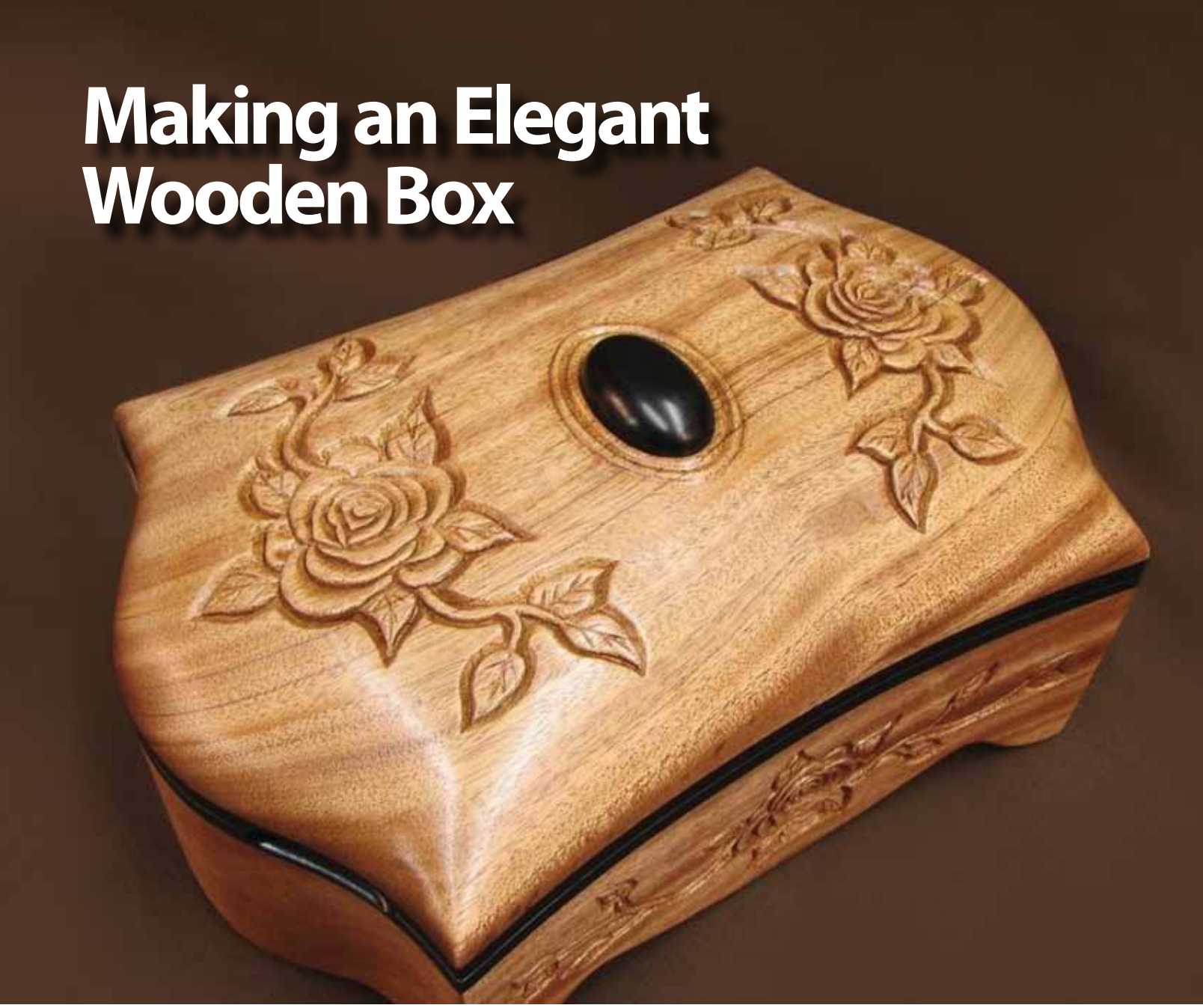
Making an Elegant Wooden Box



Combine woodworking and carving techniques to produce an exceptional handmade box

