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Wall-Mounted Magazine Rack: Design, Templates and Joinery

From "[Wood Works](#)"

episode WWK-604 -- [More Projects](#) »

In this episode of *DIY Wood Works*, host David Marks builds a magazine rack that allows you to access and display your magazines in a stylish and decorative fashion. In this first segment, he goes over the design, prepares templates for prepping the stock and begins work on the back panel and joinery.

With its frame made from African wengae and its back and bins made from fir, this modern magazine rack was designed to be wall-mounted. The curved frame, made from African wengae, is joined using a half-lap in the top two corners. The curved support pieces and the visual contrast of the light and dark woods give the piece a unique and bold look.

Approximate dimensions: 60 inches tall by 18 inches wide.

Materials:

Fir and wengae stock

Fir plywood

MDF for templates and mockup

Large carpenter's compass

Router

Trammel arm

Table saw

Band saw

Jig saw

Table router

Biscuit jointer

Sharp chisel

Clamps

Yellow woodworker's glue

Straight-edge

Carpenter's pencil

Safety glasses or goggles



With its frame made from solid mahogany, this modern magazine-rack was designed to be wall-mounted.



The complementary curves of the frame and bins combine with the sleek, connecting vertical lines to create stylish storage.

Safety Alert: *Always* wear safety goggles or safety glasses, and follow proper safety precautions, when working with wood, power-tools, saws, drills, routers, etc.

Design Overview, Templates and Plywood Back-Panel

The design of the rack incorporates four magazine bins, each large enough to hold two average-sized magazines vertically. The three main parts, or sub-assemblies, for this piece are the **bins**, **back panel** and **frame**.

The four magazine compartments are simple open boxes and are joined to the frame using glue and brass screws, and the bins are angled for easy access. For added strength, the back panel is made from 3/4-inch douglas-fir plywood.



Figure A

To design this rack, David created a full-scale drawing on a sheet of 1/4" MDF. Once he had the measurements and design worked out, he cut templates for each arc from MDF (**figure A**). The steps are outlined below.

- On a sheet of 1/4" MDF, lay out a center line. We arbitrarily determined a pleasing curve by setting a compass with a 36" radius. This arc represents the curve for the top and bottom curve of the back panel (**figure B**).
- Use another sheet of 1/4" MDF and draw on the same center-line and arc. Then, from the same point on the center, re-set the compass to make a second arc that is 1-1/2" longer than the first (**figure C**). This represents the width of the frame -- 1-1/4" -- plus 1/4" to compensate for the size of the router bit. This arc represents the curve of the top and bottom rails of the wengae frame.



Figure B



Figure C

- Cut the curves using a router mounted on a **trammel arm**. A trammel arm can be made from a piece of plywood. Install a 1/4" carbide bit in the router and attach it to one end of the arm; then measure up 36 inches to match the curve and attach the other end of the trammel arm at the center-point with a wood screw. This will allow the router bit to follow the arc just as the marking-tip of the compass did. The trammel arm allows the router bit to precisely follow the arc of the

curve and make a smooth cut (**figure D**).

- This creates the template that will be used to make the back panel for the magazine rack (**figure E**).
- Next, cut out the rail template for the frame on the other MDF sheet. Again, use the trammel arm to make the cuts. Using the router mounted on the trammel arm, cut the outer curve first, then move the trammel arm back to cut out the inside curve.



Figure D



Figure E

- With the templates complete, you can now begin work on the back panel. On a piece of 1/2" vertical-grain douglas-fir plywood, lay out a center-line and line it up to the center-line on the MDF template. Trace the outline of the top curve (**figure F**).



Figure F

- Measure out the desired length of the rack, then rotate the template and trace on the bottom curve.
- Use a jig saw to rough-cut the top and bottom curves of the back panel (**figure G**).
- Then, using the MDF template as a guide, use a plunge-router and flush-trim bit to flush up the top and bottom curves of the plywood (**figure H**).



Figure G



Figure H

Frame and Joinery

With the wengae for the frame milled up, David used the template to lay out the curves for the pieces

and added green tape to the stock to help visualize the lines for the top and bottom rails. Before cutting the curves, it will be necessary to cut the dado for the half-lap joinery. Cutting the dado will be much easier while the stock is still square.

As seen on the prototype, the half-lap is cut on both pieces, allowing them to join together flush (**figure I**).



Figure I

For efficiency, the top and bottom rails can both be cut from a single piece of wengae (**figure J**).

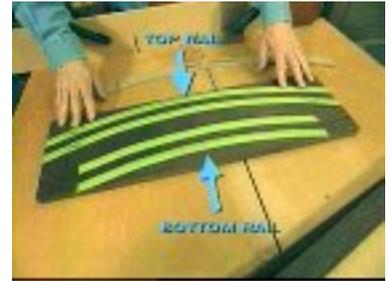


Figure J

- Since the bottom rail is shorter than the top one, the half-laps can simply be cut in the top rail at the table saw. Once the walls of the dado have been defined using cuts with the table saw, make a series of scoring cuts to remove the waste in-between the boundary cuts. Stop-blocks clamped to a backing board (**figure K**) help to ensure accuracy.
- Once the dados have been cut in the top rail, you can rough-cut the rails using the band saw (**figure L**).

Cutting Tip: Because wengae is a very dense hardwood, make certain that your band-saw blade is sharp, and make the cuts slowly to avoid splintering.



Figure L



Figure K

- Before rough-cutting the final curve of the bottom rail, and while the stock is still partially square, use the table saw to cut the bottom rail to final length (**figure M**).
- Now you can take the stock back to the band saw to cut the final side (**figure N**).



Figure M



Figure N

- At the router table, with the templates taped to the stock as guides, flush-trim the edges (**figure O**).
- With the curved rails of the frame completed, the slots for the joinery can be cut. Since the stock where the slots will be cut is curved and the biscuit-jointer has a straight fence, we cut #20 slots into the curved frame (**figure P**) and #0 slots into the edges of the plywood. As such, since the depth of the cuts will be reduced slightly by the curve, you'll actually end up with slots that are approximately the same size.



Figure O



Figure P

- Using a layout pattern for precision, mark the center-points for the slots on the back panel (**figure Q**). Then do the same for the rails using the same pattern.
- Set the biscuit jointer to cut #20 slots and, with the backside of the top rail facing up, carefully cut the slots.
- To cut the matching joinery in the back panel, adjust the biscuit jointer to the zero-setting and attach a 1/16" shim to the fence of the biscuit jointer to raise the blade (**figure R**). This shim will offset the slots, allowing the rails to stand proud above the back panel.



Figure Q



Figure R

- After the joinery has been cut, clamp the top and bottom rails in place. This will allow you to measure for the final dimensions to confirm the precise layout for the ripping cut that will give the final width of the plywood back.
- At the table saw, rip the first side of the plywood back-panel (**figure S**). Then adjust the fence and rip the second side to the final dimension.
- Now you can fit the wengae stiles to the plywood back. Dry-clip the frame with the stiles placed into position. Then, using a razor knife, scribe the boundaries for the dado onto the stiles (**figure T**) to make the opposing part of the half-lap joint.
- Using the plunge router, rout out the dado on the stiles about 1/16" from the taped boundaries. Remove the remaining waste stock using a sharp chisel (**figure U**).



Figure S



Figure T



Figure U

In the segment that follows, assembly of the frame continues and work begins on the magazine bins made from fir.

RESOURCES:

Woodworking Techniques: Best Methods for Building Furniture from Fine Woodworking

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