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Craftsman-Style CLOCK

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January/February 2012

craftsman-style Clock

This mantel clock is small in size, but it's sure to be big in appeal.

A mantel clock in the Craftsman (or Arts & Crafts) style looks great in just about any setting. And the design shown in the main photo is a good example of the classic lines of that period. It also incorporates a hand-made, ceramic tile that reflects the traditional Arts & Crafts elements. Designers and builders of Craftsman homes and furniture often used highly stylized tile in their construction.

While I wanted to maintain a traditional look, I also took advantage of more modern conveniences, like a quartz clock movement. And though screws are used for some of the joints, you'll hide the screw holes by installing thin, end-grain plugs.

A plywood panel behind the front frame holds the clock movement and the tile. I made the unique face for the clock out of light-colored maple to contrast with the stained white oak. The four reference points on the face are also stained, end-grain white oak. Finally, a thin, plywood back panel is attached with screws to allow easy access to the movement.

Hand Made: Tiles for All Tastes

One of the most striking features of this clock is the decorative art tile framed in the area below the face. During the design phase of this project, I wanted to find a tile that seemed faithful to the traditional Arts & Crafts style, but not a direct copy of any single example. With just a little searching, I found a tile company that exceeded my expectations.

Motawi Tileworks, a small Michigan company, produces a diverse line of hand-made tile. The founder, Nawal Motawi started the company after doing extensive research on tile designs, glazes, and glazing techniques of the master craftsmen and artisans from the Arts & Crafts period. Today, *Motawi Tileworks* offers some of the finest quality tile available. Check out the designs at motawi.com.

