

KITCHEN PROJECTS FOR THE WOODWORKER

PLANS AND INSTRUCTIONS FOR OVER
65 USEFUL KITCHEN ITEMS



BY KEN HORNER

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KEN HORNER



LINDEN PUBLISHING

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by Ken Horner

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About the Author

ACKNOWLEDGEMENTS

I want to express immense gratitude to my wife, Linda Horner, for all her help in moving this book from our workshop out into the big wide world. Linda converted my rough drawings and sketches into detailed figures allowing the reader to easily follow my thoughts from concept to finished project. She helped me choose which projects to include and made one herself; the **Tall Salt and Pepper Shakers**. Linda read the chapters as I was churning them out and pointed out errors and made many suggestions. She also was my most severe critic, something an author needs as he labors along, sometimes floating off into an intellectual stratosphere. Linda brought me back to earth.

Dave Peck and Jim D'Anjou, wood-working colleagues of mine, read the chapters and made valuable comments on the projects, on the methods of construction and whether I was clear or dotty in my prose. Thank you both.

Tom Dotta of Hollister, Ca. showed me his **Checkered-Type Cutting Board** and his **Double Spiral Trivet**, both of which I altered slightly and included in this book. Marcus Moody of San Jose, Ca. made the **Sugar Bowl and Spoon** shown here in the Bowl section of the book. Jim D'Anjou showed me his **Sushi Board** and John Wilson shared his **Toaster Tongs** with me. Linda's granddaughter, Emma, took a lot of fine photos.

Thanks to all of you,
Ken Horner

CHAPTER 1

CUTTING BOARDS

Cutting Boards are the simplest and possibly the most useful of the wooden items we will make. They make great gifts because everyone uses them and often they can be constructed from scrap woods. There are six boards here: (A) **Three-in-One Cutting Board** (see [Photo 1A](#)) where we will use three different woods and make three different boards, (B) **Checkerboard-type Board** (see [Photo 1B](#)) made of two woods to give two boards, (C) **Large Sink Cutting Board** (see [Photo 1C](#)) that you can make to fit your kitchen sink, (D) **Veneer Inset Board** (see [Photo 1D](#)) that is quite pretty but somewhat difficult to make and (E) **Block Inset Board** (see [Photo 1E](#)). Finally, (F) **Small Sandwich Board** (see [Photo 1F](#)). With all the boards, make sure the wood is dry to about 6-8% moisture content; otherwise the finished boards might warp, twist and separate.



Photo 1A

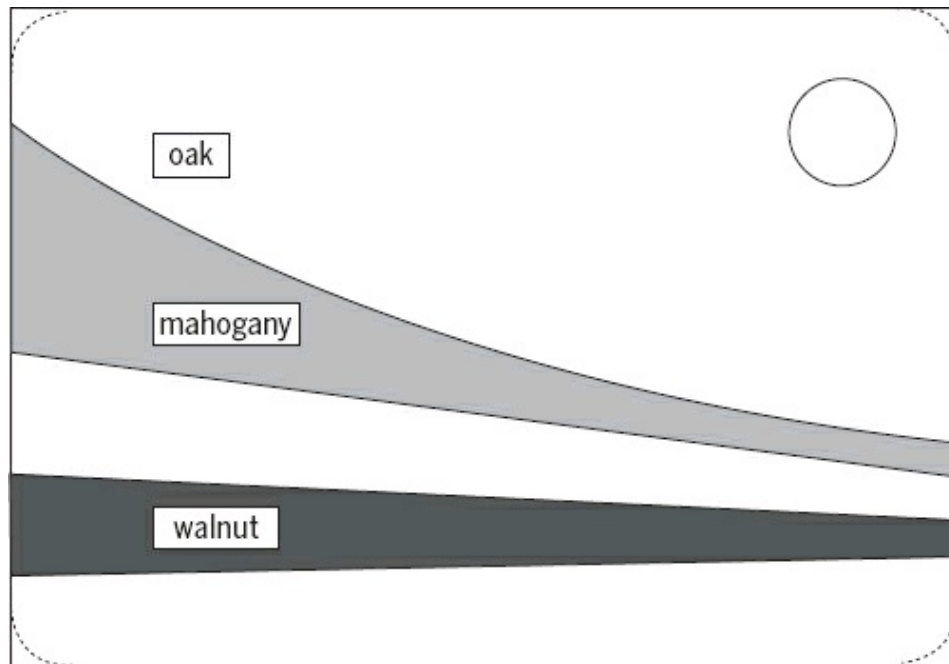
Care of Cutting Boards: For wooden boards that will be used to cut meat, veggies and other ‘wet’ materials, seal the wood with mineral oil. Do not use vegetable oils as they will spoil. Wash these boards in warm water and dry immediately. For boards that will be used for cutting bread and other ‘dry’ foods, use polyurethane to seal the pores. To clean, merely brush them off.

A. Three-in-One Cutting Board. This is an easy project and you will make three beautiful boards. Each will have the same three types of wood but every board will be different depending on which wood is dominant. See [Photo 1A](#) where mahogany, walnut and red oak were used.

Tools and Materials Needed: Three pieces of wood each about 10" wide × 15" long, band saw, blue tape (See [Appendix, Tapes](#)), clamps, PVA glue (See [Appendix, Glues](#)), drill press, 1- $\frac{3}{4}$ " Forstner bit and mineral oil.

Make the Board: Make sure all the pieces are the same size and thickness. The boards can be one piece or glued-up.

