

Build a Japanese-Style Garden Gate

Versatile assembly can be adapted to any gate design

BY ASA CHRISTIANA

When we moved west and bought a fixer-upper in Portland, Oregon, one of my first to-do items was replacing a broken-down fence with one of my own design. I hired pros to set the posts, but did everything else myself, including building a Japanese-style arch over the gate opening. The plan was to cook up an eye-catching gate in a similar style.

I've learned not to rush the design stage, so I visited the excellent Portland Japanese Garden, took pictures of every door and gate I found there, and did some digging online. This gate, with falling ginkgo leaves pierced through the lower panel and traditional Japanese gridwork at the top, is the result.

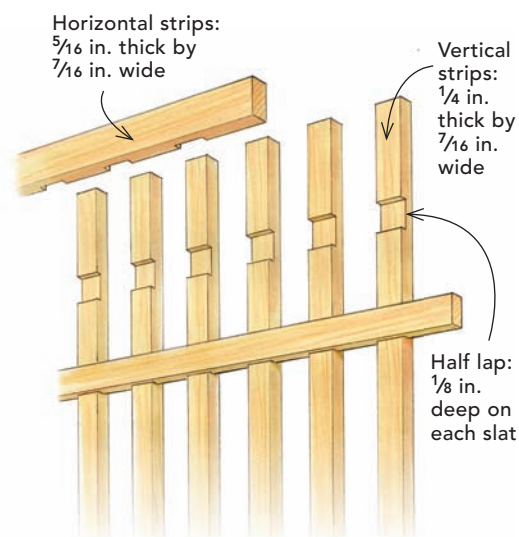
Water, weather, and weight are tough on gates, and over the years they tend to sag. The usual solution is a diagonal rod, surface-mounted and tightened with a turnbuckle. But in my research, I didn't see any Japanese carpenters resorting to such contrivances, so I didn't plan to either. Like them, I relied on the right materials and robust joints to keep the gate square and swinging smoothly. After more than a year, it hasn't sagged a centimeter in its 4-ft. opening. Better yet, the gate is obviously custom-made, and never fails to grab visitors' attention.

Sturdy frame for gates of any size

The first step in the engineering was to choose the wood, which was easy. Widely

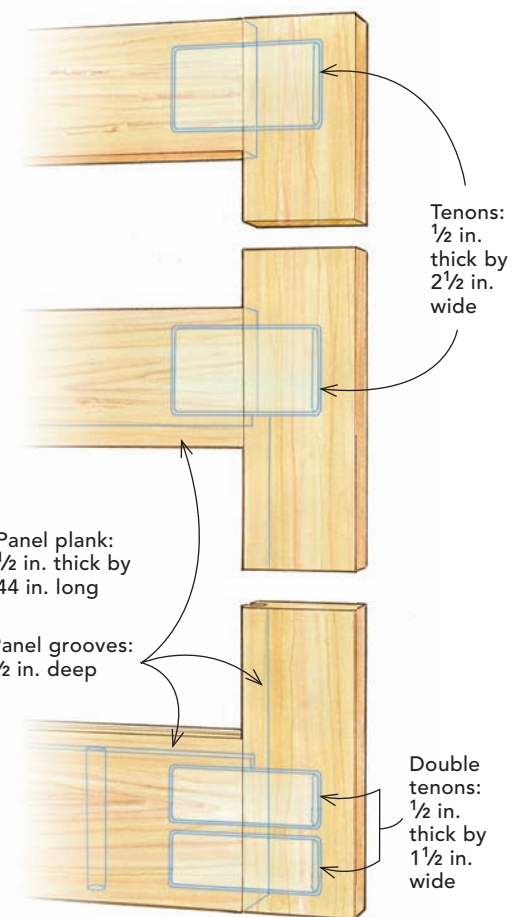


Pretty path to the backyard. This cedar gate is more like a big passage door, with deep tenons to keep it square and sag-free.



SAG-RESISTANT ASSEMBLY

I dimensioned the parts to look good and weigh as little as possible while accommodating deep tenons. The lower tenons are doubled up because seasonal wood movement will wreak less havoc on two smaller tenons than one very wide one. The lower panel boards are held in grooves while the upper gridwork is held by strips similar to glass stops. You can adapt the anatomy to almost any gate design you like.



DEEP TENONS MADE SIMPLE

This simple jig, combined with a router bushing installed in the router base and a long upcut spiral router bit, creates matching mortises in the rails and stiles of this frame. The jig shown below is used for the double mortises in the bottom rail. Follow the same approach to make a jig for the single mortises in the upper rails.

