Pear Mantel Clock

Clean lines and few details make this clock handsome and easy to build

by Mario Rodriguez

My daughter Isabel's seventh birthday was fast approaching, and I wanted to build her something special. She had recently learned to tell time, so a clock seemed like the perfect way to mark the occasion. I designed the clock in the Arts-and-Crafts style; it looks somewhat contemporary but still has a traditional feel (see the photo at left). The joinery is simple, just stub tenons and dadoes, most of which can be cut quickly on a router table and tablesaw.

The clock consists of eight parts: the top, bottom and two sides, the middle shelf assembly, veneered panels for the face and back of the clock, and a door below the middle shelf. The clock is just a bit taller than 16 in. As a result, not a lot of wood is required to build it, and the planing, sanding and finishing don't take very long.

This clock is made of pear, which has a very mild grain that lets the clock's design dominate. A coarsely grained or heavily figured wood could overpower a clock of this size.

Use router table and tablesaw for joinery

The two sides of the clock are dadoed into the top, and the lower and middle shelves are dadoed to the sides. I routed these stopped dadoes as well as the grooves for the back panel and face panel on the router table. The dadoes are all ¼ in. deep by ¼ in. wide. I moved the router-table fence over a hair for the grooves, which are just slightly wider to accommodate the face and back panels. I made these from ¼-in. birch plywood, veneering one side with quartersawn pear veneer. To ensure accurate, square cuts on the router table, I used a right-angle jig and cut no more than ⅛ in. deep per pass. With the tablesaw, I cut the corresponding stub tenons at the top of the case sides and on the ends of the lower and middle shelves. They were cut just a little wide and then fitted by hand.

I tapered the outside faces of the clock sides using a jack plane, taking the sides from ¾ in. at the bottom to just under ½ in. at the top. This gives the clock a lighter feel and is a detail found on many Arts-and-Crafts clocks made earlier this century. A ½-in. cove routed around the underside of the clock's top gives it a visual lift.

