

Comfortable Outdoor Chair

Curvy chair is built to last

BY MICHAEL FORTUNE



The Garden Chair, Part 2

In Part 1, we covered how to make the bent laminations for this project. Now it's time to cut all of the parts to shape and assemble the chair.

When I set out to redesign the classic Adirondack chair, I wanted to capture the spirit of the original while making it more comfortable and attractive. With that in mind, I added a few more curves, inspired by the plants in my garden. But I didn't stop there. The seat is closer in height to an indoor dining chair, and does not have the severe backward slope of the classic. That makes it much easier to rise up from. It can even be pulled up to an outdoor dining table. At the same time, there is nothing to stop you from falling asleep in the sun.

In Part 1 (*FWW* #240), I showed how to make the two types of bent laminations you'll need: one for the arms and front legs, and

one for the seat and back slats. Now I'll show you how to trim those laminations to size, cut out the rest of the parts, and put the chair together. The joinery amounts to a few small notches and a pile of screws, so it goes quickly.

As with most chairs, the various angles and joints took me a while to work out. But you'll have no such trouble. I've outlined patterns for every part (see p. 53). Be sure to make them all, using $\frac{1}{8}$ -in. Masonite or MDF so they can be flexed into the curved parts. The patterns make things easy. You'll use them to trace the shapes of each part, and also to mark the locations of the notches and even the holes for the screws.

Start with the arms

Once you've cut out and smoothed the patterns, transferring them onto both flat and curved pieces is a cinch. Be sure to keep track of the left and right arms, which are mirror images of each other.



Simple tracing job. Use spring clamps to hold the pattern in place on the bent-laminated arms while you trace the edge profile.

Using bent-laminated pieces

In Part 1, I finished up by jointing one edge of each lamination to create a nice reference edge. The rest of the shaping and trimming happens on the bandsaw. I don't trim curved parts on the tablesaw because of kickback danger. For most of the slats, which have straight sides, you can just bandsaw the opposite edge parallel using the rip fence, keeping the curve down on the table at the cutting point.

The other laminations are cut to specific shapes. The arms have a long curved line bandsawn down one side, and a shallow curve on the inside. Before laying out and bandsawing the arms, place them back on the bending form and transfer the mark for floor level onto their edge and face. That will help you align the pattern.

Trace these shapes on the curved pieces by pressing the Masonite patterns into the curves and holding them there. Then bandsaw the profiles right to the line, and trim them to length.

When cutting the slats to length, the trick is to have their ends line up to form smooth, graceful curves on the finished



Curves on curves. The bandsaw is the perfect tool for cutting curved profiles on curved parts. Just make sure the workpiece is always touching the table in the area where the blade is cutting. Quick tip: A bit of side pressure on the back of the blade will help you control the path of the cut.