Design and carving by Dennis Zongker
Text by Patti Davis

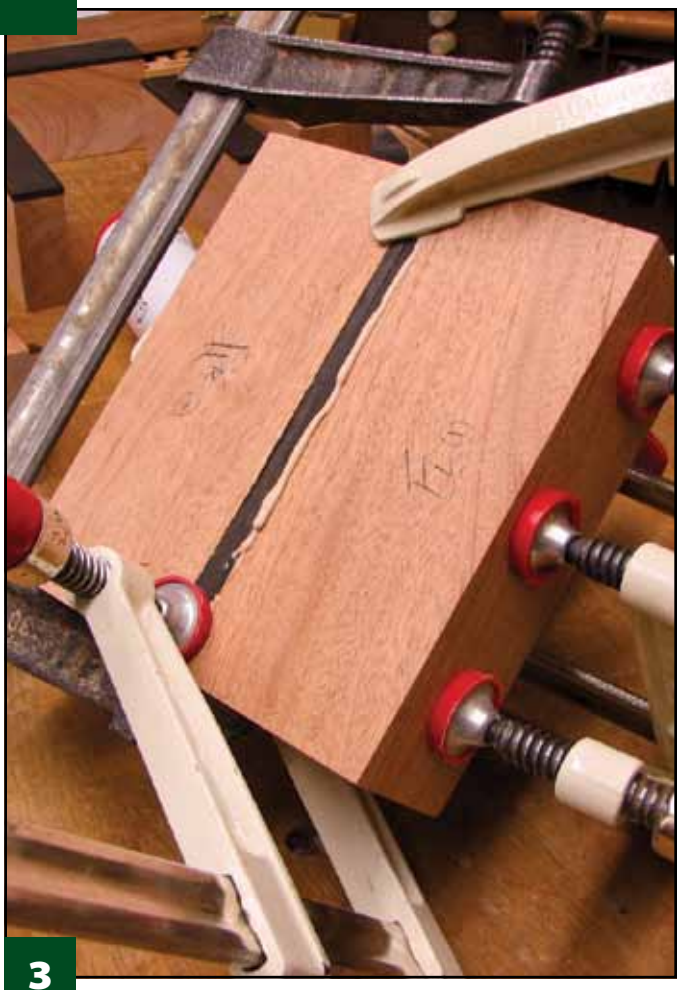
This beautiful wooden box is an advanced project that requires basic woodworking skills. The end results are well worth the effort. The box makes an elegant gift and is sure to be handed down to future generations. Dennis designed this box for his sister, who passed away Dec. 6, 2008, before he completed the project.

Construction of the box requires four major woodworking tools: a jointer, table saw, miter saw, and router table. If you don't have these tools, you can create the box using hand tools, embellish the lid of a commercially available wooden box, or enlist the help of a fellow woodworker.

Dennis chose mahogany for the box. He obtained a 12"-wide piece, so there was no need to laminate sections for the box lid. Mahogany carves well and holds detail. The wood looks beautiful with a natural finish. Walnut, black cherry, and Spanish cedar are also good choices for a natural-finished box. If you plan to stain or paint the box, use basswood. Cut the blanks for the top, sides, front, and back to the dimensions listed in the materials list. Make sure your table saw blade is perfectly square to the saw table.

1 **Laminate the blanks for the sides.** Sand the two surfaces to be glued together with a flat sanding block and remove the sanding dust with compressed air and a soft rag. Mark the top edges and apply Titebond III wood glue to the surfaces to be glued together. Spread the glue with a good-quality paint roller and clamp the pieces together tightly overnight. Use a jointer to square up the laminated sides.

2 **Clean up the blanks.** Use the table saw to cut all four sides of the box to their finished width and thickness. If your table saw cannot cut the whole way through the stock, set your fence and cut slightly more than halfway through on either side. All four pieces are 3½" (90mm) wide. The front and back are 1½" (40mm) thick and the sides are 2¾" (70mm) thick. Cut the sides to 8⅝" (220mm) long and the front and back to 10" (255mm) long with a miter saw. Trim both ends so the blanks are square.



3 **Add the accents.** Dennis chose ebony for the accents, but any complementing dark wood would work. Sand the glue surfaces of the box blank and accent blank with 80-grit sandpaper wrapped around a flat block. Remove the sanding dust with compressed air and a rag. Apply a bead of glue on both surfaces and use a paint roller to spread the glue. Clamp the pieces tightly and let the glue dry overnight.