1 BUILD THE JIG



Nail on the plate. It can be difficult to get the wood fence flush with the $\frac{1}{4}$ -in. MDF. Instead, attach it so that it sticks out a little from the plate. Because the jig's fence will ride the router fence when you cut the slot, the slot will be perfectly parallel to the jig fence, which is what matters.



Get ready to rout. This jig needs two mortise slots. Lay out the slots, marking the centerline and ends of each slot, and then drill $\frac{3}{4}$ -in.-dia. holes at the left end of each slot. For the middle and top rails, make a similar jig with one slot for the single tenons in those joints.

Head to the router table. Each slot can be routed in a single pass with a $\frac{3}{4}$ -in. bit, but it's safer to make two passes with a $\frac{1}{2}$ -in. bit. Drop one of the drilled holes over the bit to help you set the fence accurately to one edge of the hole. Hold down the jig, turn on the router, and make a pass on each slot, using the pencil lines as guides. Then turn off the router, adjust the fence, and take a second pass on each slot to widen them to the full $\frac{3}{4}$ in.



available and affordable, western red cedar offers an excellent combination of strength, weight, and weather resistance. I started by picking very straight, $1\frac{1}{2}$ -in.-thick decking boards out of the lumberyard pile, and milled them down to $1\frac{1}{4}$ in. using my thickness planer. This gave me boards that are thick enough to resist warping and bowing, and to accommodate the $\frac{1}{2}$ -in.-thick tenons I was planning, without being an ounce heavier than they needed to be.

When using a softer wood like cedar, the walls of the mortises should be at least $\frac{3}{8}$ in. thick to have enough strength to resist flex-

ing out when the tenons are inserted. A word of advice: Avoid boards that have sections of cream-colored sapwood in them. That part of a cedar log is far more prone to rot.

As for the deep tenons, I used slip-tenon (or loose-tenon) joinery, an approach that makes a traditional joint much simpler. Rather than being integral parts of the rails, the tenons are made from other stock, ripped and shaped on the tablesaw and router table to fit into matching 2-in.-deep mortises in the frame pieces.

The beauty of this approach is that the tenons are completely separate pieces, so you

can simply run them through your planer to achieve a perfect fit. I have a slick way to rout the matching mortises, too, borrowed from Gary Rogowski in the pages of *Fine Woodworking* magazine ("Arts and Crafts Bed," *FWW* #156). I went 2 in. deep into both sides because that's the maximum depth possible with a standard $\frac{1}{2}$ -in.-diameter spiral router bit.

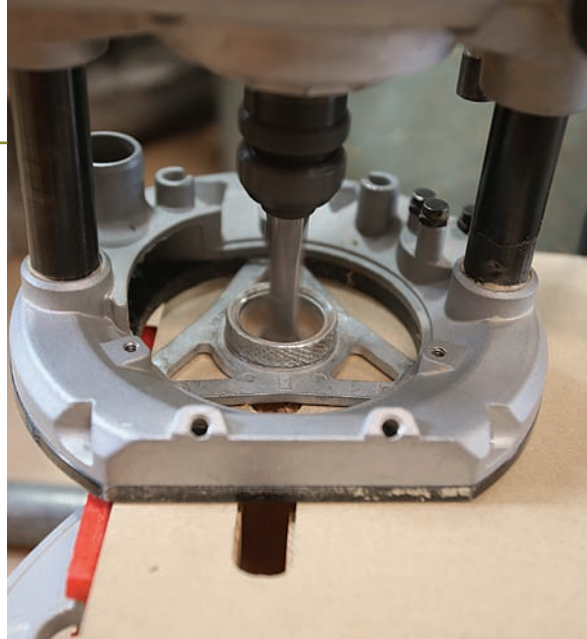
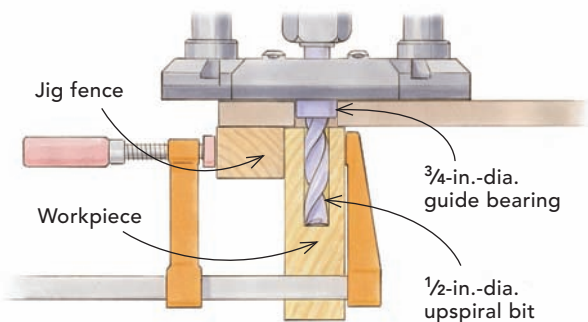
I designed the bottom rail wider than the two upper rails. The upper rails each get single wide tenons, while the extra width of the bottom rail accommodates two narrower tenons, adding to the strength. A wider bot-



2 ROUT THE STILES AND RAILS



Mortise the stiles. Measure to determine where the center of the jig goes, then clamp it on the edge of the workpiece. Set your router to use the bit's full cutting depth (around 2 in.) and rout each mortise with a series of shallow passes. Upcut spiral bits remove some of the chips; stop and vacuum the chips out if they get packed in. A $\frac{3}{4}$ -in. guide bearing keeps the $\frac{1}{2}$ -in. bit centered in the jig and on the workpiece, leaving $\frac{3}{8}$ in. of material on either side of each mortise.



