

Building a Fireplace Mantel

Fluted pilasters and decorative trim make for a mantel that appears complicated but really isn't



by Gary Katz

At first glance, fireplace mantels seem impressively intricate and outrageously expensive, but frequently they aren't. I know because a good client asked me to build a copy of a mantel from his previous home. After seeing the original mantel and identifying its parts, I was able to build the new mantel simply and economically using solid stock, plywood and manufactured moldings (photo right). Even though I've been a trim carpenter for many years, anyone with a basic knowledge of woodworking can build a fireplace mantel with the techniques I used here.

Strips of MDF simplify flute spacing—For this mantel, the first things to build are the pieces flanking the firebox, or the pilasters. I make each pilaster with three pieces—two sides and one face—mitered together along their length. I rip the faces and sides from solid oak and cut them slightly longer than their finished length. Once the pilasters are built, I'll trim them to size on a radial-arm saw.

Although I rip the sides of the pilasters to width with one edge square and the other beveled 45°, I rip the faces slightly wide and with square edges. Later, I'll bevel the edges at 45° for mitered joints, but right now I'd rather push a square edge along the table saw's rip fence. The long point of a bevel can jam under the fence, and in this case I'll be pushing the face stock



Mantel built in three sections. A 2x4 prop (top photo) holds the mantel top level while the author nails a pilaster to the panel wall. The three components—two pilasters and a mantel top—were built off-site; the texture on the oak comes from scraping out the soft grain.

through the fence six times to make parallel decorative grooves, or flutes.

Although fluting looks ornate, it isn't difficult to accomplish with a table-mounted router. My Makita portable 8-in. table saw is designed with a router mount underneath, so the bit sticks up through an opening in the table. The fluting also can be cut by running a router along a straight-edge or by using a router guide. While these

methods might be safer, they are slower and less accurate than a table-mounted router.

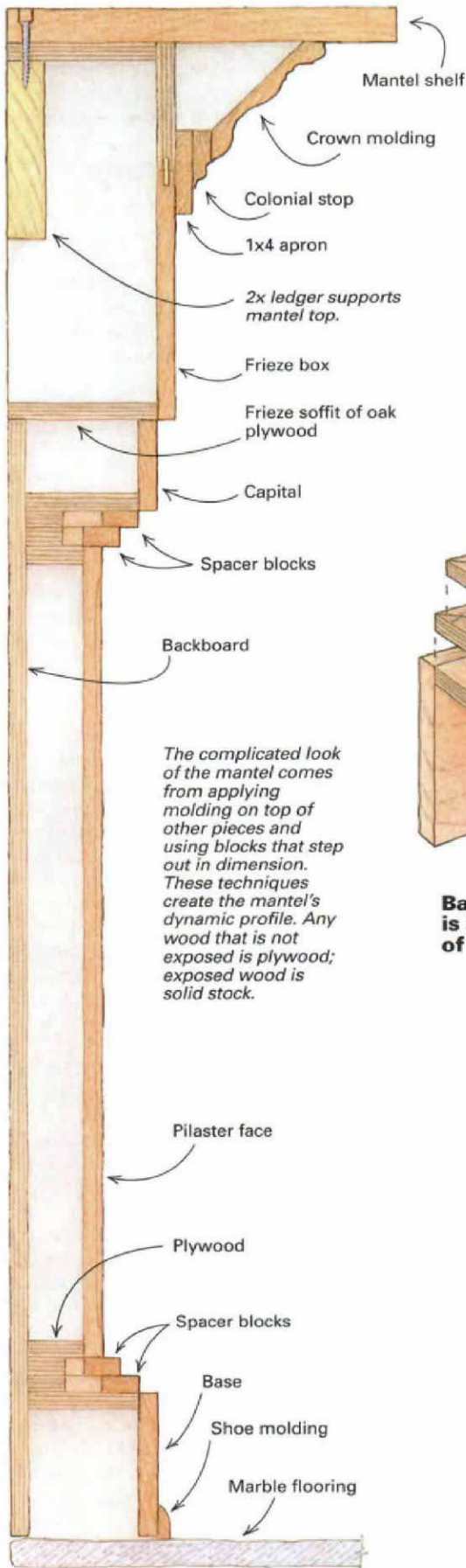
I use a ½-in. round-nose (core box) bit to cut the flutes, set to a depth of ¼ in. To make the process easy, I place multiple strips of medium-density fiberboard (MDF) between the rip fence and the workpiece (top photo, facing page) and remove one strip after each pass, making it unnecessary to adjust the rip fence for each flute.