1. Cut the three boards to the same size; about $\frac{3}{4}$ " thick and 9" wide × 13" long.



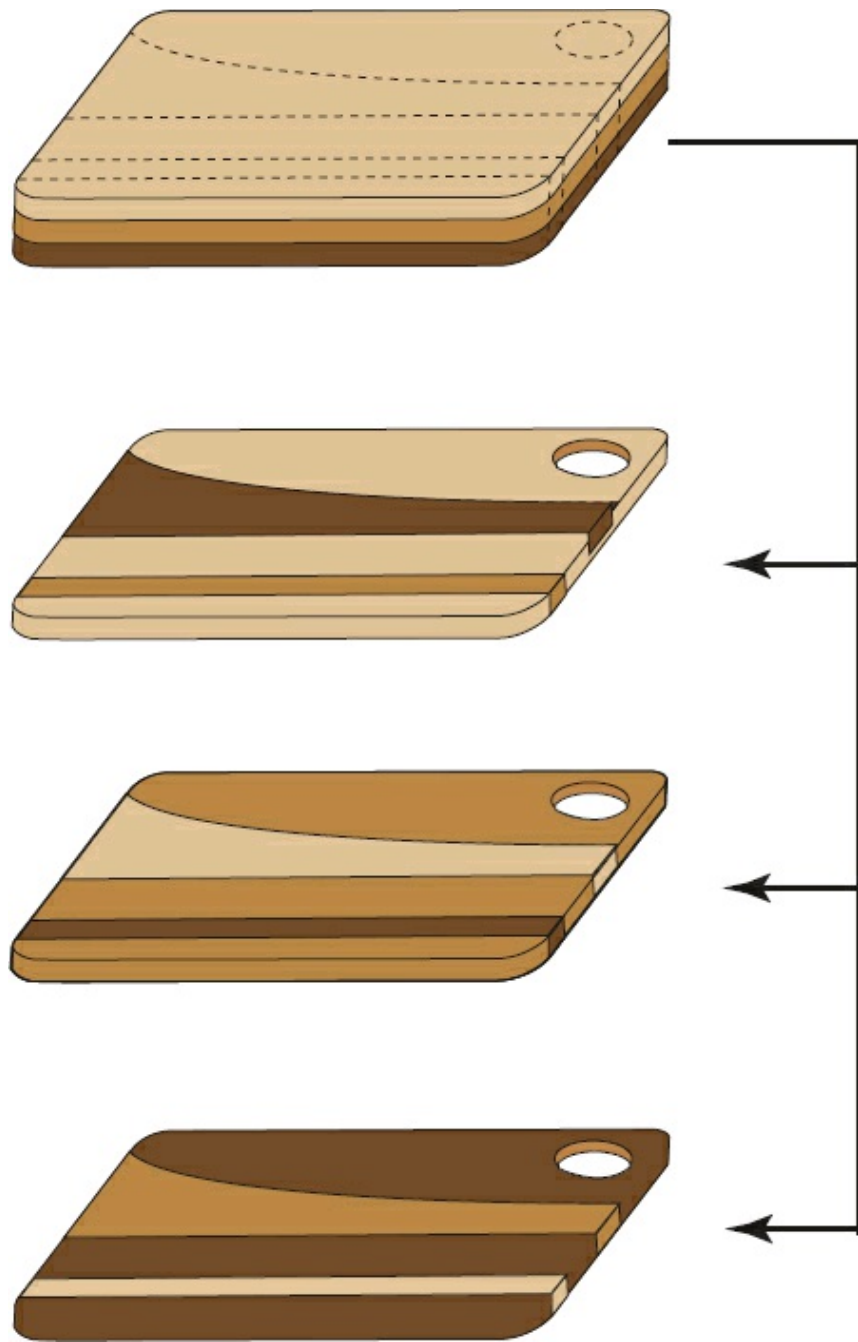
1A-D1. Three-in-One Cutting Boards. The boards are made of $\frac{3}{4}$ " material and are 9" wide × 13" long.

2. Use blue tape and/or double-sided tape and fasten the three boards together in a stack.
3. Draw the pattern as shown in [Fig. 1A-D1](#) on the top board. Draw the lines lightly so the marks can be sanded away later.
4. Use a 1- $\frac{3}{4}$ " Forstner bit and drill the hand hold through the stack. Also round off the four corners.
5. Now use a band saw and cut out the pieces as in [Fig. 1A-D1](#).

6. Mix and match and glue the three different boards together as in [Fig. 1A-D2](#).
7. Sand each board and ease the edges; use a rasp or a router with a round-over bit.
8. Finish with liberal coats of mineral oil. See [Appendix, Mineral Oil](#).



Don't let your cutting boards lay in the sink. Water will warp them.



1A-D2. Stack-Cut the Three Boards. Drill a 1- $\frac{3}{4}$ " diameter hole as shown. Mix-and-match the pieces after cutting the stack with a band saw.

