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Bill Krier  
Editor  
WOOD® magazine

### **Adobe Acrobat Troubleshooting Guide**

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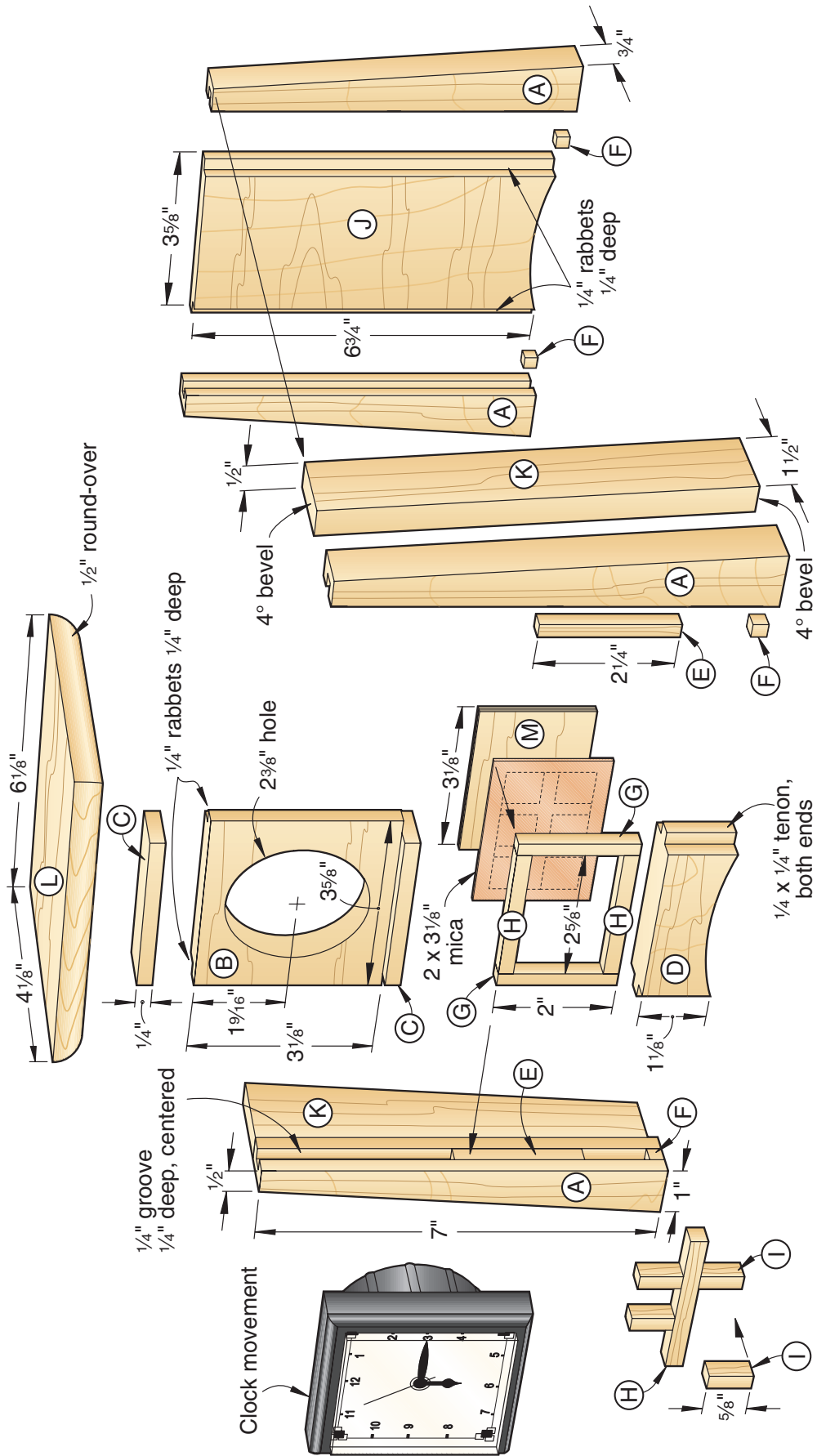
# mission-style shelf clock

**Build it in no time, and admire it all the time.**



Looking at the simple lines, graceful proportions, and figured grain of this clock's quartersawn oak, it's easy to see why mission-style pieces are so admired. To help you achieve the same results, see the Buying Guide for a source of quartersawn oak, the clock movement, and the mica back for the clock's grille.

