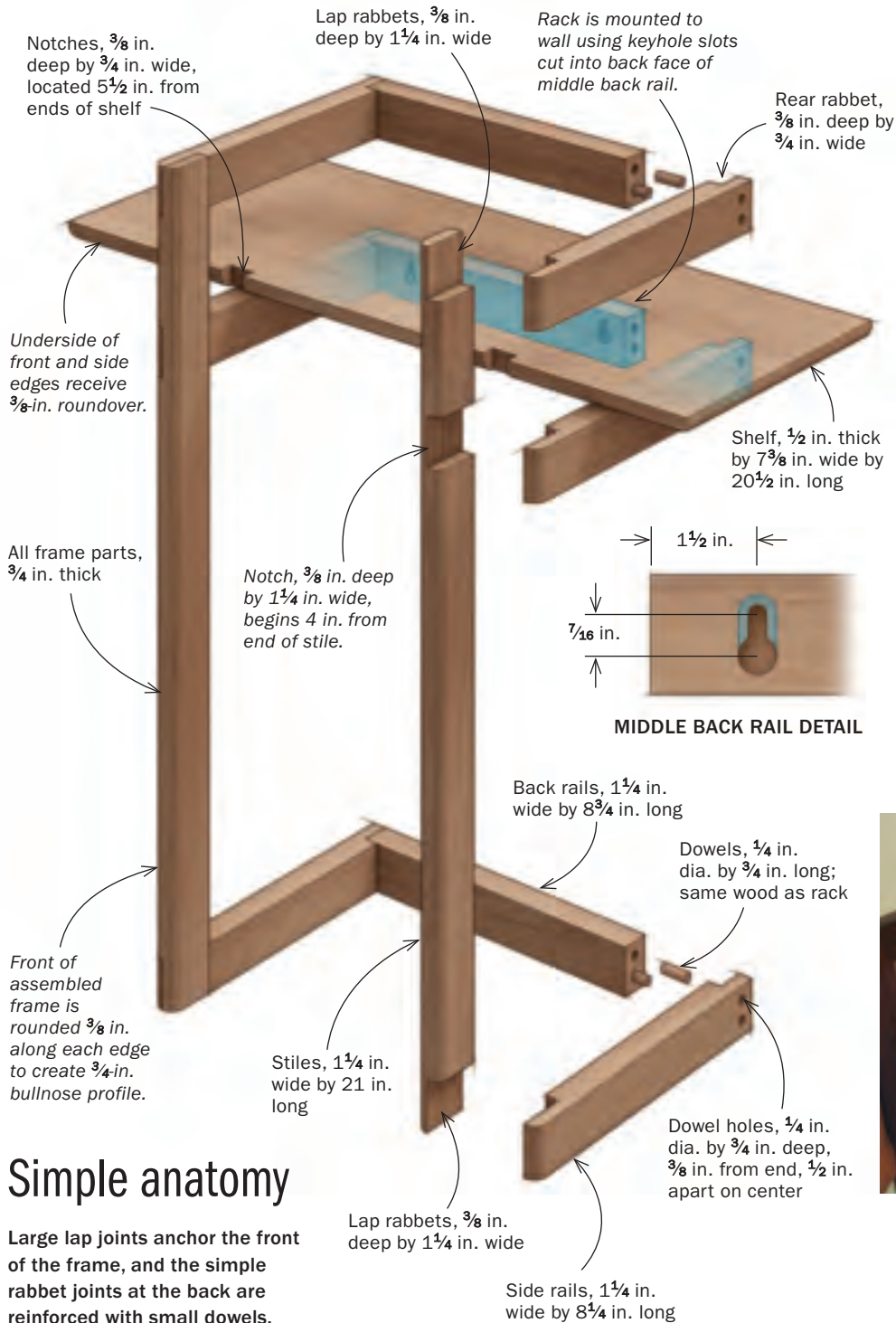




# Contemporary Towel Rack

Wall-hung unit brings storage and charm to any bathroom

**BY LEAH AMICK**



## Simple anatomy

Large lap joints anchor the front of the frame, and the simple rabbet joints at the back are reinforced with small dowels.

I designed this piece after my husband and I purchased our first home and realized that our guest bathroom lacked storage for towels and toiletries. With floor space at a premium, a wall-hung unit seemed like the right solution.

The rack holds rolled-up towels in two sizes, with room for toiletries and decorative items.

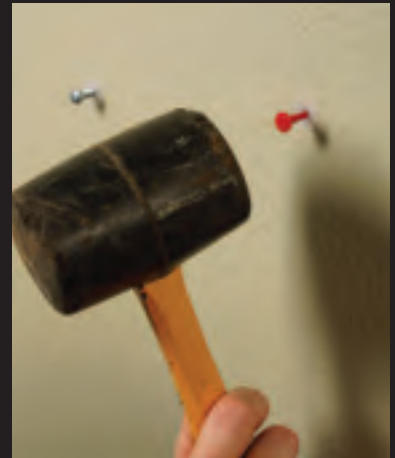
This is an easy project that should take only a day or two to build, not counting finishing. All of the frame joinery is cut on the table saw using

a dado set. The front of the frame is joined with lap joints, and the joints at the back are simple rabbets, reinforced with dowels. And one of the back rails receives two keyhole slots for hanging the rack securely and invisibly.