4 **Cut the miters.** Draw the angles onto the blanks with a white pencil. Draw a 53° angle on the ends of the box sides and a 37° angle on the ends of the front and back pieces to produce the 90° angle required for the joint. Keep the side you cut off of the laminated side pieces toward the center of the box so the glue joint does not show when assembled. Cut the angles on a miter saw. You may need to add shims between the blank and the mitre saw fence to cut the 53° angles.

5 **Prepare to cut the dovetails.** Use the templates to draw the shape of the box on the dry-assembled blanks. Make sure you include the dovetail lines. Cut 37° angles opposite to the 53° angles on the sides so you have a square edge to hold against the router table fence. This allows you to cut accurate dovetail slots with a router table.

6 **Cut the dovetails.** Set the dovetail bit ¼" (6mm) above the router table. Adjust the router table fence so the bit lines up with the dovetail marks on the blank. Make sure the fence is square and practice with a few test pieces. Use a scrap block behind the stock to prevent blowout. The second cut you made on the side pieces provides a flat edge to hold against the router fence. Re-set the router fence and hold the corner of the front and back pieces against the fence as you cut the dovetail.

7 **Make the splines.** Use mahogany cut-offs from the box parts. The grain direction in the spline is parallel with the grain direction in the box sides. Set the dovetail bit ¼" above the router table. Set the router fence at a 14° angle and run all four sides of a practice piece through the router. Use a push stick and block of wood to protect your fingers as you cut this thin wood. Check the fit of the practice piece in the dry-assembled box and adjust the fence settings until you get a good fit. Cut the splines to 4" (105mm) long.

8 **Cut the front, back, and sides.** Make sure your band saw blade is square to the table with a small square. Set the bottom of the blade guide about ¾" (20mm) above the top of the box. Cut the front, back, and sides. Apply a light even pressure to the pieces as you cut. Avoid stopping once you start cutting. Save the cut-off pieces and mark where they came from so you can use them when cutting the arches on the bottom.

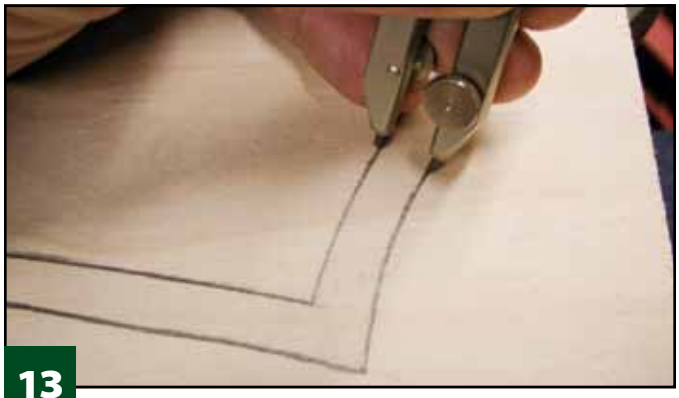
9 **Sand the curved pieces.** Use a small drum sander. Remove all of the band saw marks and smooth the faces. Dry assemble the pieces and mark any areas to sand. When the pieces are shaped properly, hand sand with the grain using 150-grit sandpaper to remove any scratches.

10 **Cut the groove for the bottom.** Use a ¼"-wide by ⅜"-deep (6mm x 10mm) rabbet bit in a router table. Set the bit ⅞" (22mm) above the bottom of the box to allow room for the lower arches to be cut in the bottom. The top of the router bit is 1⅛" (30mm) from the bottom of the box. Use the guide post on the router table for additional control when routing the curved parts.

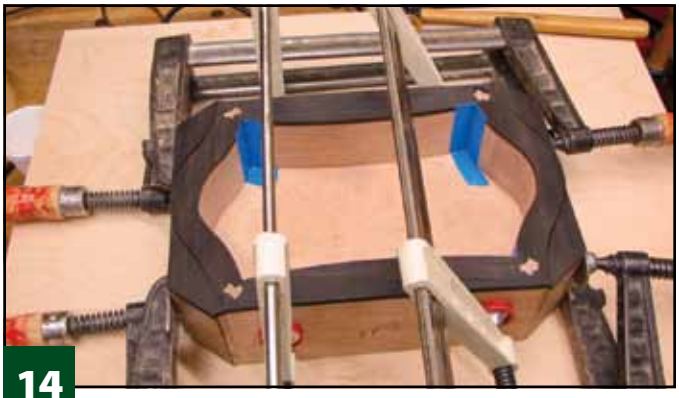
11 **Cut the bottom arches.** Use blue painter's tape to secure the scrap pieces back on the inside of the blanks. This provides a flat surface for easier cutting. Make a template of the bottom arches and trace the arches onto the blanks. Cut the lower arches with a band saw. Sand the bottom edges smooth using a drum sander followed by hand sanding.