**1** EXPLODED VIEW





With the face (B) clamped (no glue) between the stiles (A), glue and clamp the face trim (C) to the face's top and bottom edges.



Glue and clamp a long filler in each stile's groove, sliding it behind the bottom face-trim piece and tight against the face. Remove any squeeze-out.

## Start with the front and back parts

**1** From  $\frac{3}{4}$ "-thick stock, cut the stiles (A) to the size listed in the Materials List. Cut a  $\frac{1}{4}$ " groove  $\frac{1}{4}$ " deep, centered on an edge of each stile, where shown on **Drawing 1**.

**2** From  $\frac{1}{2}$ "-thick stock, cut the face (B) to size. On the back of the face, cut a  $\frac{1}{4}$ " rabbet  $\frac{1}{4}$ " deep along the side edges, where shown. You'll drill the hole in the face to receive the clock movement later.

**3** Cut the face-trim pieces (C) and the bottom rail (D) to size from  $\frac{3}{4}$ "-thick stock. Then, using a dado blade, form the  $\frac{1}{4} \times \frac{1}{4}$ " tenons centered on the rail ends, where shown. Make two copies of the full-size arch patterns on the *page 7*. Apply one pattern to a face of the rail with spray adhesive, and set the other pattern aside. Bandsaw to the pattern line to form the arch, and sand smooth.

**4** From  $\frac{1}{4}$ "-thick stock, rip a  $\frac{1}{4} \times 24$ " blank for forming the fillers (E, F) and grille parts (G, H, I); then cut the parts to size. Set the grille parts aside.

**5** From  $\frac{1}{2}$ "-thick stock, cut the back (J) to size. Cut a  $\frac{1}{4}$ " rabbet  $\frac{1}{4}$ " deep along the sides on the inside face, where shown. Then, adhere the second copy of the arch pattern to the back at its bottom, and bandsaw and sand the arch.

## Assemble and glue the parts

**1** To assemble the front of the clock case, first place two stiles (A) and the face (B) on your work surface, outside face up. Without gluing, clamp the face between the stiles with its top edge positioned  $\frac{1}{4}$ " below the top of the stiles. Now, glue the face-trim pieces (C) to the face, as shown in **Photo A**.

**2** Check that the top face-trim piece is flush with the top of

the stiles. Then, glue and clamp a long filler (E) in each stile, as shown in **Photo B**. This will leave 1 3/8" of open groove at the bottom of each stile to receive the 1 1/8"-wide bottom rail (D) and the 1/4" short filler (F). Separate the stiles from the face/trim assembly.

**3** Apply glue to the rabbeted ends of the face and to the bottom rail's tenons. Now,

assemble the face, bottom rail, and stiles, with the bottom rail tight against the long fillers. Clamp the assembly.

**4** Place a dab of glue in the stiles' grooves below the bottom rail. Then, install and clamp a short filler in each groove.