The shelf is also notched with the dado set to keep it in place against the front of the rack, and no fasteners are needed to keep it stable. In addition, these shallow notches keep the front edges of the frame aligned properly.

## Easy to hang

Keyhole slots are a strong, invisible way to attach wall-hung projects.



Go with drywall anchors. The frame of the rack is too narrow to line up with wall studs, so it's easiest to attach it with drywall anchors. Amick used anchors that flare out behind hollow areas of the drywall and hold their screws securely.



Fit the keyholes over the screw heads. Slide the shelf into position, and then hang the frame on the screws.

# Cut the frame joinery

Everything is cut on the table saw using a dado set, and the various setups are very similar. Mill some extra pieces to help dial them in.



**Lay out the lap joints.** To ensure a good fit, Amick used mating parts to lay out the large rabbets and notches. A white pencil shows up nicely against the dark walnut.

**Start with test pieces.** Use extra pieces to fine-tune the setup for the lap joints at the front corners of the frame. The goal is for the ends and faces of the joint to end up flush.



**Take it in two passes.** Place a sacrificial backer piece against the fence of the sled, and clamp on a stop block to limit the length of the notch. Cut away half of the waste at a time, finishing with the workpiece against the stop block.



I rounded the edges of the frame and shelf to match the soft aesthetic of the bathtub tray I wrote about in *FWW* #304. The wood is the same also—walnut—but any other species will work.

## Cut the frame joints

The frame parts are all  $\frac{3}{4}$  in. thick, which makes milling easier. The shelf is  $\frac{1}{2}$  in. thick, and you can make it from one solid piece or glue it up from two or more.

When cutting the frame parts to width and length, I made a few extra parts as backups in case I made a bad joinery cut. I also held on to the offcuts to help me set up joinery cuts.

**Lap joints first**—Start by laying out the lap joints in pencil to help you keep track of their orientation. The lap joints are essentially large rabbets that are cut on the table saw using the dado set. Stack the dado blades a little under  $\frac{3}{4}$  in. wide, and then set their cutting depth to about  $\frac{3}{16}$  in. to start. I support the parts with my crosscut sled, clamping on a stop block to control the length of the rabbets, although a miter gauge could also work.

Dial in the setup using your offcuts, ensuring that the mat-



**Cut the center notches.** The stiles are notched for the middle side rail. Cut these in two passes, using the rip fence as a stop for the first cut and a stop block for the second.

ing parts end up flush with each other. And make the cuts in multiple passes, creeping up on the right depth of cut and the right stop-block position.

If you lack a dado set, the lap joints can be cut with a straight bit on the router table, with a miter gauge or a square backer board keeping the stock square to the fence.

Dry-fit the lap joints before moving on, making sure their mating surfaces are as close to flush as possible. And leave the table-saw setup in place for the next steps.

**Rabbet the side rails**—To connect the frame parts at the back of the rack, I simply rabbeted the side rails to fit over the back rails. The middle back rail has keyhole slots for attaching the rack to the wall, so it carries the weight of the rack and its contents. I went with the same sled setup to cut these rabbets, using a test piece to dial in the cuts. After assembly, these rabbets are reinforced with small dowels, made from the same wood species as the rack, so they blend in.



**Don't forget the rear rabbets.** The side rails have rabbets at their back ends to receive the back rails.



**Check the fit.** The back and side rails should end up flush at the back, but a small amount of misalignment can be planed and/or sanded away later.

## Glue up and round the side assemblies

You'll need to assemble the joints at the front of the rack in order to round their edges.



**One joint at a time.** Tackle these joints one at a time, feeling with your fingers to be sure the ends are flush as you tighten each clamp. You'll end up with two flat side assemblies.

**Round the front edge.** Lay each assembly flat on the router table to round its leading edge. Use a  $\frac{3}{8}$ -in. roundover bit, flipping the assembly to create a full bullnose profile.



### Build the frame in stages

The frame is assembled in several steps. First, the side rails are glued to the stiles. This creates two side assemblies that you can lay flat on the router table for rounding the front edges of the frame.

**Start with the lap joints—**Dry-fit the joints to make sure the side assemblies are mirror images of each other and the lap joints come together square and flush. Then apply glue and clamps.

The fully rounded profile on the front edges is shaped with two passes on the router table, using a  $\frac{3}{8}$ -in. roundover bit. If you've got your shelf ready, use the same router-table setup to round its front and side edges.

**Rout the keyhole slots—**The central back rail gets keyhole slots for attaching the rack to the wall. The rail isn't long enough for the keyhole slots to line up with two wall studs 16 in. apart, so I recommend using drywall anchors to hang it. That will let you place the rack wherever you want to.