WOODEN BOX: ASSEMBLING THE BOX

12 **Make the top.** Dry-assemble the box, flip it upside down, and set it on the blank for the top of the box. Make sure the box is square to the blank and trace the perimeter of the box onto the blank for the top. Cut along these lines with a band saw.

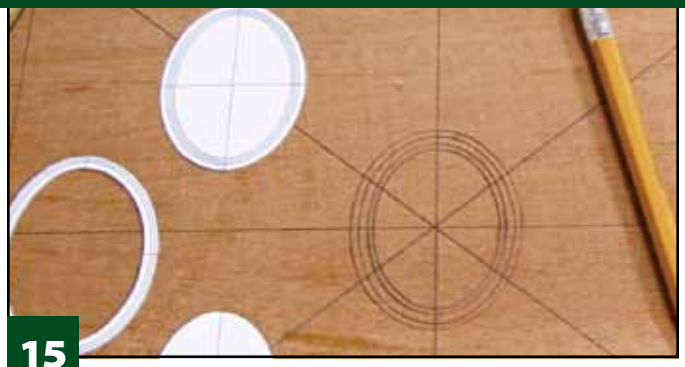


13 **Make the bottom.** Set the box upside down on the blank for the box bottom. Trace inside the box. Because the groove for the bottom is ⅜" (10mm) deep, set the compass points 5⁄16" (8mm) apart. Keep one point on the line traced from the box and draw a second line outside this line. Cut along the outside line with a band saw.



14 **Assemble the sides.** Apply a strip of tape anywhere the glue can seep out of the joints. Apply wood glue to the dovetail and miter joints. Do not get any glue in the bottom groove or on the bottom. Trim the dovetail splines to the size of the box. Reassemble the box with the bottom nestled in the groove and insert the dovetail splines. Position the waste pieces on the sides to produce a flat surface and clamp the box together overnight.

WOODEN BOX: CARVING THE ACCENTS



15 **Prepare the center medallion.** Trace the inside medallion line onto the ebony blank and cut outside the line with a band saw. Round the top of the ebony medallion. Draw lines from opposite corners on the top to locate the center. Trace the ovals from the medallion template onto the box lid. Align the center guidelines on the box and template.

16 **Carve the area around the medallion.** Use tools with sweeps that match the curve of the ovals to stop cut around the ovals. Leave the outer ring raised and relieve the adjacent ring. Start ¾" out from the outer ring and gently relieve the wood up to the ring. Relieve the center oval. Make the center as flat as possible to ensure a good joint when you glue the medallion in place.

17 **Finish carving around the medallion.** Smooth the rings with a small round file or detail riffler. Use a 25mm #3 gouge to carve out from the medallion, removing the saw marks and flattening the top of the box. Use a rasp, such as a Stanley Surform rasp, to taper the edges of the top down about ¼" (6mm).

18 **Rough shape the top.** Carve a series of grooves with a 7mm #8 gouge. Start about 1¼" (30mm) from the edges of the medallion rings on the left and right and about ½" (15mm) from the rings on the top and bottom. The grooves are shallow near the medallion and progress to 5⁄16" (8mm) deep at the edges. Carve the grooves ½" (15mm) apart. Then remove the waste between the grooves with a 12mm #5 gouge.

19 **Prepare the top for carving.** Remove the gouge marks on the top with a rasp. Repeat steps 18 and 19 until the top is shaped to your satisfaction. Smooth the top with a bastard wood file. Leave a 5⁄16" (8mm)-wide uncarved area along the bottom edge for added strength. Smooth the surface with a fine rasp to prepare for the rose carvings.