**5** To assemble the back of the clock case, first apply glue to the rabbeted sides of the back

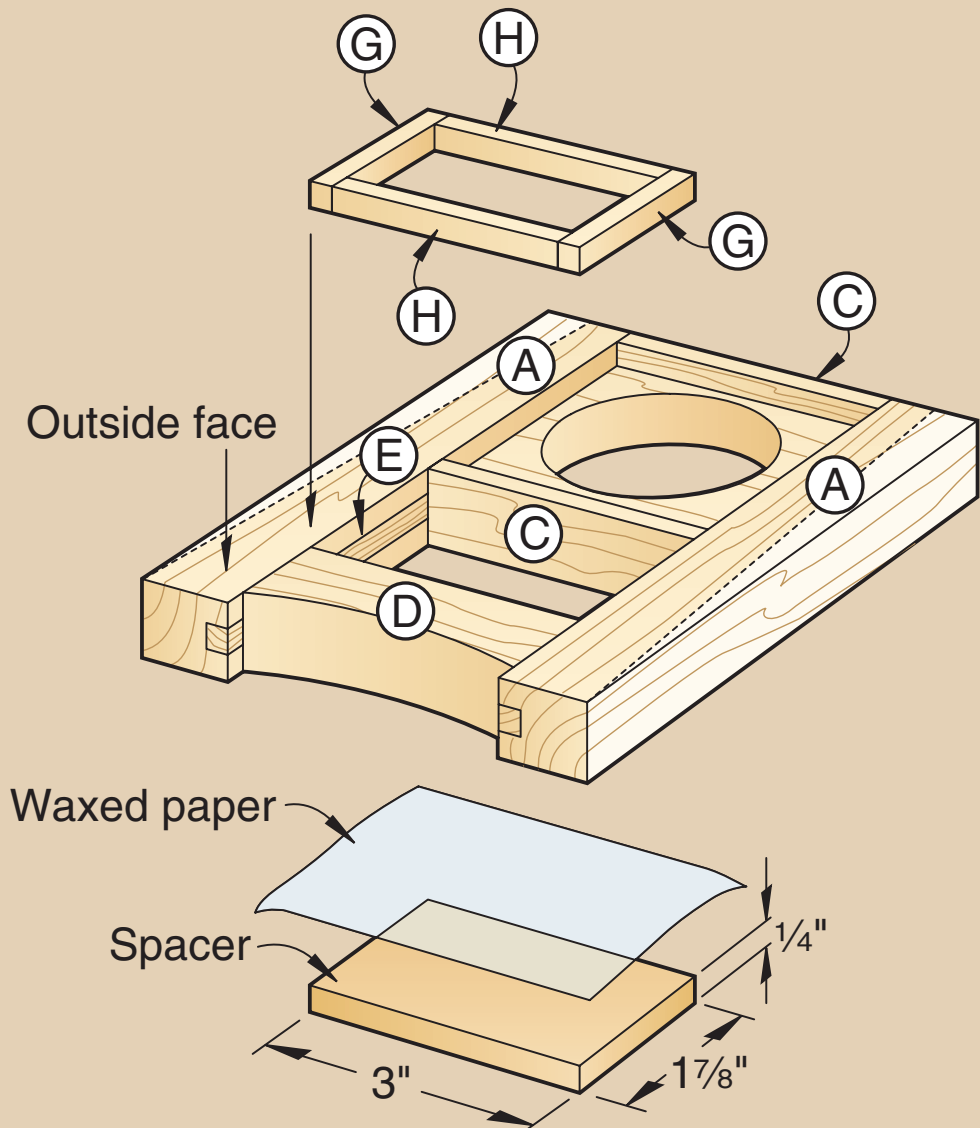
(J), and clamp it between the remaining stiles with their top edges flush. Then, glue and clamp the remaining short fillers in the stiles.

**6** From 1/4" hardboard, cut a 1 7/8" x 3" spacer for positioning the grille side and rail pieces (G, H) in the clock's front opening, 1/4" back from the front edge. See the **Shop Tip**, below. With the front assembly outside

## SHOP TIP

### Prevent glue from sticking to unwanted surfaces

Glue squeeze-out can cause parts to become joined where unintended. To prevent this, place a piece of waxed paper between the surfaces that you don't want joined, where possible. For example, when gluing the grille sides (G) and the rails (H) in the clock's opening, put waxed paper on top of the spacer. The glue will not stick to the paper, so you'll find it easy to remove the spacer and scrape off any residual glue.







**C** Bandsaw the stiles to the marked lines to form the tapered sides. Start the cut at the bottom of the stile, and finish at the top. Sand smooth.



**D** Install the remaining grille rail and uprights in position, pressing the epoxied edges against the mica. Check for proper alignment.

face up on your work surface, position the spacer in the grille opening. Then, glue the grille side pieces to the long fillers (E) in the stiles, and glue the rail pieces to the lower face trim (C) and the bottom rail (D). Press the pieces firmly down against the spacer.

**7** Using a  $2\frac{3}{8}$ " Forstner bit, or a circle cutter set to cut a  $2\frac{3}{8}$ " hole, drill a centered hole through the face (B) to receive the clock movement.

**8** Mark the taper on each of the stiles (A), where dimensioned. Then, bandsaw the tapers, cutting just outside the marked lines, as shown in **Photo C**. Then, sand to the lines.