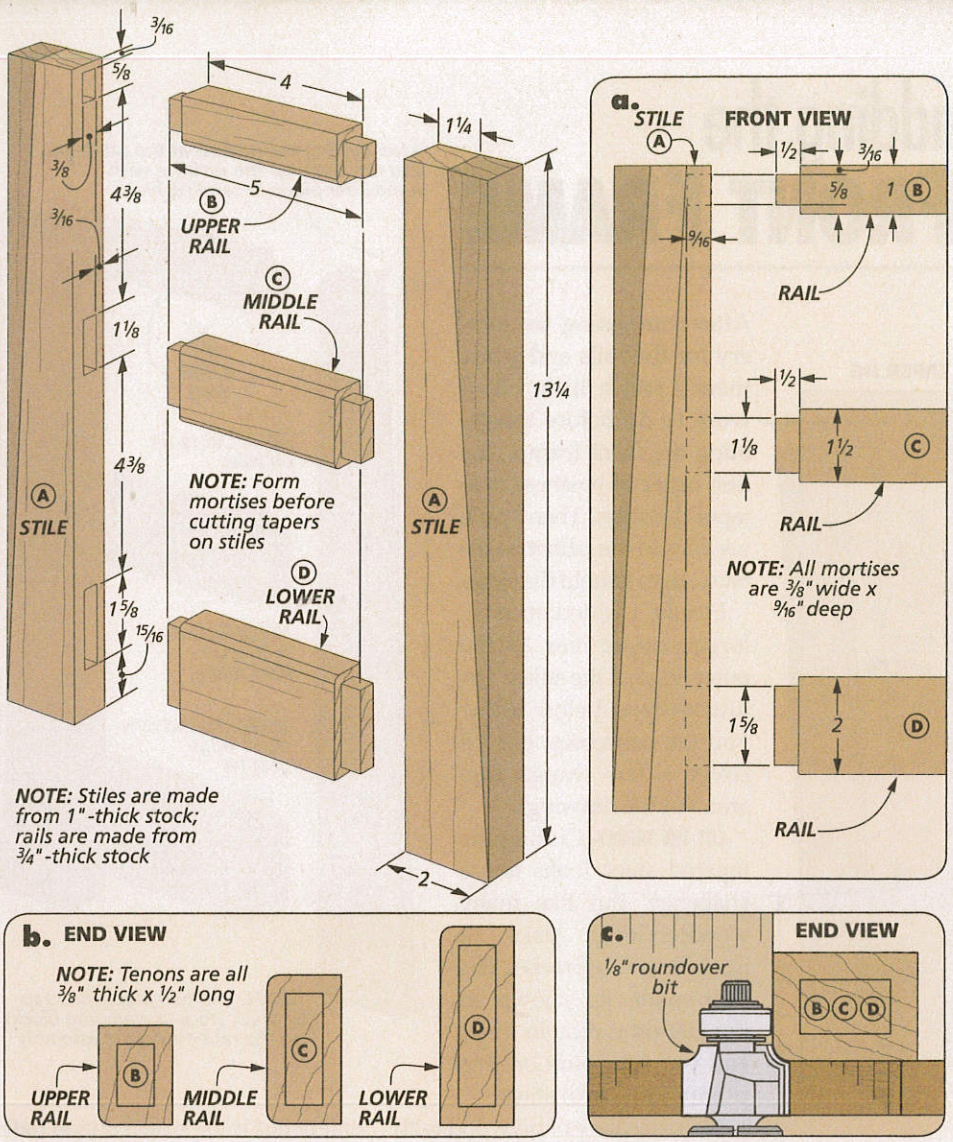
FRONT FRAME

The tapered front frame sets the style for the clock. It consists of two tapered stiles joined by three rails, each a different width. The stiles form the borders of the upper and lower fields that contain the clock face and the tile.

Before getting started, you might want to take a look at the materials list on page 23. I mention this because the clock requires three different thicknesses of riftsawn white oak. It's a good idea to rough out those pieces up front and get all of the planing done at one time. Another helpful hint is to make sure to mill a little extra stock of each thickness for tool setups and spare parts in case you make a mistake.

STILES. The first thing to work on is the pair of stiles. As you can see in the drawing at right, I cut the mortises on both stiles while the blanks were still square. The left drawing in the box below shows how I drilled out the mortises first, using a Forstner bit in the drill press. After that, you can square them up using a chisel.

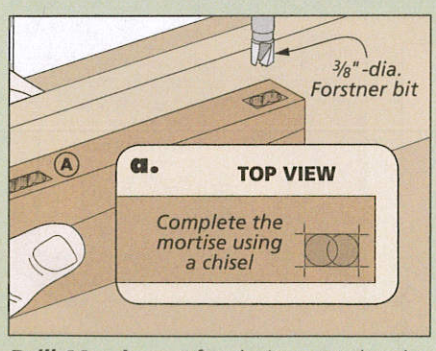
RAILS. Now you can move on to making the three rails. I started by cutting the blanks to final length. Then I ripped each one to its individual width. Now install a dado blade in the table saw and an auxiliary fence on the miter gauge. The right drawings below show how to cut the tenons.



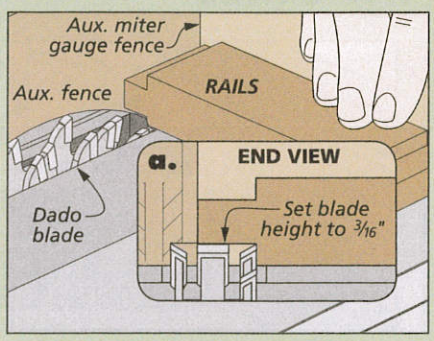
Details 'a' and 'b' give the dimensions of each rail and tenon.

EDGE PROFILES. At this point, it's time to head to the router table and rout the roundovers on the rails. Since the rails actually form frames for the clock face and tile, I just wanted to slightly round over the corners. An 1/8"-radius roundover bit does the job. Detail 'b,' above, shows which of the edges on each piece to rout.

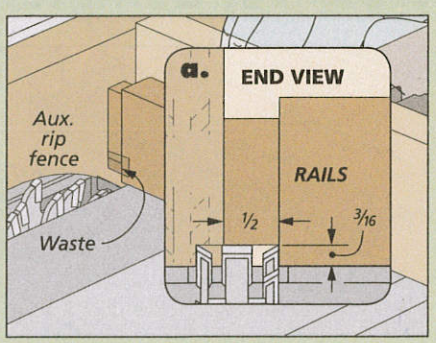
How-To: Make Mortises & Tenons



Drill Mortises. *After laying out the size and location of each mortise, drill them out and square up the sides with a chisel.*

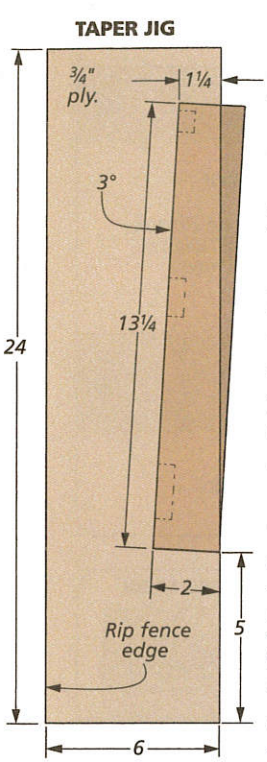


Cut the Cheeks. *Bury part of the dado blade in an auxiliary rip fence and use a miter gauge to make the cheek cuts.*



Then the Shoulders. *You can use the same blade and fence setup to cut the shoulders of the tenons.*

adding the FRONT FRAME



After completing the joinery for the rails and stiles, there's still a little bit of work to do before assembling the front frame. The first order of business is to taper the stiles. Then you'll need to cut the rabbet on the back edges to hold the sides.