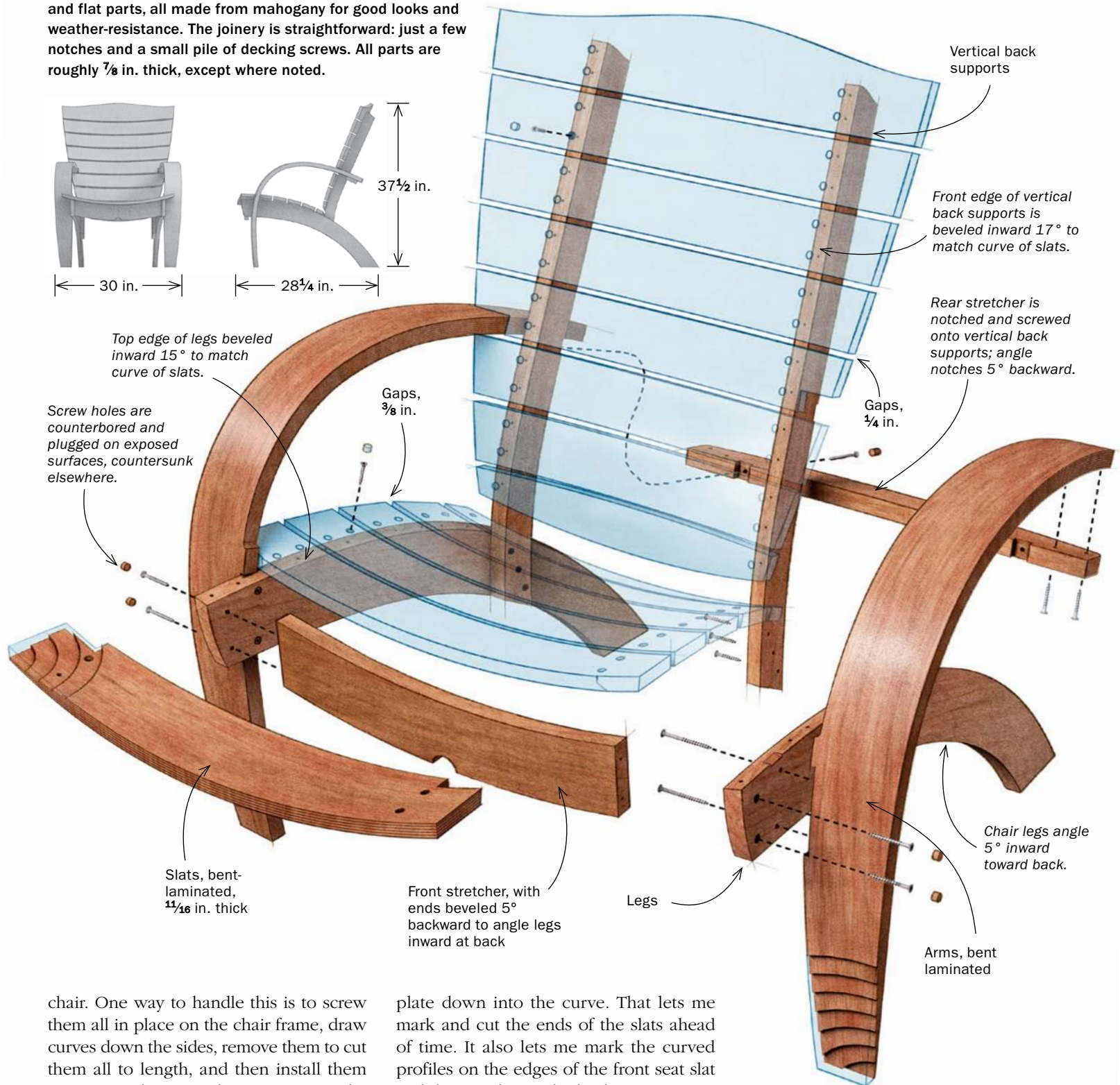


Arms need notches. The legs rest in a long, shallow notch on the inside edges of the arms. A simple router jig is the best way to make this shallow notch. Mark the notch on the arm and set it on a piece of softwood, at the location of the notch. Trace both edges of the arm (left), and cut along those lines. Throw out the middle section, glue coarse sandpaper to the curved edges, and clamp the arm flush between the pieces. Use a plunge router and straight bit to rout close to your layout lines, cutting into the jig as needed (bottom left). Finish up with chisel work.



Use simple joinery for curved parts

Fortune's garden chair is a combination of bent-laminated curves and flat parts, all made from mahogany for good looks and weather-resistance. The joinery is straightforward: just a few notches and a small pile of decking screws. All parts are roughly $\frac{7}{8}$ in. thick, except where noted.



chair. One way to handle this is to screw them all in place on the chair frame, draw curves down the sides, remove them to cut them all to length, and then install them again. But there is a better way. I make two big templates, one for the entire seat shape and another for the back. Then I lay the respective slats on a benchtop, place appropriately sized spacers between them, align their centerlines, and press the tem-

plate down into the curve. That lets me mark and cut the ends of the slats ahead of time. It also lets me mark the curved profiles on the edges of the front seat slat and the top slat on the back.