For the fluting on these 6-in. wide pilasters, I make the MDF strips 1-in. wide: ½ in. for the flute plus ½ in. for the space between flutes, which gives me even spacing across the face. The MDF strips stay put because they butt into a stop block that's screwed to the table extension. The stop block is positioned so that the workpiece bumps against it, resulting in flutes that end 1¼ in. from the bottom of each face.

On the MDF strips, I draw a line 1¼ in. beyond the feed side of the router bit; this line indicates the beginning of the fluting. I carefully lower the workpiece past the line for the initial plunge and slowly pull it back until the end of the stock lines up with the 1¼-in. mark across the MDF strips. Then I feed the board through until it butts into the stop block, remove the workpiece and an MDF strip and repeat the process five more times.

After fluting the faces, I rip the edges at 45°. Then I spread glue on the miters of the side pieces and the face, hold the joints tight with my

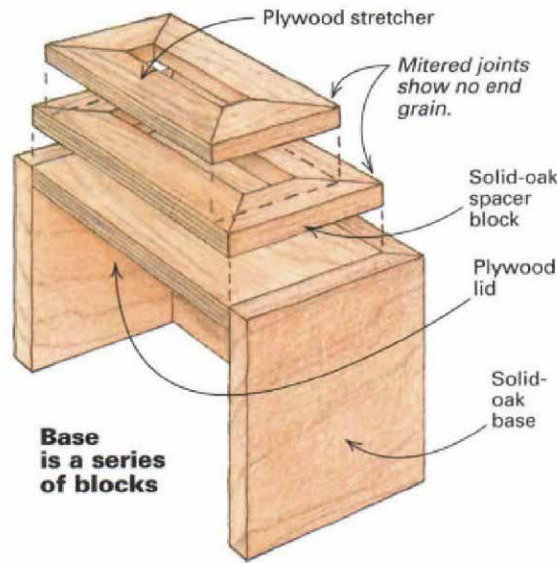
Side view shows combination of plywood and solid wood



The complicated look of the mantel comes from applying molding on top of other pieces and using blocks that step out in dimension. These techniques create the mantel's dynamic profile. Any wood that is not exposed is plywood; exposed wood is solid stock.



Cut multiple flutes without moving the fence. The pilaster faces were fluted on a router table by registering them against 1-in. MDF strips instead of directly against the rip fence. After each pass, a strip is removed; the rip fence is not moved.



Joining the pilaster to the capital. After building up the capital with two 1-in. oak spacer blocks, the pilaster's plywood end is screwed to the capital. All of the blocks are flush.



Use plywood where it won't show. Nailed to the pilaster, a backboard eliminates the need to scribe fit the fireplace's marble veneer to the pilaster profile. For economy's sake, the backboard consists of two pieces of solid oak on the exposed ends and plywood in the hidden center, all glued and biscuited together.



Frieze box has plywood upper half and solid-wood lower half. This part of the mantel top will be capped with a shelf and covered with trim, and only the solid-oak lower half will be exposed. The plywood and the solid wood are biscuited together, and blocking supports the joints.



Fitting the colonial stop. The joint between the frieze box's solid-oak lower half and its plywood upper half is covered by a 1x4 oak apron to which is affixed the colonial stop.



Fastening the crown. Once the shelf is fastened to the frieze box, the crown molding is applied. The front piece goes on first, and the mitered ends are glued and nailed in place.

fingers and nail the miters together. Plywood or MDF backer blocks nailed inside the pilasters at each end support the joints (left drawing, p. 67); the backer blocks also serve as a backing both for the bases and for the capitals, which are the decorative blocks that will adorn the bottoms and the tops of the pilasters.

It's important to close up the miters as tightly as possible while the glue is still wet. I use a scrap of hardwood or my hammer handle to roll the sharp edge down just slightly, which flattens the mitered edge and closes the joint. Fine sandpaper finishes this process, leaving the mitered edges softly eased.

