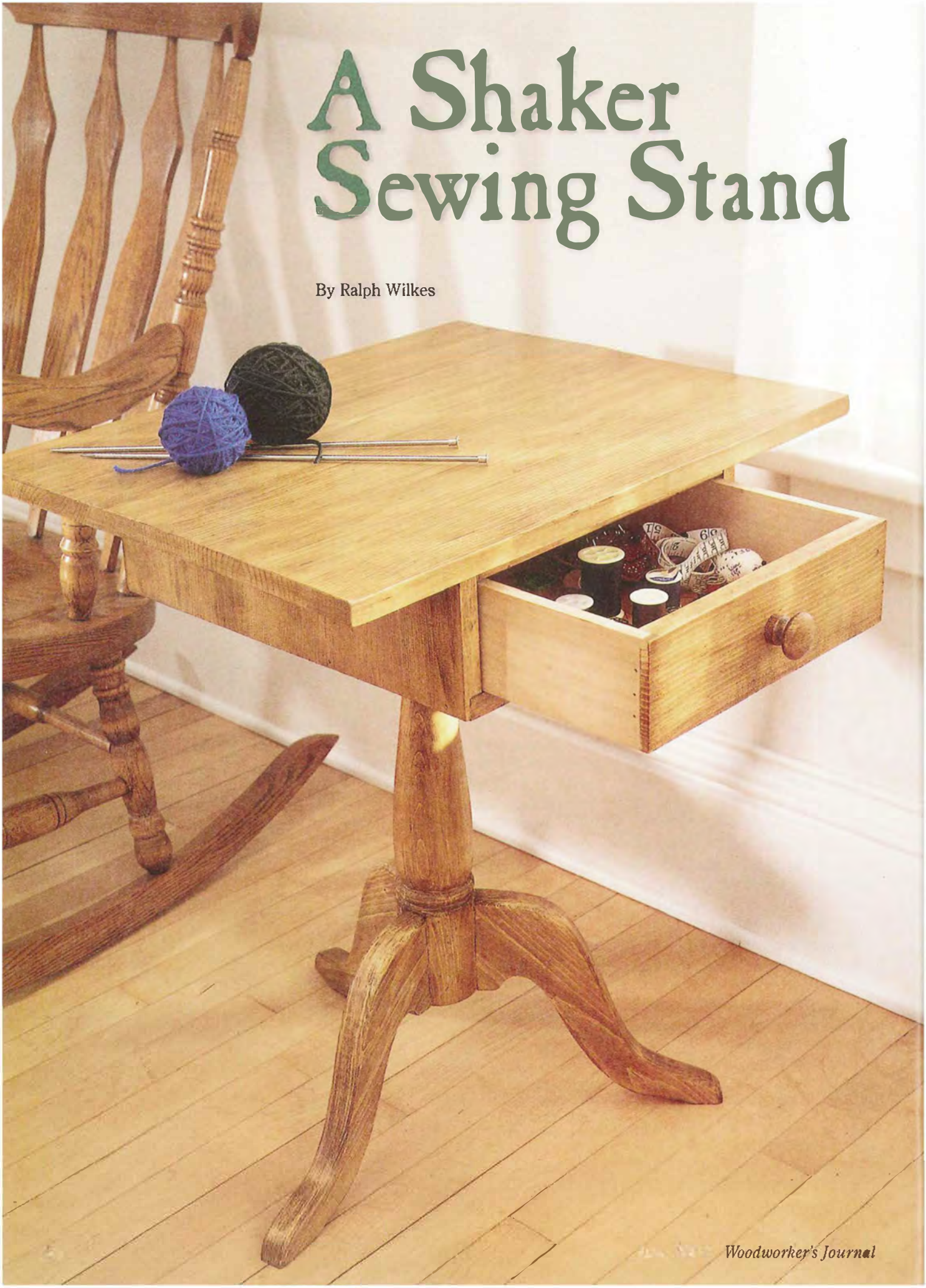
Shaker-inspired Writing Desk

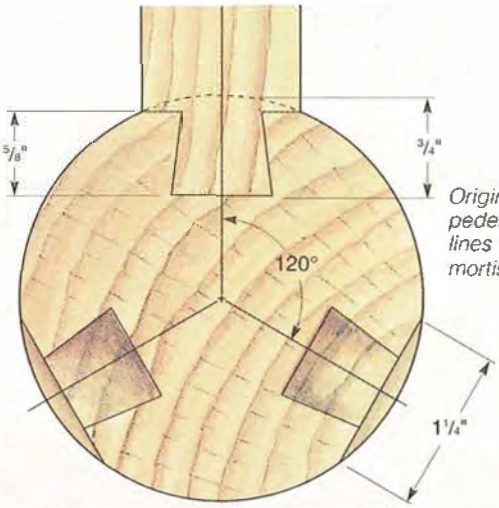
Shaker-Inspired Woven Rocking Chair

Shaker Candlestand

A Shaker Sewing Stand

By Ralph Wilkes



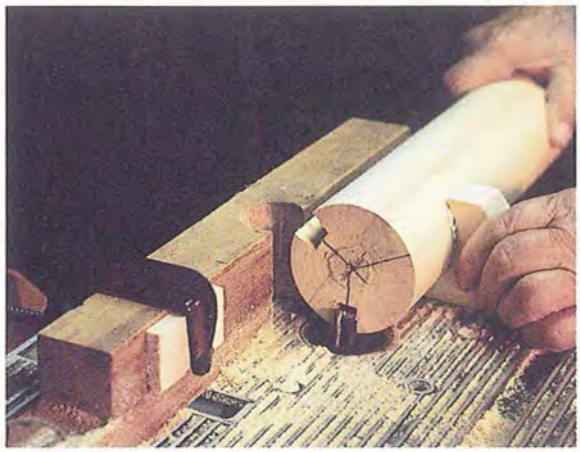


To join the legs to the pedestal seamlessly, the author flattened the curvature of the pedestal and the dovetail sockets, using a sharp chisel.

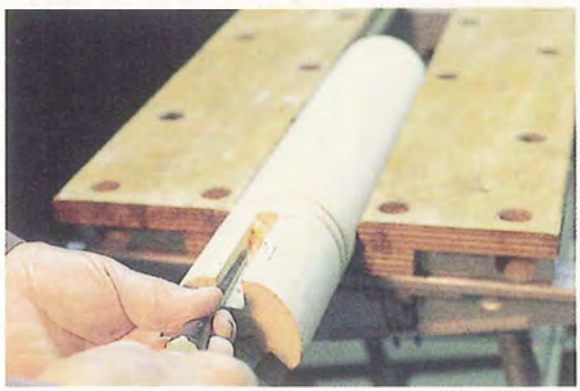
Originating at the center of the pedestal, the author drew three lines 120° apart to help locate the mortises for the dovetail sockets.

This classic sewing stand design was inspired by one made in the Shaker community of Mt. Lebanon, New York around 1850. Many Shaker furniture items came from that area in the 19th century, the designs often emphasizing that simple things are the most beautiful. Practicality was important in their furniture designs as well, although in later years, Shaker craftspeople relaxed their austere beliefs a little, especially in furniture made for outsiders.

This sewing stand was designed for use by two people at the same time. The drawer is shared and was designed to pull in both directions.



The author turns the pedestal to a diameter of 3" and removes it from the lathe. Before completing the turning, he forms dovetail sockets for the legs, starting out on the router table.



Once the straight bit has done its work, the author turns to a sharp chisel to complete the dovetail walls and to flatten the areas that will later be covered by the ends of the legs.

Start With the Pedestal

Since the three legs and the entire top assembly attach to the pedestal (piece 1), it is logical to turn this first. If you have to glue together two or more pieces to get the required size, check carefully to match the grain and wood color as closely as possible.

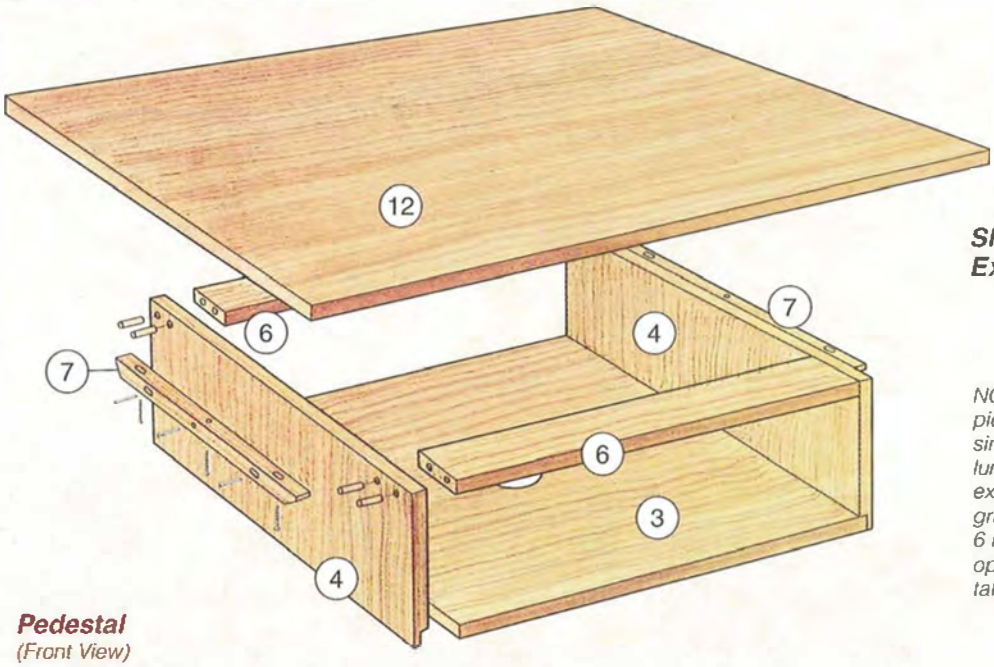
Turn the entire length to 3" in diameter and leave it at that size until after completing the three dovetail sockets at the lower end, which should be the live center end when mounting it on the lathe. This way, the other end, or dead center end, can later be turned to fit the 1½" hole in the upper assembly. It's also a little easier to clamp this piece when it's all the same size.

Making the Dovetail Sockets

As shown in the pedestal *Drawing* above, lay out the live center end for the dovetail sockets using a protractor to keep them 120° apart. Draw a line to the center point to aid in eyeballing the location of each of the router cuts. Using a 1/2" straight bit in a table-mounted router, make your first passes 1/4" deep by 3" long. Use a bumper block, clamped to the fence of the router table, as shown in the top photo, to establish the length of cut.

To ensure that the dovetail sockets stayed straight while I cut, I took a few moments to make a cradling jig by cutting an arc into some scrap that perfectly fit the 3" diameter of the pedestal. Face this with some double-sided tape. By pressing my jig against one side of the pedestal, I could easily hold the other side tight against the fence, preventing the pedestal from turning. After your first pass for each socket, successively increase the depth to 1/2", and finally to 3/4" for your final passes.

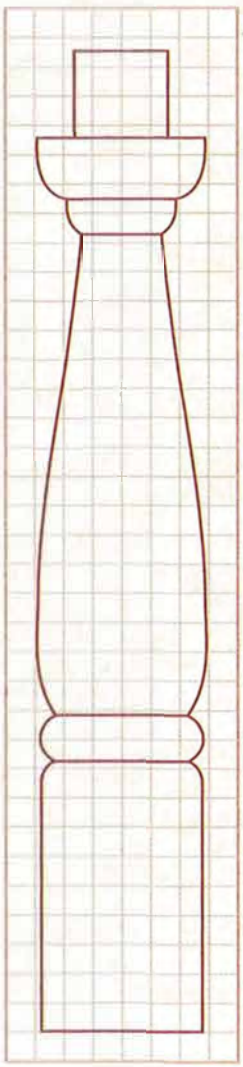
Once you've reached the right depth, you'll need to complete the dovetail cuts with a sharp wood chisel, as shown in the bottom photo. But first, you'll need to flatten the curvature of the pedestal around each dovetail socket. Do this by centering a 1¼" x 3½" piece of cardboard over the socket (representing one of the legs) and tracing around it with a pencil. By flattening this



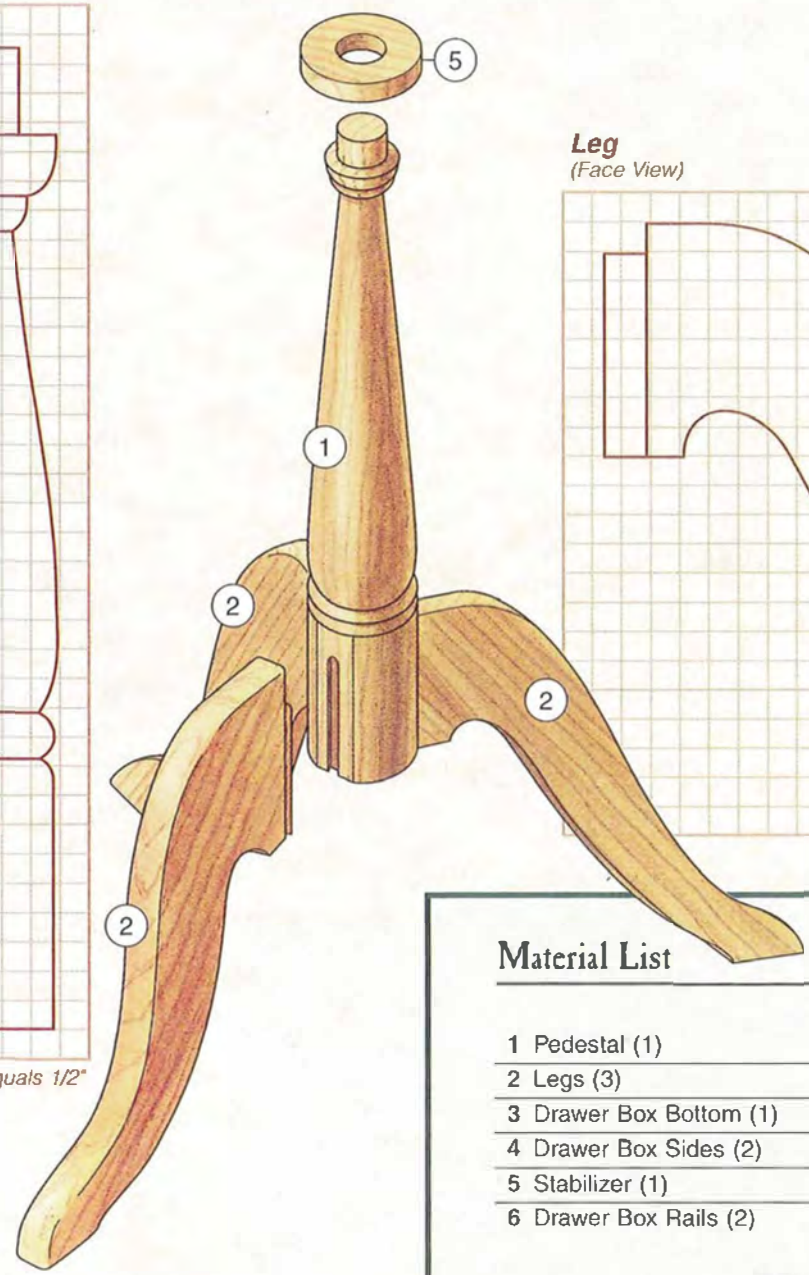
Shaker Sewing Table Exploded View

NOTE: The author made pieces 3 and 4 from a single piece of glued up lumber. To avoid exposed end grain, the grain in pieces 3, 4, and 6 runs around the opening at 90° to the table's drawer.