Patterns include joinery, too

The rest of the parts are solid wood. Use the curves and grids on the opposite page to make patterns for the curves on the legs,



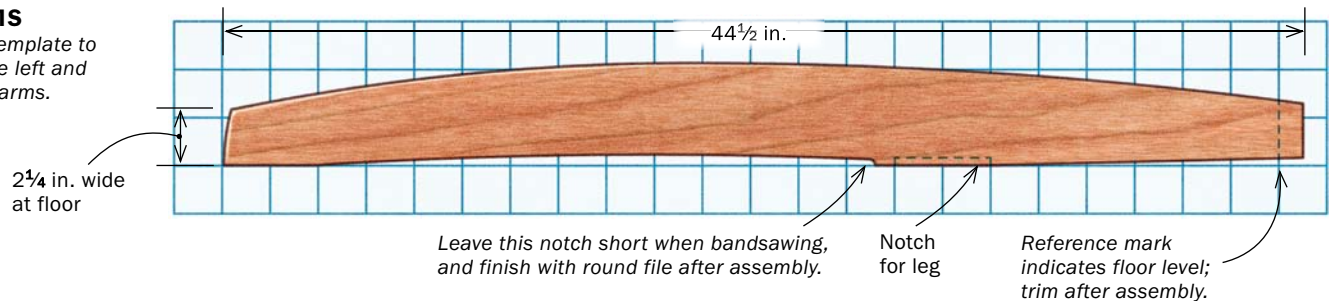
To purchase expanded plans and a complete cutlist for this garden chair and other projects, go to FineWoodworking.com/PlanStore.

SMART TEMPLATES HAVE ALL THE INFO YOU NEED

Transfer the patterns below onto $\frac{1}{8}$ -in.-thick Masonite or MDF, including all of the layout marks on every pattern. Those tell where other parts intersect, where notches need to be cut, and even where the screw holes go.

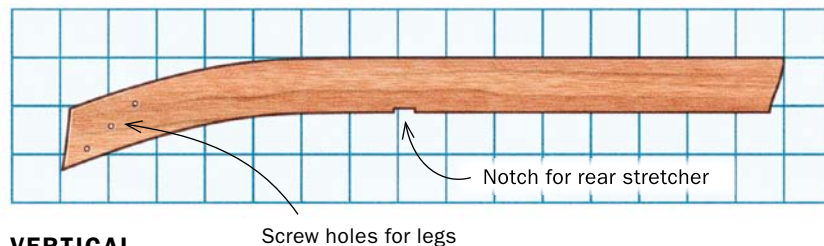
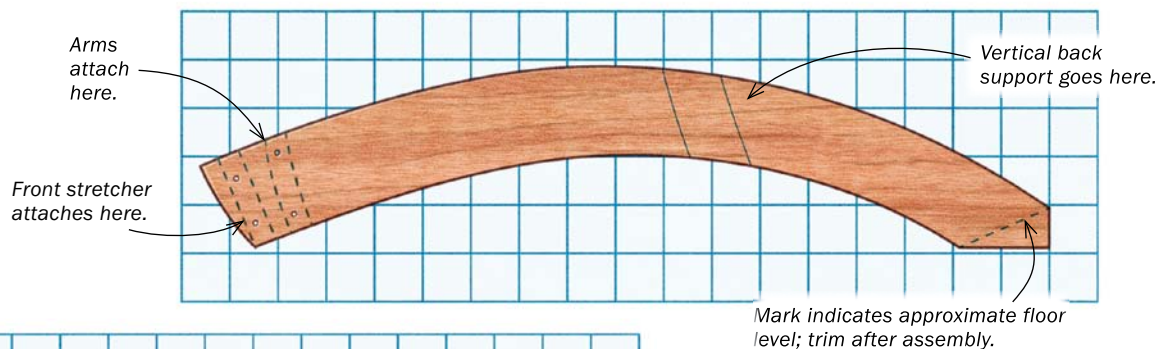
ARMS

Flip template to create left and right arms.

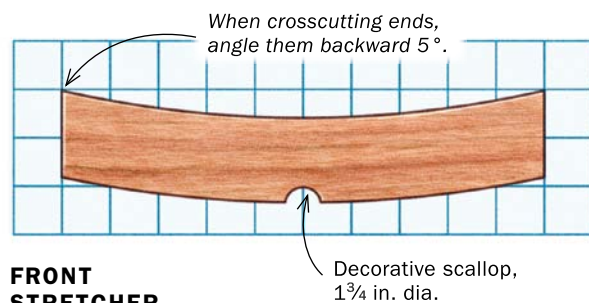


LEGS

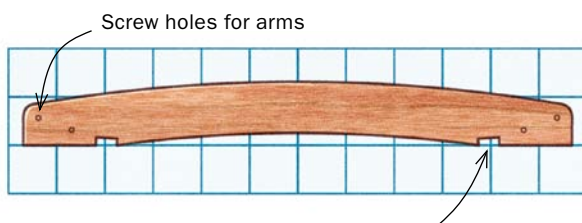
Flip template to create left and right legs.