Making capitals and bases—The pilasters have a capital and a base; each capital and base has two 1-in. spacer blocks (right drawing, p. 67). The bases, capitals and spacer blocks are solid oak, and each one is larger than the one that it's attached to, creating a profile of $\frac{3}{4}$ -in. steps.

The spacer blocks are ripped from 1x2 oak and are mitered on a chopsaw. I make them with four sides, like picture frames, with all miters glued and nailed together. I miter the corners because this mantel will be stained rather than painted, and I don't want any end grain to show.

The capitals and bases are built just like the pilasters, with a face and two sides mitered together. I use my table saw and rip fence to cut the 45° bevels, glue and nail these joints together, roll the edges and sand them. I install a lid at one end using any material handy, usually $\frac{3}{4}$ -in. plywood. The lids are backing for attaching the spacer blocks, and they aren't exposed.

Backboard eliminates scribing—On this job, a marble-veneer fireplace surround will be applied after I install the mantel. To make the mason's job easier, I mount the pilasters on a backboard (bottom photo, p. 67). This board provides a straight line for the marble installer to butt the

material to; otherwise the installer would have to cut that marble to fit the profile of the pilasters. With the pilasters attached to the backboard, the installer has an easier job.

Because most of the backboard is hidden behind the pilaster (there's a $\frac{3}{4}$ -in. reveal beyond the capital and base), there's no reason to make the whole backboard of solid stock. I use two pieces of 1x4 oak for the area that won't be covered by the pilasters and a plywood filler in the center. I join these three pieces with biscuits to make a 12-in. wide backboard. With the pilaster covering most of the backboard, none of the joints will be visible; the joints just have to be flush to avoid gaps between the pilaster and the backboard. I make the backboards longer than the pilasters. Once the pieces are assembled, I'll trim the backboards flush with a circular saw.

Assembling the pilasters—Now it's time to put all the pieces together. I glue up the first spacer block and center it on a capital or base so that the reveals are an even $\frac{3}{4}$ in. The pieces must be flush at the back, or else there will be gaps between them and the backboard. I nail the first block in place and position the second smaller block in the same manner. Then I attach a capital and a base to each pilaster, running screws through the backer blocks to draw the first spacer block tight (center photo, p. 67). I also nail the backboard to the pilaster so that there's a $\frac{3}{4}$ -in. reveal at the capitals and the bases.

The frieze is just a big box—I build the top of the mantel starting with the frieze box that will sit above the capitals and support the mantel shelf. In this case I copied an existing frieze box, though usually I rely on a scale drawing or a mock-up of the mantel to determine the frieze dimensions. This frieze box overhangs the capitals by $\frac{3}{4}$ in. both in the front and on the sides.

Although the frieze box is 15½-in. high, I use 10-in. wide solid oak only for the exposed portion of the box, the part below a 1x4 oak band, or apron. Over this apron I apply colonial doorstop and a wide crown molding, both stock items. The upper portion of the frieze box, therefore, is covered with trim, so I make the upper portion of the box from $\frac{3}{4}$ -in. plywood and biscuit it to the solid oak (top photo, left).

Building the frieze box is just like building the capitals and bases in that the front and sides are mitered, glued and nailed, except I install blocks across the biscuit joints to strengthen the connections. I also nail in a couple of midspan blocks that provide backing for the bottom of the box, or the soffit, and the backing for the lid, both of which sit within the frieze box. The soffit will be exposed, so here I use oak-veneer plywood. The lid of the box can be made of anything. Its only purpose is to provide backing to secure the mantel shelf.

When installing the backing blocks, I take care to hold them 1½ in. inside the back of the box so that I can slip the box over the 1½-in. mounting ledger and have it fit snug to the wall.

On the assembled frieze box, I draw pencil lines showing the positions of the crown molding, colonial stop and 1x4 apron. I place a short

piece of crown on the frieze box with the top of the crown butted against a framing square as if it were the underside of the mantel shelf and scribe a line along the bottom of the crown. From that mark I locate and draw lines for the colonial stop and for the 1x4 apron. I cut and install the apron and the stop, mitering and gluing the outside corners (bottom left photo, facing page). The crown stays off until the shelf is installed.

