

Custom, Shop-Built

# Radiator Covers





# A furniture maker pairs traditional looks with mechanical fasteners to manage extreme temperatures

BY BRIAN ALCORN

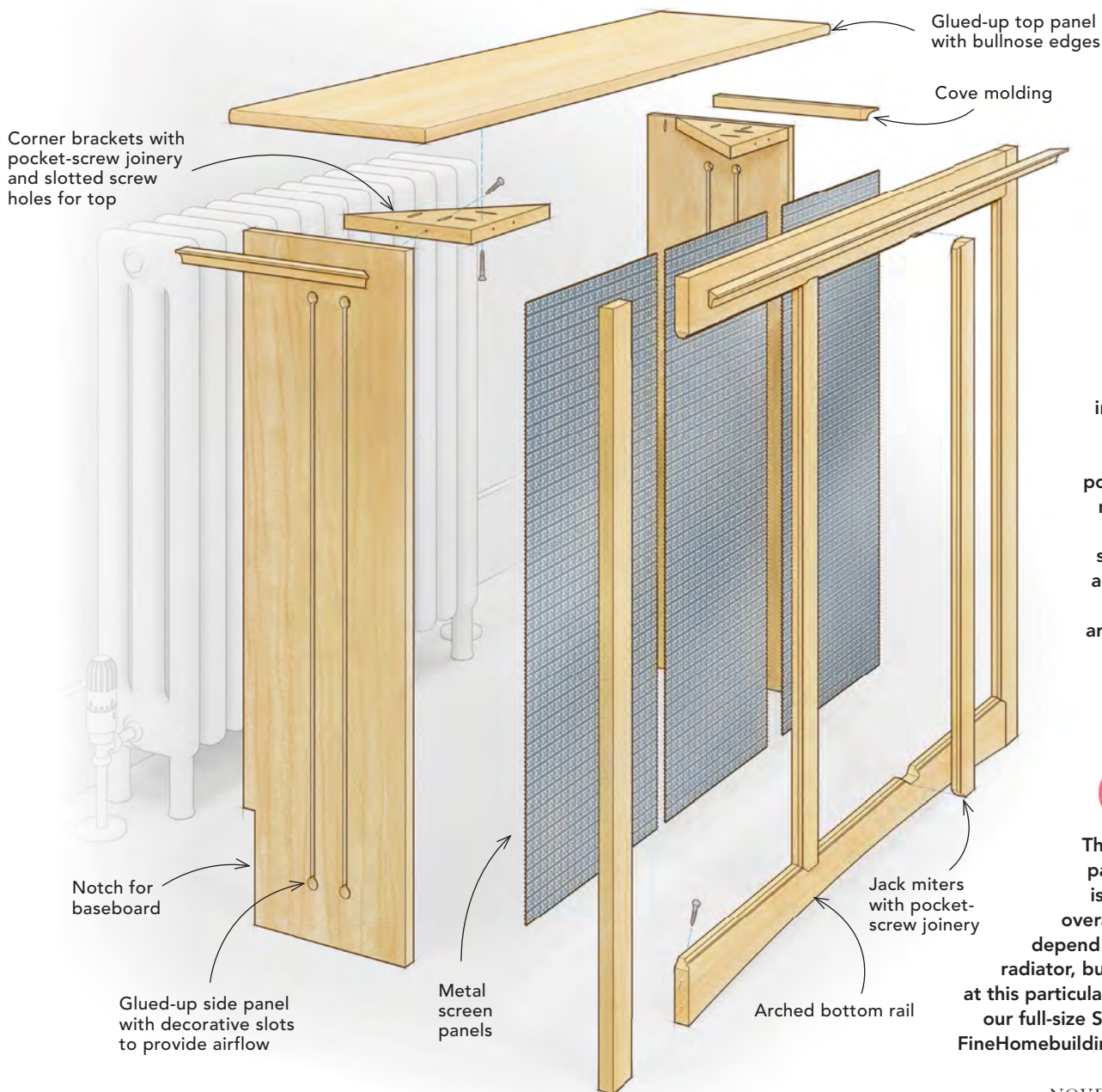
**A**s a woodworker whose focus is furniture-making, most of what I do is more likely to end up in the pages of *Fine Woodworking* than *Fine Homebuilding*. But I do get the odd commission that falls into the home-building realm, usually projects like replacing columns and stair parts or repairing damaged or timeworn elements of the colonial-era homes where I live in eastern Massachusetts. Recently, though, a family needed a solution to cover their home's eight cast-iron radiators.