Mortise the rails. As with the stiles, measure and mark where the center of the jig goes, and clamp the jig on the workpiece. Use the same router setup used to mortise the stiles to mortise the rails, again making a series of shallow passes. Be mindful that the top rails each get one mortise per end, while the bottom rail gets two mortises per end.



Foolproof results. Vacuum out the last of the wood chips, and the mortises are done. Note the long clamps used to hold the workpiece vertically against the edge of the workbench.



Matching mortises. It's critical to make the mortises in the correct locations on each piece to keep the gate square. The jig's job is to ensure that the mortises match.

3 MILL PERFECT-FITTING TENONS



Plane a board to a snug fit. Run a board through your planer until it will slip into the mortises with hand pressure.



Rip and rout. Rip the board on the tablesaw to just narrower than the width of the mortises, then use a $\frac{1}{4}$ -in. roundover bit to rout all four edges.



Chop and bevel. Cut the tenons a little short to leave room at the bottom of the mortises for the glue that will be pushed down there during assembly. Then bevel the ends a little to make it easier to insert the tenons.



DOOR DECORATION

The ginkgo leaf is featured prominently in Japanese design and culture, so I decided to cut a series of those shapes into the lower panel boards.



Arrange by eye. After printing ginkgo leaves on paper, glue them to cardboard and cut them out to use as templates. With the panel boards all laid out, play around with the templates until you find the windblown effect that looks right to your eye. There will likely be some erasing involved, but it's easier to erase pencil lines than a hole in the wrong spot.



Jigsaw does the job. Drill holes inside the perimeter of each leaf outline to make a place to start each cutout. Then put a curve-cutting blade in your jigsaw (I used a Bosch T119BO blade), and get to sawing and sanding.

tom rail also just looks good in a frame-and-panel assembly, grounding it.

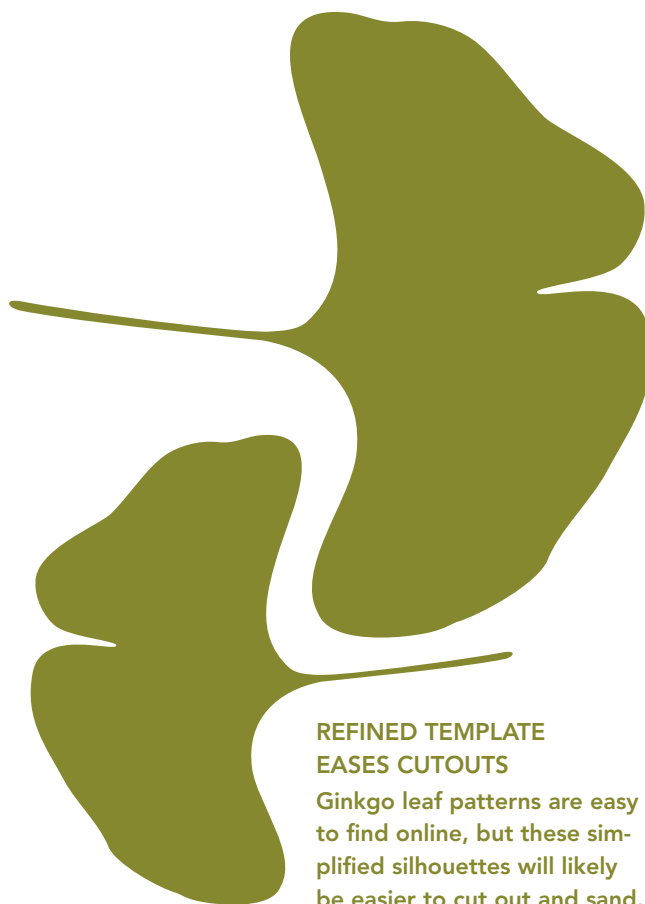
Altogether, that adds up to eight deep, thick mortises and tenons, four down each side—enough to keep this wide gate square for the long haul.

I added one more detail to increase the gate's longevity: To prevent water from pooling in the groove of the bottom rail, I

drilled $\frac{3}{8}$ -in.-diameter holes, spaced about 6 in. apart, down through it before assembly.

The details are up to you

Once you know how to make a big, sturdy frame like this, you can design any gate you like. In my case, I filled the lower frame with $\frac{1}{2}$ -in.-thick cedar boards, and the upper one with Japanese-style gridwork.