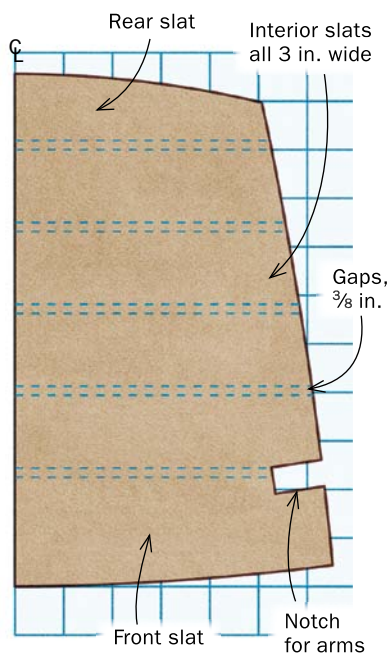
VERTICAL BACK SUPPORT



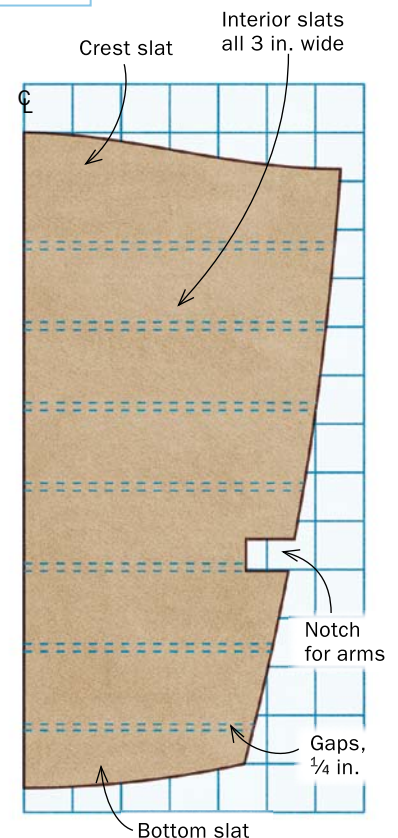
FRONT STRETCHER



REAR STRETCHER



SEAT SLATS



BACK SLATS

Trace and shape parts

Follow the templates. The patterns for each part also contain joinery information, such as the locations of screw holes, mating parts, and notches. Be sure to transfer that information, too.



vertical back supports, and two stretchers. Most of the construction is simply screws and glue, but there are a few key notches in the weight-bearing areas. Those take the pressure off the screws and guarantee the chair a long life, even if your guests are big fans of poutine (Go Canada!).

There is a long notch in the side of the arms to receive the legs, and small mating notches that connect the vertical supports and the rear stretcher. I cut these after sawing the curves. To help you lay out all of the joinery and screw holes, I've marked their locations on the patterns. You can simply transfer everything to the parts when you are tracing the curves. On the leg patterns, I've also marked where the front stretcher and vertical back supports cross over. Transfer those marks to the parts, too.

Note that the legs need a 15° bevel on their upper edge to accept the curvature of the seat slats. So when bandsawing those curves, you'll need to tilt the table. Warning: This makes the two legs unique right and left parts. The same goes for the vertical back supports, which need a 17° curve on their forward edge. Make sure those opposite bevels face inward on the chair.

Sand, notch, and drill the parts now

This is a good time to smooth all of those bandsawn edges and sand all of the faces. Then you'll be able to cut and fit the notches accurately.



Bevels on the bandsaw. The legs and the back supports have beveled edges (slightly different angles for each) where they meet the curved seat and back slats. Tilt the bandsaw table when following these lines on your layout, but keep careful track of the left- and right-handed parts.



