

# Build a Chippendale Mirror

A wide range of skills  
in a small project

BY STEVE LATTA

During the late 18th century, elaborately framed mirrors, known as looking glasses, served as testimonials to the wealth of their owners. A looking glass similar to the one shown here would have cost the owner 10 to 12 shillings, a hefty price considering that the average wage for a skilled tradesman of the time was about 6 shillings a day.

This is the first serious piece I give my students to make. Because I'm blending a traditional piece into a modern curriculum, I don't go nuts over historical precedence and technique, and I take full advantage of modern machinery. For a small project, this mirror introduces a wide range of skills from basic design and layout to veneering and scrollwork. Each year, my class ends up with a great collection of stunning mirrors that they present as thank-you gifts to mom and dad for the thousands doled out for tuition.

## Begin by constructing a two-layer frame

Despite its elaborate appearance, this project has only two main parts. The frame, which I make first, consists of a visible mitered molding in mahogany that sits on top of a poplar subframe; surrounding it are scrollsawn parts made from a shopmade core with figured veneer (in this case makore) as the face veneer and plain veneer on the back.

The common way to build a frame is to use  $\frac{3}{4}$ -in.-thick primary wood and miter the corners. Even when the joints are splined or

nailed, this is a poor approach. I make a poplar subframe with half-lap corners using stock that is  $\frac{5}{8}$  in. thick by 1 in. wide. This approach creates a much stronger frame, uses less primary wood, and is historically correct. Don't worry about the contrasting woods—when stained, the poplar will blend right in.

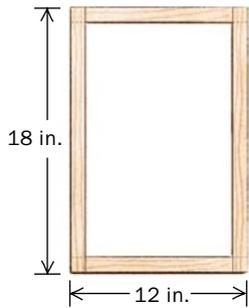
Before you start milling, purchase the mirror so that you can measure its exact dimensions and size the frame accordingly. You could use ordinary  $\frac{1}{8}$ -in.-thick flat mirror, but this frame justifies the extra cost of  $\frac{1}{4}$ -in.-thick mirror with a 1-in. beveled edge.

Mill the poplar subframe members an extra  $\frac{1}{16}$  in. long to allow the joints to overhang slightly, and cut the half laps on the tablesaw using a miter gauge with an auxiliary fence to prevent blowout, and a tenoning jig for the cheek cuts. Dry-fit the subframe, glue opposite corners to make sure they are square, and then glue the rest. Trim the overhang with a chisel, making sure that you don't round the edges. Remember that the veneered ornamental pieces will be glued to this surface and any irregularities will make for a poor joint. If the frame turns out square, mitering the molding pieces is a snap. If the frame is at all out of square, you'll have to fudge the joints in order to get a nice, tight fit.

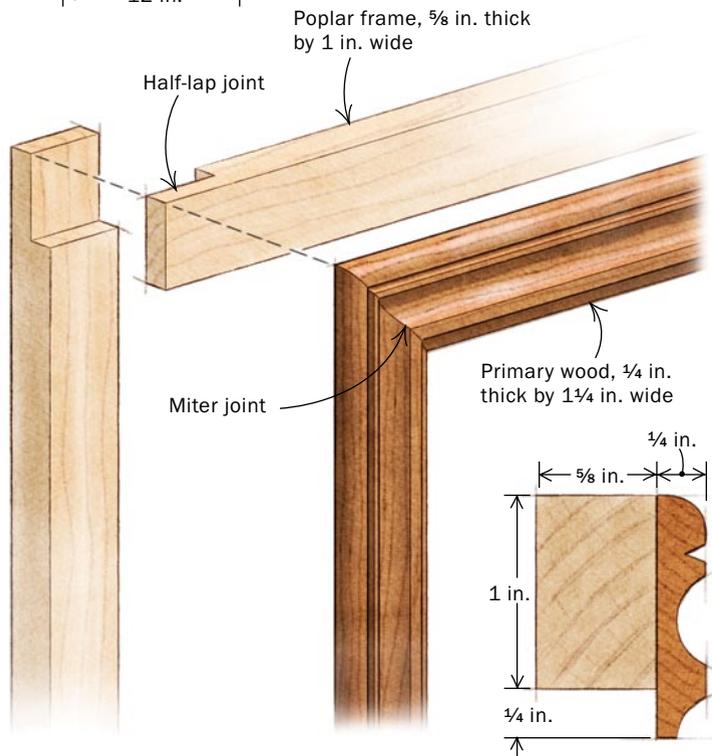
After I've profiled the front, visible moldings (see drawings, facing page), I cut their miters. With an L-shaped auxiliary fence attached to the chopsaw, make  $45^\circ$  cuts to the left and right, but be careful to keep the cut as shallow as possible and avoid