Finally, I added another, larger roundover to the outer edge of the stiles. The illustrations below show you the processes, but I'll cover a few things that aren't in the drawings.

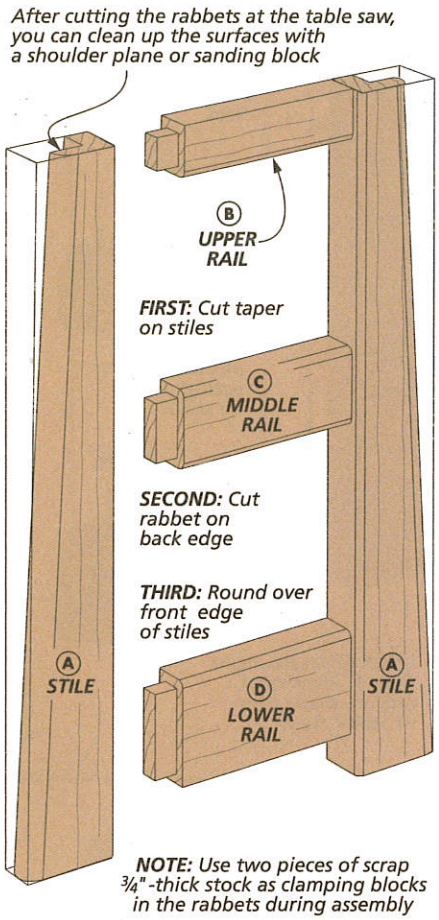
CUT THE TAPERS. Cutting the tapered stiles looks like a challenge. But like many woodworking tasks, a jig makes it a breeze. The shop-made jig shown in the margin is easy to make and you can count on it to produce identical stiles.

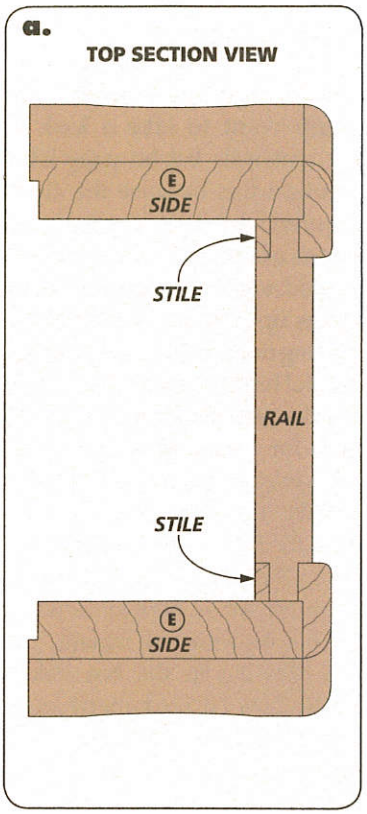
It's just a piece of plywood with the desired final shape of the stiles cut out. You can make the jig by cutting out the waste at the band saw. Then, just clean it up with a little sanding and you're ready to go. All you need to do is place the stile in the jig with the mortises facing the fence and you can safely cut it to perfect shape (left drawing below).

RABBET. After you've finished the taper cuts, you're ready to cut the rabbet on the outside back edge of the stiles. The middle drawing shows the technique for this cut.

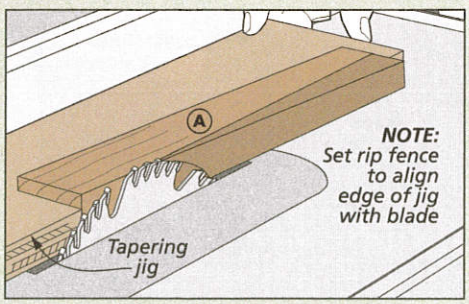
ROUNDOVER. Finish up the stiles by routing a roundover as shown in the right drawing. This softens the edge and the look of the front.