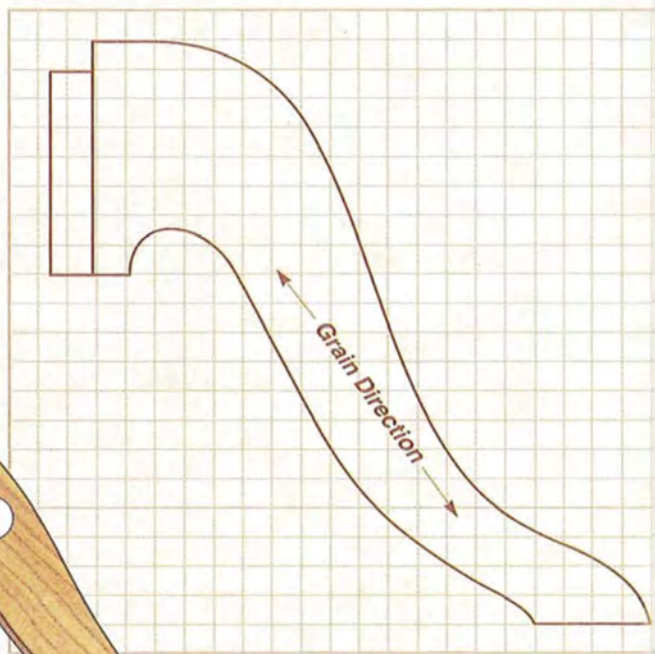
Pedestal
(Front View)



One square equals 1/2"



Leg
(Face View)



One square equals 1/2"

Material List

		T x W x L
1	Pedestal (1)	3" Dia. x 16¾"
2	Legs (3)	1¼" x 5" x 14"
3	Drawer Box Bottom (1)	3/4" x 17" x 13"
4	Drawer Box Sides (2)	3/4" x 17" x 5"
5	Stabilizer (1)	3/4" x 4" Dia.
6	Drawer Box Rails (2)	3/4" x 2½" x 12"

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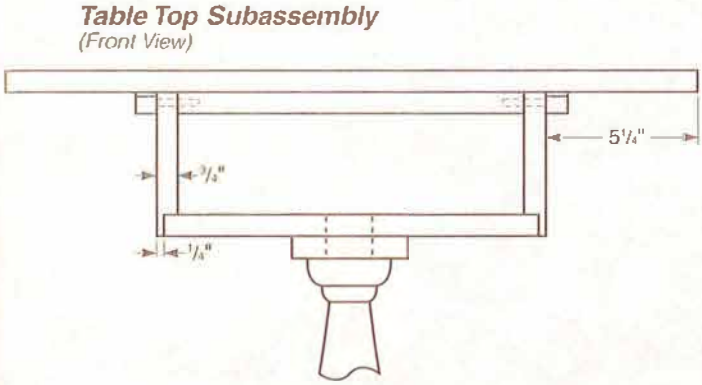
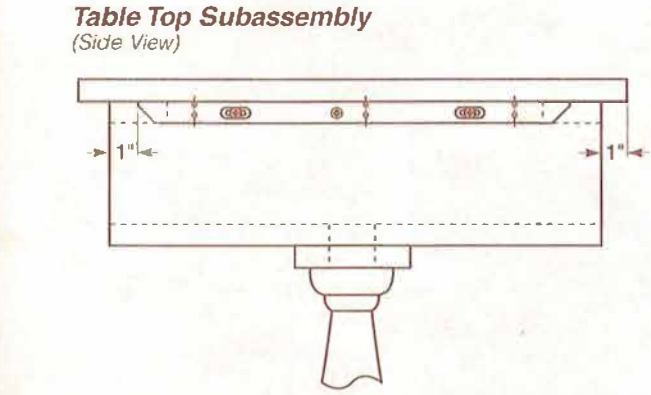
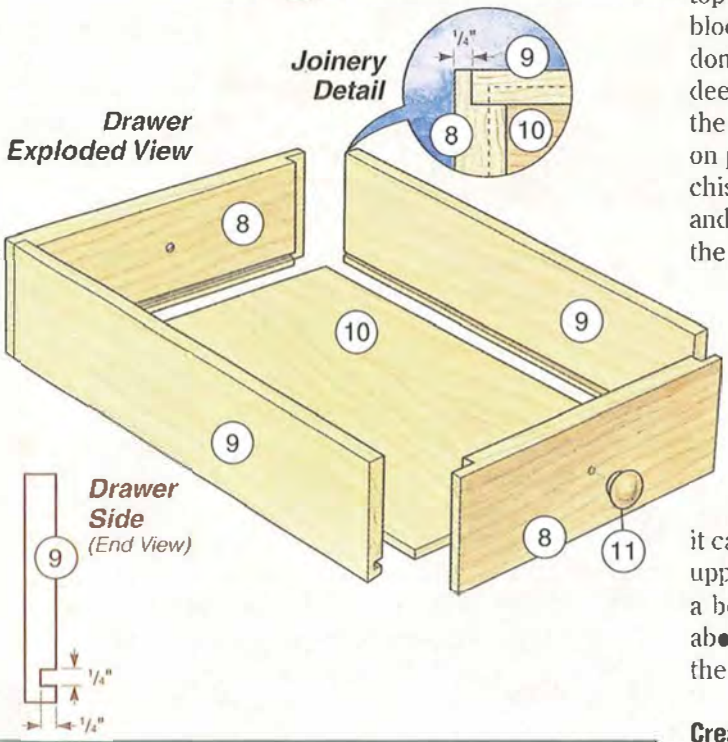






	T x W x L
7 Cleats (2)	3/4" x 3/4" x 15"
8 Drawer Fronts (2)	3/4" x 3½" x 12"
9 Drawer Sides (2)	1/2" x 3½" x 16½"
10 Drawer Bottom (1)	1/4" x 11½" x 16"
11 Drawer Pulls (2)	1½" Dia. x 1"
12 Tabletop (1)	3/4" x 19" x 24"

Sand the upper and lower edges of the three legs on an oscillating or drum sander or, in their absence, try clamping your belt sander upside down. Then use a 1/4" roundover bit to complete the machining.

area, you ensure a tight fit of the leg against the pedestal. Use a sharp wood chisel, first making the cut across the top end 3½" from the bottom. Sandpaper, backed by a flat block, may be used for final flattening. When you're done with this task, the grooves should measure 5/8" deep. Lay out the guideline markings for the dovetails on the bottom end of the pedestal (see *Elevation Drawing* on page 51) and chisel to the dimensions shown. In any chiseling job, keep the edge sharp by honing frequently and, for your own safety, keep the hand that is not doing the work well away from the business end of the chisel.

Shaping the Legs

Use 1¼" thick stock for the legs (pieces 2), choosing wood that is free of knots or blemishes. Use the *Scaled Drawing* at left to create a pattern and transfer it to your stock, paying careful attention to the grain direction. For the neatest and quickest sawing job, I prefer the band saw, although it can be done with a scroll saw or a saber saw. Sand the upper and lower edges until smooth, using the end of a belt sander or a drum sander, as shown in the *photo* above. Follow up with a 1/4" roundover bit, as shown in the *inset photo*.

Creating the Leg's Dovetails

If you plan to make the dovetail depth cuts by hand, start by marking the guidelines and clamping a straight piece of scrap wood across the leg to guide the saw and protect the blade. Make the cuts 5/16" deep, preferably with a back saw.

I found that I could do a neater and more accurate job on my table saw. I quickly traced out two jigs, one for each side of the leg, to hold it in position during the cut,

as shown in the photos at right. Using 3/4" scrap stock, hold the scrap and one leg (the end you will be dovetailing) squarely against your table saw's rip fence and accurately transfer the leg's curves with a pencil.

On the table saw (for legs that are 1¼" thick), set the blade to a depth of 5/16", then make the shoulder cuts on each side of each leg to define the back of the tail. If you are short on experience with this type of joint, try shaping a complete dovetail on a piece of scrap stock first.

Consult the dimensions in the *Drawing* shown below to complete your dovetails, testing the fit in the sockets as you go. To shape the dovetail to fit the pedestal socket, use a padded clamp to hold the leg firmly in place on a bench and make the chisel cuts in the direction of the grain, not across it. Round the tail's upper corners to match the shape of the socket.

To ensure straight shoulders on the tails, the author created two jigs to hold each leg exactly square as he formed the shoulder of the dovetail. The curve in the leg is matched by the shape of the jig (inset photo) to hold the legs securely as they are being machined.

Once the shoulder cuts are made, the author uses a chisel to shape the dovetails to fit the sockets in the pedestal perfectly. Chisel in the direction of the wood grain and use a padded clamp.

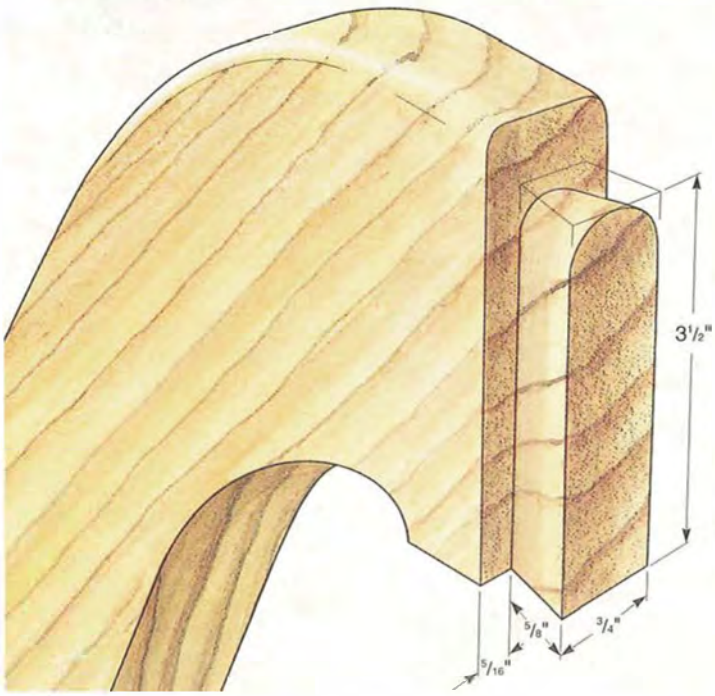
After sanding through the grits on each leg, you can set them aside for now, until after the pedestal turning is completed.

Drawer Frame Details

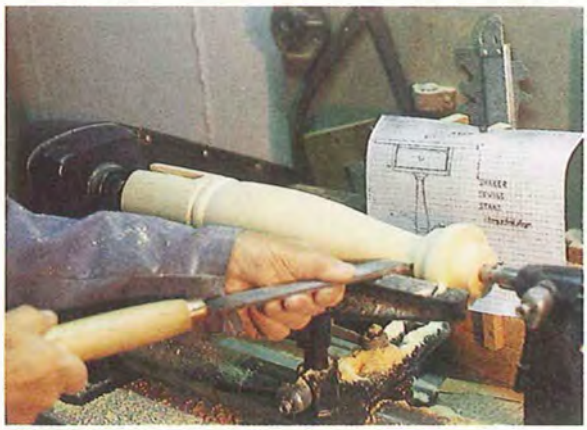
I didn't want to see end grain when looking at the sewing stand, so the grain of the drawer box bottom and sides (pieces 3 and 4) runs crosswise to the direction the drawer will slide. I glued up one 17" x 24" panel to create these three pieces, joining the edges with glue and biscuits and then cut them each to size.

Form the rabbets on the sides (see *Drawings* on page 5) and join them to the bottom with glue and #4 finishing nails. Now locate the center of the bottom piece and glue the stabilizer (piece 5) in place. Once the glue dries, drill the pedestal hole with a hole saw or expansion bit. As you can see from the Drawings on page 4, the box rails (pieces 6) are held in place with two 5/16" Dia. x 1-1/2" dowels at each end.

Before moving on to the drawer and pedestal, take a moment to form the two cleats (pieces 7) that attach the tabletop to the drawer box. Drill three holes in each direction on these two pieces, (see the Elevation Drawings on page 5), slotting the outside ones to allow for seasonal movement of the ides and top. Because round-head crew with washer were employed here, I used a Forstner bit to set the heads below the surface.



The legs are joined to the pedestal with simple dovetails, as is traditional in Shaker-inspired furniture. The top of the dovetails are rounded to match the router-formed sockets in the pedestal.



After the dovetail slots are completed, the author returns the pedestal blank to the lathe and wraps up the turning. He also completes all but one sanding step on the lathe as well, saving a final pass to do by hand, with the grain.

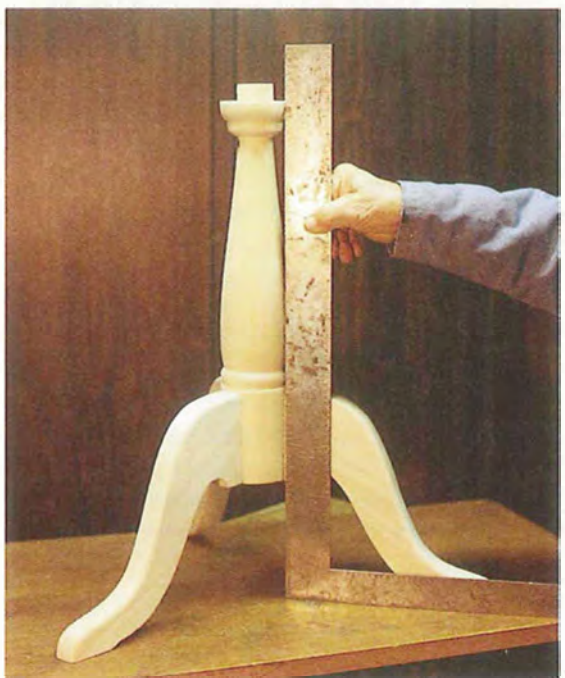
Completing the Pedestal

At this point you can return to the pedestal and bring it to final shape. Start by dry fitting the legs and lightly marking their uppermost locations. Raise the first bead above that point, as shown in the *Drawing* on page 4. Then move to the top end and turn it down to fit the hole in the center of the drawer box bottom. With the two ends done, follow the *Scaled Drawings (see page 4)* to complete turning the pedestal's gently curving shape. Sand the pedestal while it's turning, ending with #220 or finer. When you're just about done, turn off the lathe and sand lengthwise by hand to remove any final scratches. Don't sand the upper tenon that fits into the drawer frame.

Attaching the Legs

Before gluing the legs permanently in place, fit them into their sockets and set the assembly on a level table. Use a carpenter's square to check to be sure the pedestal rises at exactly 90°from the surface, photo below. Even the slightest error here can give you something akin to the Leaning Tower of Pisa. While a variation might be almost invisible to the eye, mark the exact place where the upper edge of each leg meets the pedestal when it is vertical. If you've done your work accurately to this point, each leg should be perfectly in line around the base of the column, with the pedestal rising perfectly plumb.

Glue the first leg and use a padded C-clamp and several heavy rubber bands to hold it tightly until dry. The goal is to apply equal pressure along the entire length of the glued joint. After each joint dries, proceed to the next. Use a wood chisel or knife to scrape away any fresh glue that squeezes out of the joint, then go over the surface with a wet cloth.



A carpenter's square can be used during the final glue-up of the legs to the pedestal to be sure there will be no tilt to the top.

Making the Drawer

The double-ended drawer (pieces 8 through 10) is made with rabbeted corner joints and a plywood bottom which slides into grooves before attaching the second front (see *Drawings* on page 5 for machining details). Do not use glue to secure the drawer bottom. Center the drawer pulls (pieces 11) vertically and horizontally. Drill a hole for each and countersink it on the inside for the screw. Drawer pulls may be made on the lathe or purchased locally.

Final Assembly

You're now ready to bring all the components together. Start by placing the pedestal on a level surface, and applying glue to the top tenon. Press the drawer box in place, using your level to ensure that it dries flat. While the glue dries, select some of your best boards (with matching grain) for the tabletop (piece 12). These pieces are fitted with three biscuits at each joint before edge gluing and clamping. Trim the ends to size and sand the edges and top. Soften the edges with sandpaper, but just enough to break the sharpness.

Finishing

Before attaching the tabletop, apply at least one coat of varnish to the inside of the drawer frame and to the underside of the tabletop to prevent uneven moisture absorption.

Apply stain, if desired, and after it has dried, use two or three coats of a sturdy polyurethane — finish sanding between coats. A bit of wax applied to the outside of the drawer, to help it slide easily, and you have an elegant, yet simple gift.

Ralph Wilkes is a writer and long time woodworker from Penn Yan, New York. His work has appeared previously in Woodworker's Journal.

Shaker-Inspired

By Chris Marshall

Our author stretched the proportions of the timeless Shaker side table and added drawers to create an elegant writing desk.

Writing desks were uncommon in Shaker communities and used mostly by elders or trustees who did business with the outside world. Often, desks were simply converted sewing tables, chests or cabinets. Practicality ruled the day for this sort of occasional furniture.

In the spirit of Shaker resourcefulness, I've taken a classic side table design and added a few twists to create this two-drawered writing desk. You'll probably use it more for e-mailing your favorite chat groups than penning letters, but it serves either purpose well.

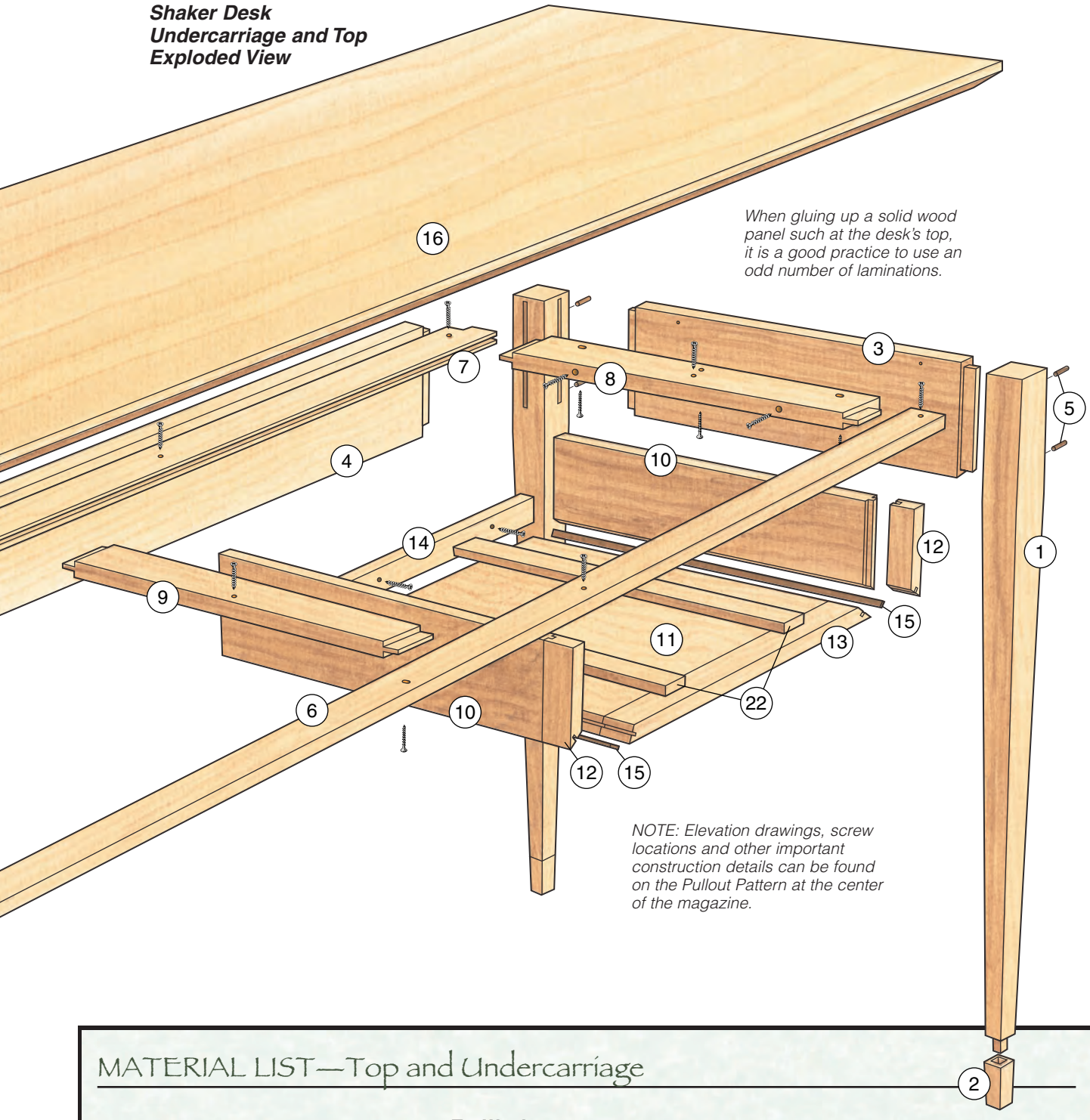
Most noticeably, the front apron is gone to make room for a desk chair with armrests. I split the usual long drawer in two and pushed each new drawer outboard to add a modest amount of storage space for writing supplies, CDs or a few computer manuals.