B. Checker Boards. These are very pretty boards but they require a lot of band sawing and then careful attention to build the two final boards. This design and the method of construction were shown to me by my good friend, Tom Dotta of Hollister, California. The final board is $\frac{3}{4}$ " thick \times 9" square. [Photo 1B](#) shows maple and walnut



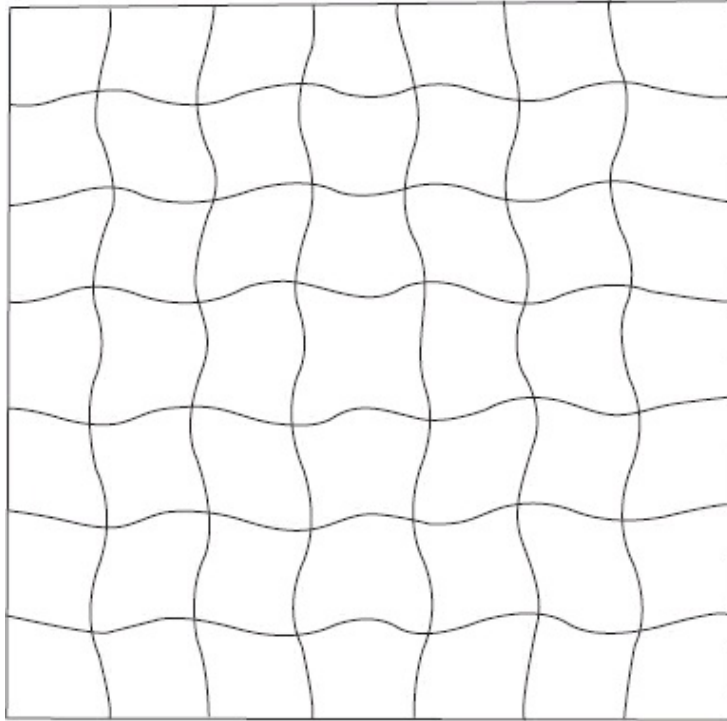
Photo 1B

Tools and Materials Needed: Two 9" square boards, band saw, blue tape, double sided tape, PVA glue, clamps and mineral oil.

Make the board: Make sure the two pieces are exactly the same size and the same thickness. You will cut seven strips, tape these strips back together again, rotate the board 90° and cut seven strips again. This will give you 49 little pieces to separate and glue back together to make two boards.

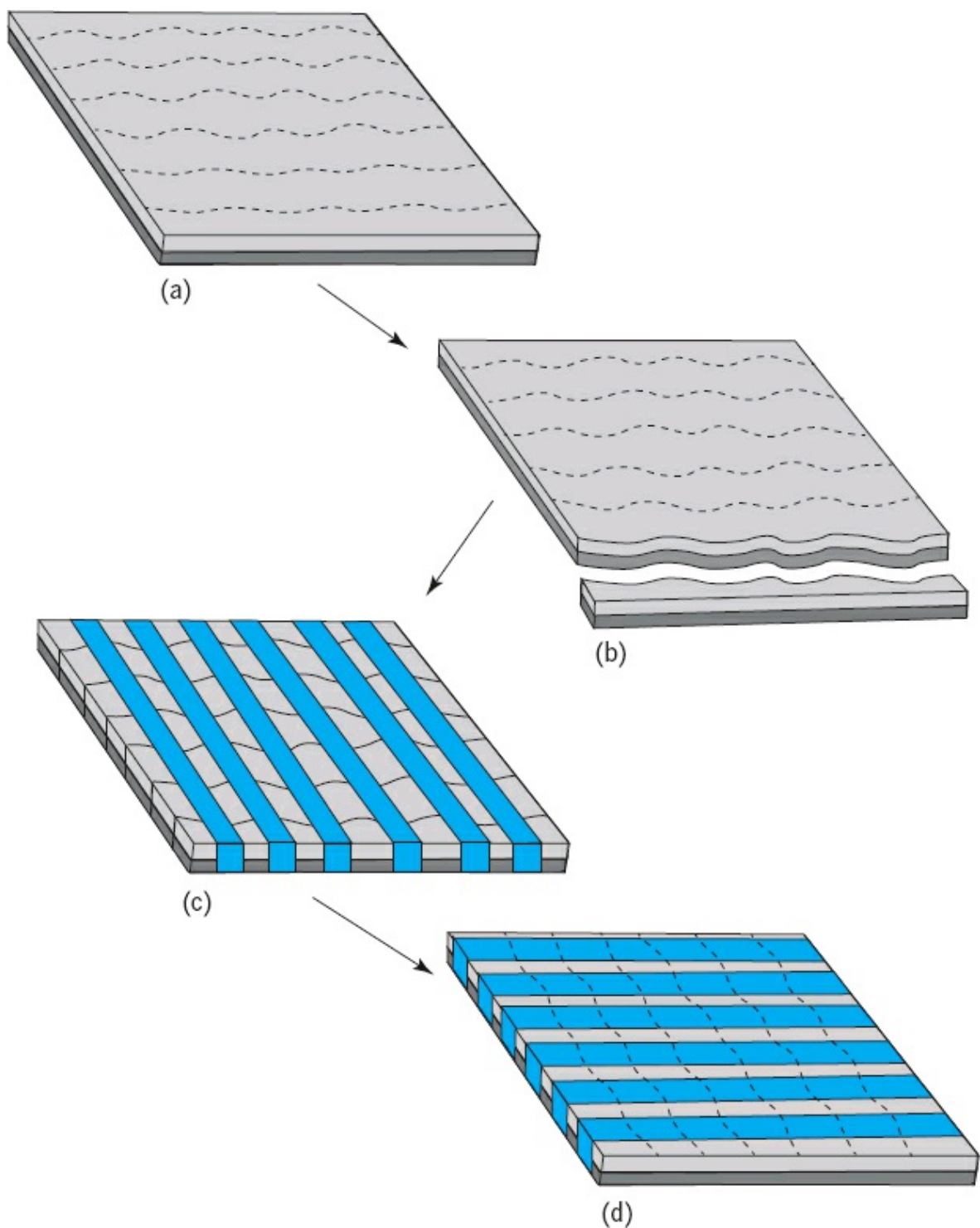
1. Align the two boards so their grain is parallel, i.e. the grain in both pieces run in the same direction.
2. Use double-sided tape and blue tape to fasten the two pieces together.
3. Put app tape on the top and trace the pattern, see [Fig. 1B-D1](#).
4. Use a band saw and make the first cut as in [Fig. 1B-D2a](#) and [1B-D2b](#). Set this strip aside.
5. Continue cutting until you have all of the seven strips. Keep the cut strips in order.
6. Use blue tape again and fasten the seven strips back together in the same fashion as they were before cutting as in [Fig. 1B-D2c](#).
7. Rotate the piece 90° and again draw the pattern matrix on the top, [Fig. 1B-D2d](#).
8. Use the band saw and cut off one strip.