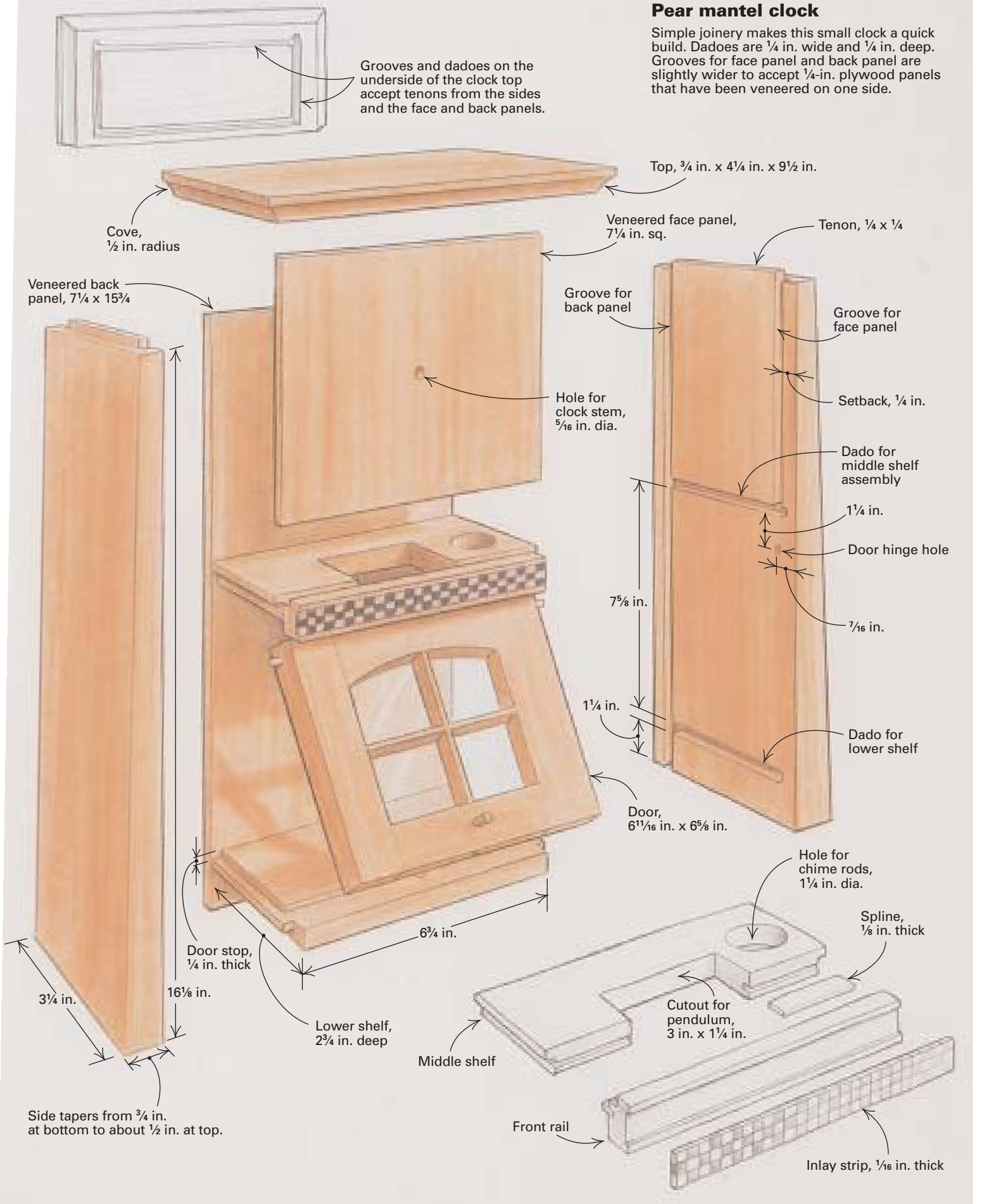
With the top, bottom and sides made and fitted, I planed and scraped the pieces. They were sprayed inside and out with two very thin coats of aerosol nitrocellulose sanding sealer followed by one coat of semigloss lacquer. To keep the joints free of lacquer, I taped the stub tenons and temporarily fit ¼-in. strips into all the dadoes. I scuff-sanded with 320-grit sandpaper between coats. Spraying before assembly allowed easy access into corners, eliminated drips and reduced overspray.

Middle shelf—The middle shelf requires a 1¼-in.-dia. hole for

Photo this page: Scott Phillips

Pear mantel clock

Simple joinery makes this small clock a quick build. Dadoes are ¼ in. wide and ¼ in. deep. Grooves for face panel and back panel are slightly wider to accept ¼-in. plywood panels that have been veneered on one side.

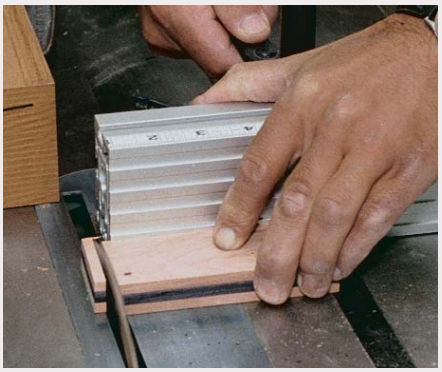


Drawings: Bob La Pointe

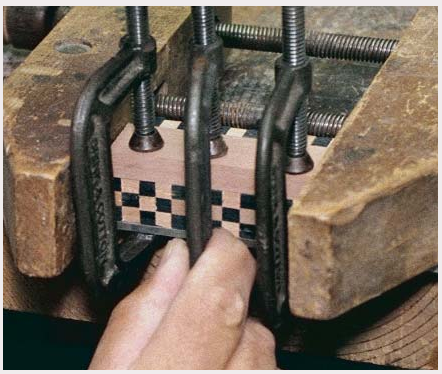
Making the checkered inlay

The checkerboard band across the middle of the clock is an eye-catching detail, and it really makes the clock. You'll find that it invites close inspection. For best results, use clean, straight material, and don't use any sapwood or wood with other defects. You'd only have to discard several strips of inlay later. *—M.R.*