Cut the keyhole slots on the router table using a  $\frac{25}{64}$ -in. keyhole bit. Begin by drilling  $\frac{1}{2}$ -in.-dia. starter holes for the router-table operation. Use a Forstner bit, and set the depth for  $\frac{1}{2}$  in.—the same depth as the keyhole slots to follow.

Now set up the router table with the keyhole bit. If your table has a miter slot, use a miter gauge to support the rail. Otherwise, you can push it along the fence with a piece of plywood or MDF with a squared corner. In either setup, the end of the rail contacts the router-table fence, which locates the slot in one direction, and a stop block limits the forward travel of the rail and therefore the length of the slot.

To set up the cut, start with the router off, and drop the starter hole onto the keyhole

# Cut the keyhole slots

These go in the middle back rail. Here's how to cut them safely and easily, using a Forstner bit and a  $\frac{25}{64}$ -in.-dia. keyhole router bit.



**Drill starter holes.** A drill press and Forstner bit work best here. Set the depth to  $\frac{1}{2}$  in. The drill bit should be a little larger than the fat part of the keyhole bit. For a  $\frac{25}{64}$ -in. keyhole bit, use a  $\frac{7}{16}$ -in. or  $\frac{1}{2}$ -in. Forstner.

bit. Then set up the fence and stop block for the first cut.

Start the cut the same way, with the router off and the bit in the starter hole. Then turn on the router and push the rail forward. When it hits the stop block, turn off the router, slide the rail backward, and lift it off the bit.

Each keyhole slot requires a different setup. Just be sure



**Start with the router off.** Set the keyhole bit's height so it matches the starter hole's depth. With the router off, place the hole over the bit.



**How the setup works.** The miter gauge is set square to the fence, which supports the end of the workpiece. The stop block determines the length of the slot. With the starter hole placed over the bit and the workpiece held securely, turn on the router and push the workpiece forward.



**Clean and neat.** Turn off the router and lift the workpiece off the bit. Your keyhole slot should look like this. You'll need to reverse the router-table setup to cut the other keyhole slot.

## Finish up the assembly

Add the back rails and the shelf. The rack is now complete.



**Glue in the back rails.** Before applying glue, clamp a spacer panel between the stiles to align the parts and hold them in position for an easy assembly.

**Round the shelf.** Amick rounded the shelf's front edge first and then decided to round the ends as well. But the choice is up to you.



the slot ends at the same point so the rack will hang level on the wall.

**Add the back rails**—Once again, start with a dry-fit. Make sure the rail with the keyhole slots is the middle one and that its keyhole slots are facing the right way up.

When it all looks good, glue and clamp the back rails into the rabbets in the side rails. To help manage this tricky assembly stage and ensure the frame ended up square, I clamped a plywood spacer panel between the stiles (photo left).

### Add the shelf

After milling the shelf to size, round over its edges on the router table. Then cut the notches on its front edge that locate the shelf on the rack. To lay out the notches accurately, hold the shelf against the frame and transfer the location of the frame parts to the shelf (as shown in the top photo on the next page). The stiles will need to be spaced evenly for this step, so keep the plywood spacer in place from the earlier assembly step.

I cut the notches with a dado set on the table saw, with the shelf standing on edge on my crosscut sled.

**Reinforce the rabbets**—Now you can remove that spacer panel and carry the rack over to the drill press for boring the dowel holes. You could drill them with a handheld drill instead, but I like the precision of the drill press. I also recommend using a brad-point bit, as a standard twist drill will tend to wander.

Mark the hole locations, and drill the  $\frac{1}{4}$ -in. holes at least  $\frac{3}{4}$  in. deep. If possible, use dowels made from the same species as the rack so that they blend in, and make sure they fit the holes nicely before you apply glue. If the fit is too tight, you can sand the dowels.

Cut the dowels a bit long, and chamfer their tips to make them easier to insert. Then spread a modest amount of glue in the holes before driving in the dowels.

I trimmed off the excess with a flush-cut saw and then sanded the surfaces flush.

### Finish and hang the rack

As I did on the bath tray in *FWW* #304, I sanded the parts to 220 grit, raising the grain before the final sandpaper pass, and finished them with two coats of Osmo Polyx-Oil, a blend of oil and wax that resists water surprisingly well.

To hang the rack securely, I used drywall anchors, which come with screws that fit the keyholes perfectly. Slide the keyholes over the screws, add some nice towels and toiletry items, and the project is done.

I installed my bath rack four years ago, and I continue to receive compliments on it. People ask me where I got it, and like every woodworker, I'm happy to tell them. □

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**Lay out the notches in the shelf.** With the rack still clamped to the spacer panel, position the shelf and mark the edges of the notches.



**Cut the notches.** Use the sled and dado set again to cut these shallow notches. You can align the cuts by eye here, creeping up on a good fit with the frame.



**Drill for the dowels.** The rear rabbets are reinforced with  $\frac{1}{4}$ -in. dowels. Amick brought the rack to the drill press to drill holes through the joints, but a handheld drill would work also.



**Drive the dowels home.** It helps to chamfer their tips first. Squirt a small amount of glue in each hole, drive the dowels, and trim off the excess.