9. Now take this first cut-strip apart and mix-and-match the pieces, starting to make the two cutting boards. See [Fig. 1B-D3](#).
10. Tape the pieces in place and cut another strip.

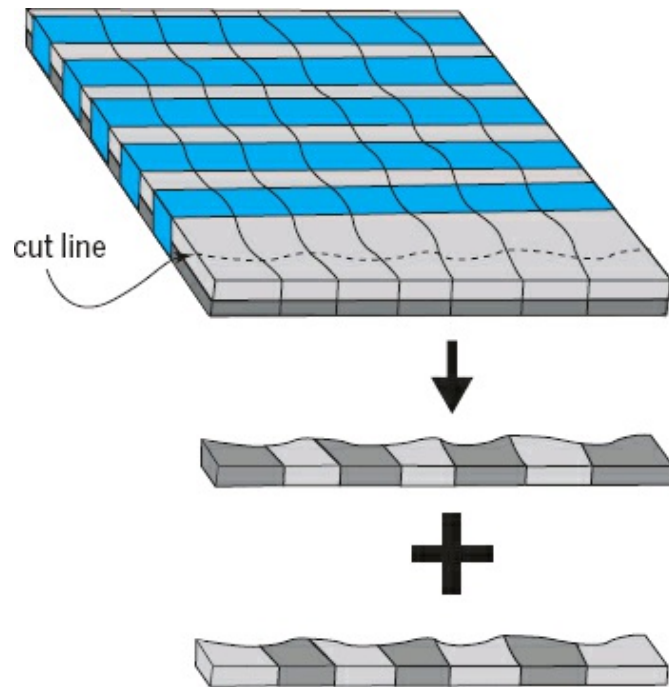


1B-D1. Checker Board. Use this pattern to lay out the cut lines. Full size is 9" square.

11. Continue to cut only one strip, separate the pieces and then put each piece in its proper place in the new board. Do this before you cut the next strip and you won't get a lot of pieces lying around; with you wondering where they all go.
12. Glue all the pieces together, sand smooth and treat with mineral oil.



1B-D2. Step-by-Step. Draw the first six cut-lines and cut off seven strips. Tape the strips back together and rotate the board 90°. Finally, draw the next six cut-lines and cut the last seven strips.



1B-D3. Making the Two Cutting Boards. Cut off one strip, remove the blue tape and mix-and-match the pieces. Continue to cut each strip, put the pieces onto the final board before cutting more strips.

C. Sink Cutting Board. This big board will be made to fit your sink top. It is a great time saver. When in place with a scrap bowl under the hole, you can cut, dice and slice to your heart's content without having the peels, skins, tops and roots in the way. You just chop them off, slide them over and they drop down the hole and into a little bowl. Check [Photo 1C](#). My sink board measures 15-½" wide × 16-½" long. It is made of ¾" material and I used mostly scrap wood. Measure your sink before you start.