1. *Prepare two "sandwiches" of material—one with a lighter wood in between two dark pieces, and the other just the opposite. Width and length aren't critical, but each layer of the laminations must be exactly ¼ in. thick.*



2. *Plane the edges of each lamination square to the faces, and make sure the edges are free of glue. Crosscut laminations into segments exactly ¼ in. wide.*



3. *Arrange segments from alternating sandwiches. Glue and clamp them together. Apply pressure down, as well, onto a steel plate or something similar, to ensure even registration all the way across.*

4. *When the glue has cured, clean up and square the completed checkerboard blank. Bandsaw into 1/16-in.-thick strips. Using a knife to pull the thin strips along on the outfeed side of the blade helps. Select the best pieces for the clock inlay.*

MAKING THE MIDDLE SHELF

Plane the front rail flush. *Using a sharp block plane is a quick way to bring the top and bottom edges of the front rail down to the level of the inlay.*

Kerf front rail and middle shelf for a spline. *One pass with each piece over a standard-width blade is plenty. Then just plane the spline to fit.*

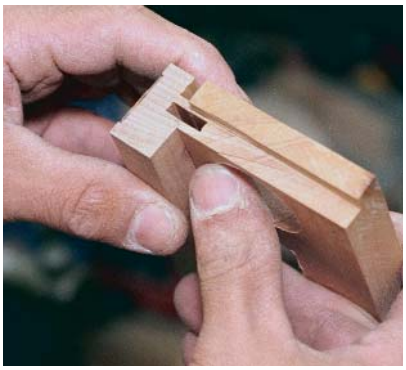
chime rods and a 3-in. by 1¼-in. cutout for the pendulum. I made the hole on the drill press with a Forstner bit and cut out the cavity for the pendulum on the tablesaw and bandsaw.

A band of checkerboard inlay is let into a front rail, which is splined to the middle shelf. I used the tablesaw to cut the slot for the ⅛-in. spline and to cut the rabbet in the top of the front rail for the veneered face panel. To create the recess for the checkerboard inlay, I plowed a 1/16-in.-deep groove across the center of the front rail on the tablesaw and planed it smooth and flat. Then I glued and clamped down the checkerboard inlay, which I made of ebony and pear (see the photos at left for a complete description of making the inlay). After the glue had cured, I planed the front rail flush with the inlay (see the top photo), cut the front rail to length and clamped up the middle shelf assembly (see the photo at right on the facing page). I taped the stub tenons and sprayed the assembly before moving on to the plywood panels for the clock face and back.

Veneer the face and back panel

Because I didn't want to worry about wood movement across

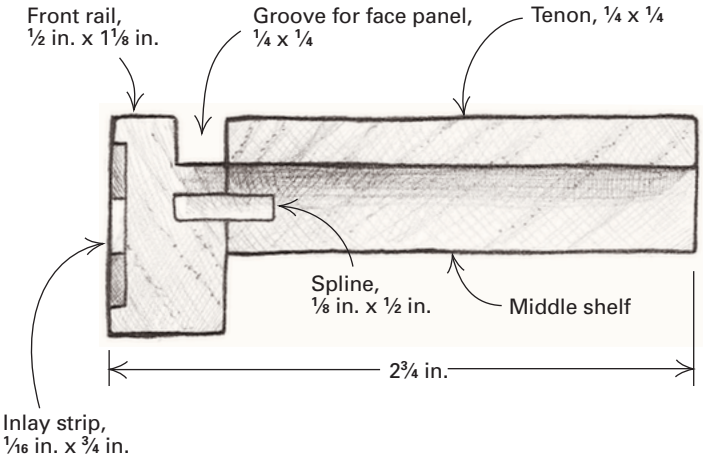
Photos except where noted: Vincent Laurence



Check the alignment *(left). The top of the middle shelf and the top of the front rail should be flush. The ¼-in. groove accepts the bottom edge of the face panel.*

Middle shelf assembly

The middle shelf assembly is 2¾ in. deep overall.