This desk is made of reclaimed Port Orford cedar, a fragrant softwood once harvested in Oregon but now available only as salvaged lumber (see page 11). For a bit of flair, I chose staggered box joints for the drawers, splined corner joints on the drawer cases and walnut accents all around. You can tackle this project in a few long weekends if you keep at it.

Writing Desk

The author turned to hard maple for his desk's "feet." While Port Orford cedar is tougher than pine, it still gave him concerns about its durability over the long term.

Shaker Desk
Undercarriage and Top
Exploded View



When gluing up a solid wood panel such at the desk's top, it is a good practice to use an odd number of laminations.

NOTE: Elevation drawings, screw locations and other important construction details can be found on the Pullout Pattern at the center of the magazine.

MATERIAL LIST—Top and Undercarriage

	T x W x L
1 Legs (4)	1¾" x 1¾" x 26½"
2 Feet (4)	1¾" x 1¾" x 2"
3 Side Aprons (2)	3/4" x 5⅝" x 18"
4 Back Apron (1)	3/4" x 5⅝" x 52"
5 Dowel Pins (8)	1/4" Dia. x 1¼"
6 Web Frame Front (1)	3/4" x 1¾" x 50½"
7 Web Frame Back (1)	3/4" x 1¾" x 52"
8 Web Frame Sides (2)	3/4" x 2¼" x 17"
9 Web Frame Middles (2)	3/4" x 1½" x 17"
	T x W x L
10 Drawer Case Sides* (4)	3/4" x 4 13/16" x 17¾"
11 Drawer Case Bottoms (2)	3/4" x 12" x 17¾"
12 Drawer Case Side Edging (4)	3/4" x 1¾" x 4 13/16"
13 Drawer Case Bottom Edging (2)	3/4" x 1¾" x 12"
14 Cleats (2)	3/4" x 1½" x 10⅝"
15 Splines (4)	1/8" x 3/4" x 17¾"

**The hidden outer sides are plywood, the inner sides are cedar. All four sides are edge banded to hide either plywood or end grain.*

Beauty in simple shapes

Port Orford White Cedar

Once used for building Japanese Buddhist temples, Port Orford cedar has long been prized for its suitability as both indoor and outdoor furniture lumber. It's a beautiful, medium-grained and close-pored softwood that's actually a member of the "false cypresses."

The lumber has working characteristics similar to pine, but it's somewhat harder and takes finishes without the same blotching tendencies. It also releases a pungent, gingery fragrance during machining that may be objectionable if you have allergies to other cedar lumber.

The only supply of this lumber I could find was from salvaged logs.

Starting with the Legs

The first step on this project is cutting the four leg blanks (pieces 1) to size. The legs taper on their two inside faces, and the bottom two inches are actually feet joined to the legs with offset tenons. Port Orford cedar is quite soft, so I decided to add maple feet for durability's sake. If you use a hardwood like cherry or maple to build this desk, you could skip the feet, but be sure to add the length back to your legs.

Save the taper cuts until after you've milled mortises for the side and back aprons and installed the feet blanks. Make the apron mortises 4⅞" long and 3/8" thick, starting them 3/8" from the top with a router, drill press or mortising machine. Remember that the front legs need side apron mortises only. Save yourself the frustration of miscuts by marking which legs are which right now.

The offset feet tenons are located 3/16" in from the front outside corners of the front legs and the same distance from the back outside corners of the back legs. If you don't locate them carefully, you'll cut through the tenons when making the tapers. Be sure to double-check your saw set-ups. Use a dado set to mill the tenons 1" long and 5/8" square. Cut the two shallow cheeks and shoulders first, then raise the blade to 15/16" to cut the other two cheeks and shoulders (see bottom left *photo,* this page).

With the leg joinery behind you, cut blanks for the feet (pieces 2) and chop mortises for the leg tenons. I made these cuts with a mortising machine and 5/16" hollow chisel bit. Four overlapping passes took care of each mortise. I used a pair of 5/16" spacers and a stop block so I could register the four cuts by simply adding or removing spacers (see bottom right *photo*).

The taper cuts begin 6" from the top of each leg and reduce the feet to 1" square at the bottom. Mark the pair of faces you'll taper on each leg, and make these cuts at the band saw or table saw. If you don't own an adjustable tapering jig, just take a flat piece of plywood or MDF and attach a couple of supports to hold the legs at the taper angle. Run the jig along the rip fence to slice one taper, then flip the blank to the adjacent face to cut the other taper (see *photo* on the next page). Run the tapered faces over your jointer to smooth away the blade marks, then ease the legs' sharp edges with a router and a 1/8" roundover bit.

The legs receive 5/8" square, 1" long tenons on their bottom ends to form mechanical joints for the feet. Make these offset joints on the table saw with a wide dado blade (above). The author cut matching offset mortises in the maple feet using a mortising machine as shown at right.

One Step at a Time

Subtle design elements add to an elegant appearance.

Building the Side Frames

Follow the *Material List* dimensions on page 10 to cut the side and back aprons (pieces 3 and 4). I added a 5/16" bead detail along the bottom outside edge of the aprons before cutting their tenons. Routing the bead first eliminates the possibility of tearout, because you'll cut the ends away when you make the tenons. Form the 3/4" long tenons on the table saw with a wide dado set recessed into a sacrificial rip fence.

Sand the legs and aprons, then glue the side aprons and legs together into a pair of side frames. Pin the mortise and tenon joints with pairs of dowels (pieces 5). See the *Drawings* (pattern at center of book) to locate these pins. I used walnut dowels as accents here.

Assembling the Web Frame and Rear Apron

A web frame fits between the aprons and serves as surrogate front apron. It's also an attachment point for the top and the cases that hold the drawers. To make the frame, slip the back apron between the leg/apron assemblies and measure the inner area, then check it against the *Drawings*. If the measurements jive, cut the web frame parts (pieces 6 through 9) to size. The web frame end and middle pieces have 3/4" tongues on their ends that fit into matching and continuous grooves cut along the front and rear web frame parts. Cut the long grooves first, then make the tongues. Glue and clamp the web frame together, but keep the two middles (pieces 9) dry so you can slide them into position over the drawer cases later. Nail the corner joints of the frame to lock them, and notch the frame's corners so they will fit around the legs *(see Elevation Drawings)*.

The legs receive tapers on two adjacent faces. Mark these faces to avoid miscuts, and rip the tapers using a commercial or shop-made tapering jig. The author made these cuts easily on the band saw.

Attach the side frames and back apron with glue and clamps, slip the web frame into position, and drive screws into the back web frame groove to attach it to the back apron. Since the web frame's ends have no grooves, drill pairs of holes for countersunk screws here.

Finally, drill or rout six elongated holes in the web frame (two on each end and one in the middle of the front and back pieces) for attaching the desktop. These slotted holes allow the top to expand seasonally with changes in humidity without cracking or pulling the apron joints apart. Wrap up by drilling two round holes in the middle of the end frame pieces where the top won't expand.

Making the Drawer Cases

The drawer cases that house the drawers consist of two sides, a bottom and a cleat in back. The drawers are inset style and fit completely inside these cases, so it's important to make the cases accurately and perfectly square. I used plywood for the bottom and concealed outer panels of the cases, but solid wood for the two inner sides that show. To hide the plywood and end grain, these pieces are edged with strips of solid wood.

The corner joints of the cases are exposed-spline miters — a showy design feature the Shakers would probably frown on. Sorry, but I think they're a nice complement to the staggered box joints on the drawers.

Build the drawer cases by cutting pieces 10 through 14 to size. Attach the side and bottom edging pieces to the drawer case sides and bottoms with 1/4" x 1/2" tongue

Once you've bevel-cut the drawer case pieces, lower the blade but keep it tilted to cut 3/8" slots for the splines. Use a standard-kerf blade for this procedure.

and groove joints. Mill the grooves on the edging and the tongues on the other parts. It's a good idea to make the grooves first, then cut the tongues to fit. When you achieve a good slip fit, glue the edging pieces to their mating case parts.

Now, turn to the corner joints. Tilt your table saw blade to cut a precise 45° bevel, and trim the edges of the casings carefully. Back up these beveled rip cuts with scrap when the blade exits through the edging to minimize tearout that would otherwise show. I cut a matching joint from scrap to check for accuracy.

Drop the blade without changing its angle to cut 3/8" spline slots into both beveled edges of the test joint. Move the rip fence so your spline slots are located about 1/8" from the inside corners of the joint — spline joints are much stronger here than with the spline centered or nearer to the outer edges. Adjust the blade projection as needed until the spline slot measures 3/4" across the assembled joint. Then cut the spline slots in the drawer case parts, as shown in the *photo* above.

The easy way to make thin spline stock (pieces 15) safely is to stick a half dozen long strips of walnut stock about 1/4" thick to a piece of MDF with double-sided tape. Run this "sled" through your thickness planer. Make sure to orient the spline stock so the face grain is what you're planing away. If the splines are oriented with the edge grain as their broad face, you'll make short-grain splines that will split easily.

Plane the spline stock down just proud of 1/8", then adjust your passes carefully until the spline thickness matches the slots. Use the spare two sticks of spline stock as test pieces during planing. The splines should slip into the drawer case slots with an easy friction fit and not forcefully. With the splines ready, glue and clamp the drawer cases, making sure they're square all along their length.

Wait for the joints to dry, and nail the cleats (pieces 14) in place to finish the cases. Sand the cases and mount them to the web frame with screws, as shown below. Drive a screw through each case into the front legs as well, to stiffen the stance of these largely unsupported legs. And while you're at it, you should screw through the case cleats into the rear apron also. Now align the middle web frames to overhang the case openings, and screw these in place.

Aside from adding strength to the piece, the web frame also serves as the fastening point for both the top and the drawer cases. After fastening the cases to the web frame, attach the back cleat to the apron with screws.

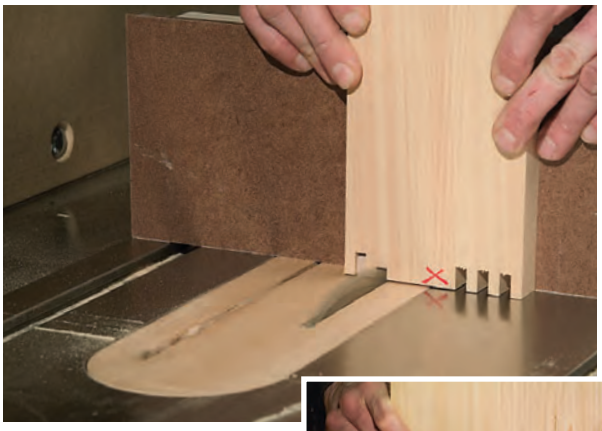
Tackling the Drawers

Except for the front corner joints, I kept drawer construction easy and straightforward. The back joints are 1/4" x 1/4" rabbets and dadoes, and the drawer bottoms are set 1/2" up from the bottom edges of the sides to make room for a pair of drawer slides (pieces 22) underneath. Start construction by cutting the drawer parts (pieces 17 through 20) to size.

As for the front corner joints, they're actually box joints cut with a dado blade on the table saw using an ordinary box joint jig. A 1/4" pin on the jig registers the joint pins and slots 1/4" away from the blade. The jig slides along the miter gauge slot for making the cuts. (You'll need to refer elsewhere for building the jig — which is a common project in many woodworking jig books.)

Simple Techniques

Skip a box joint step to enhance the visual pattern.



Cut the drawer face pins and slots first (above photo). Then use the drawer face to set the first offset for the drawer side joints (right photos).

To make the joints, you'll cut the drawer face pins and slots first, then use the drawer face to start the complementary joint pattern on the drawer sides. Start the face joints by making three slot cuts off of one edge. Be sure the first slot is 1/4" in from the drawer face edge. When the first set of three slots are cut, simply flip the drawer face over and cut three more slots from the other edge — no need to work your way across the drawer face, as is typical for these joints. Then, swap your miter gauge for the box joint jig and cut away the material between the innermost slots to form the wide, center joint slot.

After you have milled the drawer face joints, fit the outer slot of a drawer face over the box joint jig pin and butt the drawer side against the face to make a slot cut right along the edge of the drawer face. Cut two more slots and flip the drawer side to make three matching slots. Remember to use the drawer face to start these slots as well.

Back up all your box joint cuts with a scrap of masonite in the jig to minimize tearout. Otherwise, flipping the workpieces will produce clean cuts on one side but ragged cuts on the other — and both will show. It looks awful.

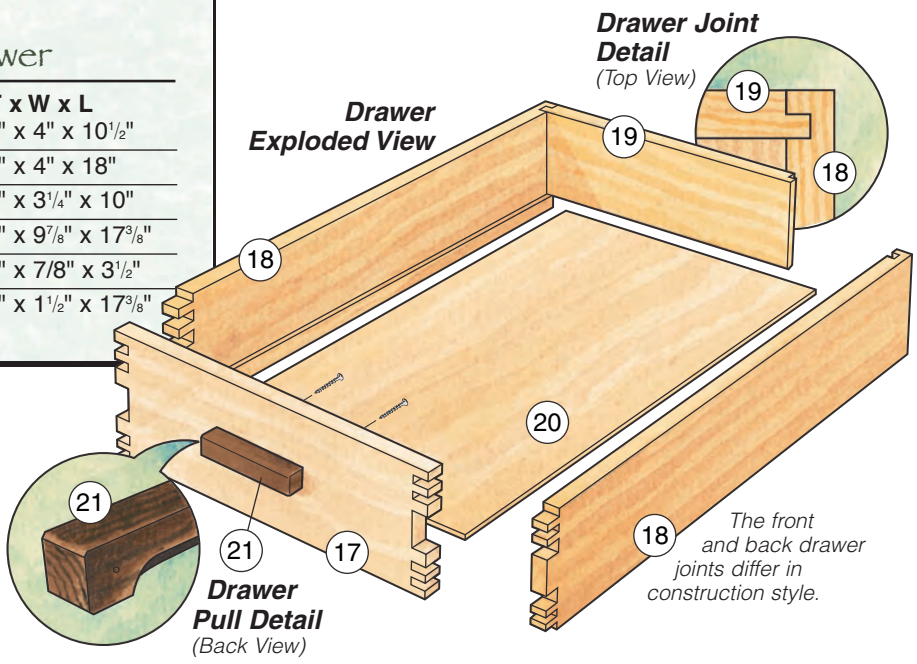
If you build these drawers exactly as I show here, remember that the drawer face slots are just 1/2" deep to seat the 1/2"-thick drawer sides, whereas the drawer side slots are 3/4" deep to fit the thicker drawer faces. Don't forget to change blade heights as you proceed!

Once the front corner joints are cut, reset the saw for cutting the drawer back joints, and mill the drawer bottom slots on the router table with a straight bit. Assemble the drawer boxes dry to be sure they fit in their cases, sand all the

Cut deep underbevels in the desktop by guiding the panel against a tall auxiliary fence clamped to the rip fence.

MATERIAL LIST—Drawer

		T x W x L
17	Drawer Faces (2)	3/4" x 4" x 10½"
18	Drawer Sides (4)	1/2" x 4" x 18"
19	Drawer Backs (2)	1/2" x 3¼" x 10"
20	Drawer Bottoms (2)	1/4" x 9⅞" x 17⅜"
21	Drawer Pulls (2)	7/8" x 7/8" x 3½"
22	Drawer Slides (4)	5/8" x 1½" x 17⅜"



The front and back drawer joints differ in construction style.

parts, then glue and clamp the front joints. Use the drawer backs as spacers to hold the drawer sides apart. When the glue dries, slip the drawer bottoms in place, glue the drawer backs into their slots and nail the drawer bottoms to the drawer backs from beneath.