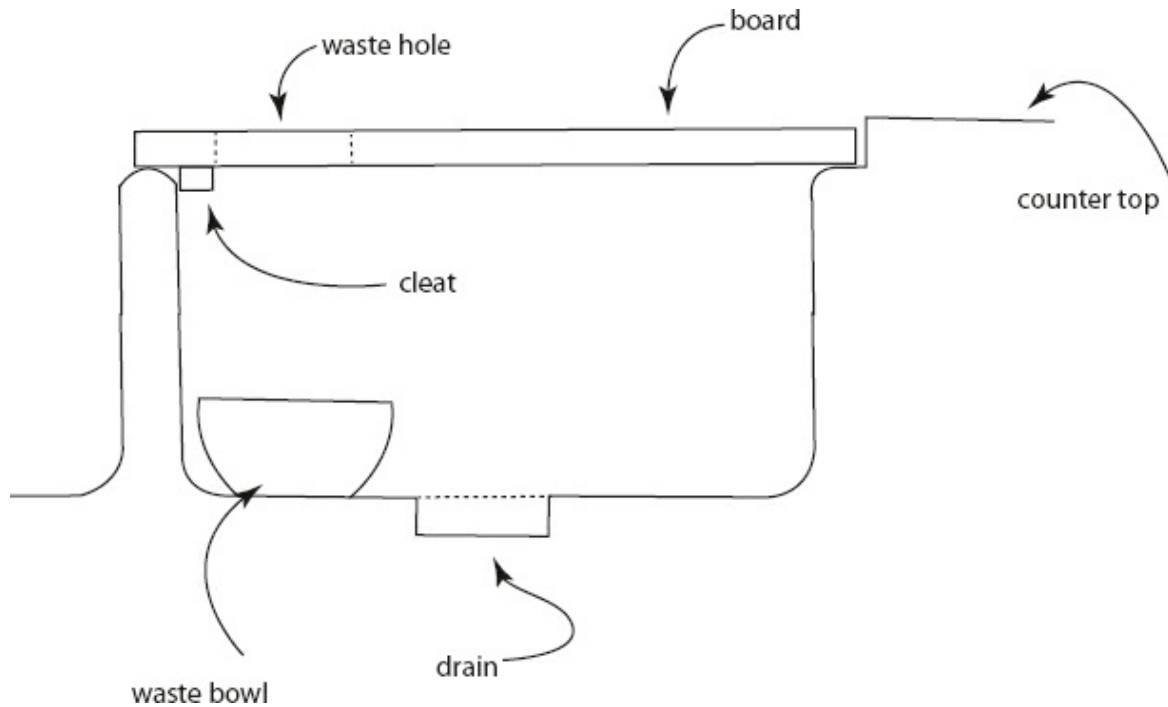


Photo 1C

Tools and Materials Needed: Lots of different $\frac{3}{4}$ " thick wood scraps at least a few inches wide by 17" long, table saw, jointer or hand plane, PVA glue, clamps, drill, saber saw or scroll saw and mineral oil for the finish.

Make the board: Gather all the wood pieces and make sure they are $\frac{3}{4}$ " thick or nearly so. Make the pieces $\frac{1}{2}$ " longer than you need.

1. Cut the $\frac{3}{4}$ " stock to width and 17" long.
2. Lay out the pieces to make a nice looking pattern, see [Photo 1C](#).
3. Gather enough pieces to make a half-board about 8" (one half the width) \times 17" long.
4. Dry clamp the pieces to be sure there are no gaps and then use yellow PVA glue to fasten them together. Note: Use small spring clamps on the ends of the joins to make sure all the slats line up and the board is flat.
5. After 30 minutes, remove the half board from the clamps and scrape off the semi-hard, extruded glue.
6. Glue and clamp the other half board and scrape as before.
7. Glue the two half boards together and clean up the glue line.
8. If you have a double sink as in [Fig. 1C-D1](#), fasten a 6" to 10" long cleat underneath to keep the board from sliding.
9. Drill a $\frac{1}{4}$ " hole and use a saber saw or a scroll saw and cut the 4- $\frac{1}{2}$ " waste hole.
10. Finally, round the corners, ease the edges and treat with mineral oil.



1C-D1. Front View of Sink, Board and Counter Area. Make the cleat to hold the board in place if you have a double sink.

D. Veneer Inset Board. This board is nice looking but takes a bit of work because each inset piece requires that an equal sized piece be removed from the board first. When the board is band-sawed, only a very thin piece can be inserted into the curve, as in inset #3 in [Fig. 1D-D1](#). The 0.180" insert piece (cut #2 in [Fig. 1D-D1](#)) requires that an equal width piece be removed from the board piece. Insert #1 requires that a 0.300" piece be removed. [Photo 1D](#) shows the completed board 9" wide × 15" long.

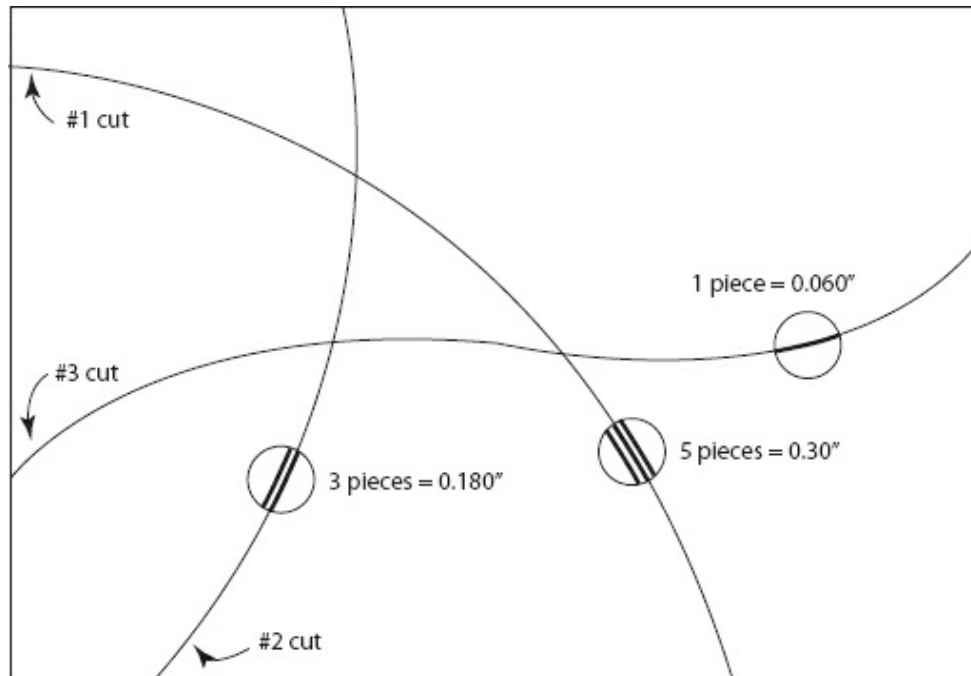


Photo 1D

Tools and Materials Needed: A $\frac{7}{8}$ " thick board about 10" \times 16", white (2) and black (3) colored veneer pieces $\frac{7}{8}$ " wide \times 18" long, band saw, equal distance marking jig (See [Appendix, Equidistance Marker](#)), PVA glue, clamps and mineral oil for the finish.