Middle shelf and front rail are joined with a spline. *Hand screws provide plenty of clamping pressure, but be sure the front rail stays square to the shelf as pressure is applied.*

the width of the clock, I used ¼-in.-thick birch plywood for the face and the back panels. I veneered the plywood with clear, quartersawn pear. This way, the grain all but disappears. After shooting and taping the veneer seams, I glued the veneer to the plywood using yellow glue and a warm iron (for more on this technique, see *FWW* #108, pp. 48-51). Ordinarily, both sides of the substrate should be veneered so the piece won't cup later. But because both panels are captured, I didn't think it was necessary to veneer their inside faces.

After the glue had dried, I scraped the veneer tape off and cut the panels to size. To mark the center of the face for the clock movement, I struck diagonals from corner to corner and used an awl to make an impression where the lines crossed. Then I scraped and sanded the pear veneer. I finished the face with sanding sealer and semi-gloss lacquer. By finishing the face before drilling for the clock stem, I didn't have to avoid the hole when I sanded or rubbed with steel wool.

I bored the hole for the clock movement on my drill press and screwed it to the back of the face panel (for part numbers, price and other information on the movement, see the sources box on p. 53). I set the back panel aside until the whole clock was glued up.

Glazed door swings up on dowel hinges

The little door that swings up to provide access to the pendulum is of standard mortise-and-tenon construction. Both top and bottom rails are 1½ in. wide, slightly wider than the stiles. The top rail takes a mild curve, and the bottom accepts a small knob and visually anchors the design. I roughed out the curve in the top rail on the bandsaw, and then I cleaned it up using a template and the template guide on my router table (see the photo at left on p. 52).

After the door frame was glued up, I routed a ¼-in. rabbet all around the inside to accept a pane of glass. I squared the corners of the rabbet and chopped small open-sided mortises in the back side of the door for the muntin assembly (see the photo at right on p. 52).

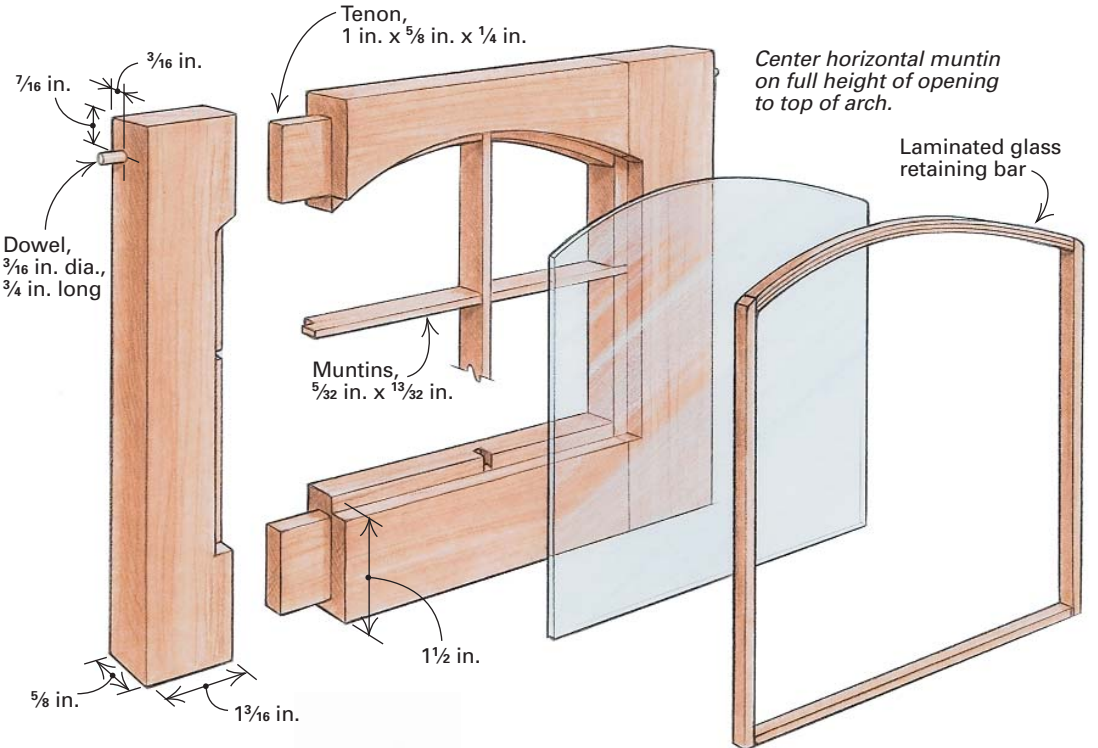
I ripped the muntin stock on the tablesaw and planed and scraped it to its final 5/32 in. thickness. I cut the tenons on the ends of the muntins with a small dovetail saw and fitted them to the mortises in the back of the door with a file. The half-lap joint where the two muntins cross was done on the