In keeping with the rectilinear and simple lines of this desk, I opted for drawer pulls (pieces 21) that are just walnut strips with a 2½"-long, 3/8" bullnose profile cut along the back for a finger recess. Build and install them with pairs of screws driven from inside the drawer.

Notice that the drawers are slightly shorter than the case depths. They also should show an even reveal around the cases when installed. I made a pair of simple drawer slides (pieces 22) for each case that stop the drawers flush with the cases as well as "float" them inside to create the reveal. No metal slide hardware here. Plane these slides down until they fit under the drawers and provide an even space around the drawer face. Glue and nail the slides into the drawer cases.

Wrangling the Top

The top of this desk (piece 16) is a 1"-thick glued-up panel. Try to build the panel with an odd number of boards for visual balance, and use consistent-grained stock. I made two narrow glue-ups first that fit through my thickness planer, so I could minimize extra sanding. Breaking a large panel into smaller subassemblies also reduces the number of glue joints you have to manage during clamping — a real stress reducer.

In the end, I had just two final "wet" joints to fuss over when clamping the full panel together.

To lighten the look of this thick tabletop, I cut deep 2" bevels at 20° all around the underside of the panel. It's relatively easy to do if you first clamp a tall, stiff auxiliary rip fence to your saw fence. A sturdy outfeed table is a necessity for this operation as well. To help steady the panel for both the short end cuts and long rips, clamp a "runner" to the panel that rides along the top edge of your tall rip fence. Make the short end cuts first. Then rip the long bevel cuts to remove any tearout that happens when cutting the short ends (see *photo,* facing page).

Sand or scrape the top thoroughly when you're through sawing, and fasten it to the web frame with panhead wood screws. Be sure to center the screws in the slotted holes to allow for movement in either direction.

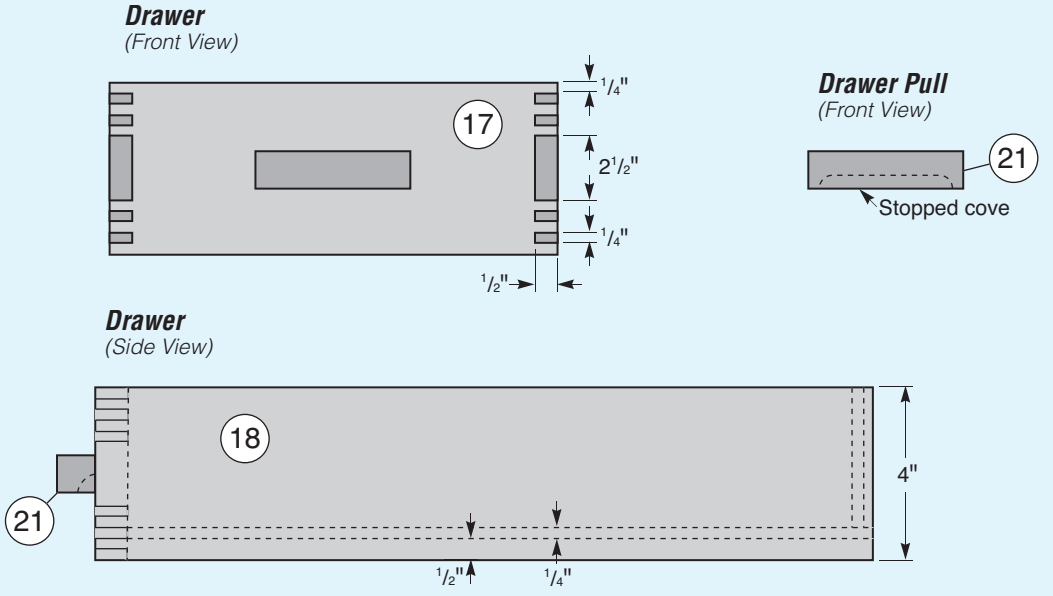
Finishing Up

The amber, "antique" coloring of garnet shellac seemed a good choice for this blond wood, so I applied four coats. To better the odds against leaving white rings from my coffee cup, I topcoated the dewaxed shellac with satin poly varnish. An easier stain-and-varnish finish would work well, too. Give

Chris Marshall is a Woodworker's Journal *contributing editor.*

Fasten the web frame to the top with panhead wood screws driven up through the access slots next to the aprons and drawer cases.

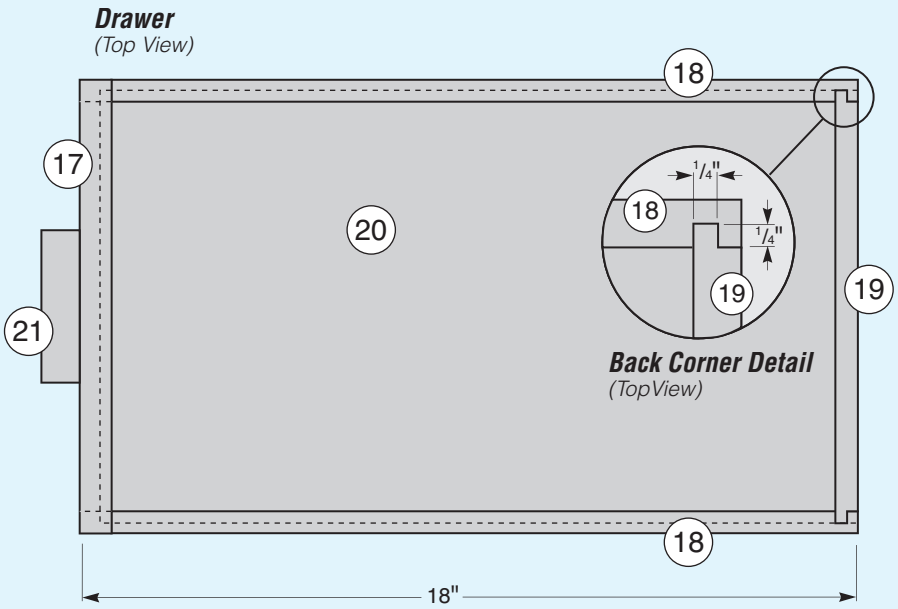
Shaker-inspired Desk
Leg tapers, box joint layouts and machining instructions to build this writing desk.

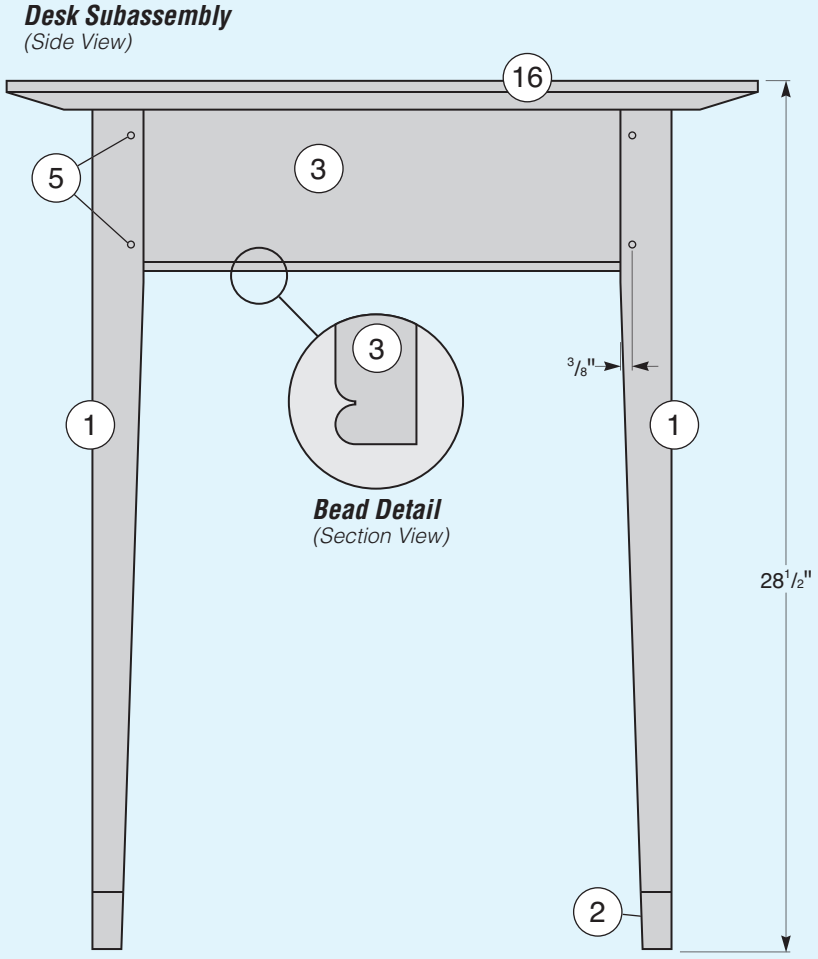


MATERIAL LIST

		T x W x L
1	Legs (4)	1 3/4" x 1 3/4" x 26 1/2"
2	Feet (4)	1 3/4" x 1 3/4" x 2"
3	Side Aprons (2)	3/4" x 5 5/8" x 18"
4	Back Apron (1)	3/4" x 5 5/8" x 52"
5	Dowel Pins (8)	1/4" Dia. x 1 1/4"
6	Web Frame Front (1)	3/4" x 1 3/4" x 50 1/2"
7	Web Frame Back (1)	3/4" x 1 3/4" x 52"
8	Web Frame Sides (2)	3/4" x 2 1/4" x 17"
9	Web Frame Middles (2)	3/4" x 1 1/2" x 17"
10	Drawer Case Sides* (4)	3/4" x 4 13/16" x 17 3/4"
11	Drawer Case Bottoms (2)	3/4" x 12" x 17 3/4"
12	Drawer Case Side Edging (4)	3/4" x 1 3/4" x 4 13/16"
13	Drawer Case Bottom Edging (2)	3/4" x 1 3/4" x 12"
14	Cleats (2)	3/4" x 1 1/2" x 10 5/8"
15	Splines (4)	1/8" x 3/4" x 17 3/4"
16	Top (1)	1" x 26" x 60"
17	Drawer Faces (2)	3/4" x 4" x 10 1/2"
18	Drawer Sides (4)	1/2" x 4" x 18"
19	Drawer Backs (2)	1/2" x 3 1/4" x 10"
20	Drawer Bottoms (2)	1/4" x 9 7/8" x 17 3/8"
21	Drawer Pulls (2)	7/8" x 7/8" x 3 1/2"
22	Drawer Slides (4)	5/8" x 1 1/2" x 17 3/8"

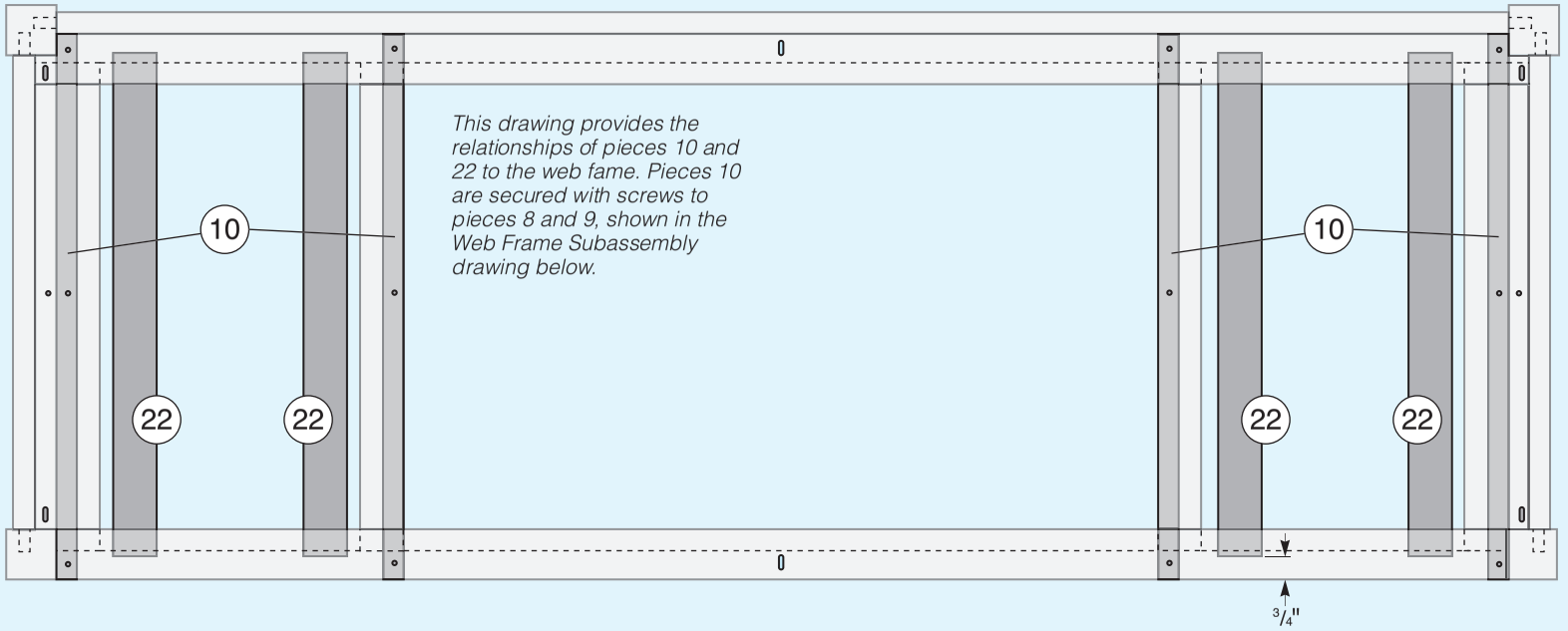
**The hidden outer sides are plywood, the inner sides are cedar. All four sides are edge banded to hide either plywood or end grain.*


Drawer
(Top View)
18
17
20
19
21
18
18
1/4"
1/4"
19
Back Corner Detail
(TopView)
18"


Desk Subassembly
(Side View)
16
5
3
3
3/8"
1
1
Bead Detail
(Section View)
28 1/2"
2

Drawer Case Sides and Drawer Slide Locations

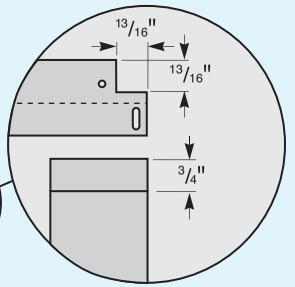
(Top View)



This drawing provides the relationships of pieces 10 and 22 to the web fame. Pieces 10 are secured with screws to pieces 8 and 9, shown in the Web Frame Subassembly drawing below.

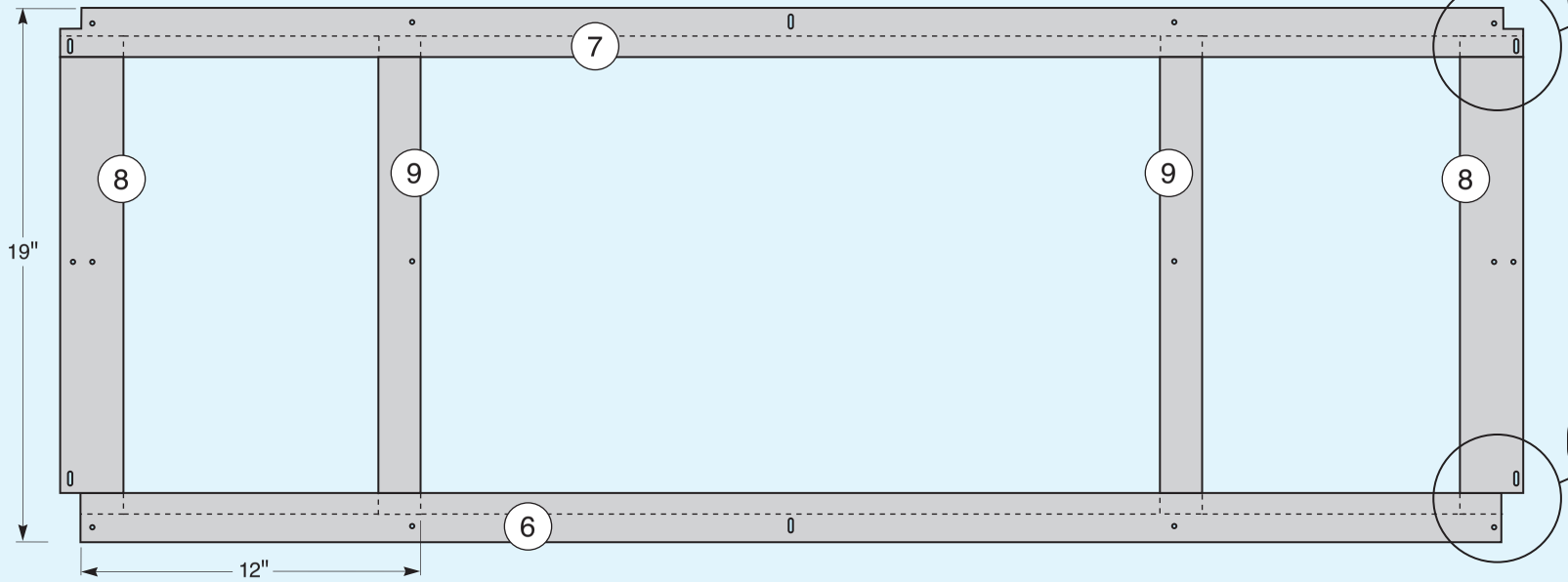
Web Frame Rear Corner Detail

(Top View)