Installing covers to protect occupants from possible burns from old radiators is a requirement in some jurisdictions, especially for rental properties and for houses that shelter foster children, like my clients' home. Some homeowners just don't like the look of the old radiators, and many don't appreci-

ate the constant cleaning—radiator ribs are highly efficient at collecting dust and cobwebs.

The techniques I use here can easily apply to other woodworking projects where traditional joinery may not work, or is too fussy for something that isn't intended as an heirloom piece. If you're planning to make your own radiator covers, measure carefully, and be sure to leave at least one inch clearance above, in front of, and on each side of the radiator. From there, based on your material thicknesses and desired overhang, you can figure out the dimensions of the sides, face frame, and top. □

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## JUST LIKE A SMALL CABINET

These decorative radiator covers are built with stiles, rails, and intermediate panel dividers joined together with pocket-screwed jack miters. The arched bottom rail and slotted side panels add style and allow for more airflow around the radiator.

### Build it yourself

The material for this paint-grade cabinet is  $\frac{3}{4}$ -in. poplar. The overall dimensions will depend on the size of the radiator, but for a closer look at this particular cover, download our full-size SketchUp model at [FineHomebuilding.com/magazine](http://FineHomebuilding.com/magazine).



## FACE FRAMES FIRST

While not all radiator covers will be the same size, the construction of the front face frames is the same, each with a pair of rails and stiles like those found on kitchen cabinets. After considering the swings in heat these joints will see, I determined that pocket-screw joinery would work best.



**Joint, rip, and profile.** For straight material and tight joints, run the stock through a jointer. Rip the rails to 3 in. and the stiles to 2¼ in. Profile one edge of each piece on the router table with a beading or cove bit.



**Nip the rails, cut the stiles.** Less prone to opening from wood movement, jack miters combine a 45° miter at the profile and a butt joint for the rest of the material. With the blade tilted at 45°, cut the miter on the stiles equal to the depth of the profile. For the flat portion of the joint, use a tenoning jig to hold the stock vertically and square as it passes through the blade. Nip off the corner of the profile on the corresponding rail (Not shown). Cut and practice with sacrificial boards until you fine-tune the setup.

**Draw and cut the arch.** The lower rail gets an arch cut in it to aid in airflow and to help with installation later in the event of any wonkiness in the homeowner's floor. It's easier to lay this out with the face frame temporarily assembled with pocket screws. I laid out the arch by making a mark 1 in. up from the midpoint of the lower rail and struck the profile using a flexible batten as a guide. I then roughed it out on a bandsaw and finished with a spokeshave for a perfect curve.



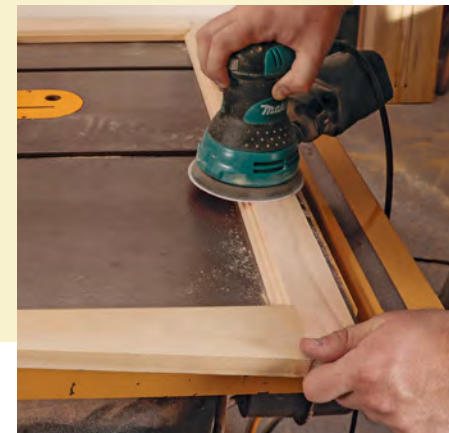
**Dividers need some handwork.** With the frame temporarily assembled with clamps, you can lay out the 2-in. divider locations on the rails and mark the mitered cuts and flat bottom of the joint using a combination square. The double-mitered ends of the dividers are easily cut with a miter saw set at 45°. For the rails, you can use a router and jig, a coping saw, or a number of other methods,



but I prefer to remove the waste for the flat portion of the joint using a crosscut sled and a dado set on the tablesaw. I then use a wide chisel and 45° miter jig that sit on the rails like a saddle and has a bevel that the chisel rides on to remove the corners of the miters cleanly.





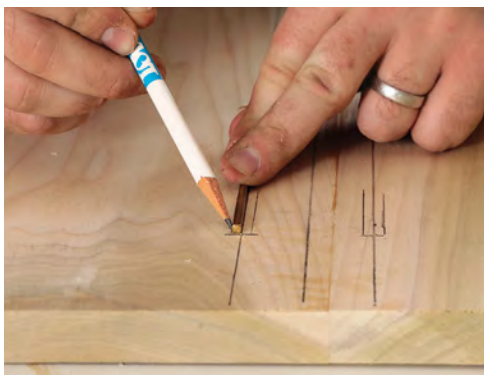
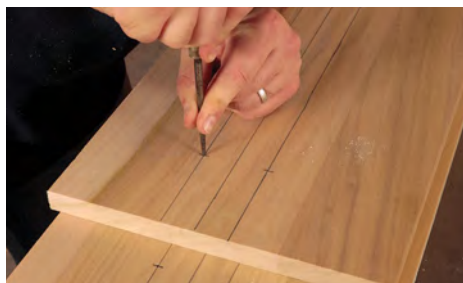


**Pocket screws pull it together.** With the female portion of the jack miters cut, assemble the outer perimeter of the face frame, measure and cut the lengths for the dividers, miter their ends, drill a pair of pocket holes in each end, and fasten the dividers into the frame.