Photos: Mark Schofield; drawings: John Hartman

# Build a strong frame



For durability, a poplar subframe with half-lap joints supports a mitered molding of mahogany. Because the mahogany is  $\frac{1}{4}$  in. wider than the poplar, it provides a lip to hold the mirror. To hold a standard 10-in. by 16-in. mirror, the outside dimensions of the frame are 12 in. by 18 in.



cutting through the fence. These initial cuts become reference marks for the exact location of future cuts, so rather than shifting the blade angle  $\frac{1}{2}^\circ$  or so, I use scrap pieces of veneer to shim the molding in, out, up, or down to tweak the miter if needed. After completing a cut, slide the molding away before you raise the blade; most damage to trim cuts occurs as the blade is lifted up from the stock.

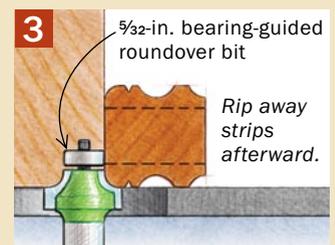
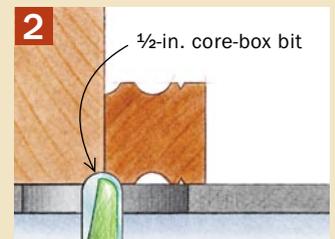
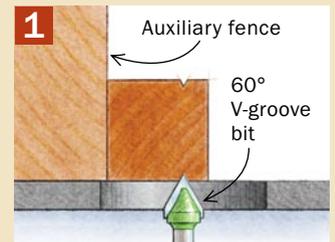
There is a logical system to follow for making all of the cuts smoothly with superior results. First, fit the top piece of molding with a  $45^\circ$  cut on both ends. Clamp it in place using two or three spring clamps. Custom cut the adjoining miters on both side pieces, making sure that they are tight across the joint and run evenly along the full length of the poplar subframe. Take the right-side piece, mark its length, and cut a  $45^\circ$  miter at the bottom. Clamp it in place using spring clamps. Custom cut the bottom miter to fit this piece, but cut the opposite end about  $\frac{1}{8}$  in. long for final trimming.

Measure the length of the left-side piece and cut the bottom miter before clamping it in place. Don't try to lay the bottom molding over the side moldings and guesstimate the final miter joint. Remove the right-side molding and fit the left-hand miter of



**Construct the subframe.** When gluing the poplar subframe, make sure it is perfectly square. If not, applying the mitered molding becomes much more difficult.

## THREE BITS COMBINE TO MAKE THE MOLDING



There are many historical designs for the molding, so feel free to experiment with your existing router bits. If you want to use the same bits I did, you should be able to find them fairly easily. Freud and Amana both make all three. Sources include: Tools Plus ([www.tools-plus.com](http://www.tools-plus.com); 800-222-6133) and International Tool ([www.internationaltool.com](http://www.internationaltool.com); 800-338-3384).



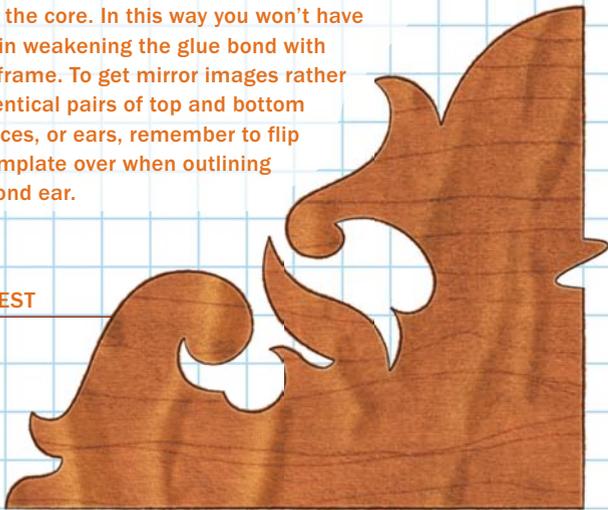
**Dry-fit the molding.** The secret to perfect miters is to dry-clamp each piece so that the subsequent section can be located accurately.