20 **Begin carving the roses.** Attach a copy of the pattern to the lid using spray adhesive. Draw a border ⅛" (3mm) outside the pattern lines with a pencil. This line represents the outside edge of the carving. Stop cut around the edge of the paper pattern. Match the sweep of your gouges to the curves as you make 1⁄16" (2mm)-deep stop cuts. Hold your gouge of choice at a 60° angle, start from the pencil line, and carve up to the stop cuts.

21 **Carve the petals and leaves.** Use the same technique of making a stop cut and cutting up to the stop cut from ⅛" (3mm) away to carve along the lines representing the petals and leaves. Work from the outer to the inner petals. Hold your gouge at a 45° angle to cut up to the stop cut for the petals and a 60° angle for the leaves. This makes the petals softer and gives the leaves more depth.

22 **Shape the leaves.** Put as much wave as possible into each leaf. Each leaf should look different. Carve a 3⁄32" (3.5mm)-deep concave wave into the upper part of the leaf with a 4mm #7 gouge. Leave the middle and tip of the leaf uncarved. Smooth the wave with a small round file or riffler. Use your imagination and practice carving a few leaves on scrap wood.

23 **Shape the rose petals.** On the larger petals, make the center of the angled cut where it joins the next petal wider. Taper the cut so it is thinner on either side of the petal to give the petals a curved look. Make the stop cuts in the center of the rose deeper. Use reference photos to create realistic-looking flowers.

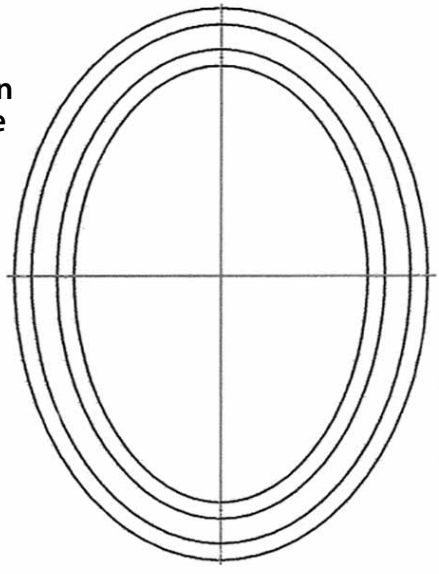
24 **Carve the vines and veins.** Give the vines a natural free-flowing look. The vines are ¼" (6mm) wide at the rose and taper to 1⁄16" (2mm) wide at the leaves. Carve in high and low areas for the vines. Use 3mm and 5mm #3 gouges. Don't carve deeper than 1⁄16" (2mm). Round the edges of the vines and leaves. Draw in veins on the leaves and carve along the lines with a 3mm 45° V-tool held at a 30° to 45° angle. Carve just deep enough to add shadow to the veins.

25 **Smooth the wood.** Use small files or rifflers to clean up the grooves and smooth the petals and leaves. Then sand everything lightly with a foam-backed sanding pad. The foam backing prevents you from sanding off too much detail. Glue the medallion in place and attach the hinges. Use ½" (15mm) or smaller hinge screws. Apply clear pre-catalyzed lacquer or your finish of choice.

USE A MALLET FOR CONTROL **tips**

Use a mallet when cutting up to a stop cut to provide extra control. Tap lightly with the mallet until you reach the stop cut to keep the gouge from slipping into your carving.

