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Drying Rack

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Drying Rack

Clever fold-up rack mounts just about anywhere

This practical project can be put to good use in almost any laundry room, mud room or kitchen. Use it to dry clothes, towels, even flowers or herbs. Ours is made from ash, but oak, maple, birch and pine are other good choices.

Prepare the Stock

You'll need 3/4 in. thick stock for the upper rail (A), shelf (B), lower rail (C), two stiles (D), and the two sides (E). We used clear stock, although boards with a few small, tight knots are perfectly suitable.

The dozen long stretchers (F) and four short stretchers (G) are made from 1/2 in. thick stock. A board that measures at least 5 in. wide and 40 in. long will provide enough material for all the stretcher parts. It's best to use clear stock here, as the stretchers are relatively small. A knot in the wrong location might weaken a stretcher enough to cause it to break under the weight of several wet bath towels.

We used 1/2 in. diameter birch dowel stock for the long dowel (H) and the 11 short dowels (I). Be a little choosy when selecting the dowels at your hardware store. You'll want them to be reasonably straight and free from small knots that sometimes show up. Also, try to avoid those that are badly out of round.

Now, except for the long and short dowels, cut all the parts to the dimensions shown in the Bill of Materials. (The dowels will be cut to length later, after the rack has been test assembled.) Before starting, though, check your table saw, along with the rip fence and miter gauge, as you'll want all the cuts to be square.

Make the Upper Rail and Shelf

The upper rail and the shelf can be tackled first. You'll note that these parts are almost identical. They differ only in that the upper rail is curved at the lower corners.

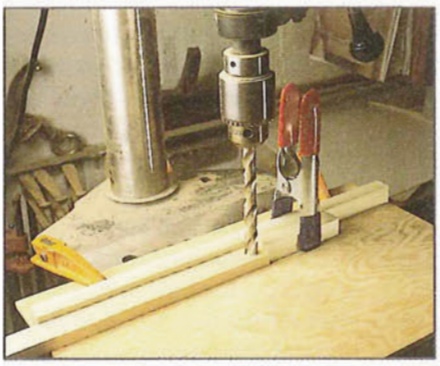
Transfer the profiles of these parts from the grid pattern to the stock, then cut them out with the band saw. Once cut, sand the sawn edges smooth. If you have one, a disk sander will come in handy here.

We added a slight chamfer (about 3/16 in.) along the long curve of each part. As shown in the exploded view, the chamfer ends at the "notch" in the curve. You can do this with a hand plane or, as we did, with a router table equipped with a 45 degree chamfering bit. Since the upper rail mounts against the wall, there is no need to chamfer the curve on the back of this part.

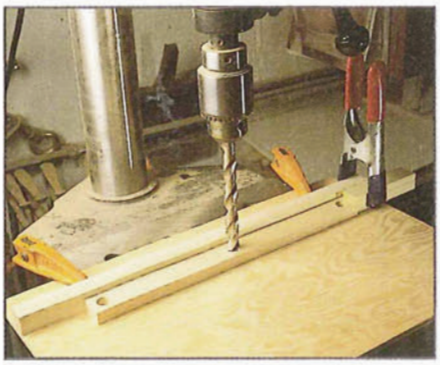
Make the Sides

Lay out and mark the location of the two, 3/4 in. wide by 2 in. long, notches on the back edge of each side. We made the 3/4 in. deep cut first, using the table saw. The stock was supported by the miter gauge as it passed, on edge, through the blade.

The 2 in. long leg of the notch was cut with the band saw. If you have one, use a wide band saw blade here (3/4 in. is



Above: Setup on drill press to bore end holes in the stretchers. Below: Relocate the stop block on the drill press to bore the middle holes



fine), as it will tend to cut straighter than a narrow blade.

The front edge of the sides has the same curve as the upper rail and the shelf. Use one of these parts as a template to trace the curve on each side, then cut them out on the band saw. Sand the edges smooth as you did earlier.

Now, referring to the end view, lay out and mark the centerline location of the 1/2 in. diameter by 3/8 in. deep hole that's bored in each side to accept the long dowel. You'll want the hole square to the side, so use the drill press here.

Bore the Stretcher Holes

As shown in the end view, all the long and short stretchers have a 1/2 in. diameter hole bored 1/2 in. from each end. In addition, the long stretchers have a 1/2 in. diameter hole bored in the middle. All totaled, there are 44 holes to be bored, so some sort of locating setup on the drill press makes a lot of sense.

The setup need only be a 3/4 in. square by 16 in. long fence clamped to the drill press table, with a spring clamp firmly securing a stopblock in place (see photos). Make the end holes first, locating the fence and stopblock to establish the proper hole centerline. (Before starting, to insure accuracy, make a couple of test holes in scrap stock.) After all the end holes are bored, relocate the stopblock to accommodate drilling the middle hole on the long stretchers.