REFINED TEMPLATE EASES CUTOUTS

Ginkgo leaf patterns are easy to find online, but these simplified silhouettes will likely be easier to cut out and sand.

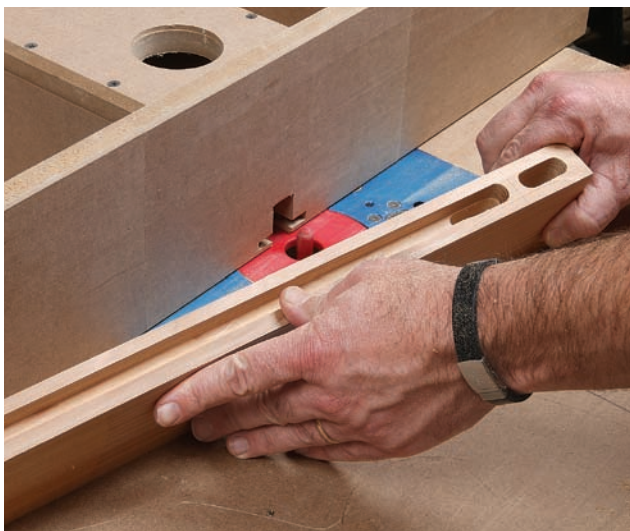


Smooth the shapes. Wrap 80-grit sandpaper around a dowel and smooth away the bumps and wood whiskers.

The thin lower boards are lightweight and so were easy to pierce with the ginkgo leaf shapes I had planned. To prevent big gaps from appearing between the boards as they shrink and expand over the years, I fired a single brad through the rail into the ends of each board, both top and bottom. This allows the wood to shrink and expand without splitting, and will prevent the boards

ASSEMBLY TIME

I recommend Titebond III wood glue, which is waterproof for outdoor use and allows ample time for assembly before it starts to cure and seize up.



Don't forget the grooves. Cut all the panel grooves on the router table with a 1/2-in. bit, using two passes to reach the full depth. To groove the lower sections of the vertical frame parts, start the bit in one of the mortises, and rout until you reach the next one. The grooves on the rails run straight through, so they are even easier.



Always do a dry fit first. Once you're sure all of the joints will close nicely, take the opportunity to round all the inside corners with a router.



Assemble in stages. Start by inserting the panel boards into the lower and middle rail, with no glue—but fire a single brad through the rail into each board to keep it roughly in place. Then apply glue to all of the mortises and tenons and add the top rail and stiles. I used bar clamps to draw the joints home, as they get pretty snug once glue is on them.



Glue goes on mortises and tenons. Put most of the glue in the mortises, using a brush to spread it around. Glue on the tenons tends to get scraped off and squeezed out during assembly, so use only a light coat there.



GRIDWORK

The gridwork jig is two pieces of 1/2-in. or 3/4-in. plywood or MDF screwed together at 90°, along with a “key” made from a length of the grid material. You can clamp it to your miter-gauge fence as shown, or screw through the back of the miter fence into the jig fence to attach it.



Grid magic. After cutting the gridwork strips to fit the opening, cut half-lap joints with a stacked dado set. A jig assures even notch spacing; just bump the tip of the workpiece against the key for the first notch, and hold it securely to the jig to make the cut. The rest indexes off the previous notch.



Get ready for the gridwork. Use 1/4-in.-thick strips behind and in front of the gridwork to secure it in place. L-shaped stops help correctly locate the back strips, and shooting 18-ga. brads through the strips locks them in place.

from moving relative to one another in the frame.

For the Japanese gridwork up top, the key is to drop it in separately after the gate is assembled. I cut the pieces to fit the opening, and then used a tablesaw jig (pictured above) to make the little interlocking notches I needed to join them together. To install the gridwork, I simply nailed thin wood strips



Locking in the grid. After gluing up the entire grid at once, put a dab of glue at each joint, let it dry (with weights on it to hold it flat), and then place it in the opening. Then nail in the front strips to lock it in place. If it ever gets damaged, you can always pull it out and repair or remake it.

on both sides of it, like glass stops. If the gridwork ever gets damaged, it will be a cinch to pop it out and repair or replace it.

As for the finish, I didn't use any. My feeling on outdoor projects is choose the right woods and then let them weather naturally. The cedar will eventually turn gray, as will the pressure-treated wood, blending with the color of the galvanized panels over time.

Before hanging the door, I trimmed its outside edges a little for a perfect fit in the opening. For hardware, I used a self-closing gate kit from Everbilt, which included adjustable, spring-loaded hinges and a matching latch. □

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