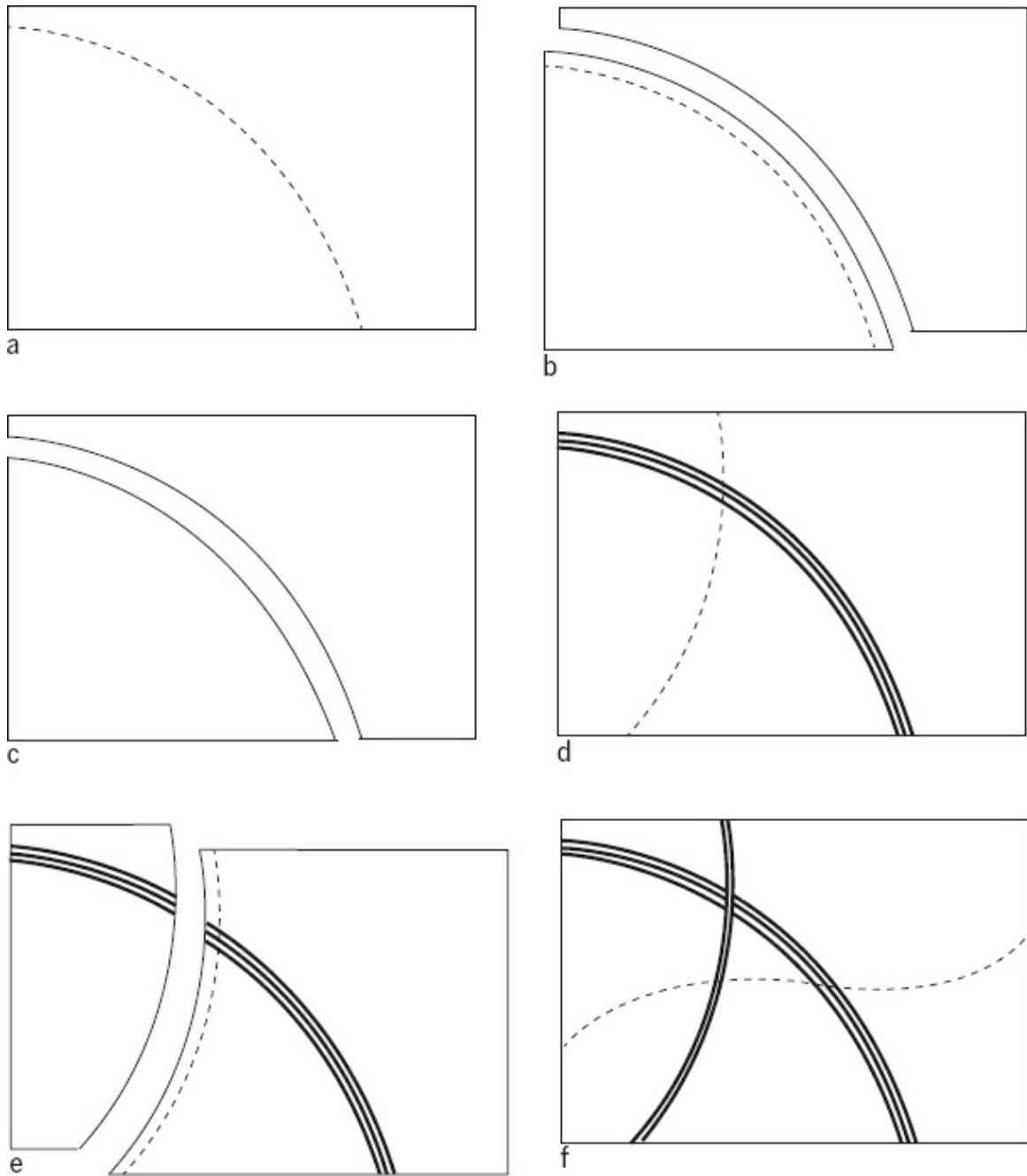
Make the Board: Start with a $\frac{7}{8}$ – 1" thick board approximately the size you want the final board to be. After each glue-and-clamp you will flatten and smooth the board and lose some thickness. By starting with a thicker board, you can end up with a $\frac{5}{8}$ " to $\frac{3}{4}$ " thick cutting board. I used veneer pieces 0.060" ($\frac{1}{16}$ ") thick as inserts. The pack of five measured 0.300" ($\frac{5}{16}$ ") thick and the three-piece set was 0.180" ($\frac{3}{16}$ ").

1. Draw the first pattern cut-line on your board; see [Fig. 1D-D1](#).
2. Use a band saw and cut along the #1 Cut-Line.
3. Use the equidistance marker and draw a line 0.300" distant as in [Fig. 1D-D2b](#).
4. Cut along this line to give two parts of the cutting boards as in [Fig. 1D-D2c](#).
5. Put glue on both pieces of the board and on all five veneer strips.
6. Place the veneer strips between the two boards and snug them up.



1D-D1. Inset Cutting Board. Make cut #1 first and glue in five pieces of veneer (0.300" thick). Cut #2 has three veneer pieces (0.180") and cut #3 has one piece of veneer (0.060" thick). The first two inserts require an equal amount of wood be removed from the board.