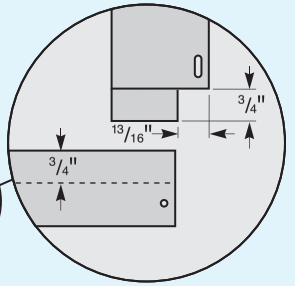
Web Frame Subassembly

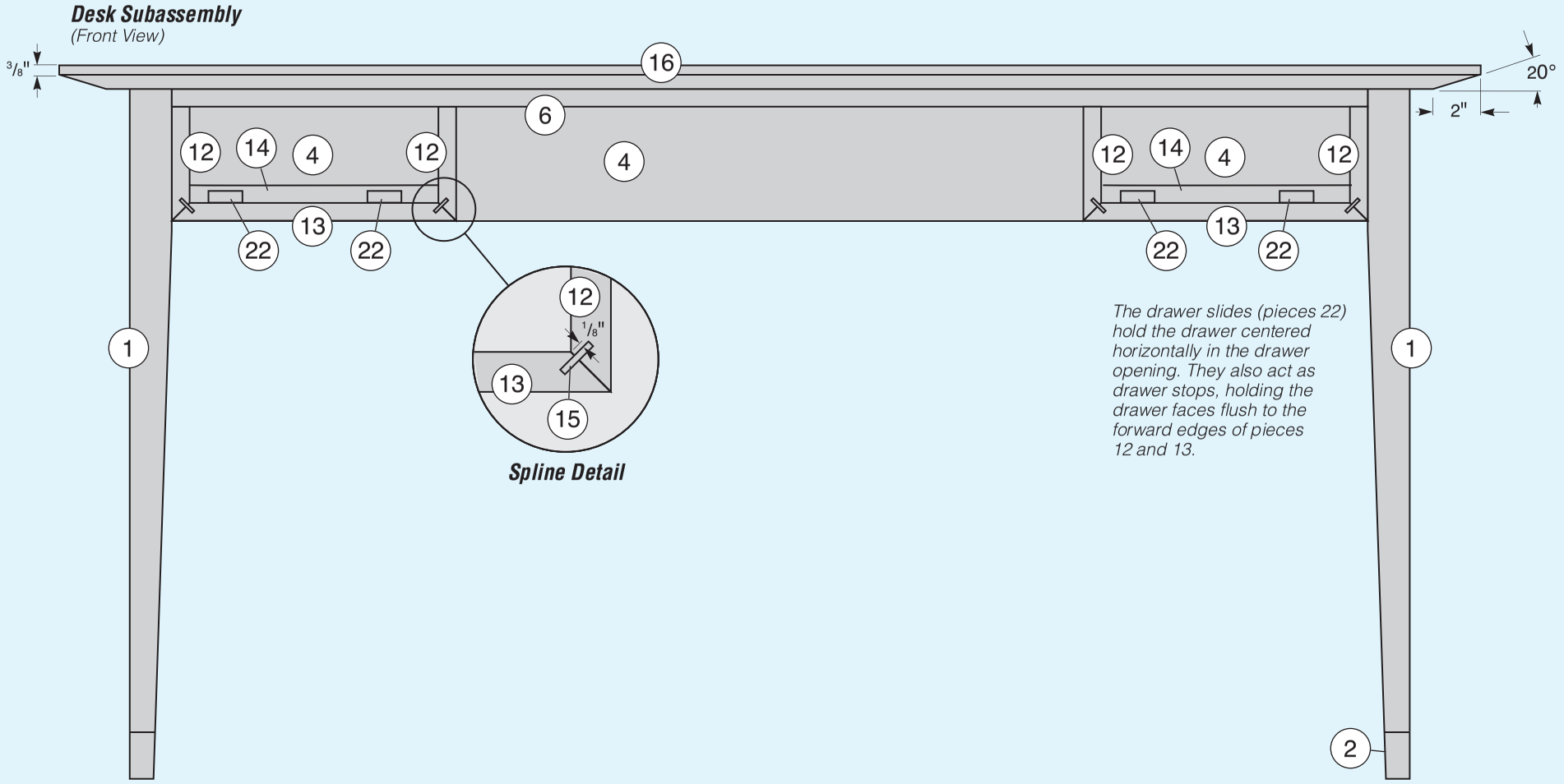
(Top View)



Web Frame Front Corner Detail

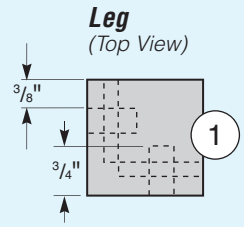
(Top View)



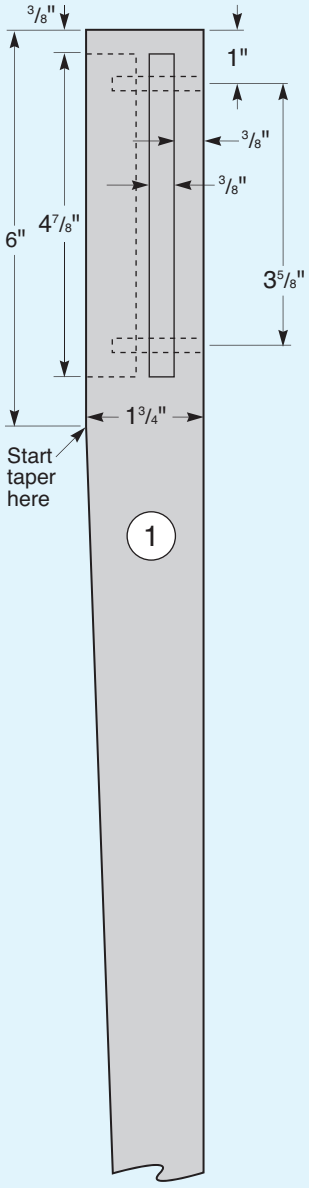

Desk Subassembly
(Front View)
3/8"
16
20°
2"
6
12
14
4
12
4
12
14
4
12
13
22
22
22
13
22
1
1
2
12
1/8"
13
15
Spline Detail
The drawer slides (pieces 22) hold the drawer centered horizontally in the drawer opening. They also act as drawer stops, holding the drawer faces flush to the forward edges of pieces 12 and 13.

Note: The rear and front legs are identical with the exception that the front legs only have one apron mortise milled into them.

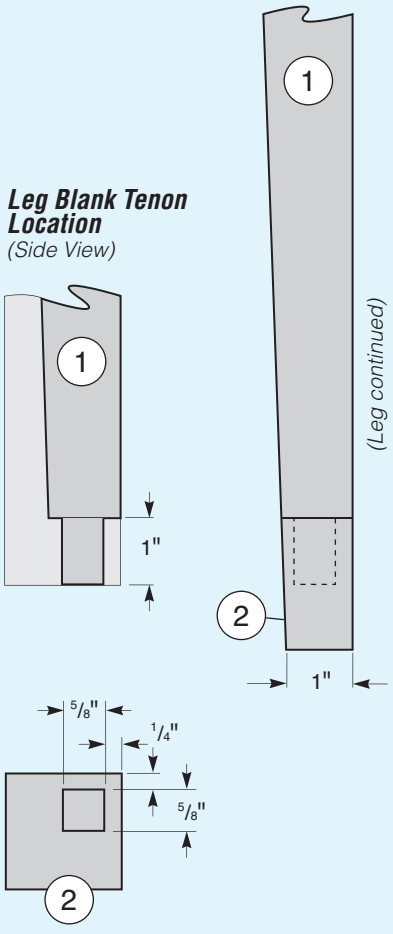
The apron tenons are pinned in place by walnut dowels. The dowels provide a simple visual accent as well.



Leg
(Top View)



Leg
(Side View)



Leg Blank Tenon Location
(Side View)

Foot Blank Mortise Location
(Top View)

Build a Shaker-inspired Woven Rocker

A handful of story sticks, two shop-made jigs and a tweaked lathe are the secrets behind our author's handsome rocker.

By Kerry Pierce

Twenty years ago, I built my first reproduction of a Shaker chair. It was based on a drawing by John Kassay (in *The Book of Shaker Furniture*) of a fairly early New Lebanon rocker. Over the next dozen years or so, I tinkered with the form, giving the arms a more sculpted shape, changing the backrest from slats to a woven panel and introducing new finials and vases. The chair you see here is the current incarnation of that form — one that has remained unchanged for several years because it's exceptionally comfortable and reasonable to build.

I don't use a measured drawing to produce copies of this chair. Instead, this chair (and all others I build) are represented only by sets of story sticks. In the case of this rocker, one stick represents the back posts with back-rung mortise locations marked on one side of the stick and side-rung mortise locations on the other. Another stick represents the front posts with side-rung mortise locations on one side and front-rung mortise locations on the other. The post sticks also include graphic representations of vase and finial shapes. I create the chair's bandsawn elements — the arms, rockers and crest rail — from traceable scrap-wood patterns. In addition, each of the rungs is represented by a stick cut to the length of the part, with tenon lengths marked on the ends.

Story sticks are common cabinetry and carpentry tools that help reduce the need for measuring everything ... and that alone prevents lots of building errors.

Extra-long Lathe Bed is a Must

Begin the project by ripping blanks for turning stock on your band saw (see *Material List*, page 24).

Although I have jigs that help me band saw square turning blanks into octagons, I have abandoned this practice over the years. It's so much easier to simply turn the square blanks round on the lathe.

In order to build full-size post-and-rung chairs, you must have a lathe that can accommodate at least 44" between centers. While it is possible to buy lathes that can be opened up that far, those models are usually quite expensive. My lathe is an inexpensive Craftsman model equipped to handle only 36" between centers. I pulled the lathe-bed tube from the headstock and had a second mounting foot welded to the headstock end of the tube so I can mount the lathe bed anywhere I

This set of story sticks constitutes the templates our author uses for this rocker. The three cherry parts are traceable patterns for arms, rockers and crest rail. The four sticks near the top are rung sticks on which the tenon lengths are indicated. The other two sticks represent the front and back posts. Those sticks index rung locations, finial and vase shapes and post diameters at various points along their lengths.

Prepare your lathe for oversized spindles

The author's modest Craftsman lathe is modified with a bed extension and wooden length-of-part toolrests. He also added gravel to each of the shop-made columns supporting the lathe.

want on the lathe table, giving me, at least in theory, a lathe with an infinite distance between centers. While it might not be possible to modify your lathe in this way, all lathe beds can be lengthened, although some modifications are easier than others.

Turning the Posts and Rungs

Long, thin spindles tend to flex away from the tool as you turn. I'd like to suggest three techniques to counter this tendency. First, choose a mid-range lathe speed. I use 1,350 RPM. Too fast, and the spindle will vibrate in a very unsettling manner. Too slow, and the spindle's tendency to flex away from your tool is enhanced. Second, use your off hand as a steady rest. (I sometimes wrap several turns of masking tape around the palm of my right hand — I'm left-handed — and, with that protected palm, I support the back side of the turning directly opposite the lathe tool.) Be sure you keep your fingers dangling down so they can't be drawn up into the gap between the work and the rest. Third, be very careful about the way you move your tool into the work. Don't push it forward. Instead, with the handle well down, lay the heel of the bevel against the rotating work. Then gradually raise the tool's handle until the cutting edge engages the work.

The finials atop the back posts and the vases below the arms are very simple shapes. I begin the finials by forming the flats above and below the full bead with a parting tool. I then roll the full bead with my 1⅛" skew and use the same tool and technique on the half beads below the bottom flat and above the top flat, as well as the half bead at the very top of the finial. I form the bottom of the front post vase with a 3/8" fingernail gouge working from above and below into the hollow. I cut the taper at the top of the vase with my roughing gouge.

When you're finished shaping the four posts, turn the 14 rungs to shape. Start with blanks at about 4" longer than necessary to allow room for forming the tenons.

Turning the spindles, finials and vase details

The author uses his free hand to support the back of thin spindles when he turns them to shape. It reduces flexing and excess vibration.

Roll half beads with the bottom half of your skew chisel. Engage the work you're rounding with the skew at a 45° angle, then roll it over the section so that the stroke is completed with the skew standing on-edge on the rest.

Use a parting tool to create the two filets on either side of the bead at the base of the finial. Steady the post with your hand.

Form the cove at the base of the front-post vase with a 3/8" fingernail gouge. Begin with the gouge standing on its side facing the cove. Then roll it 90 degrees into the cove until it lies on the rest with the flute up.

Shaping the Tenons

The tenon at the top of the front post and the tenons on the ends of each rung must be carefully formed, because the resulting joints made from fitting these tenons into 5/8" mortises are what principally hold the whole chair together.

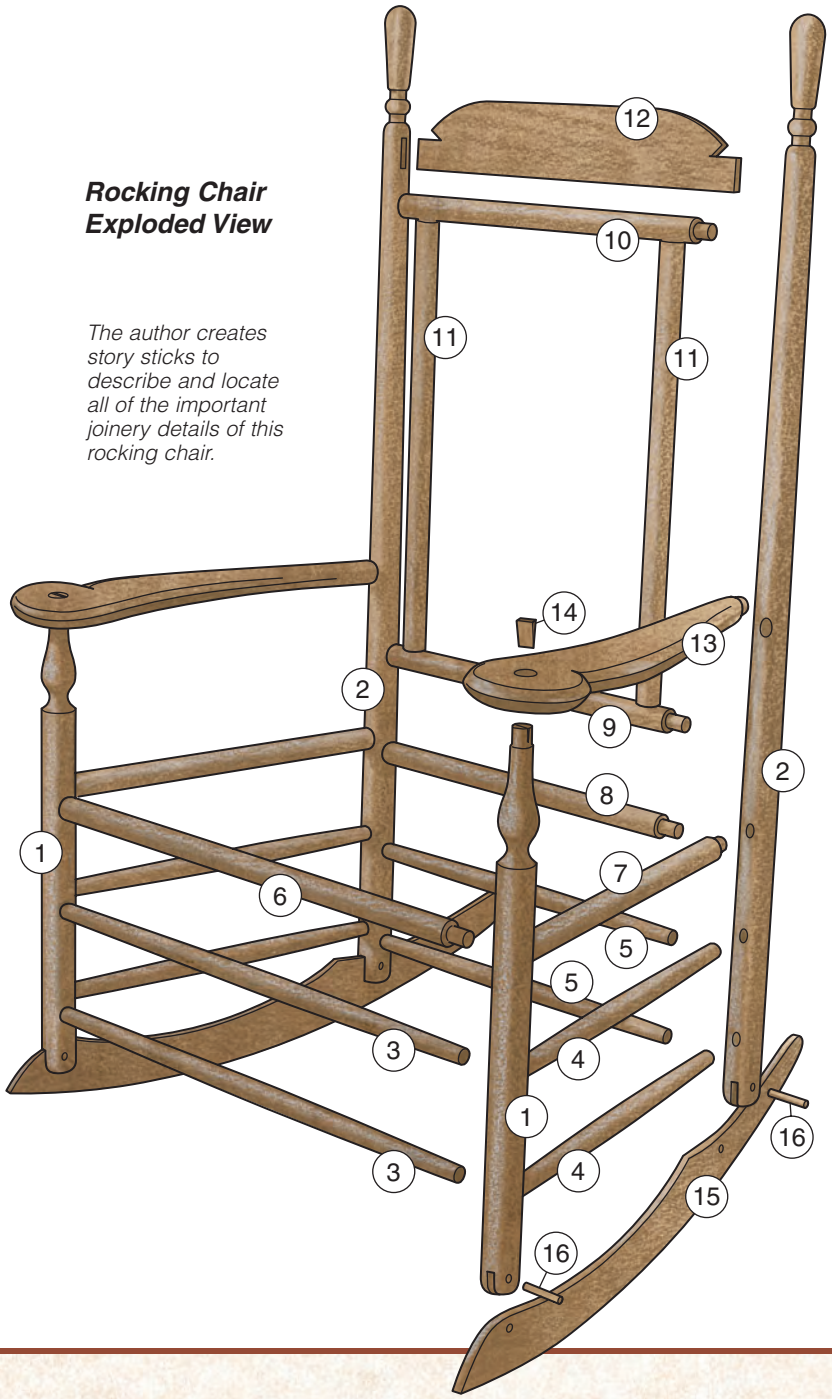
I form the tenons by first working a hollow in the tenon area with a fingernail gouge. When the thinnest diameter of that hollow is 5/8" (measured with a caliper), I lay a very sharp 1" butt chisel bevel-side-down on my tool-rest and carefully feed it into the tenon until its entire 7/8" length is reduced to 5/8".

Tenon fit is critical, and — perhaps oddly — tenons a tiny bit loose are better than tenons a tiny bit snug. Snug tenons can cause major headaches at assembly when you're trying to simultaneously bring a dozen tenons into a dozen mortises.

Once all the parts have been turned, lathe-sand each up to 220-grit. Then remove the parts from the lathe and cut the surplus length off your turning blanks. Because the back posts are relatively thin near the top of the chair, the 5/8"-diameter tenons on the backrest upper rung (the top element in the

Rocking Chair Exploded View

The author creates story sticks to describe and locate all of the important joinery details of this rocking chair.