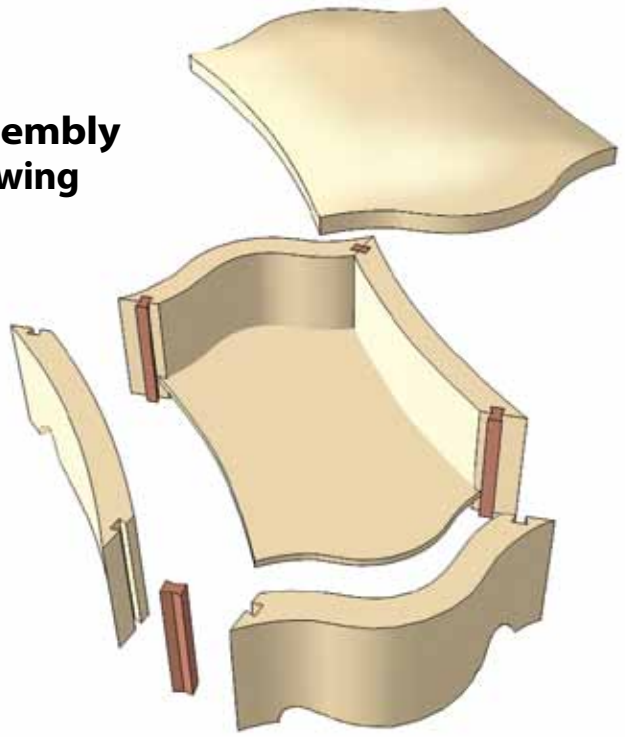
Medallion template



About the Artist

Dennis Zongker is one of the co-owners of Zongkers Custom Furniture. Dennis adds custom carvings to the furniture the company produces. Dennis' first book, *Stylish Wooden Boxes*, will be published by WriteLife LLC and is due out in fall 2011. For more of Dennis' work, visit the company's website at www.zongkers.com.

Assembly drawing



materials & tools

MATERIALS:

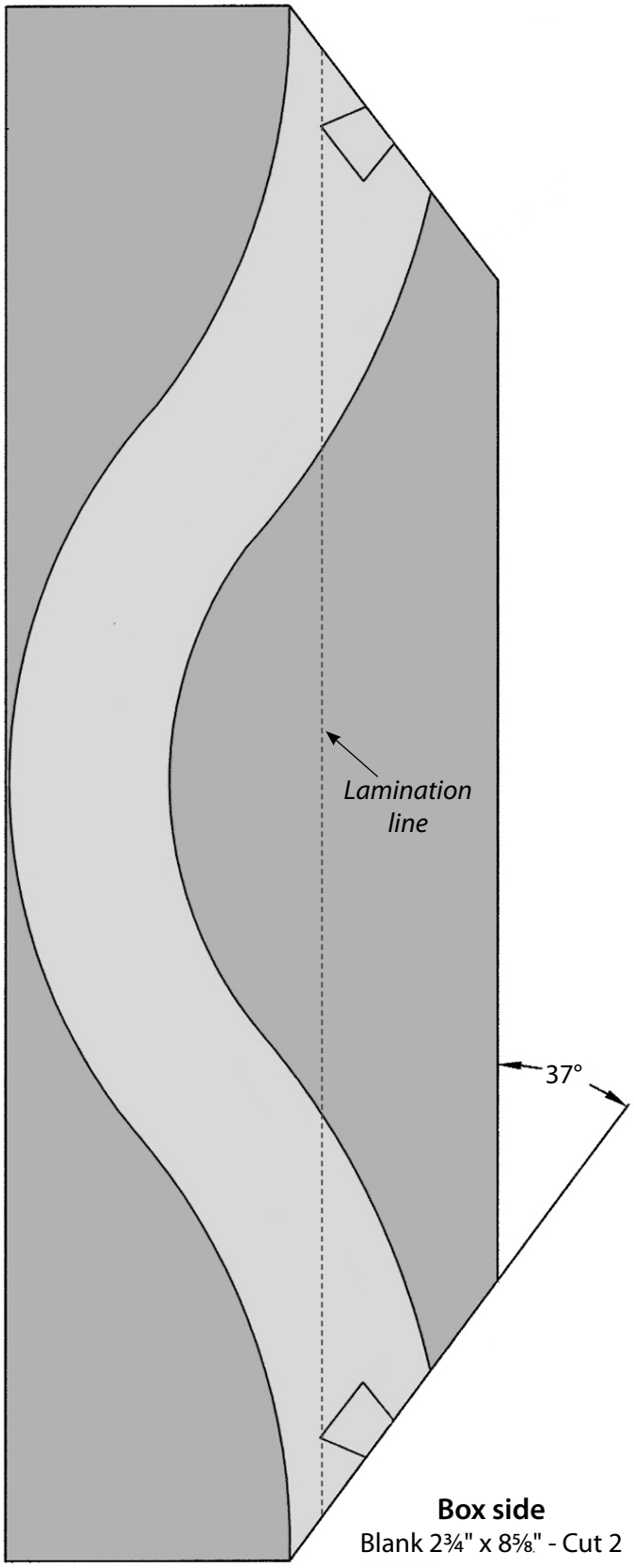
- 1¾" x 10" x 14" (45mm x 55mm x 355mm) mahogany or wood of choice (top)
- 4 each 1¾" x 3¾" x 9" (45mm x 95mm x 230mm) mahogany or wood of choice (sides)
- 2 each 1¾" x 3¾" x 10½" (45mm x 95mm x 265mm) mahogany or wood of choice (front and back)
- ¼" x 10" x 14" (45mm x 255mm x 355mm) Baltic birch plywood or plywood of choice (bottom)
- 2 each 5/16" x 2 13/16" x 8 9/16" (8mm x 96mm x 221mm) ebony or accent wood of choice (sides)
- 2 each 5/16" x 1 9/16" x 10 1/16" (8mm x 40mm x 257mm) ebony or accent wood of choice (front and back)
- ⅜" x ½" x 36" (10mm x 15mm x 915mm) mahogany or wood of choice (dovetail splines)
- ½" x 1½" x 2¼" (15mm x 40mm x 60mm) ebony or accent wood of choice (center medallion)
- Sandpaper, 80 and 150 grits
- Spray adhesive
- Titebond III wood glue or dark-colored wood glue of choice
- Clear pre-catalyzed lacquer or finish of choice
- 2 each small hinges