### Add the sides and top

**1** From  $\frac{1}{2}$ "-thick stock, cut two  $1\frac{1}{2}\times 8$ " blanks for the sides (K). Tilt your tablesaw blade to  $4^\circ$  from vertical. Now, bevel-cut the blanks to their finished length of  $7\frac{1}{16}$ " with a  $4^\circ$  bevel on each end, where shown.

**2** Glue and clamp the sides to the front assembly, keeping the top and bottom ends and the angled sides flush. With the glue dry, glue and clamp the back assembly to the sides. When dry, remove the clamps, and sand the sides and the top and bottom edges of the case smooth.

**3** From  $\frac{1}{2}$ "-thick stock, cut the top (L) to size. Rout a  $\frac{1}{2}$ " round-over along the bottom edges, where shown. Sand the top, including a light sanding of the top edges. Now, center the top, front to back and side to side, on the case, and glue and clamp it in place.

### Time to wrap it up

**1** Finish-sand the clock case and remaining grille parts (H, I) to 220 grit, and remove the dust. Apply a stain of your choice to the clock case. Also, stain all

## Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A stiles	3/4"	1"	7"	QO	4
B face	1/2"	3 1/8"	3 5/8"	QO	1
C face trim	3/4"	1/4"	3 1/8"	QO	2
D bottom rail	3/4"	1 1/8"	3 5/8"	QO	1
E* long fillers	1/4"	1/4"	2 1/4"	QO	2
F* short fillers	1/4"	1/4"	1/4"	QO	4
G* grille sides	1/4"	1/4"	2"	QO	2
H* grille rails	1/4"	1/4"	2 5/8"	QO	3
I* grille uprights	1/4"	1/4"	5/8"	QO	4
J back	1/2"	6 3/4"	3 5/8"	QO	1
K* sides	1/2"	1 1/2"	7 1/16"	QO	2
L top	1/2"	4 1/8"	6 1/8"	QO	1
M backer	1/8"	2"	3 1/8"	BP	1

\*Parts initially cut oversize. See the instructions.

**Materials Key:** QO—quartersawn white oak, BP—birch plywood.

**Supplies:** 1/4" hardboard, epoxy, N battery.

**Blades and Bits:** Dado blade, 2 3/8" Forstner bit or circle cutter, 1/2" round-over bit.

## Buying Guide

**Clock kit.** 2 3/8"-diameter press-in clock movement (1), 2x3 1/8" mica (1). Kit no. MSC, \$15.95 ppd. Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247. Call 800/346-9663 or go to [www.schsons.com](http://www.schsons.com) to order.

**Lumber kit.** Enough quartersawn white oak and birch plywood (some pieces cut slightly oversize) for one clock. Kit no. LP-4, \$23.95 ppd. See *above* for address and telephone number.

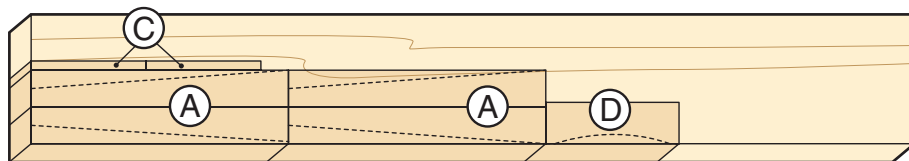
**Bit kit.** 2 3/8" Forstner bit kit no. 400901, \$18.95. Address and telephone number *above*.

but one edge (for gluing) of the remaining grille parts. (We used ZAR Spanish Oak wood stain.) Then, apply a clear finish. (We sprayed three coats of Watco Satin Lacquer Clear Wood Finish, sanding to 400 grit between coats, and removing the dust.)

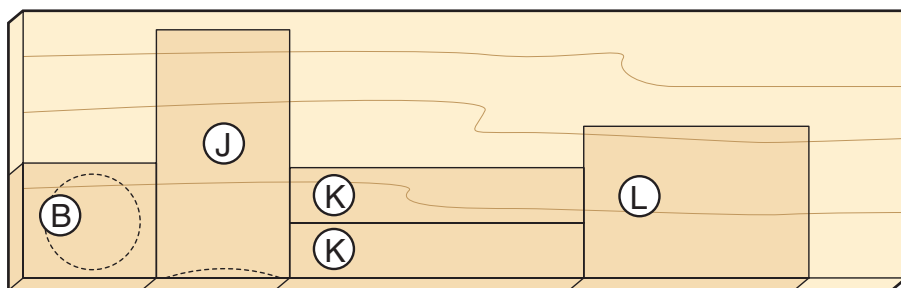
**2** Cut the backer (M) to size, and cut a piece of mica (or stained glass, as an option) to the same size. (We cut our mica using a bandsaw and a zero-clearance insert.) Adhere the mica to the backer with epoxy.