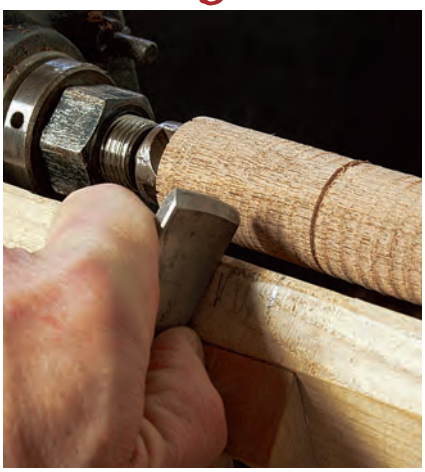
MATERIAL LIST

	T x W x L
1 Front Posts (2)	1½" Dia. x 20¾"
2 Back Posts (2)	1½" Dia. x 43⅞"
3 Front Spindle Rungs (2)	1" Dia. x 23"
4 Side Spindle Rungs (4)	1" Dia. x 16½"
5 Back Spindle Rungs (2)	1" Dia. x 17¼"
6 Seat Front Rung (1)	1" Dia. x 23"
7 Seat Side Rungs (2)	1" Dia. x 16½"
8 Seat Back Rung (1)	1" Dia. x 17¼"

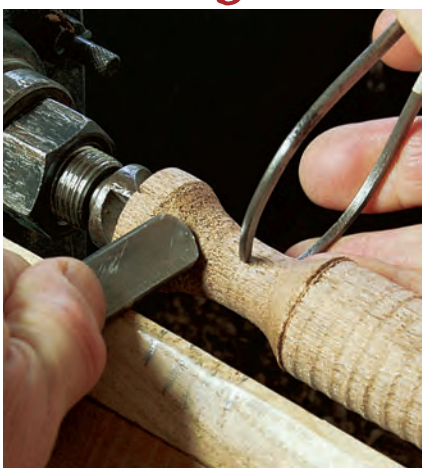
	T x W x L
9 Backrest Lower Rung (1)	1" Dia. x 17¼"
10 Backrest Upper Rung (1)	1" Dia. x 17"
11 Backrest Side Posts (2)	1" Dia. x 19⅜"
12 Crest Rail (1)	5/16" x 3" x 17"
13 Arms (2)	3/4" x 4¼" x 18¼"
14 Wedges (2)	1/16" x 5/8" x 3/4"
15 Rockers (2)	3/8" x 4" x 28"
16 Rocker Dowels (4)	1/4" Dia. x 1½"

NOTE: All measurements given are finished dimensions. Additional length and girth will be required for all blanks used to form the turned parts.

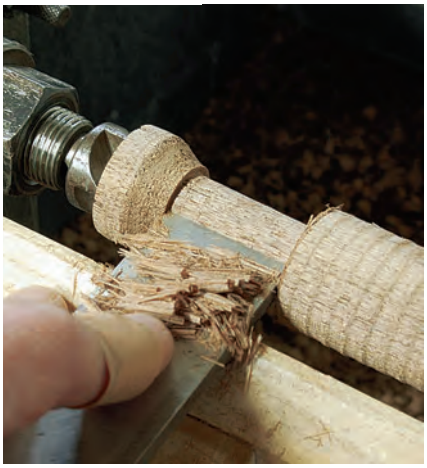
Turning tenons, setting mortises



The author transfers the lengths of the rungs from the story sticks directly onto his wooden tool-rests, then to the work with a skew chisel.



Reduce the tenon nearly to final size with a fingernail-ground spindle gouge, checking its diameter periodically with calipers.



Finish the tenon with a bevel-side-down paring chisel. Aim for consistent tenon thickness and a slightly loose fit. Cut off the end waste.

back panel frame) should be only 9/16" long. Using this same tenon-forming technique, create the 7/16"-diameter x 1/2"-long tenons on the ends of the backrest side posts that will make up the sides of the back panel. Turn all the rung tenons.

Finally, turn the tenons at the tops of the front posts. Make them long enough to accommodate the thickness of the arms, plus some extra that you'll cut flush with the top of the arms.

This marking jig allows the author to draw mortise lines along the posts that are parallel to the axis of rotation. He first locks the lathe's indexing head, then slides the jig along the lathe table while keeping the pencil point engaged with the work.

Locating and Marking Mortises

I use my lathe's indexing head to lay out penciled reference lines to locate the rung mortises.

An indexing head is a disk centered on the lathe's axis of rotation. The disk on my lathe has 36 equally spaced holes drilled near its circumference. A spring-loaded indexing pin allows me to lock the head at any of these 36 stops. I can, therefore, lock the head and draw a line along the length of the outside diameter of the post with my marking jig (see *photo*, left). That line will be exactly parallel to the lathe's axis of rotation (the post's centerline). In the case of the back posts, after drawing the first line, I release the locking pin, count 10 stops, reset the locking pin and, with my marking jig, draw a second line. These lines are then 100 degrees apart on the post's outside diameter. This 100-degree separation is the angular distance between the centerlines of the back rungs and the centerlines of the side rungs. I repeat the process on the front posts, with one exception: Because the angular distance between the centerlines of the side rungs and the front rungs is only 80 degrees, I count off only eight stops on the indexing head.

If your lathe lacks an indexing head, here's an alternative method. First, rip a flat carpenter's pencil along its length so the lead is exposed from end to end. Then, on your bench top, clamp a pair of posts together. Lay one ripped half of the carpenter's pencil — exposed lead down — across the pair of posts. Slide the pencil along the lengths of the posts. This will leave behind a line along each post that is parallel to its centerline. Then rotate the posts (approximately 100 degrees for back posts and approximately 80 degrees for front posts), re-clamp them, and create a second line by drawing the ripped pencil along the lengths of the posts.

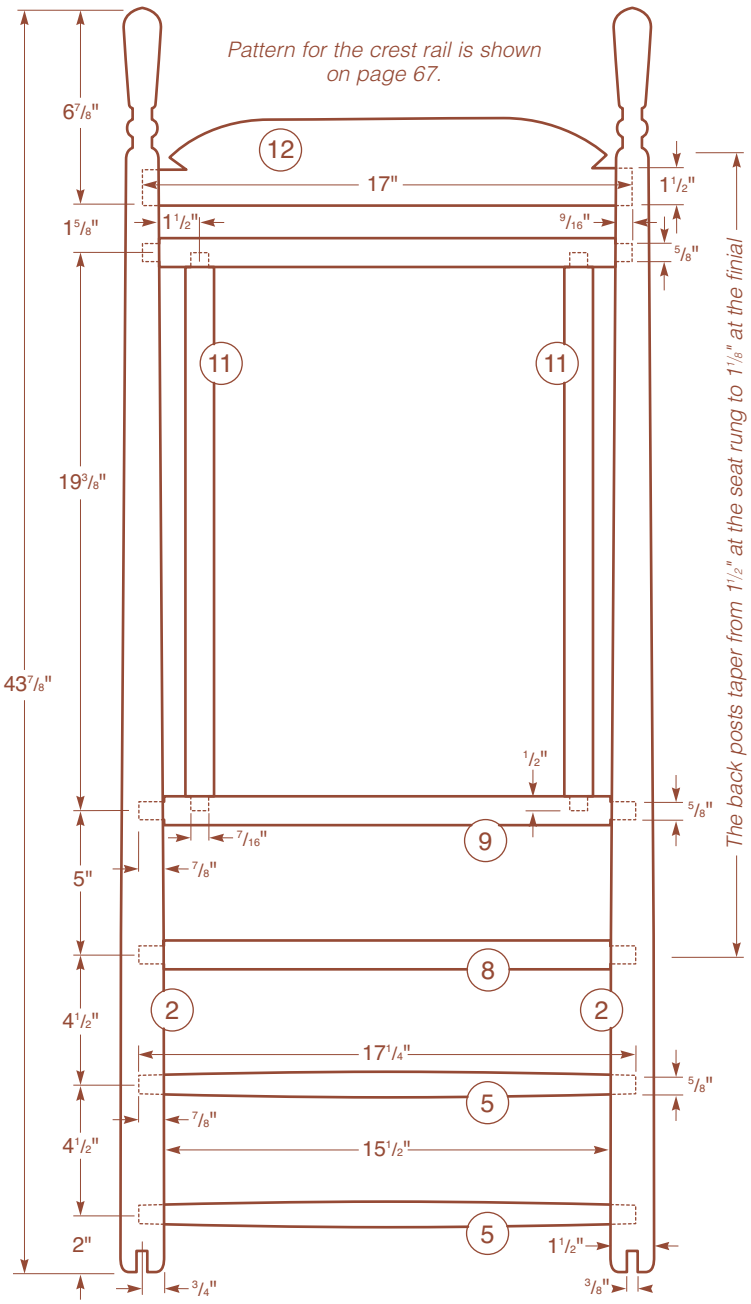
Estimating 100- and 80-degree increments may sound foreboding, but it's not. Remember that the 100-degree distance is just a bit more

Once the mortise reference lines are drawn on the posts, you can easily transfer rung-mortise locations directly from the story sticks.

than 90 degrees and the 80 a bit less. All you really need at this point is an estimation so you have something on which to mark mortise locations along the lengths of the posts. The exact angular positions will be created later using two types of rung-mortise jigs.

After you've drawn reference lines along all the posts using whichever method for establishing these lines, lay a story stick along one line on one post. Mark the mortise locations along the length of the post by transferring the information from the stick to the post (see *photo*, above). Be very accurate with these placements along the lengths. Then rotate the post to the other line, flip the story stick over, and transfer the other set of mortise locations. (*Editor's Note: You must have one left front post and one right front post. Two matching posts won't work. Same rule applies to the back posts.*)

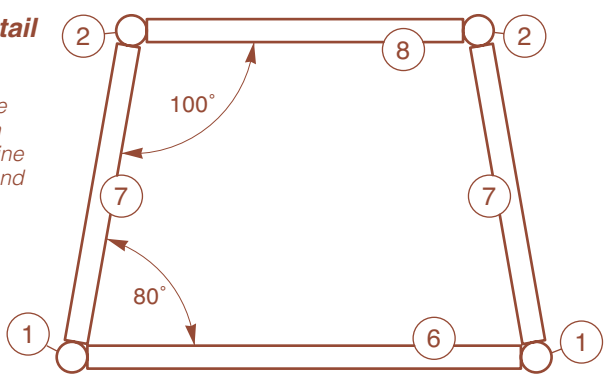
Back Ladder *(Front View)*



Seat Angle Detail

(Section View)

The author uses the indexing feature on his lathe to determine and mark the 80° and 100° angles.



Drilling jigs ensure spot-on mortises

Drilling Rung Mortises with Jigs

To simplify drilling the rung mortises, I devised two very simple rung-mortise jigs: the side-rung mortise jig (SRMJ) and front-rung mortise jig (FRMJ). They'll work for any chair with back rungs 100 degrees from the side rungs, and that includes many, many Shaker chairs. In use, you'll need to support each of these jigs on a large, flat surface on your drill press. Build both the jigs now from scrap, following the *Drawings*, below.

The purpose of the FRMJ is to keep the posts from rotating as you drill the 5/8" mortise holes. Snug the first post up against the side of the jig so the layout line along the length of the post is parallel to the jig's long leg. Then lock the post into place by turning two screws into the end grain of the post.

With the post locked, line up the first mortise location under your drill bit. (Be sure to have the drill press set to drill a 15/16"-deep hole in the post. This is best established by drilling into a scrap test piece turned to the correct diameter.)

Snug the post up tight against the front-rung mortise jig (FRMJ). Then rotate the post so the line along which you've marked the front (or back) rung mortises is parallel to the jig's long leg. Measure and verify equal distances along the full length of the post. Then drive a pair of drywall screws into the end grain at the bottom of the post to lock it in place.

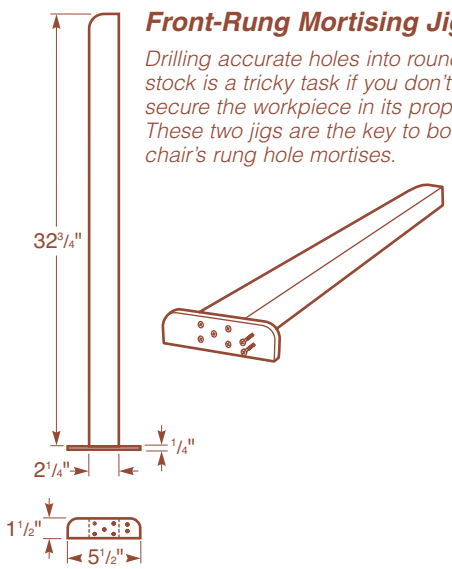
Drill the back-rung mortises in your back posts and your front-rung mortises in your front posts. (*Editor's Note: Be sure not to drill any side-rung mortises with the front-rung jig — it's an easy mistake to make and impossible to fix without remaking new leg blanks.*)

Before you put the FRMJ away, drill a pair of 1/2"-diameter mortises near each end of the top two backrest rungs (the top and bottom elements of the back panel). These are the mortises that will accept the 7/16"-diameter tenons on the ends of the backrest side posts.

Building the Rung Drilling Jigs

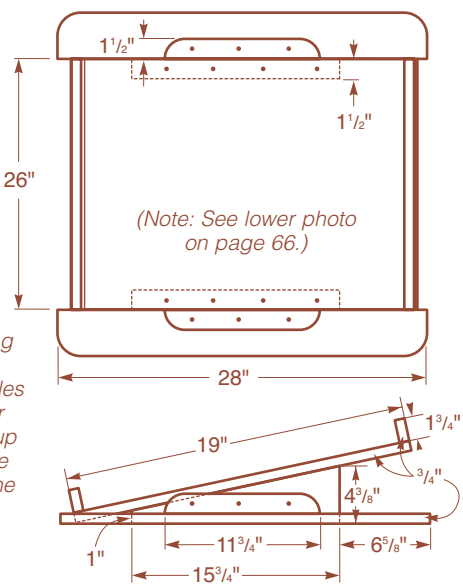
Front-Rung Mortising Jig

Drilling accurate holes into round or cylindrical stock is a tricky task if you don't use a jig to secure the workpiece in its proper orientation. These two jigs are the key to boring the rocking chair's rung hole mortises.



Side-Rung Mortising Jig

The Side Rung Mortising Jig is designed to help you accurately bore holes into the side rungs after they have been glued up into a subassembly. The jig will accommodate the left- and right-hand subassemblies.



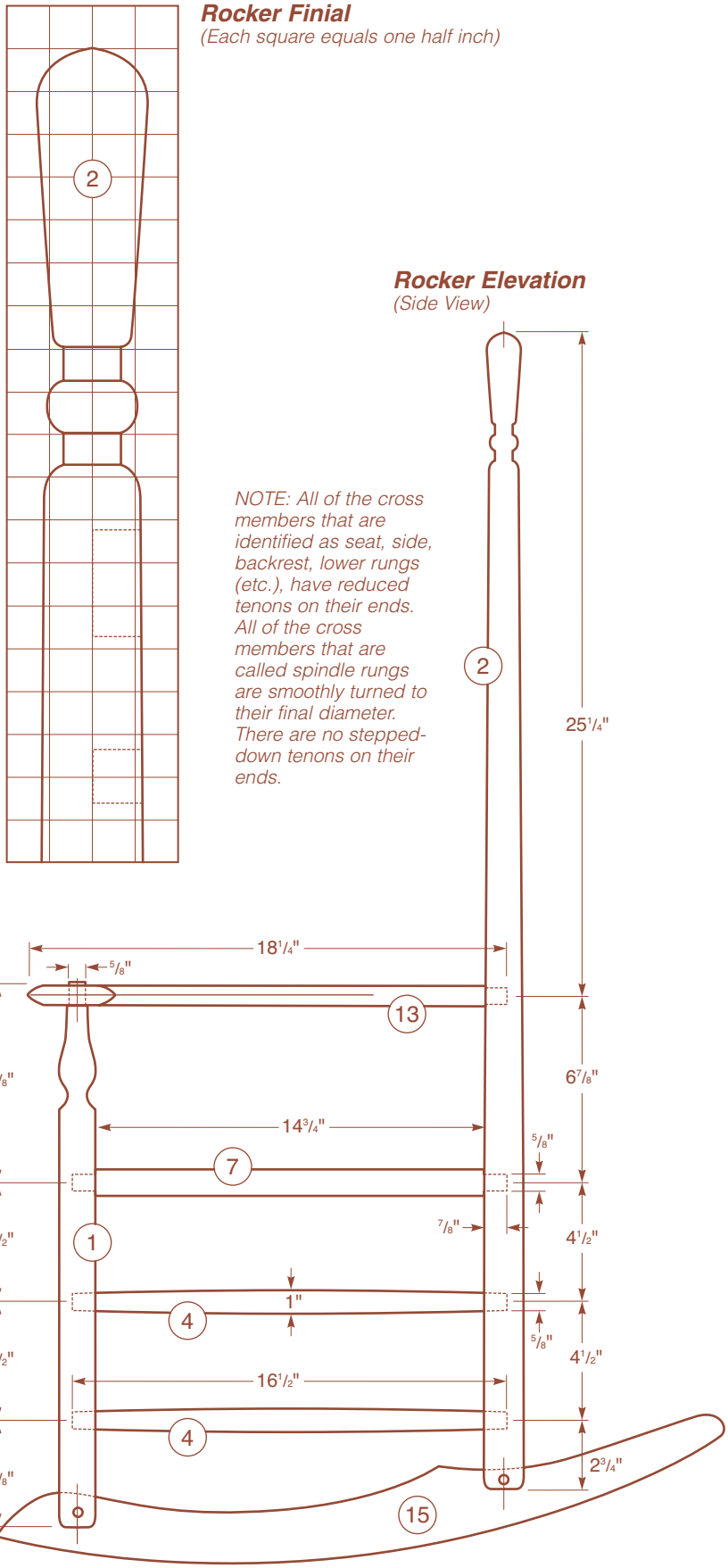
Bore holes for the front and back rung mortises on the drill press with an oversized table supporting the FRMJ. Set up the drilling depth first, testing it on same-diameter scrap.