# Attachments adorn the frame

## LAYING OUT THE ATTACHMENT TEMPLATES

When using the four templates to lay out the attachments, keep the flat sides parallel to the grain of the core. In this way you won't have end grain weakening the glue bond with the subframe. To get mirror images rather than identical pairs of top and bottom side pieces, or ears, remember to flip each template over when outlining the second ear.

TOP CREST



TOP EAR

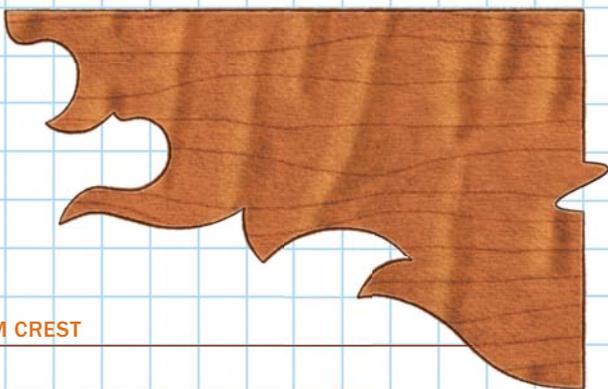


BOTTOM EAR



Enlarge the plans on a photocopier at 200% to obtain the full size.

BOTTOM CREST



the bottom piece, leaving the piece a hair long. Clamp the right-side piece back on and slide in the bottom molding. Because the proper angle of cut already has been established, it should need only a slight cut to bring it to final length.

Dry-fit all of the pieces onto the frame using lots of spring clamps. To prevent sliding, glue the top and bottom sections first, angling the spring clamps so that they push the miter joints tight. Once these pieces have tacked, glue the sides, again using the clamps for directional pressure. Before the glue has set, check the inside edge for squeeze-out that might interfere with the mirror.

## Make the core, and then apply the veneer

With the double frame complete, work on the veneered attachments: the top and bottom crests and four side pieces, or ears.

The core will be visible, so make it from solid wood. Do not use plywood or medium-density fiberboard (MDF). Like the subframe,

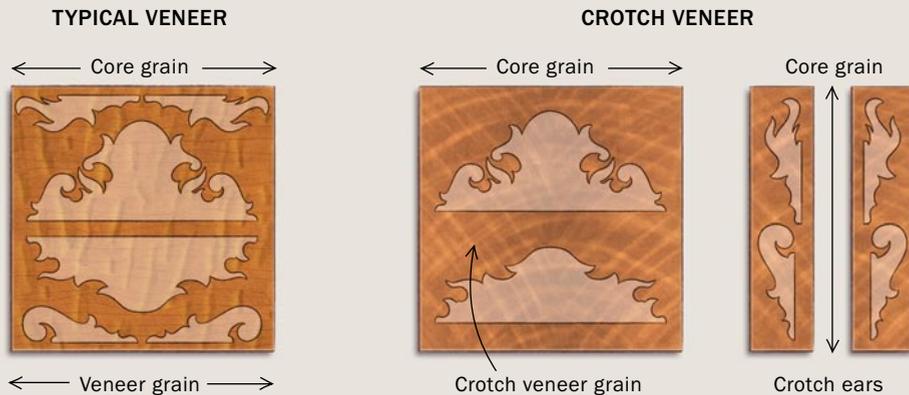
## 1. GLUE THE VENEER TO A CORE

Use a short-nap paint roller to apply a thin but even coat of yellow glue to both the veneer and the poplar core (right). When clamping the veneer in the press (below), apply pressure to the center cauls first. This helps prevent air from getting trapped under the veneer.