7. Clamp the board together with bar clamps both along the length and width.
8. Use hand spring-clamps at the ends of the cut to make the two faces line up.
9. After 30 minutes remove the clamps and use a scraper to peel off the semi-hard, extruded glue.
10. Make cut #2 as in [Fig. 1D-D1](#) and draw a line 0.018" from one edge as in [Fig. 1D-D2e](#).
11. Use a band saw and cut away the extra material.
12. Put glue on both pieces of the board and on all the veneer strips (three this time) and clamp. See [Fig. 1D-D2f](#).
13. Prepare the board by scraping and then draw line #3 as in [Fig. 1D-D1](#).
14. Use the band saw and cut along the #3 Cut Line.
15. Glue the single piece of veneer into the board.
16. Ease all the edges, scrape, sand smooth and finish with mineral oil.



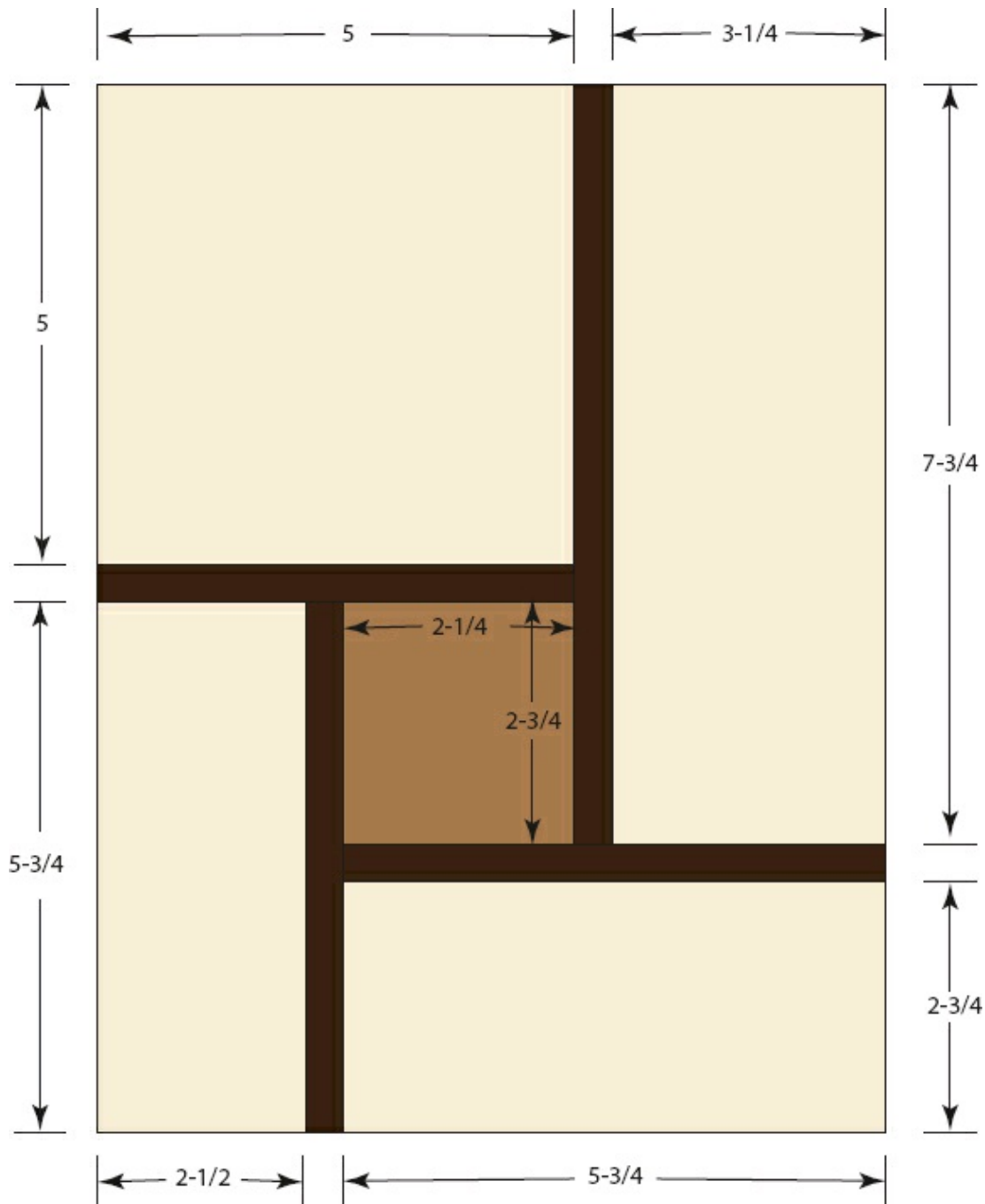
1D-D2. The Three Cuts. Cut #1 (a) with the extra cut-line (b); the open board (c) and the glued-up block (d). Cut #2 (e) with the extra cut-line and the glued-up board (f). The single piece of veneer will be glued in next after cut #3.

E. Block Inset Board. This Board is nice looking and you can use any wood; [Photo 1E](#) shows maple for the main wood and ebony for the stripes. In both cases sedua was used as the inset wood. With so many small pieces joined, it is prudent to glue-and-nail them together as the assembly progresses.

Tools and Materials Needed: A $\frac{7}{8}$ " to 1" thick board (I used maple here) about 9" wide \times 12" long, a contrasting piece of wood (I used sedua for the inset) about 3" wide \times 4" long, 25" of a thin wood (I used ebony) about 1" wide \times $\frac{1}{4}$ " thick, table saw, PVA yellow glue, hand drill and 1" brads (or an air gun and $\frac{3}{4}$ " – 1" nails) and clamps.