When boring the holes, it's a good idea to always keep the same edge of the stretcher against the fence. Doing so will help insure that the holes line up pretty well, even if they are slightly off center in the drill press setup.

Assemble Stiles To Sides

Next, the stiles are glued to the sides. When joined, the back of the stiles should be flush with the back edge of the sides. Also, the ends of the stiles should be flush with the ends of the notches cut in the sides.

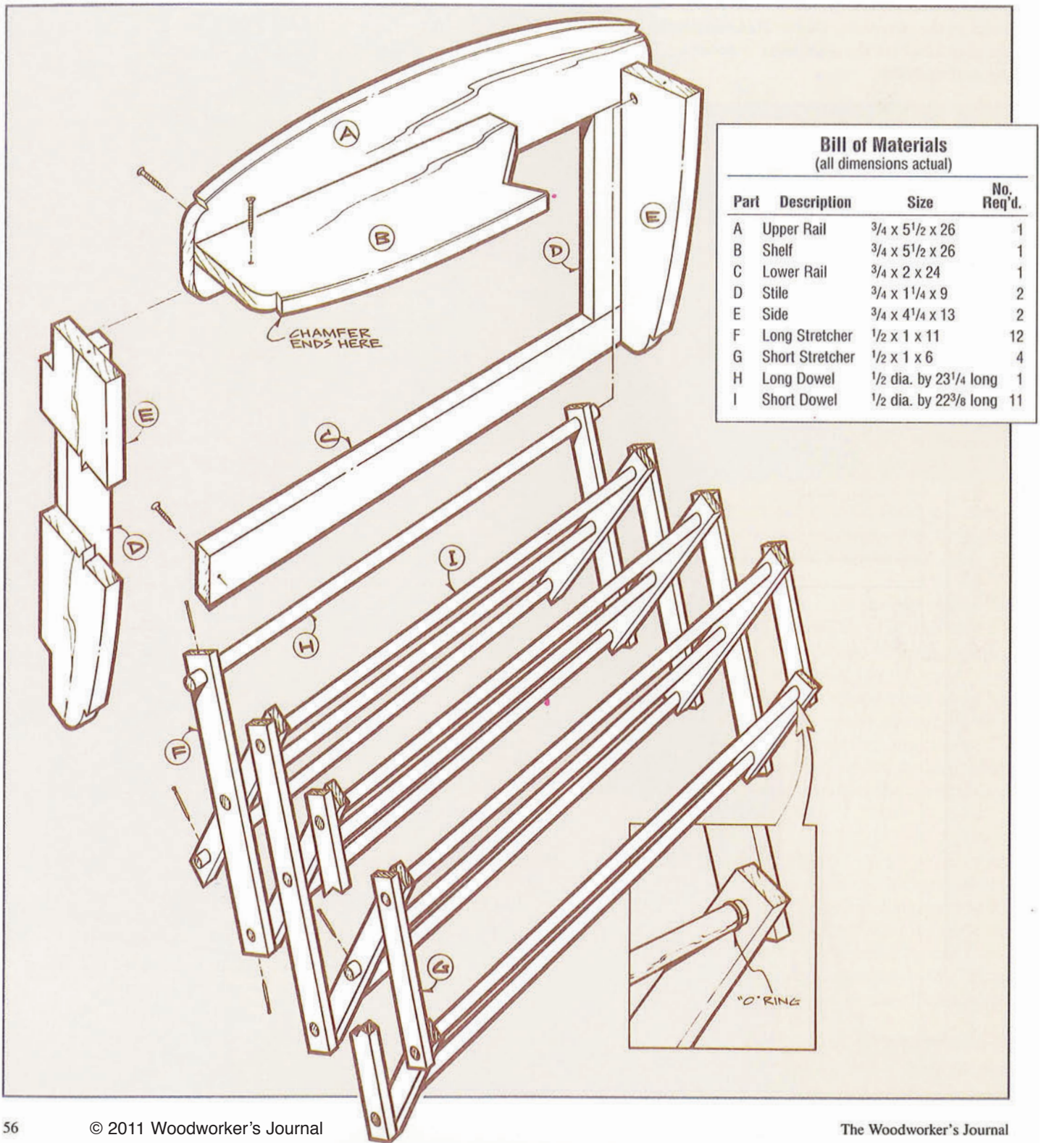
To join the stiles to the sides, add a thin coat of glue to the mating surfaces and apply clamp pressure. In order to prevent the parts from sliding out of position when the clamps are tightened, drive three or four small brads along the edge of each stile, then snip the heads off so that about 1/16 in. is exposed. When the parts are clamped, the brads will keep them from moving around.

Allow the parts to dry thoroughly before removing the clamps. If necessary, scrape away any glue that may have squeezed out of the joint.