Fine-tune the leg-to-arm joint. The top edges of the legs are beveled, so you need to cut a small notch there to create a flush joint. Cut that notch before paring the long notch in the arms to final length.



Drill, countersink, and counterbore on the drill press. On the ends of the legs, Fortune uses his pattern to lay out all four holes. He drills all four from the same side, but counterbores only two. Then he flips the part over to countersink the last two holes on the opposite side.

FRONT STRETCHER GETS SPECIAL TREATMENT

The ends of the front stretcher are beveled at 5°, aiming the back of the chair slightly inward. The stretcher's bottom edge gets a scallop detail.

I use a variety of tools to smooth curved edges: spokeshave, block plane, and a number of flat and curved sanding blocks, made of softwood with sandpaper wrapped over them and stapled at the front and back. I don't recommend spindle sanders; they tend to leave a wavy surface on gentle curves, no matter how big a drum you use. I smooth the outside faces with a normal flat sanding block, but I use curved blocks for the inside faces. I also put a nice chamfer on all of the edges.

A handsaw and chisel will handle the small notches at the back of the chair. However, for the long notches on the inside edges of the curved arms, which receive the sides of the legs, I use a simple router jig (see p. 51).

Screws speed assembly

All of the joints, notched or not, are screwed together. Visible screws are plugged to avoid unsightly screw holes and the inevitable stain from the metal hardware. Less-visible screws are simply countersunk flush to the surface. In this chair, I used a variety of #10, square-drive decking screws, which have a coating for outdoor use.

Drill the clearance holes, countersinks, and counterbores now, while the parts are separate and you can do the job cleanly and accurately at the drill press. The counterbores are $\frac{3}{8}$ in. dia., for $\frac{3}{8}$ -in. wood plugs. Make them at least $\frac{1}{4}$ in. deep.

Thanks to the simple joinery, this chair assembly goes quickly. With your clearance holes drilled, it's just a matter of clamping the various parts into position, and reaching through the holes to drill pilot holes for the screws.

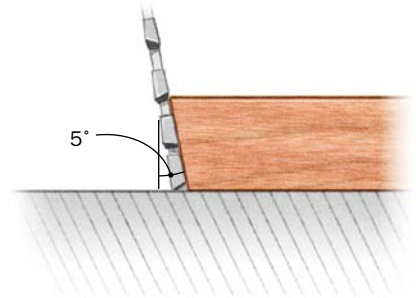
The first step is attaching each of the vertical back supports to its corresponding leg, the one joint in the chair that gets glued along with the screws. Then attach the front stretcher and arms. When the frame is done, you can attach the slats.

Attaching the slats

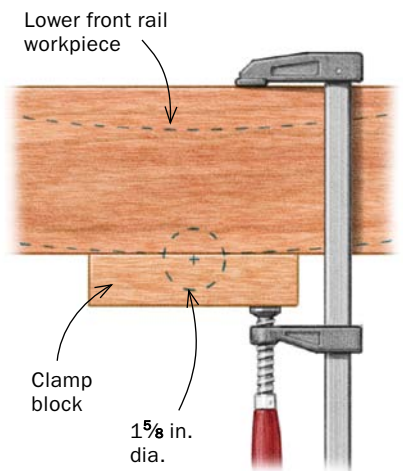
One goal with outdoor furniture is to prevent water or debris from getting trapped and rotting the wood. For this reason, the slats on the seat of this chair have a healthy $\frac{3}{8}$ -in. gap between them, while the back slats are spaced $\frac{1}{4}$ in. apart. Because of the



Bevel the ends. A miter saw cuts clean bevels on the ends of the front stretcher.



Decorative detail. Clamp on a scrap block and use a Forstner bit on the drill press to drill a clean hole through the edge of the workpiece (left). Then saw the curves to reveal the final look (bottom).



Assembly is easy

With all the parts notched, drilled, and marked, assembly goes quickly. Clamp each new part in place, use the existing clearance holes to locate and drill pilot holes, and then screw the parts together.



VIDEO WORKSHOP

Watch Fortune build this chair from start to finish in a members-only video at FineWoodworking.com/extras.



Cross the T's. Screw and glue each of the vertical supports to its mating leg. Be aware that there are left and right versions of all four parts. These are the only joints that are glued.