ASSEMBLY. Now that you've completed the work on the rails and stiles, you can assemble the frame. Just brush a little glue in the mortises and on the tenons. I used a couple pieces of ¾"-thick stock in the rabbets to act as

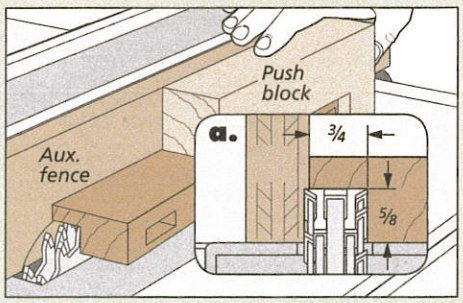




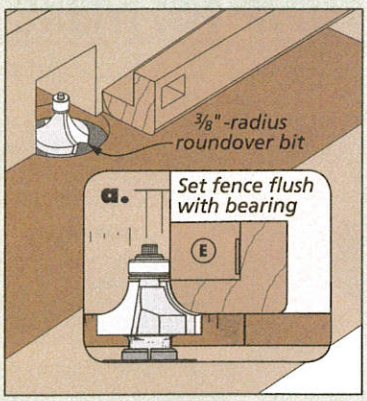
How-To: Complete the Stiles



Taper the Stiles. *With the stile fit firmly in the tapering jig, all you need to do is set the fence and make the cut.*



Rabbet. *Set the dado blade to full width and install an auxiliary rip fence to cut the rabbet on the back outside edge of the stiles.*



Soften the Edges. *Round over the front outside edges of both stiles at the router table.*

clamping blocks during the glueup. This way, you can be sure to get a good glue bond by clamping across each joint.

SIDES. With the front frame complete, it's time to move on to the sides. The sides simply fit in the rabbets on the front frame.

I started by cutting the sides to final width. Then I cut the rabbet on the rear edge using a dado blade in the table saw. Finally, I installed a standard blade and tilted it to cut the bevel on the top and bottom edges of both pieces (left drawing, below).

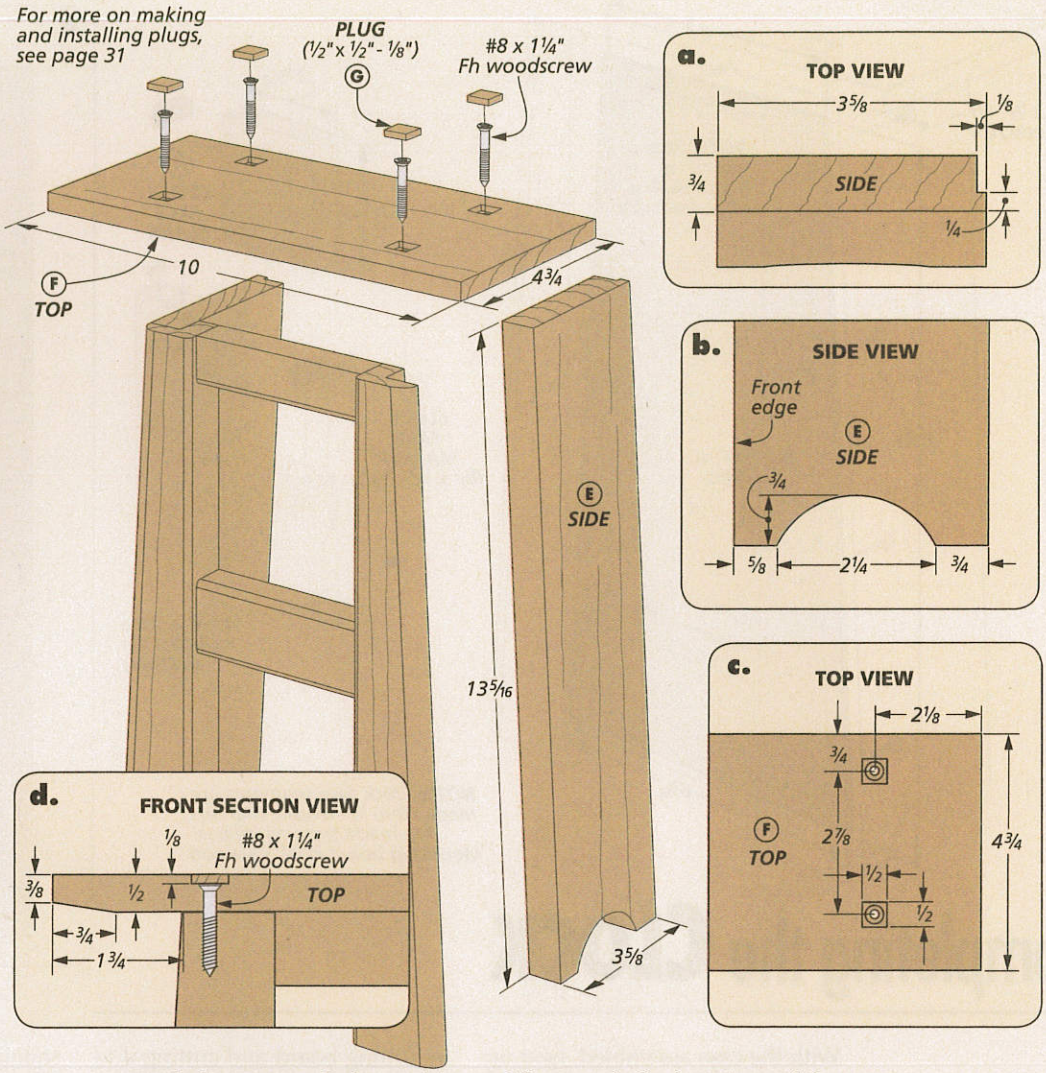
CUT THE ARC. The decorative arc on the bottom edge of the sides is another traditional feature of Craftsman-style clocks. I marked the arc in pencil and then cut the shape at the band saw.