TOOLS:

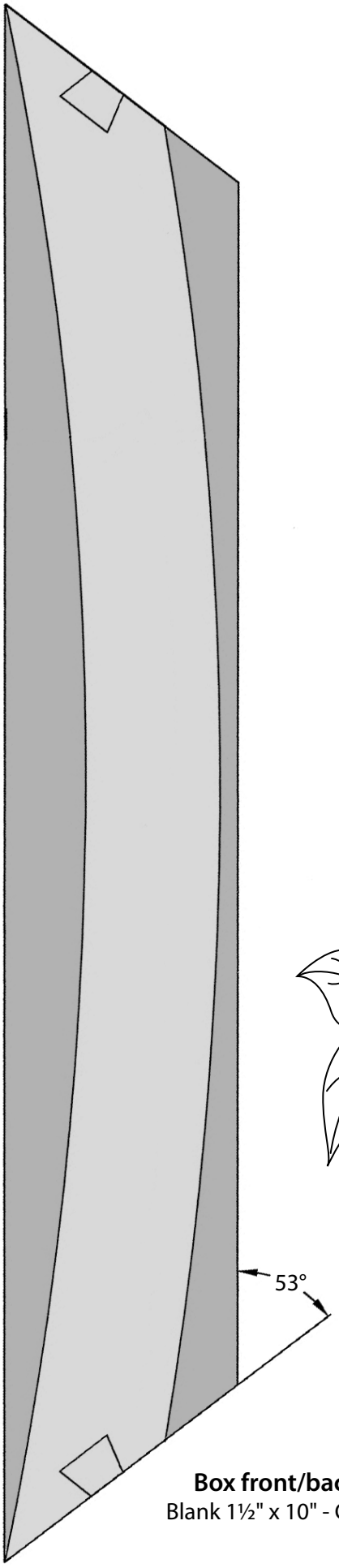
- Mallet
- 8mm #2 gouge
- #3 gouges: 3mm, 5mm, 8mm, 12mm, 25mm
- 12mm #5 gouge
- 4mm #7 gouge
- 7mm #8 gouge
- 3mm #9 gouge
- 3mm 45° V-tool
- Detail Riffler, small file
- Stanley Surform Rasp
- Wood bastard file
- Router in router table
- Dovetail bit
- Table saw
- Band saw
- Miter saw
- Jointer
- Clamps
- Foam-backed sanding pad

SPECIAL SOURCES:
Detail rifflers are available from Lee Valley, 800-871-8158, www.LeeValley.com.