MAKING THE DOOR

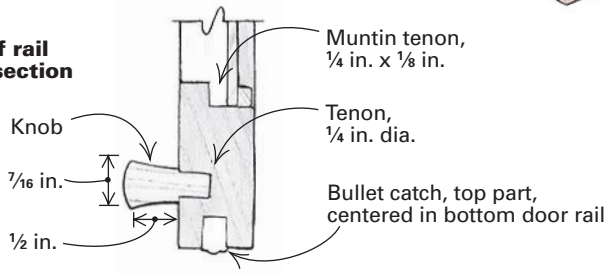
A template and guide shape the top door rail. *After bandsawing the curve in the rail to rough shape, the author routs it to finished shape.*

Muntins are tenoned into open mortises in frame. *Tap the tenons home with a small hammer and a wooden block.*

Back view of door



Cross section of rail at muntin intersection



tablesaw. After gluing in the muntin assembly and letting it dry, I planed it flush with the front of the door frame.

I cut the glass for the door, but the edges were still a bit ragged, so I cleaned them up on a belt sander clamped into my bench vise. A 100-grit belt eased the edges quickly but safely.

To hold the glass in the rabbet in the back of the door frame, I spot-glued a laminated, curved bar across the top and straight strips against the two sides and the bottom. I made the curved bar from three thin strips, using the top rail as a form and planing them flush after the glue had dried. Because these retaining bars are just glued to the frame in a few spots each, they can be pried out and the glass replaced, if necessary. When the glue had dried, I scraped, sanded and finished the door.

Location of dowel hinge holes is critical—I wanted the door on this clock to swing up rather than out, and I didn't want to mar the clock's appearance with metal hardware. My solution was to pivot the door on two short sections of 3⁄16-in.-dia. dowel set into holes in the door's edge and on the inside of the clock case. The exact placement of the holes is critical, but it's not difficult. Before drilling the holes in the sides of the door, I did a test with a piece of scrap the same size as my door. I wanted to be sure the door wouldn't bind on the bottom edge of the front rail when opened and that it would set back 1⁄4 in. into the clock case.

To drill the hinge holes in the door, I used a doweling jig and a hand-held drill. I drilled the holes in the case sides on the drill press, shimming the underside of the thinner end to get the sides level.

The dowel I used was a little too fat to fit in the holes I had drilled, so I shaved it with a block plane before cutting it to length—about 3⁄4 in. to start.

I dry-fitted the door in the clock case and fine-tuned the length of the dowels with a file until I had an even reveal on both sides of the case, without much play.