ASSEMBLE THE SIDES. At this point, I glued up the face frame and sides. When clamping the pieces together, check to make sure the beveled ends of the sides are flush with the top of the frame. This step helps to ensure a flat surface for the top.

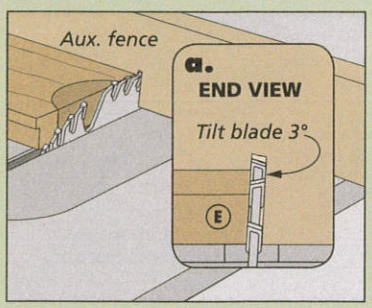
THE TOP. The underside of the top is beveled to lighten the look, then attached to the sides with screws. After assembly, I covered the screw holes with small squares of end grain oak.

First, cut the top to size from ½"-thick stock. Then you can tilt the blade on the table saw 8° and use a tall fence to cut the slight bevel on the underside of the blank. The right drawing below demonstrates how to do this.

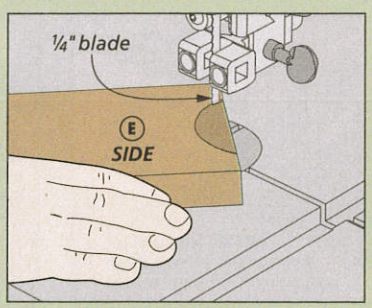
Now mark the locations of the screw holes on the top and drill the holes at the drill press. Then, cut the shallow mortises for the caps using a chisel. Shop Notebook on page 31 shows how to make the end grain oak plugs I used to cover the screw holes. After installing them, sand them flush.



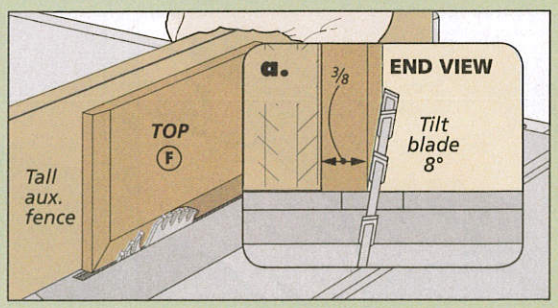
Sides & Top



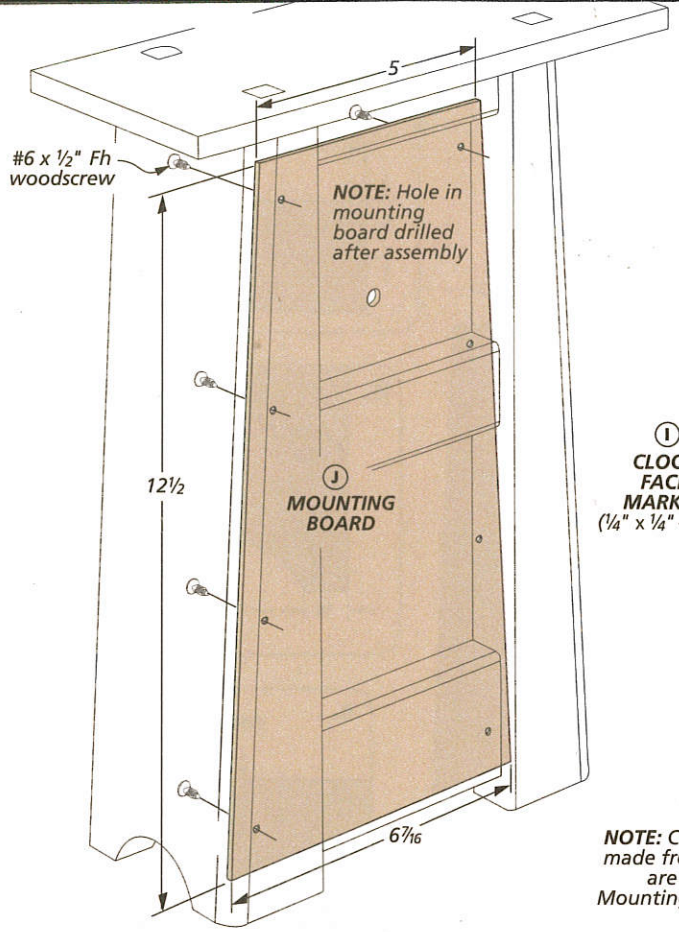
Bevel Cuts. *Bevel the top and bottom edges of the sides using the miter gauge and auxiliary fence.*