## Orienting the patterns

With most veneer, orient the grain parallel to that of the core. With crotch veneer, to make the veneer appear to radiate out from the mirror (right), the veneer's grain is laid perpendicular to the core's grain and the templates are laid out differently. To prevent the core from cupping, you also should use crotch veneer for the back side.



a poplar core will blend in with the veneer when stained. Because the core is 12½ in. sq. but only ¼ in. thick, I make it from a series of 2½-in.-wide strips to reduce the risk of cupping. To avoid wasting stock, I resaw strips of 1-in.-thick poplar on the bandsaw or tablesaw. If your planer can handle 12½ in., glue up the entire core, paying attention to grain orientation to reduce the likelihood of cupping and tearout during final thicknessing.

Although the backs of the attachments will not be visible, I veneer both sides of the core to reduce the potential for warping. The grain of both veneers should run parallel to the poplar core

so that the dominant figure radiates from the center of the mirror. Make sure the figured face veneer is the same thickness as the plain veneer on the back. Take time to study the veneers and select the smoother side as the outside face. If the veneers must be seamed, locate the joint at the separation between the top and bottom crests. Seam the two parts with 2-in. clear packing tape; it allows you to see the actual joint and, with white or yellow glue, peels off if removed within an hour.

The easiest veneering method is to use a vacuum bag, but you can make a veneer press for a project this size. It consists of top

## 2. CUT THE ATTACHMENTS WITH A SCROLLSAW



**Lay out the attachments.** Spray-mount the patterns to ¼-in.-thick Masonite or plywood and cut out the templates with a scrollsaw. Use these templates to lay out the designs on the veneered panel. Scissors and cardboard work well, too.

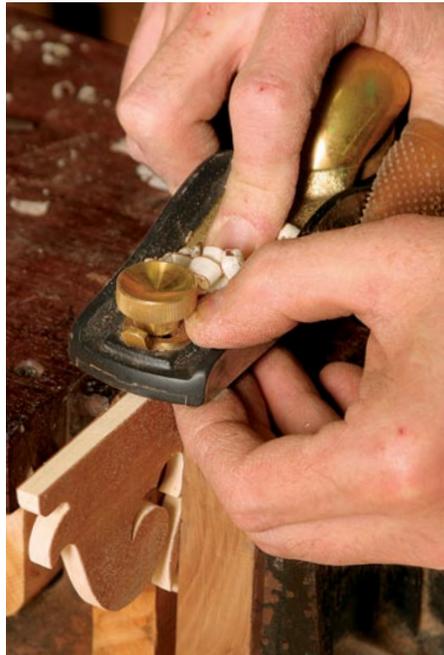
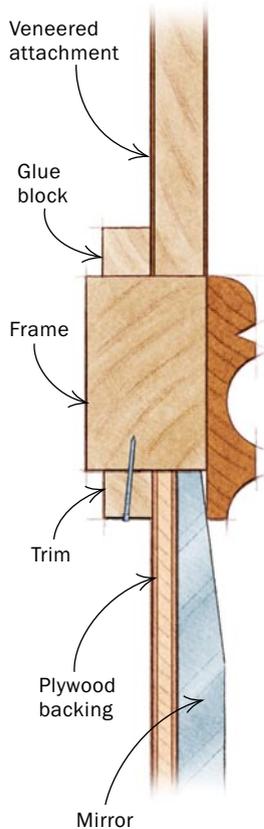


**Saw the attachments.** When coming to a sharp internal corner, don't try to revolve the piece around the blade. Instead, back out and saw in on the adjacent line.



**File the edges.** Use a fine file to remove sawmarks, but angle it slightly to avoid breaking the back edge.

# Rubber bands clamp the pieces to the frame



**A good contact surface.** Joint and square the straight edges of the attachments with a block plane so that they will have good glue contact with the frame.



**Fit to length.** After the top and bottom crests have been cut out, hold them against the frame and mark any overhang for removal.