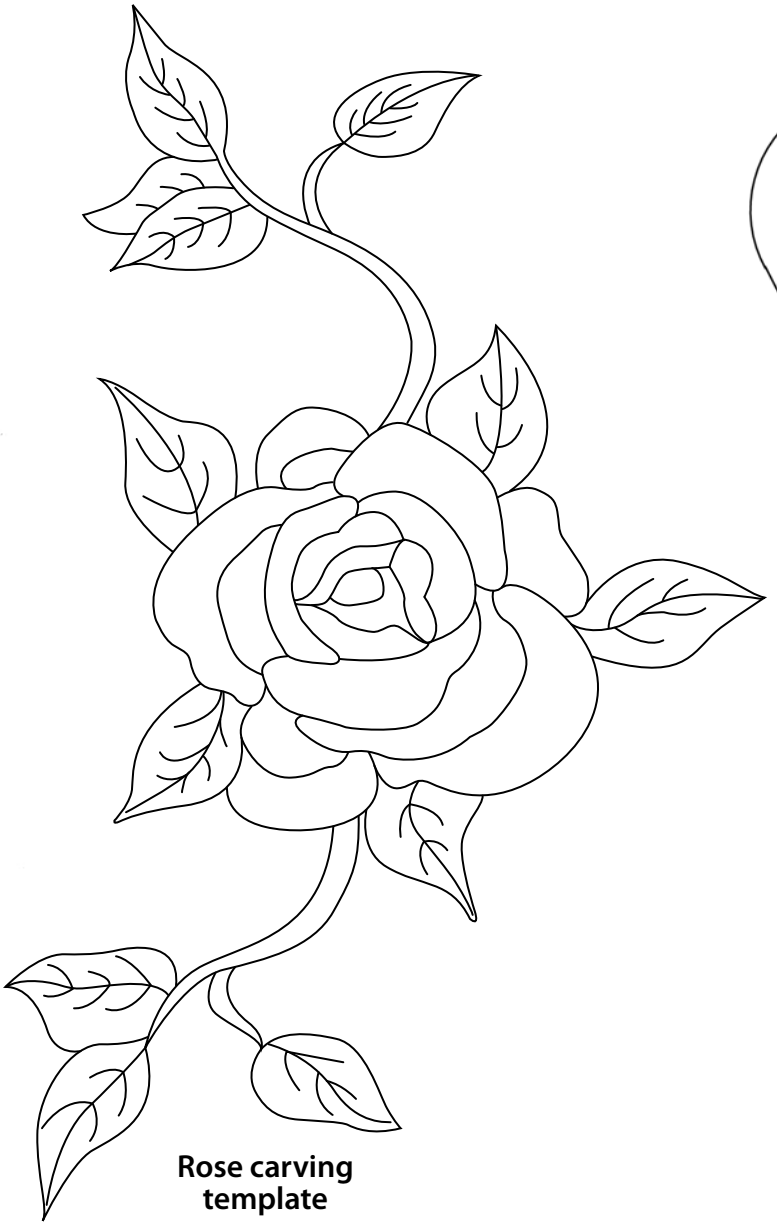
Box patterns and templates



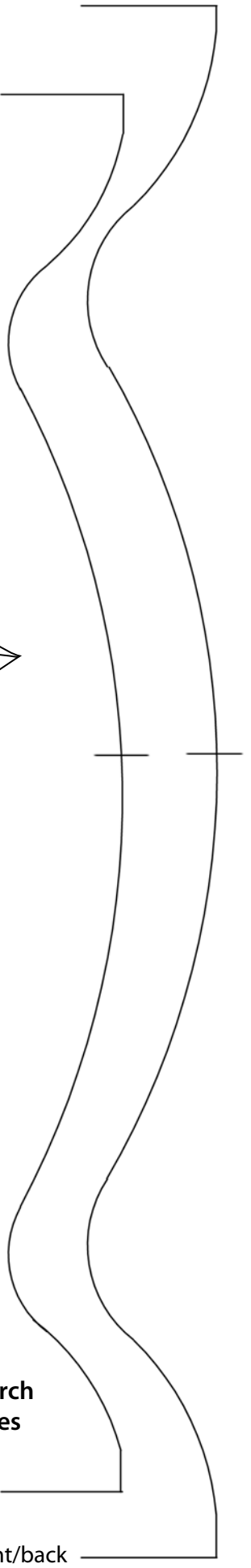
Box side
Blank 2¾" x 8⅝" - Cut 2



Box front/back
Blank 1½" x 10" - Cut 2



Rose carving template



Bottom arch templates