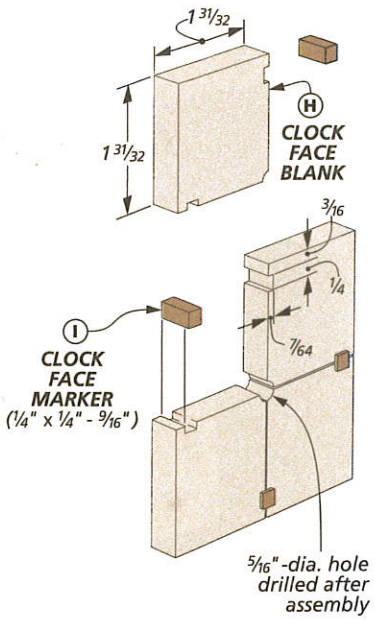


Cut the Arc. *After marking the arc using a compass, go to the band saw to make the cut.*

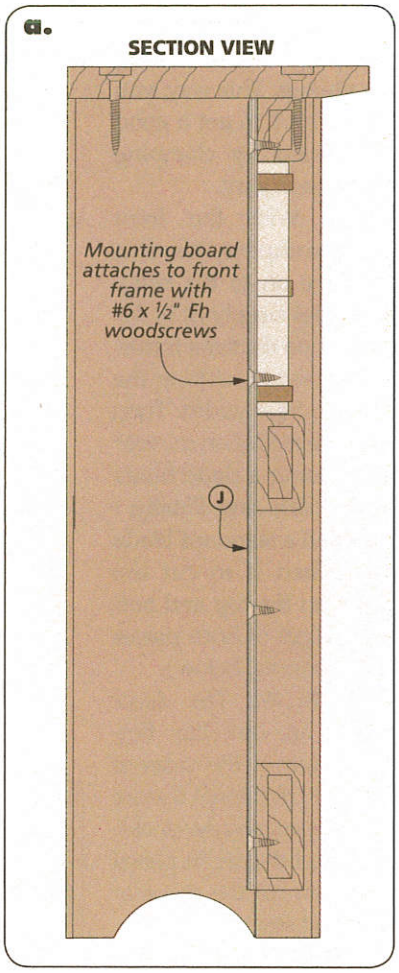


Bevel the Top. *You can cut the 8° bevels on the top at the table saw by installing a tall auxiliary fence on the rip fence and tilting the blade.*





NOTE: Clock face segments are made from ½" maple. Markers are made from white oak. Mounting board is ⅛" plywood



completing the CLOCK

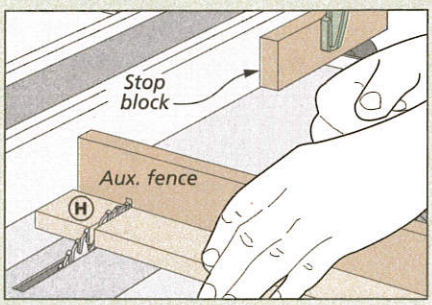
With the case assembled, next up is adding the mounting board. This holds the clock movement and face, as well as the decorative tile. After that, you'll assemble the face and markers, install the movement, and complete the clock by adding the plywood back.

MOUNTING BOARD. You can start by laying out the shape of the mounting board and cutting it to final size. Then drill eight ⅛"-dia. screw holes for attaching it to the back of the frame.