Assembling the Ladders

The front ladder is now ready to be assembled. Do a dry fit, then apply glue to the all the joint parts and tap the ladder together with a soft mallet to start the tenons. Close the joints with a long clamp. Check the ladder with a framing square. Rack it into square if necessary, making sure it lies flat on a flat surface, then set it aside to cure. DO NOT leave a clamp installed on the assembly, which could deform it ... the glue will make this error permanent. Just let it dry flat and unclamped.

Band saw the crest rail to shape and finish the edges. I carve the ends of my rails, but this is optional.

Chop a crest rail mortise in each of the back posts. The back ladder will then be ready to assemble. A dry fit is particularly important here because the backrest parts and the back ladder should be assembled at once. When everything is just the way you want it, assemble the joints with glue, use a clamp if needed to close them, and let the back ladder dry unclamped on a flat surface.



Bringing it all together

Drilling the Side-Rung Mortises

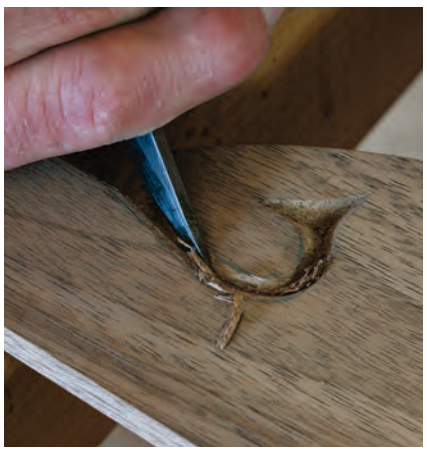
When the ladders are fully dry, it's time to drill the side-rung mortises. I'll save you the geometry lesson and just say that you can use the same side-run mortising jig (SRMJ) to drill the side-rung mortises in both ladder assemblies.

Take a couple of moments to study the *photo,* below right. Here the jig is set up to drill side-rung mortises in the front ladder. I simply clamped the jig to my drill press table so that when I brought the bit into the front post, it drilled a mortise along the centerline of that post, exactly 15/16" deep. It may take a bit of experimentation to get this set up correctly, so experiment using a section of scrap turned to the correct diameter. Once everything is dialed in, slide the front ladder along the jig, drilling the three side-rung mortises on that post. Then turn the ladder around and drill the three mortises in the other post.

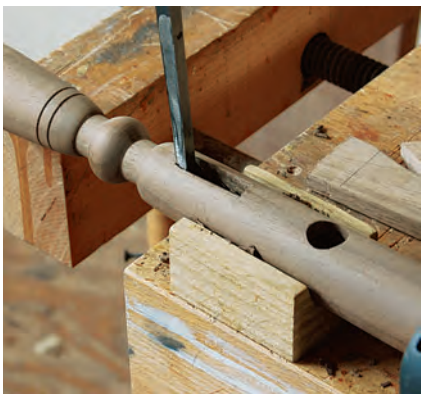
To drill the side-rung mortises in the back ladder, rotate the jig 180 degrees on the drill press table and clamp it in place to bore mortises along the centerlines of the posts. Again, make these exactly 15/16" deep. Work out the setup on scrap first. (*Editor's note: Be sure to drill the mortises for the tenons at the back of each arm now, while the back ladder is on the SRMJ.*)

Assemble the Chair Frame

Once all the side-rung mortises are drilled, dry-fit the chair frame together by placing all of the side-rung tenons into their mortises. If you've got a good fit, pull the assembly apart, brush glue onto the parts and squeeze the front and back ladders together with a clamp. Allow the glue to dry thoroughly.



The author details the crest rail with decorative carvings using a sharp knife and paring chisel, followed by careful sanding.



Chop out the crest rail mortises in the back posts with a 1/4" mortising chisel. Make the mortises 9/16" deep and 1½" long. Use a curved support to brace the post from below and to keep it from twisting.

Making the Arms and Rockers

Make patterns for the arms and rockers (see gridded *Drawings*, right), and trace them onto your project stock. Saw the rockers and arms to shape. I fair the arms by hand, using a series of pencil marks to set the transition areas for shaping. I rough-in the long-grain bevels with a drawknife. The arms are then finished with chisels, rasps and sandpaper. Now whittle the 7/8"-long, 5/8"-diameter tenons on the ends of the arms, and drill the front post tenon mortises.

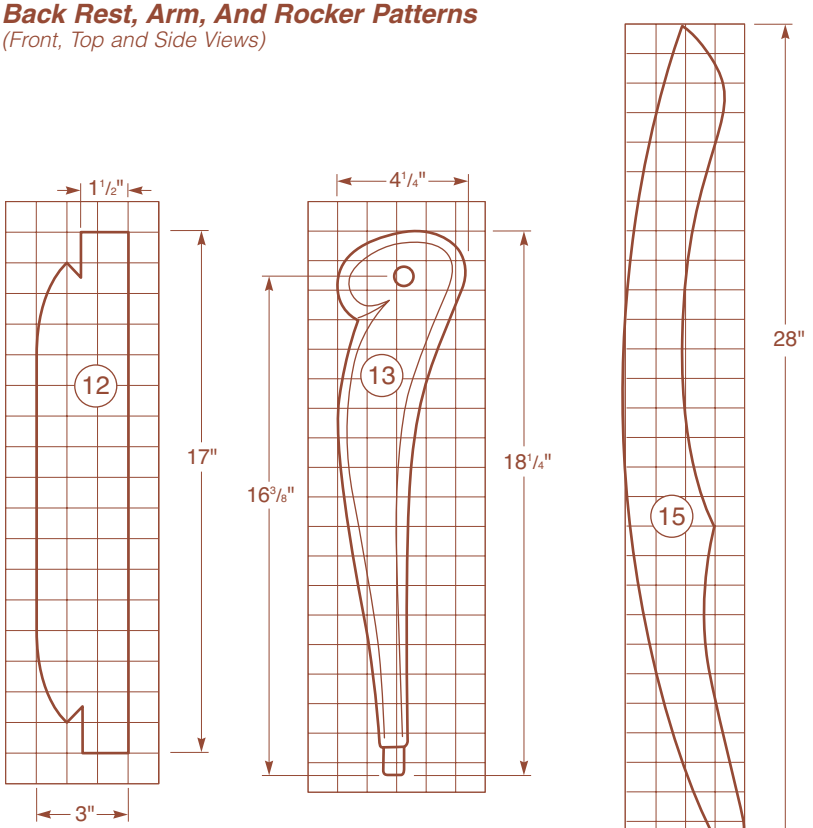
After you've glued your front ladder together, set up the side-rung-mortise jig (SRMJ) as shown so that it will bore a 15/16"-deep mortise in the center of the posts. Then drill the three side-rung mortises in one post, turn the ladder around, and drill the three side-rung mortises in the other post. Next, rotate the jig 180 degrees on your drill press table and drill the side-rung mortises in the back ladder.

The author turns to a drawknife, rasps and sanding to shape the edges of the arms. Pencil lines establish the transition areas.

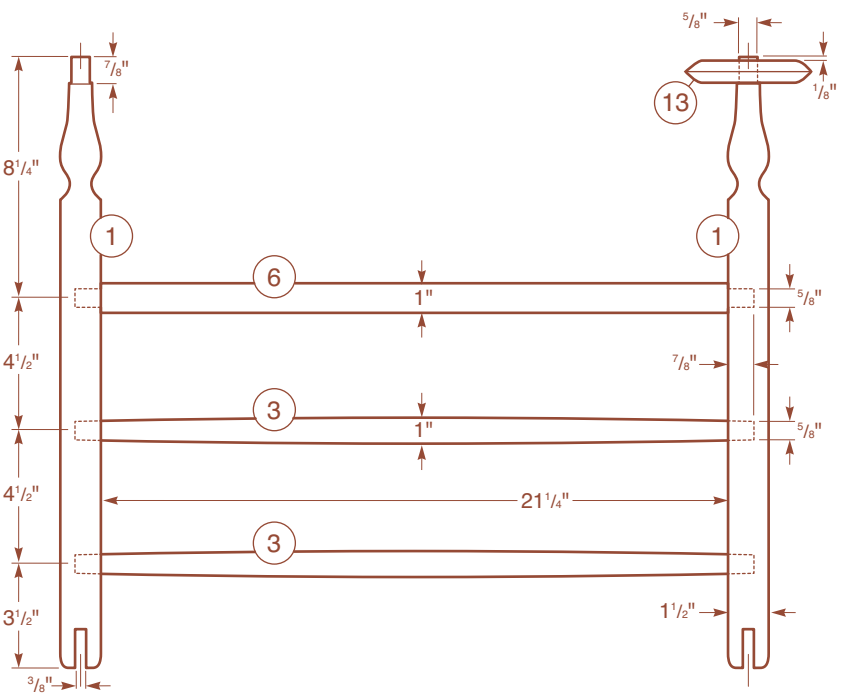
The through tenon at the top of the front post is held in place with a wedge that tapers from about 1/16" at the very top of the front post to nothing at the base of the tenon. I also drill a 1/8" through relief hole at the base of this notch to reduce the likelihood of splitting when the locking wedge is tapped into place.

Cutting the rocker notches requires a combination of cleats and clamps to hold the chair secure as the notches are formed.

Back Rest, Arm, And Rocker Patterns
(Front, Top and Side Views)



Front Post, Rung and Arm Elevation
(Front View)



Weaving a Traditional Seat with Rattan Splint

The seat and back panel of this rocker are woven with rattan splint (flat reed), available from Connecticut Cane and Reed (*www.caneandreed.com*). Three hanks should be enough to weave one chair.

Soak a hank of splint in a tub of warm water for about an hour before you use it. Then open it up, bend a strand, and examine it. You'll notice that one side has loose fibers lifting from it, and the other side is smoother with fewer lifting fibers. Arrange every strand you weave so the smoother surface faces upward.

A chair seat weave consists of two elements. The "warp" is the pattern of strands that runs between the front and back rungs. The "weave" is the pattern of strands woven perpendicular to the warp.

Tape the starting end of the first warp strand to the side rung as shown in Photo 1. Feed the warp up under the front rung, over it, then back around the back rung in a loop. Repeat these loops until you've filled the central rectangle of the seat. The final warp strand should pass over the front rung, then under, to the back of the side rung where you can tape it off.

Note: If you have to splice in a new length of warp, simply lap the first eight or so inches of the new warp over the last eight inches of the old warp and staple the two together (see Photo 2).

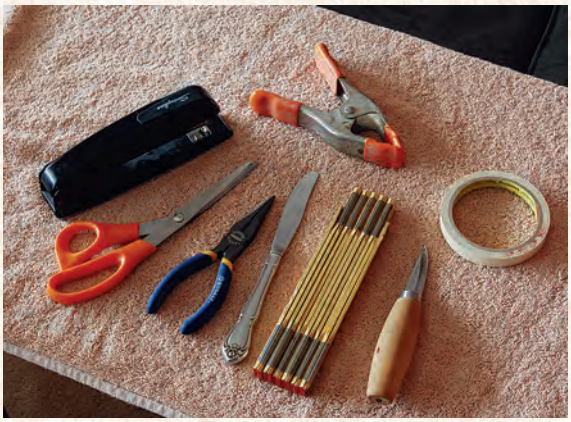
Now you can thread the first weaver into place between the warp strands (see Photo 3). Before you dive into the other weavers, study Photo 4 for a few minutes. Notice that each new strand of weaver enters into the warp one warp strand forward from the point of entrance of the previous weaver strand. Add gusset strips to fill the triangular sections of the seat (see Photo 5).

If you make a mistake with your weavers (and you probably will), nothing is lost. Simply pull out weavers until you reach the mistake. Then reweave. Also, an occasional weaving mistake is a cosmetic issue only. If, after you've finished the seat, you find a weaving mistake in the first few rows of weavers, it isn't structurally necessary to unweave the whole seat and start the process over again.

Although I splice weavers on both the top and bottom surfaces of chairs, most chairmakers splice on the bottom only. There's no need to staple the weavers; the tightness of the weave will hold the splice together.

Weave the back panel in the same way you wove the seat. I recommend that you remove the warp-splice staples on the back of the chair when you're done because the tightness of the weave will hold the splices tight. You can go ahead and remove the staples on the bottom of the seat as well, but I never bother to do this.

— Kerry Pierce



The tools you'll need for weaving include a desk stapler, scissors, needlenose pliers, spring clamp, measuring tape or folding rule, sharp knife, butter knife and masking tape.

To form the rocker notches, first define the sides of each notch with a thin backsaw. Then drill through the posts with a 3/8"-diameter bit at a position that will become the bottom of the notch. Finish by splitting out the waste with a chisel and paring the walls as needed.

(*Editor's note: These wedges must run approximately perpendicular to the grain direction of the arms.*) When laying them out, rest a straightedge across the tops of the front posts parallel with the front rungs and draw centerlines for these wedge slots. Using a fine backsaw, carefully slice the wedge slots.

Once the arms have been dry-fit, apply glue to the tenons and into the mortises and work the arms into position. Apply glue to the wedges and tap them home. Trim the tenons and wedges flush.

To cut the rocker notches in the bottoms of the posts, clamp the inverted rocker to your bench (see the photo on page 67). Draw a line connecting the centers of the front and back posts to accurately mark the centers of the rocker notches you'll cut next.

The notches in the front post should be cut 1⅜" deep on the front and back faces of the post.

The notches for the back posts

First establish a rectangle in the center of the chair's seat with warp strands. That rectangle should be as wide as the distance between the back posts and approximately square at each corner. You'll fill the empty triangular corner areas with gusset strands later.

To splice on a new warp strand, invert the chair, lap eight inches of the lead end of a new strand over the final eight inches of the old strand, and fasten them together with three staples.

The first weaver fills the space between the posts on the top of the seat. The strand should go over three and under three warps, as shown here. Tuck both ends under.

Start the first long weaver on the bottom of the seat using the "over three and under three" pattern. Bring it up around the side rung and work it back into the warp using the "over three and under three pattern" again, starting this second weaver one warp strand forward from the warp strand at which the fill weaver entered.

Insert gusset strips to fill the triangular sections of the seat on both sides of the seat's central rectangle. Work these gusset strips into the weave using the same "over three and under three pattern," staggering their entry points one strand from the adjacent warp strand. Wrap them over the front rung. Then weave them into the weave on the bottom side of the seat. Tuck the ends under. A butter knife will help you feed these strips into the weave.

Tightness of the woven panel will increase as you progress toward the front of the seat. For that reason, you may want to use a butter knife to guide the lead end of the weaver and a pair of needlenose pliers to pull it through tight places.

are a little different. To accommodate the curved rocker, the back post notches are 3/4" deep on the front side of the post and 7/8" deep on the back side. Slice the sides of the notches with a backsaw.

Then, drill a 3/8"-diameter hole — from the front to back — right through the post at the bottom of the notch. Break out the waste very carefully with a sharp mortising chisel, and pare the notches to slowly refine the fit of the rockers. Fix the rockers in their notches with a 1/4"-diameter dowel driven through each post.

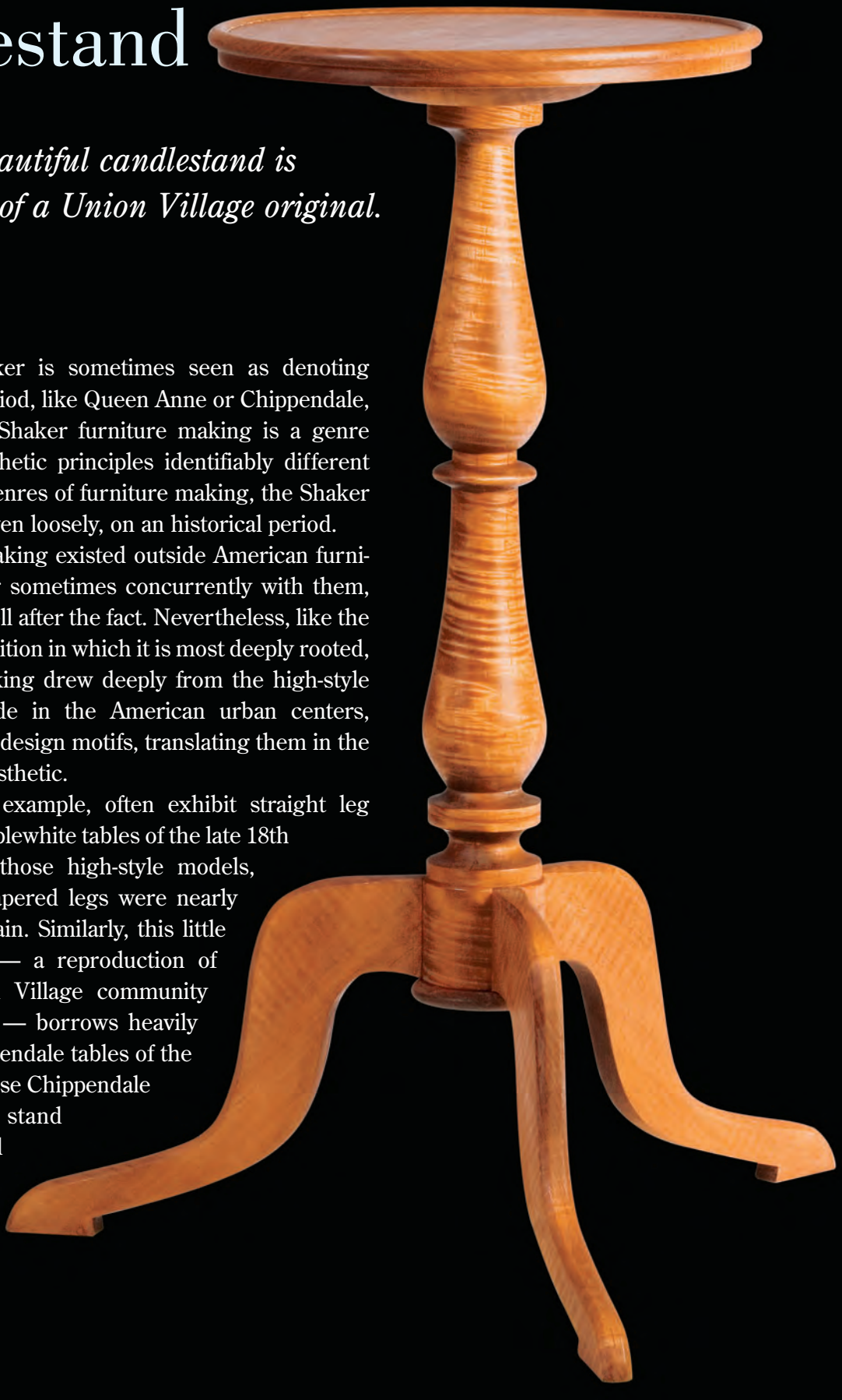
Finishing and Weaving

Sand the entire chair up through the grits to 320, and apply the first coat of finish. It's time to weave the seat (see extended *sidebar*, above). Save additional coats of finish until after the seat and back have been woven. This way, you can clean up any scuff marks the weaving process might create, then follow with final finish.