Test Assemble

At this point, it's a good idea to test assemble the parts to make sure everything is fitting up okay. It will also enable you to determine the exact length of the long and short dowels.

Use 1 3/4 in. long by no. 8 flathead



Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Upper Rail	3/4 x 5 1/2 x 26	1
B	Shelf	3/4 x 5 1/2 x 26	1
C	Lower Rail	3/4 x 2 x 24	1
D	Stile	3/4 x 1 1/4 x 9	2
E	Side	3/4 x 4 1/4 x 13	2
F	Long Stretcher	1/2 x 1 x 11	12
G	Short Stretcher	1/2 x 1 x 6	4
H	Long Dowel	1/2 dia. by 23 1/4 long	1
I	Short Dowel	1/2 dia. by 22 3/8 long	11

wood screws to attach the stile/side subassembly to the upper rail and the lower rail. As shown in the exploded view, a single screw is all that's used at each joint. Next, using the same size screw, attach the shelf to the top end of the sides and to the upper rail. Just one screw joins the shelf to the sides, while three screws secure it to the upper rail.

Measure the distance between the two sides and cut the dowels to length. The long dowel should extend at least 1/4 in. into the 3/8 in. deep hole in each sides. The short dowels should be cut about 1/16 in. less than the distance between the sides.

Sand and Finish the Parts

Remove the screws from the assembled rack so that all the parts, including the stretchers and dowels, can be final sanded. Sand each of the parts thoroughly, finishing with 220-grit. Take particular care when sanding the dowels, as rough edges will easily snag on delicate fabric.

Before final assembly, we applied two coats of varnish to all parts except the stretchers and dowels. Don't use shellac or any other of the clear finishes that won't stand up well to dampness or moisture. The stretchers and dowels were left unfinished.

Also, it's probably not a good idea to stain the stretchers and dowels, as some stains tend to "bleed." If that happened, your favorite sweater might come off the drying rack with an unwanted accent stripe.

Assemble the Rack

Looking at the exploded view, you'll note that each end of the rack has three long stretchers and a short stretcher on the *inside*, and three long stretchers and a short stretcher on the *outside*.

Begin by inserting three short dowels through the middle holes of the long *inside* stretchers. Note that the dowels must extend through the holes the 1/2 in. thickness of the stretcher stock. Once you have the dowel extending the right distance, drive a 7/8 in. long brad through the edge of each stretcher and into the dowel. Before driving the brad though, bore a pilot hole to help keep the stretcher and dowel from splitting. When joining these parts, you must make sure that the stretchers are lined-up (parallel) with each other when viewed from the end of the dowel. Perhaps the easiest way to do this is to first attach the stretcher to one end of the dowel, then add the second stretcher while all three parts lay flat on your workbench. When completed, this subassembly has a shape that looks much like an "H".

Photo A: Dry assemble the "H" subassemblies to all remaining parts

Photo B: Close up the rack and clamp together

Photo C: Lay the rack down and brad the outside stretchers

Next, as shown in Photo A, all the remaining stretchers and dowels (except the long dowel) can be dry assembled to the "H" subassemblies. We found that everything tends to stay together better if the assembly is done with the parts on end as shown.

When all is dry-assembled, close-up the rack, then use a clamp and a couple of pieces of scrap stock to help hold the upper parts together (Photo B). Now, carefully lay the assembly on the workbench as shown in Photo C. With the rack in the closed position, drill pilot holes for 7/8 in. long brads in each end of the *outside* stretchers. Do one end at a time, first drilling the pilot hole, then driving the brad.

Do not add a brad to the middle hole of the long stretchers, or to the ends of the two *inside* short stretchers. A brad in any of these holes will prevent the rack from opening.

Because the two inside short stretchers don't have a brad at either end, they may slide out of position a bit if the rack is used a lot. We solved the problem by slipping a small rubber "O-ring" on each end of the dowel before assembly (see detail). You can find "O-rings" in the plumbing section of your hardware store. As another option, you can drive a short brad into the dowel just inside each stretcher.

Final Assembly

Using the screws from the test assembly done earlier, attach the upper and lower rails to one of the stile/side subassemblies. Now, slide the long dowel through the stretcher holes in the rack and into the pivot hole in the side, then add the other stile/side. Finally, attach the shelf to complete the assembly. By the way, the screws provide plenty of strength, so there is no need to add any glue to these joints. And, by not using glue, you'll be better able to make repairs should any part of the rack ever get damaged.

With the parts assembled, check to see that everything operates smoothly as it's opened and closed. If all looks okay, the project is ready to be mounted to the wall.

Make sure the rack is mounted securely, as it will be under a bit of strain when wet towels are hanging from it. Ours is mounted with two screws driven through the upper rail, just under the shelf. They were spaced 16 in. apart so that we could be assured of screwing into two wall studs.

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