**3** Through the bottom of the clock case, apply a small amount of epoxy to the back of the grille sides (G) and rails (H). Insert the mica/backer through the bottom, and press it into the opening against the epoxied parts. Apply masking tape to hold the mica/backer in position while the epoxy cures.

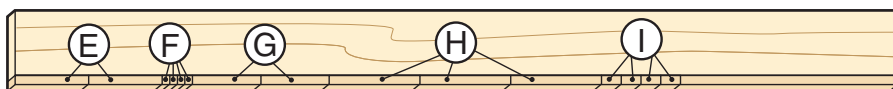
**4** Apply epoxy to the unstained edges of the remaining grille rail and uprights, and install these pieces, as shown in **Photo D**. Finally, install an N-size battery in the clock, set the time, press the clock into the hole in the face, and proudly place your masterpiece on a shelf for all to see. ♣



3/4 x 3 1/2 x 24" Quartersawn white oak



1/2 x 7 1/4 x 24" Quartersawn white oak



1/4 x 2 x 24" Quartersawn white oak



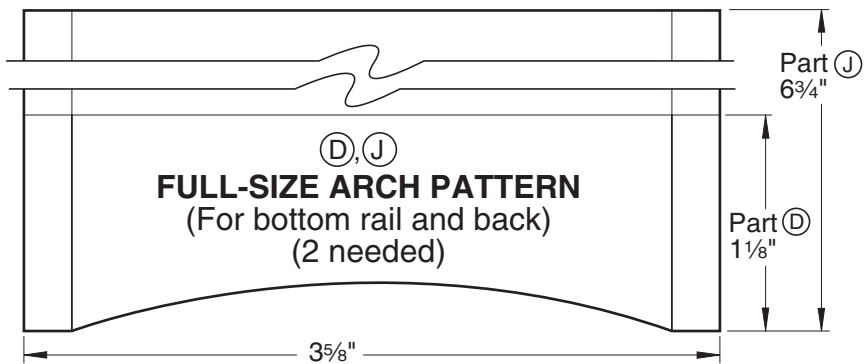
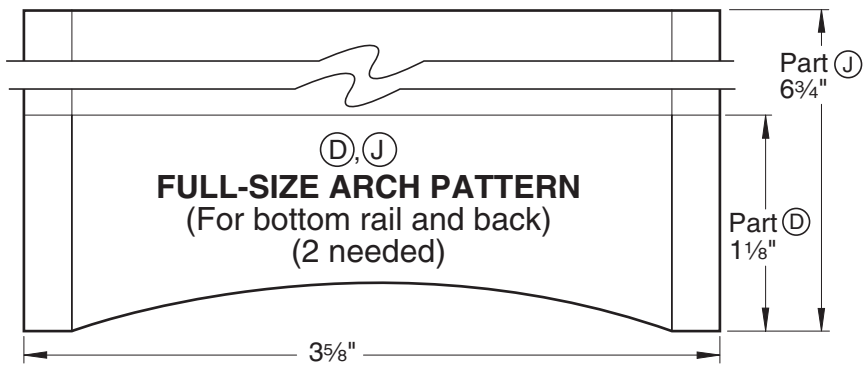
1/8 x 2 x 3 1/8" Birch plywood

## Cutting Diagram

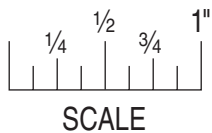
### What is mica?

"Mica" is a general term for a group of more than 30 slightly different silicate minerals. Commonly known for their translucent properties, micas are commercially used in decorative applications, such as lampshades, ceiling panels, and the grille back in our shelf clock.

Mica typically is mined in chunks that get split and further processed into films, flakes, and powders for various uses. Fabricated mica sheets, like those used in this clock, get formed by combining mica flakes with binding resins of contrasting colors.



To ensure full-size patterns are correct size, your printer should be set to print at 100% (not fit to page). Measure full-size patterns to verify size.



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