You're done! Ease into that new rocker and relish its woven comfort. It's been an ambitious project, but you've just proven your mettle as a budding Shaker chairmaker.

Kerry Pierce is a master craftsman and woodworking author from Ohio.

Chippendale-styled Shaker Candlestand



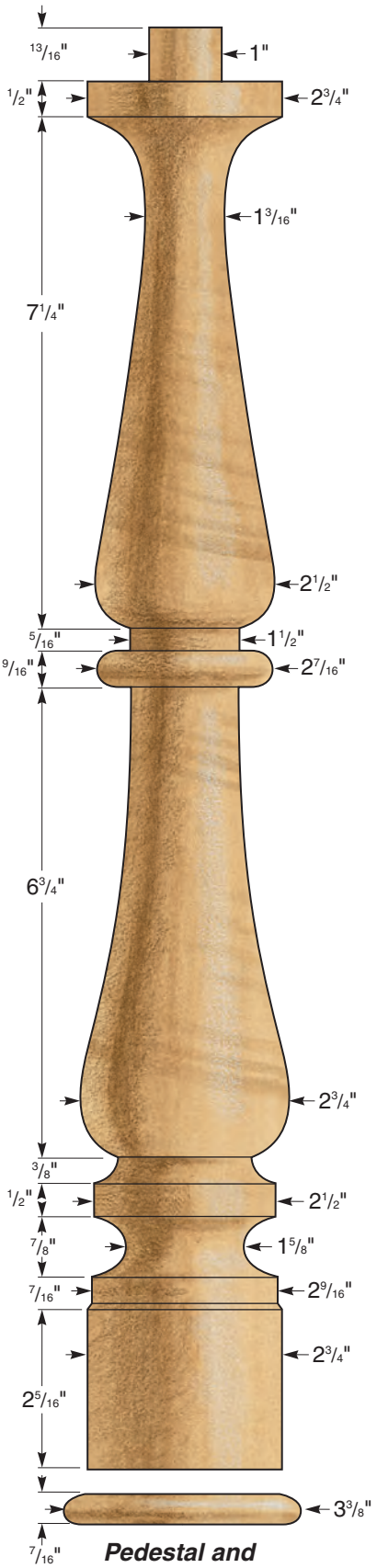
The author's beautiful candlestand is a reproduction of a Union Village original.

By Kerry Pierce

The term Shaker is sometimes seen as denoting a furniture period, like Queen Anne or Chippendale, but although Shaker furniture making is a genre built to a set of aesthetic principles identifiably different than those of other genres of furniture making, the Shaker genre is not based, even loosely, on an historical period.

Shaker furniture making existed outside American furniture periods, running sometimes concurrently with them, sometimes trailing well after the fact. Nevertheless, like the country furniture tradition in which it is most deeply rooted, Shaker furniture making drew deeply from the high-style period furniture made in the American urban centers, borrowing forms and design motifs, translating them in the light of the Shaker aesthetic.

Shaker tables, for example, often exhibit straight leg tapers much like Hepplewhite tables of the late 18th century, but unlike those high-style models, Shaker tables with tapered legs were nearly always simple and plain. Similarly, this little Shaker candlestand — a reproduction of one from the Union Village community near Lebanon, Ohio, — borrows heavily from high-style Chippendale tables of the 18th century. Like those Chippendale predecessors, this stand features three graceful cabriole legs leading to



Pedestal and Bottom Disk Elevation Drawings

Before beginning any new piece of furniture, the author makes a set of story sticks. This piece required two such sticks. One is a pattern for the cabriole leg profile, and the other is the stick shown above, on which the elements of the turned pedestal have been marked off.

This simple marking gauge allows the author to draw marks on a turned spindle that are perfectly parallel to its axis of rotation. To mark the locations of the leg mortises, he stops the lathe's rotation by engaging the locking pin on its indexing head. He then slides the jig (pencil point pressing lightly against the object) along the bed to scribe a straight line.

a turned pedestal that supports a top surrounded by a shallow turned lip. But this somewhat stripped-down and "Shakerized" version offers only a smattering of the turned and carved detail characteristic of the American Chippendale examples from which it evolved.

Turning the Pedestal

The pedestal consists of a succession of turned beads, coves and vases. After roughing in the cylinder, I marked these elements by transferring them from a story stick (see top photo for details), then created the beads with a skew chisel and the coves with a 3/8" fingernail gouge. I added a 1"-diameter, 13/16"-long tenon at the top of the pedestal, which you'll later fit into a mortise drilled into the bottom of the top support and the top itself.

The vertical centerline of each of the three legs is exactly 120 degrees apart from the other two. These distances are most easily located through the use of an indexing head. An indexing head is a disk centered on the lathe's axis of rotation with a number of equally spaced stop holes drilled near its circumference. It is a truly helpful feature now found on most lathes. My lathe has 36 holes, so the distance between two adjacent holes is exactly 10 degrees.

The cabriole legs on the original candlestand have slightly crowned bevels on either side of their top edges. The author created these bevels with a spokeshave and a rasp, as shown above, after first freehanding some guidelines with a pencil.

Square tenon shoulders won't mate tightly with a rounded pedestal. To create a tighter fit, the author bevels the areas underneath the shoulders. Here, he's marking these areas.

With a wide chisel, create the bevels that will lie under the leg shoulders. These bring the shoulder up tight against the pedestal base. Pare carefully to your layout lines, checking the fit periodically.

To mark the 120-degree segments on the base of the pedestal, I engaged the indexing head's spring-loaded locking pin, drew a line with the marking gauge shown in the bottom photo, previous page, and marked the centerline of one of the pedestal's legs. I then counted off 12 stops on my indexing head, engaged the locking pin, and marked the second centerline. I repeated this to locate the centerline of the third leg. I also added marks on the base of the pedestal halfway between each of these centerlines. These extra marks allowed me to later create lines on the bottom of the pedestal that form the centerlines of each mortise on the bottom of the pedestal.

You can achieve the same thing by connecting the bottom of the center-line of each leg mortise and the mark left by the tailstock center. I added the extra marks because sometimes in cleaning up the bottom of the pedestal, I obliterate the tailstock's center mark.

Making and Installing the Legs

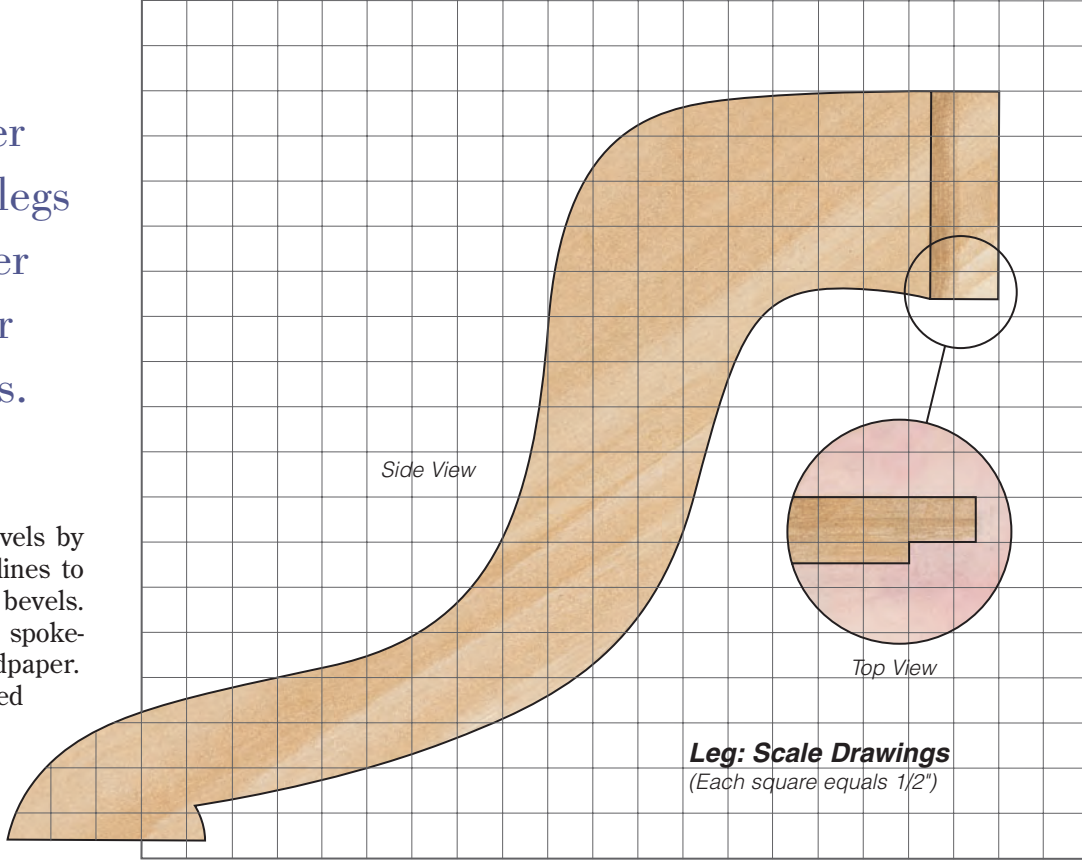
I clamped the pedestal to my bench top using a series of U-blocks and the clamps, some of which can be seen in middle and bottom photos on this page. Then I completed the mortise marking process.

The joinery on this pedestal stand is unlike any I've seen on other Shaker pedestal stands. Many of these pieces have sliding dovetails, while others have simple tenons with a shoulder on each side. Each leg of this particular pedestal stand, however, has only one shoulder on the right side of a fat tenon.

I chopped out the mortises with a 1/2" mortise chisel and a wide paring chisel. I then turned my attention to the legs.

In profile, these legs are much like the legs on many Chippendale-era pedestal stands. They don't, however, exhibit the carving typical of the Chippendale examples. The only elaboration on the band saw leg form is a slightly crowned bevel on the top outside edges of each leg.

Single-shoulder tenons set these legs apart from other typical Shaker pedestal stands.



Leg: Scale Drawings
(Each square equals 1/2")

I began work on these bevels by free-handing penciled guidelines to indicate the limits of the bevels. I created the bevels with a spokeshave, a rasp and sandpaper. I roughed in the one-shouldered tenons with a backsaw, hand-planing each to final thickness one shaving at a time.

Many years ago, when I first began to build tripod tables, I undercut the shoulders on the leg tenons in order to get a tight fit of shoulder against the round base of the pedestal. Otherwise, there will be a wide gap between the shoulder and that round base — which curves away from the shoulder. However, several years ago, I began to cut a narrow bevel on the base underneath the shoulder instead. This bevel allows the shoulder to fit snugly against the base.

Tips for Preparing the Top

I turned the top while it was mounted on a faceplate. First, after mounting the faceplate to what would eventually be the upper side of the top, I cleaned up the bottom surface of the top, turned the filet under the lip on the top's edge, and then shaped — by scraping — the bottom half of the lip itself. I then removed the top from the lathe, took off the faceplate, and remounted it on the bottom side of the top to complete the lip turning and to dish out the excavation. This last process removed the material containing the screw holes made by the first mounting on the faceplate.

Note: After you've done your shaping on the bottom surface of the candlestand top, and before you remove the work from the lathe, use a pencil on your tool-rest to create a couple of concentric circles on the bottom of the candlestand top. These circles should be just a bit larger than the diameter of your faceplate. Then, after removing the faceplate from the upper side of the candlestand top, use these concentric circles to align the faceplate on the bottom of the candlestand top. When you're mounting the faceplate on the bottom side, it must center on the same axis of rotation you established with the faceplate on the upper side.

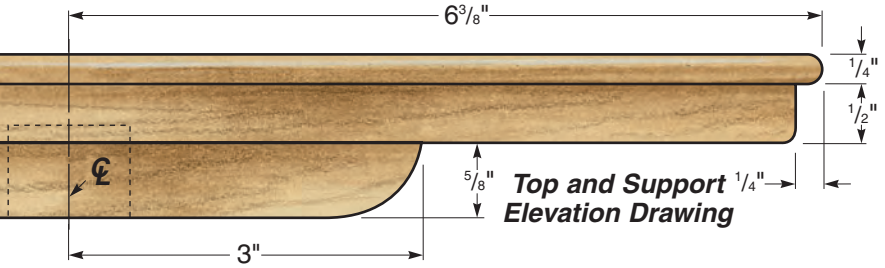
I actually made two tops for this candlestand. The first one, which I turned from a blank of kiln-dried 5/4 curly maple in one long session at the lathe, transformed itself into the buckled shape of a potato chip after one day in our heated home.

"Nothing can completely prevent an unsupported top like this one from curling a bit over time."

I took a more cautious approach to making the second top. First, I planed the 5/4 blank flat, removing perhaps a 1/4" of thickness, and placed it under the couch in our heated living room for a week. Next, I mounted it on my lathe and removed another 1/4" of thickness and gave it a second week under the couch. Then I reduced it to its final thickness, leaving it fatter than the the first top. The combination of approaches — reducing the thickness in stages so I could turn away any deformation that occurred, and leaving a greater final thickness — resulted in a more stable top. But I know that nothing can completely prevent an unsupported top like this one from curling a bit over time.

A slow lathe speed is very important when turning an object with a diameter as large as the top of this candlestand. That's because the rim speed — the speed at which the work passes the tool — is determined not only by the lathe's rpm, but also by the diameter of the object mounted in the lathe. For example,

The author uses a shop-made beam compass to draw the outside diameter of the candlestand top. Instead of bringing this blank to final thickness right away, he recommends planing and flattening the top in stages to help minimize warping.



Top and Support Elevation Drawing

Use the point of your skew to push thin layers of material across the outside diameter of the candlestand top, working from right to left (top photo). This passive style of turning simplifies — and makes safer — the process of working a surface spinning past a tool at high rim speed. The author uses a spindle gouge reground with a long tip to hollow out the excavation inside the lip that surrounds the top (bottom photo).

an object two inches in diameter mounted in a lathe with a speed of 400 rpm will have a rim speed of 209.4 feet per minute. A 12-inch object spinning at 400 rpm will have a rim speed of an astonishing 1256.6 feet per minute, almost six times as fast. And that speed has real consequences at the work/tool interface. A careless move with a gouge that might be a minor event at 200 feet per minute could be disastrous at 1,200 feet per minute.

That's why I'm going to make two recommendations in regard to turning the top. First, turn that top at the slowest possible speed. A speed of 100 rpm would not be too slow. Second, unless you're a great technician at the lathe, use a timid approach to turning the outside edge where the speed is greatest.

I'm not a great technician on the lathe, so I embrace the timid approach. Although I use tools that cut when I'm spindle turning, when I'm turning the outside diameter of something mounted on a faceplate, I simply scrape — very carefully — until I've rounded the entire outside diameter. Then I shape it by pushing little nibbles with the tip of my skew until I've created the shape I want. It's not an elegant technique, but it works, and I've never had an accident when turning on a faceplate.

The actual excavation of the top's interior I achieved with a spindle gouge I've reshaped so that most of its tip is ground to a bevel. I then feed the tool to the work, from the center out, so only one short section of the radius on the end of that ground tip is in contact with the work at any one time. As you see in the bottom photo (above), it gives me long shavings and solid control.

Finishing Touches

There's a 6"-diameter support under the candlestand top that I turned on a faceplate. I then attached the top support to the underside of the top using four 1¼" #8 drywall screws. I aligned the grain on this support so that it was perpendicular to the grain direction in the top itself. That provides a small bit of resistance to the top's inclination to curl across the grain. I then bored the 1"-diameter hole that receives the tenon at the top of the pedestal.

Finally, there is a small disk with a radiused edge on the bottom of the pedestal. I made the radius with a carving gouge and a rasp, although I could have turned it on the lathe like the other pedestal components.

Give the project a final sanding, add finish, and you'll have an elegant candlestand that wears its blended styling and traditions proudly.

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