Door knob is turned from a blank shaped to a Morse taper—The small pull is made of the same wood as the clock case. I first shaped a 1-in.-sq., 3-in.-long piece of pear into a rough Morse taper, leaving about ¾ in. at the end for the knob. I cut off the end the drive spurs had bitten into, replaced the drive center with the tapered plug and tapped it securely in place. With the end free, but secure, I turned a small knob. Then I sanded, burnished and finished it right on the lathe before cutting it free from the tapered plug with a small tenon saw.

I marked the location of the knob mortise at the center of the bottom door rail and drilled it on the drill press. After some final fitting of the knob tenon with a file and sandpaper, I glued and clamped the knob to the door using a hand screw.

To hold the door in place when it's closed, I used a ¼-in. bullet catch made by Brusso and sold through many woodworking-supply catalogs. The Brusso catch is the cleanest, smallest and least intrusive one I've seen.

I dry-assembled the clock, with the door in place. The door is positioned correctly when it is set back from the front edge of the case by ¼ in. evenly top to bottom. I marked straight down from the front edge of the door at its center. Then I located the center of the bottom part of the bullet catch 5/16 in. back from that mark. I centered the top part of the catch on the ⅝-in.-thick door. The hole in the door can be bored freehand. But I drilled the hole in the bottom shelf on a drill press. Both pieces of the bullet catch can be pushed in place. No glue is needed.

Assemble case on its side

I laid one side of the case on the workbench and glued in the bottom and middle shelves. Next I slid in the veneered face panel with the works attached. I set in the completed door and then carefully lowered the other case side, lining up all the mating parts. After standing the clock upright, I glued the top on and clamped up the whole assembly, side to side and top to bottom. I adjusted the clamps until the case was square (see the photo at right). The back of the clock, which slides home in a groove, goes on last.

After the glue had dried, I cut, planed and finished one side of a ¼-in.-thick door stop. I glued the door stop onto the bottom shelf, using spring clamps to hold it in place until the glue had set. The bullet catch provides a positive stop for the door, but the door stop will prevent the door from being inadvertently jammed past the catch, possibly breaking the hinge dowels or the case itself.

Snap pendulum rod to size, and attach hands

The pendulum hanger extends down into the lower compartment through the cutout in the middle shelf. The hanger supports the adjustable pendulum shaft. The pendulum shaft is manufactured with scored lines across its back so that it can be broken to length. I broke off the shaft so the center of the pendulum bob would swing past the cross hairs formed by the muntins of the door.

I positioned the one-piece dial and bezel over the clock stem extending through the veneered face panel (the dial is the face of the clock; the bezel is the brass-bound glass disc). Then I fastened the dial with a thin brass nut. I press-fitted the hands over the stem and screwed on the top nut. Each hand has a slot or hole that corresponds with a portion of the dial stem. Next I tacked the dial in place with the eight tiny brads that came with it. Once the dial was tacked down, I put in a D battery and turned on the clock.

Finally, I turned the clock upside down (after temporarily removing the pendulum shaft and bob) and slid the back of the case in from the bottom. I secured it with two ¾-in. #8 brass screws driven into the back edge of the bottom shelf. The removable back makes it easy to change the battery or turn off the clock. □

Mario Rodriguez teaches woodworking at the Fashion Institute of Technology in New York City and at Warwick Country Workshops in Warwick, N.Y. He is a contributing editor to FWW.

Assemble the clock on its side, *turn it upright and then place the top on the clock. Adjust the clamps as necessary to make the case square.*

Sources of supply

The quartz Bim-Bam movement and the dial-bezel combination are from Merritt's Antiques (P.O. Box 277, Douglassville, PA 19518-0277; 800-345-4101). The movement is part #P-647W/P and costs $41. The dial-bezel combination is part #P-222 and costs $19.

The hands are from S. LaRose (3223 Yanceyville St., P.O. Box 21208, Greensboro, NC 27420; 910-621-1936). The hands are part #816012 and cost 75¢.