Attach the front stretcher. Screw a temporary spacer into the waste area at the back of the legs, jack up the front of the chair on a board, and clamp the front stretcher in place. Then drill pilot holes and drive screws.

way the chair is viewed, the gaps will seem similar. When you are happy with their spacing from front to back, locate the slats side to side and lay out their screw holes. To do that, place a slat on the chair, with its appropriate spacers, and even out the overhang on each side. Then carry the location of the legs up onto the edge of the slat and onto the face. When laying out the holes in the seat slats, offset them toward the inside of the chair, about $\frac{1}{8}$ in. off the centerline, to adjust for the curve. That way the screws won't make a surprise appearance on the outside of the legs. Drill the legs with their curves down flat on the drill-press table. Then place the spacers again, use your layout lines to line up the slat side to side, drill pilot holes, and drive the screws.

The back slats go on the same way, but it's probably better to start at the middle slat, which notches around the arms. Remember that the gaps between these slats are $\frac{1}{4}$ in. Also, because the vertical back supports are not only beveled but also tilt inward by 5° , you'll need to offset the screw holes a full $\frac{1}{4}$ in. toward the center of the chair.

Plug the holes, trim the legs, and finish

There are just a few details to see to before you can take this chair outdoors. For one, the screw holes need to be plugged.



Rear stretcher and arms. After screwing the rear stretcher into its notches, Fortune clamps the arms in place and fits their inner notches onto the fronts of the legs. He uses a flexible drilling attachment to drill and drive screws from the inside. Last, he attaches the arms at the back.

INSTALL THE SLATS

Fortune cuts the curved profiles along the outside edges of the seat and back slats before he installs them. Use the half-templates on p. 53 to make full templates.

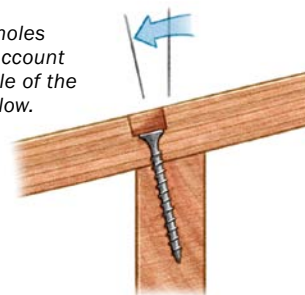


Press and mark. Lay down all the slats for the seat or back, with spacers between them and tape to keep them aligned. Press the template down to mark the ends of each slat, then cut the slats on the bandsaw and sand them smooth.



Locate the screw holes. Using spacers again, start at the back of the seat. Even out the overhang on each slat before transferring the location of the leg onto the top face. Drill the holes and counterbores on the drill press.

Offset the holes inward to account for the angle of the support below.



Drill and drive. Working in the same order and using the same spacers, put the slats back in place on the chair to drill pilot holes and drive screws into the legs below. Then do the back slats.

I cut plugs using a $\frac{3}{8}$ -in.-dia. plug cutter from Lee Valley, which is tapered so the plug tightens as it is tapped home. Also, when you drill the cutter all the way down into the wood, it cuts a nice chamfer on the tip of the plug, which helps you install it later. Cut the plugs from the face of a piece of the same wood the chair is made of, at least $\frac{3}{4}$ in. thick. After cutting a couple of rows of plugs in the board,

cut them loose with a resaw cut on the bandsaw, with the board on edge.

To install the plugs, dip the tips in glue and drive them home. After they dry for a couple of hours, trim them flush.

Level, sand, and finish—With so many curves in play, I left all four feet 1 in. extra-long, so I could level them after assembly (below). Put a heavy chamfer around each foot so it doesn't splinter when dragged.

Sand everything to 150-grit, and finish with an outdoor oil, which won't chip or peel and will let the chair weather to a nice soft gray. Now carry it out to the garden, sit down, and take a well-deserved, comfortable break. □

Contributing Editor Michael Fortune makes furniture in Lakefield, Ont., Canada, and teaches around the world.

FINISHING TOUCHES



Plugs hide screws and repel water. Cut and install wood plugs, and trim them flush with a block plane and a curved sanding block. If you align their grain, they almost disappear.



One last detail. Use a round file to fine-tune the rough notches you left on the inside edges of the arms, making them end near the seat. Protect the slats with blue tape while you work.



Leg-leveling trick. Hot-glue three feet down onto a flat surface. Use a 1-in.-thick spacer to saw almost all the way through all four legs, before cutting off the waste completely.