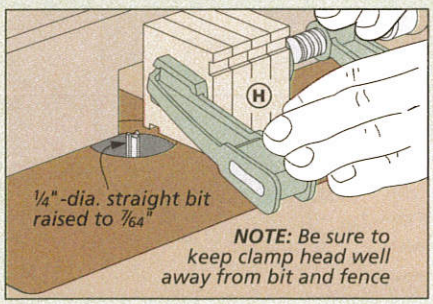
CLOCK FACE. At this point, you're ready to make the clock face. The drawings in the box below walk you through the steps. The face is made from four pieces of ½"-thick maple separated by four small, square markers. I chose to use four pieces rather than one larger, single piece in order to create shadow lines in the face. When you assemble the four pieces and install the clock face markers, the resulting gap between the blocks creates a unique look.

You can begin by cutting four maple blanks to equal size (left

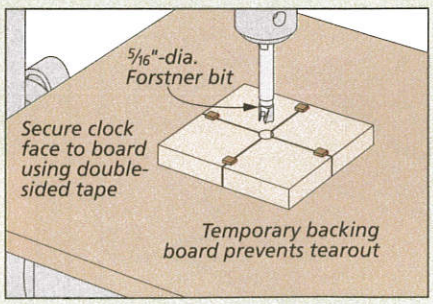
How-To: Make the Clock Face



Square Segments. *I attached a stop block to the rip fence to set the length for cutting the individual blanks.*



Rout the Notches. *A clamp holds the blanks securely while you rout the notches using a straight bit.*



Drilling the Clock Face. *After assembling the clock face, attach it to a backer board to drill the hole for the stem.*

drawing below). Then, head over to the router table to rout the notches for the markers. Clamp the blanks together and install a ¼"-dia. straight bit in the router table. After routing the first notch, move the clamp, flip the blanks and rout the other notch.

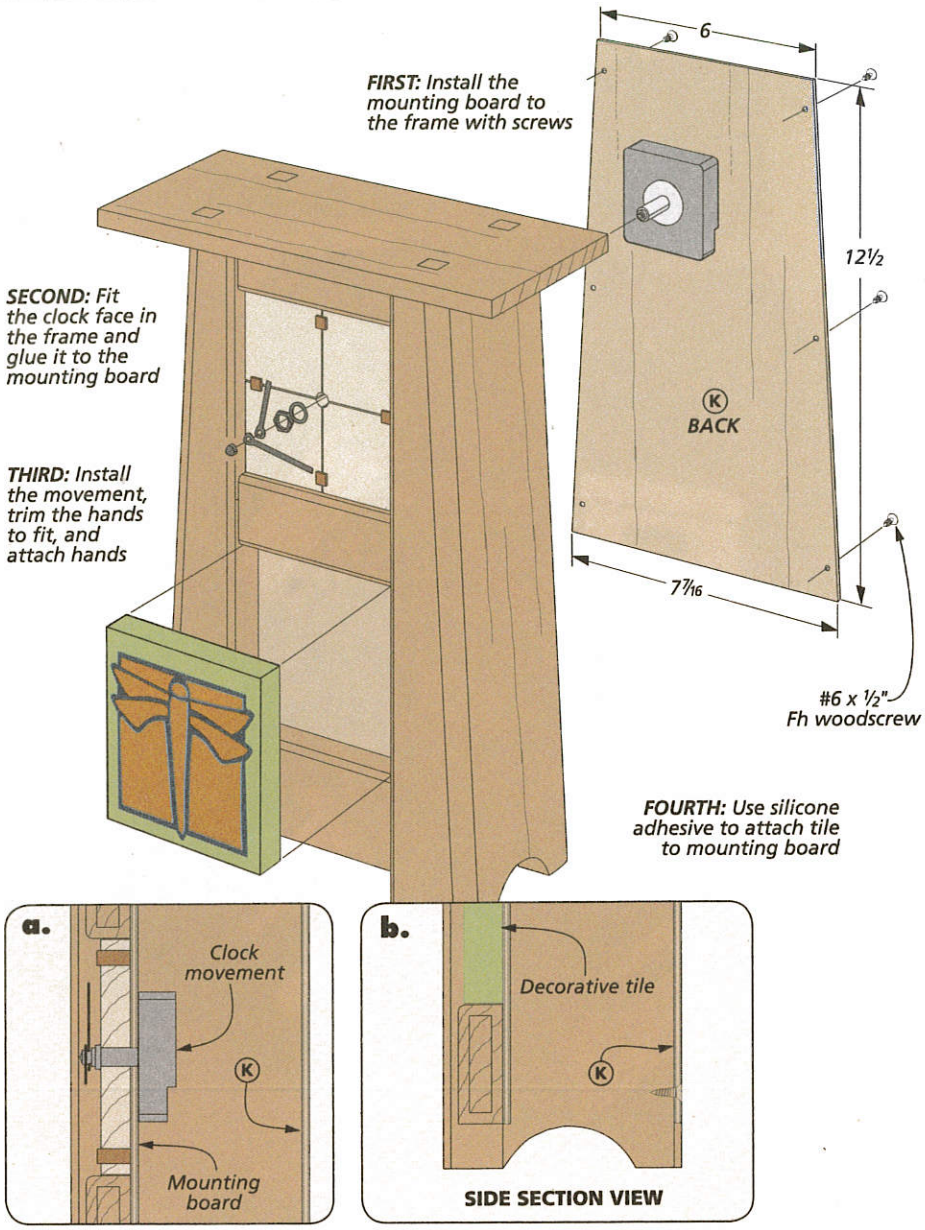
CLOCK FACE MARKERS. The four face markers are simply narrow pieces of oak that you'll stain to contrast with the maple. An easy way to make them is to rip a ¼" x ¼" strip of oak stock. Then, use a hand saw to cut the face markers to length.