**Glue on the first attachments.** Apply a thin film of glue to the straight side of the top crest, place it on the poplar subframe, and begin clamping with rubber bands. Use two rubber bands knotted together to stretch around the frame, securing the ends over projections on the crests. Because the attachments do not touch each other, if you work carefully it is possible to apply all six at one time.

and bottom plates that are about 13½ in. sq., made from two or three layers of ¾-in.-thick MDF glued or screwed together. The thickness adds stiffness and gives a better transfer of clamp pressure. Cover the inside surfaces with plastic laminate or strips of clear tape to prevent squeeze-out from binding the veneers to the press. I also make three sets of cauls out of 8/4 pine that are about 3 in. wide by 18 in. long, crowned in the center by about ⅛ in.

Use a narrow short-nap paint roller to apply a film of glue on both the core and veneers. Always roll veneer with the grain or the veneer will curl on the roller and break. Apply a strip of clear tape that ties the front and back veneers together along the side to reduce slippage during the pressing. Place the stack between the MDF slabs, apply the cauls top and bottom, and clamp the center pair of cauls first. Slowly tighten only until the bow in the cauls is flattened out. Do this in a controlled manner, directing the squeeze-out to the outside edge. Overtightening or clamping too quickly can create glue pockets under the veneer that will be a problem down the road. After about half an hour, open the press and carefully remove any tape used to seam a joint. Clamp the press back up and let the assembly dry overnight.

Remove the veneered core from the press. Scrape away squeeze-out (any shiny spots of adhesive on the core will scrape right out) and sand the core to P220-grit. Wipe the grain with a moist cloth

and double-check for glue; it will be tough to remove after the parts have been sawn. Even when fully cured, keep the uncut blank covered and under weight to reduce the chance of cupping.

## Cut the ornamental attachments with a scrollsaw

Orient the patterns as shown in the drawing on p. 63, leaving about ½ in. between the top and bottom crests. Make sure that the straight edges of all four ears are parallel with the grain of the core. This prevents cupping and gives a good surface to be glued to the frame.

My students typically come in with poor hand-eye coordination, and there's nothing like a scrollsaw for bringing it up to par. Before scrolling your pieces, practice, practice, practice. The more you practice, the less cleanup you'll need. Although a bowsaw with a narrow blade or a fretsaw would work, an electric scrollsaw with a #4 double-tooth blade is best. Don't worry about

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**Add glue blocks.** Apply small sections of wood to the back of the frame to reinforce the veneered attachments.



**Install the mirror.** After finishing the frame, place four dabs of clear silicone caulking on the inside of the frame and then lower in the mirror. Use tacks or a pin nailer to attach mitered trim to hold the mirror and plywood backing in place.

### Sources of Supply

**VENEER AND SHELLAC**

[www.rockler.com](http://www.rockler.com)  
800-279-4441

**SCROLLSAW BLADES**

[www.wildwooddesigns.com](http://www.wildwooddesigns.com)  
800-470-9090

**MOHAWK'S  
ULTRA PENETRATING  
BURNT UMBER DYE**

[www.ofscorp.com](http://www.ofscorp.com)  
800-381-3126

getting a straight cut along the edges that mount to the mirror frame as you'll clean these up with a block plane. With the parts cut out and any rough areas filed, break all of the edges with sandpaper. Mark and trim the top and bottom crest pieces to length.

To join the pieces to the frame, put a thin bead of glue on the edge of each attachment (not on the frame) and apply it by pressing the face edge down and then rolling it back until it is perpendicular to the poplar frame. This moves the squeeze-out to the back edge where it can be removed easily with a chisel. Clamp the pieces to the frame with rubber

bands. Check the mirror from the side and make sure the pieces aren't leaning, tweaking the front and rear pressure of the rubber bands if necessary. When dry, reinforce the joints with glue blocks applied using a simple rub joint.

After final sanding and cleanup, finish the frame by wiping or spraying on a non-grain-raising burnt umber dye to harmonize the woods, and then brushing on garnet shellac to give the piece an antique appearance. Install the mirror using a few small dabs of silicone along the inside lip of the frame. The mirror is backed by a piece of 1/8-in.-thick birch plywood fastened in place with 1/4-in.-sq. poplar strips mitered and tacked in place. Be sure to cut the bottom strip in two so that you can lever away the strips in case the glass needs replacing down the road. □

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