## SIDES SECOND

I make the sides by jointing and edge-gluing stock with Titebond III. To help with airflow and for a more aesthetically pleasing look, rout  $\frac{1}{4}$ -in. slots into the sides, 2 in. apart and centered in the case. The face frame will be added to the sides, so account for this when measuring.

**Lay out the slots.** Strike lines delineating the centerlines of the slots, and mark points 3 in. from the top and bottom of the piece for the  $\frac{5}{8}$ -in. holes. Mark  $\frac{1}{8}$  in. from each side of the centerlines to find the outside of the  $\frac{1}{4}$ -in. slots. I prick the hole locations with an awl to help center the spur of the Forstner bit when I cut the holes at the drill press.



**Bore and rout.** After boring the holes, rout the slots. Raise the bit up through the hole and align it using the marks struck earlier. With the router table fence adjusted and locked and the bit centered in the hole, start the router and cut the slots in a single pass, moving slowly and steadily to account for the thickness of the material.



## ALL TOGETHER NOW

The top is a glued-up panel with a bullnose profile and is sized for a 1¼-in. overhang on the front and sides. A cove molding complements the face-frame profile nicely. I use Titebond III glue again and 1½-in. 18-ga. brads to join the sides to the face frame, with corner brackets to square it up and secure the top.

**Hold it square.** Use 90° clamping jigs to do a dry assembly of the sides and face frame, then, leaving the jigs in place, glue and fasten one side at a time.



**Clamp it up.** In order to ensure tight joints, immediately clamp the entire case and leave the clamps in place while the glue sets. Look for a uniform amount of glue squeeze-out along the joints and clean it up immediately.



**Block it square.** Once the glue is set, replace the 90° clamping jigs with a pair of right-triangle blocks glued and pocket-screwed into the upper corners. Cut the blocks so that the grain runs parallel to the triangle's hypotenuse in order to maximize the strength of the joint. These triangle blocks hold the case square and provide a means of attaching the top.



**Shape the top.** Using the router table, profile the ends first (across the grain) and then the length in order to minimize the chances of the corners blowing out deeper than the bit will cut.





**Attach the top.** Drill pocket holes near the back of each side of the case, and drill elongated holes into the triangle corner blocks. The screws at the rear hold the top fast in place, while the screws in the elongated holes allow the top to expand and contract and minimize the risk of warping or cracking. If expansion does occur, it can only move outward, preventing a gap from opening at the wall.



**Make a cove.** Use a cove bit in a router table to make a cove molding. Profile both sides and rip the pieces free at the tablesaw.



**Attach the cove.** Mark the cove sections using the case as a guide and fasten them with short brads and glue to the sides only. Fastening to the top could cause the cove to separate if the top expands from the heat.



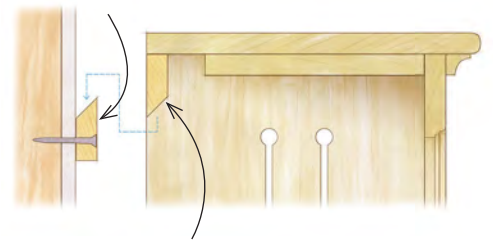
## FINAL TOUCHES

The inner field of each face frame is filled with perforated decorative sheet metal, which is readily available at most big-box stores in 2-ft. by 3-ft. panels—large enough to fit the field on smaller covers. For larger ones, I use inner dividers to break up the field. I opted to make the center panel slightly narrower on this cover for interest.



**Fill the frame.** Cut each sheet roughly 1½ in. larger than the openings in both directions, and predrill the sheets for the #6 washer-head screws so that the sheets don't distort when the screws are driven.

Beveled cleat fastened to framing with structural screw



Mating beveled cleat inset between sides of the assembly

### Secure it with cleats.

To prevent tall, narrow covers from tipping, install French cleats. Rip these from a 4-in. piece of square stock. Fasten one half to the case with pocket screws and the other to the wall. During installation, the screens can be quickly popped out for cleat alignment.