Putting on the shelf—I make the mantel shelf from a single piece of 6/4 solid oak. The owner wanted the end grain to show, so I didn't miter the ends. On this job, the shelf overhangs the top of the crown molding 3 in. That overhang is consistent around the front of the mantel, too, so the width of the shelf is equal to the frieze box, plus the coverage of the crown, plus a 3-in. overhang. After ripping, crosscutting and sanding the shelf, I use a 3/16-in. roundover bit in my router to ease the edges.

To secure the mantel shelf to the frieze box, I place the shelf upside down on my workbench and position the frieze box on the shelf, centered and flush at the back. Then I screw through the frieze lid into the mantel shelf.

Installing the crown molding—With the shelf in place, I now can install the crown molding (bottom right photo, facing page), which goes under the shelf and flush with the back of the frieze box. The main concern is getting the crown's outside miters tight.

I place the front piece of crown upside down on my compound-miter saw as if the saw table were the mantel shelf and the saw fence the frieze, and cut one end at a 45° miter. I tack this piece in place on the colonial stop, then cut the return piece. I'm no mathematician, but I am fair at trial and error, and that's the method I use to find the perfect angle on a compound-miter saw to cut crown molding. I cut scraps until they fit just right to determine the setting for the saw. Wish it were easier.

Once the saw is set, I cut the right side of the front piece first, then I hold it up to the colonial stop, where the crown eventually will be nailed. I check the fit on the right end with a short scrap, also mitered, then mark the bottom back edge of the left end. This is the ideal spot to guide in the blade of my Hitachi sliding compound-miter saw.

Once the miters are tight, I cut the backs of the return pieces so that they are flush with the back of the frieze box. Then I glue the mitered ends and securely nail all three pieces both to the stop and to the shelf.

Mantel top hangs on ledger—The mantel top is mounted on the wall at the combined heights of the pilasters, the frieze box and the shelf, plus 1½ in. of clearance for the marble flooring. I scribe this height on the wall and measure down from the mark the thickness of the mantel shelf and the frieze lid combined, which is 2¼ in. With a straightedge I scribe a line at this elevation across the wall. This line locates the top of the ledger that supports the mantel top. I rip the ledger from a piece of 2x8 and crosscut it ½ in. shy of the inside dimension of the mantel shelf,



Masking tape makes the scribe line visible. Although the pilaster's backboard eliminates the need to scribe the pilaster to the wall, the capital must be scribed to fit beneath the frieze soffit. The pilaster is shimmed up until it touches the soffit, then it's scribed and cut. Masking tape makes the scribe line easier to see on the finished capital.

allowing me a little room to adjust the final location of the mantel top. Then I fasten the ledger to the studs with 3½-in. screws and panel adhesive. On a masonry fireplace I would use plastic anchors and panel adhesive.

The frieze box slides over the ledger, and a couple of 2x4s temporarily support the box while the shelf, the soffit and the sides are scribed to the wall. The mantel top is prefinished, so I stick masking tape along the edges and scribe the lines on the tape, which makes them easy to see. I cut the top with a worm-drive circular saw. Because I cut all the scribe lines at a slight bevel, the bottom of the cut won't jut out and cause gaps to be visible between the mantel top and the wall.

Once the mantel top fits perfectly tight to the wall, I countersink holes and screw through the mantel shelf into the ledger. I use an inexpensive plug cutter by Vermont American (P. O. Box 340, Lincolnton, N. C. 28093; 704-735-7464) and make

oak plugs to cover the screw holes, then sand them smooth for the finisher to touch up.

Installing the pilasters—Because the pilasters are mounted on backboards, they only need to be scribed to the frieze soffit (photo above), not to the wall. If there were no backboard, I would install a cleat on the wall, much like the mantel-top ledger, and after scribing the pilaster to the wall, nail the pilaster to the cleat. In this case I don't need a cleat. I spread panel adhesive on the backboard and nail it right to the wall. I hold the pilasters 1½ in. above the floor, leaving plenty of room for the marble flooring to slide under the base. The resulting ¼-in. gap leaves an excuse to return to tack on some prefinished shoe molding and to take a picture (top photo, p. 66) of the finished mantel for my portfolio. □

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