ASSEMBLE THE FACE. After staining the markers, you can assemble the four face pieces by gluing the markers in the notches. When the glue dries, temporarily mount it to a backer board using double-sided tape and drill the center hole (right drawing at the bottom of the opposite page).

The most reliable way to do this is to install a 1/16"-dia. bit in the drill press. Lower the bit and center the intersection of the four face pieces directly under it. Now, you can be sure the hole you drill with a 5/16"-dia. bit is centered.

STAIN & FINISH. At this point, I stained the case. When the stain dries, you can add a clear finish to the case and the maple face before moving on to the final assembly.

MOUNTING THE CLOCK. The next step is to install the clock face on the mounting board. For this, I screwed the mounting board in position and applied a little glue to the back of the clock face. Then all you need to do is fit the face into the opening in the frame and use a caul on each side to clamp the face to the board. When the glue dries, drill the center hole through the mounting board and install the movement (detail 'a'). After trimming them to fit the clock face, install the hands.



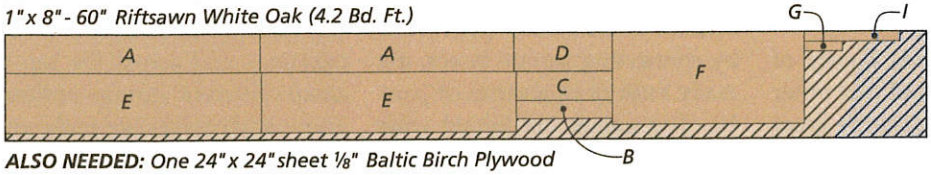
FINAL ASSEMBLY. Now you can attach the tile to the mounting board with a couple beads of silicone adhesive. I completed the clock by attaching the back. All that remains now is to find the perfect spot for the clock.

Materials, Supplies & Cutting Diagram

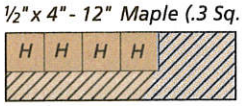
A	Stiles (2)	1 x 2 - 13¼	**G**	Plugs (4)	⅛ x ½ - ½
B	Upper Rail (1)	¾ x 1 - 5	**H**	Clock Faces (4)	½ x 1 31/32 - 1 31/32
C	Middle Rail (1)	¾ x 1½ - 5	**I**	Clock Face Markers (4)	¼ x ¼ - 9/16
D	Lower Rail (1)	¾ x 2 - 5	**J**	Mounting Board (1)	⅛ ply. - 6 7/16 x 12½
E	Sides (2)	¾ x 3⅝ - 13 5/16	**K**	Back (1)	⅛ ply. - 7 7/16 x 12½
F	Top (1)	½ x 4¾ - 10			

- (1) Push-On Quartz Movement
- (1 pr.) Clock Hands
- (1) 4" x 4" Decorative Tile
- (14) #6 x ½" Fh Woodscrews
- (4) #8 x 1¼" Fh Woodscrews

1"x 8"- 60" Riftsawn White Oak (4.2 Bd. Ft.)



½"x 4"- 12" Maple (.3 Sq. Ft.)



***NOTE:** Parts B, C, D, and E planed to ¾" thick; Part F planed to ½" thick*

***ALSO NEEDED:** One 24"x 24" sheet ⅛" Baltic Birch Plywood*