Make the Board: Cut the main board to size or glue up pieces to make the correct dimensions. The thin border pieces will be attached to the center block with nails and glue whenever possible.

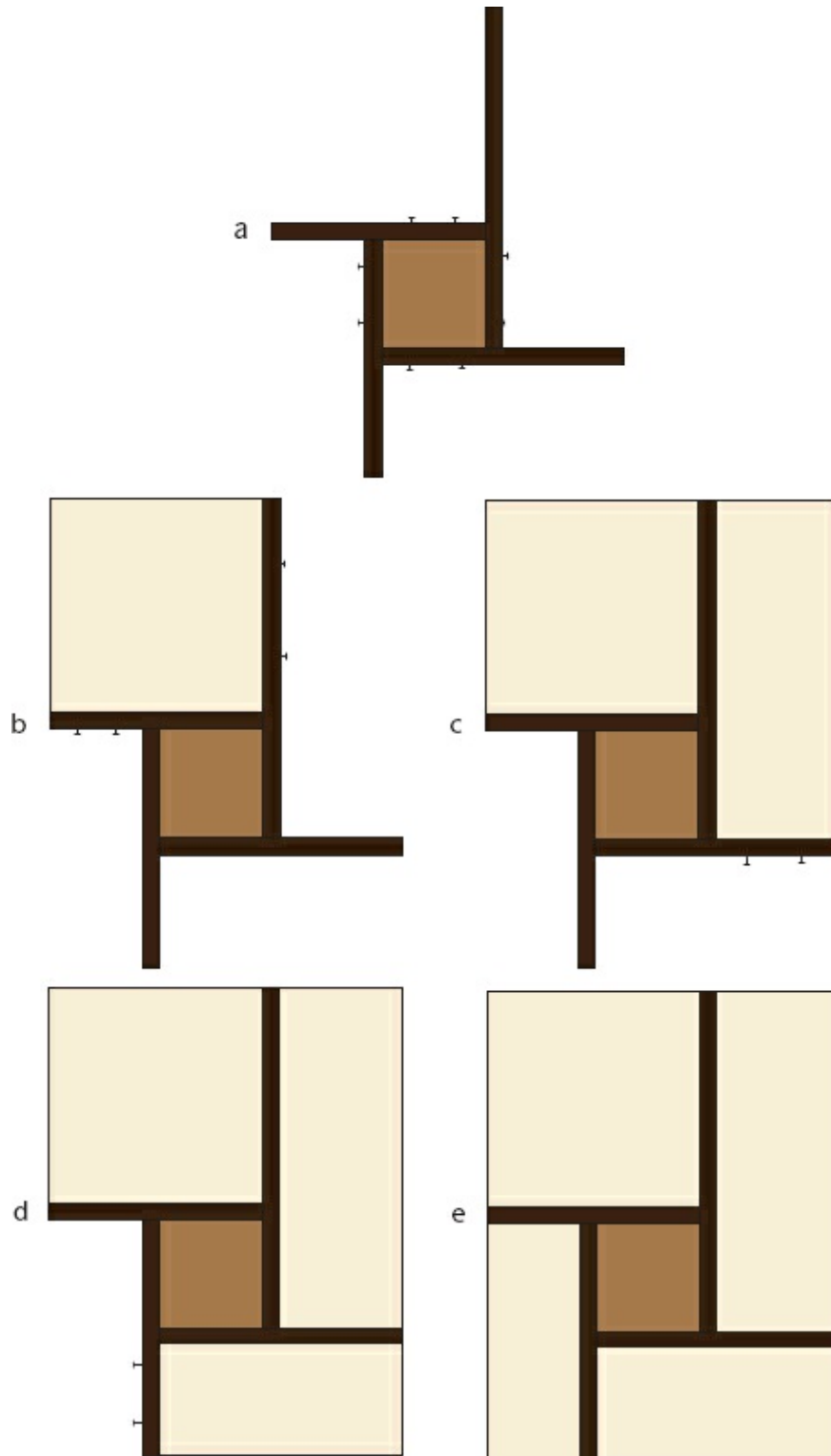
1. See pattern ([Fig. 1E-D1](#)) and cut the base board to sizes required.
2. Cut the inset block to size; about 2- $\frac{1}{4}$ " wide \times 2- $\frac{3}{4}$ " long.



1E-D1. Pattern for Block Inset Board. The finished board looks best if it is made from one piece.

3. Cut the thin border pieces to approximate length; about $\frac{1}{4}$ " longer than needed.
4. Use glue and brads (or an air gun), and start attaching the thin border pieces to the center, inset block. See [Fig. 1E-D2a](#) for this.
5. Next attach the four outer board pieces to the matrix with brads and glue ([Fig. 1E-D2b,c,d,e](#)).

6. Cut off the extruding border pieces and square up the board on the table saw.



1E-D2. Attaching the pieces. The border pieces are attached to the center block first (a). Next add the blocks with glue and brads if possible (b, c, d, e).



Photo 1E

7. Hand plane, scrape and sand the board smooth and ease the edges.
8. Finish with wipe-on polyurethane

F. Small Sandwich Board. This board is nice looking and has a small cut-out for scraps and ends. Use any fairly hard, close-grained wood. The three different width border strips can also be from any wood. See [Photo 1F](#) where I used red oak and walnut. This board is $8\frac{1}{8}$ " long \times $6\frac{3}{8}$ " wide.



Photo 1F

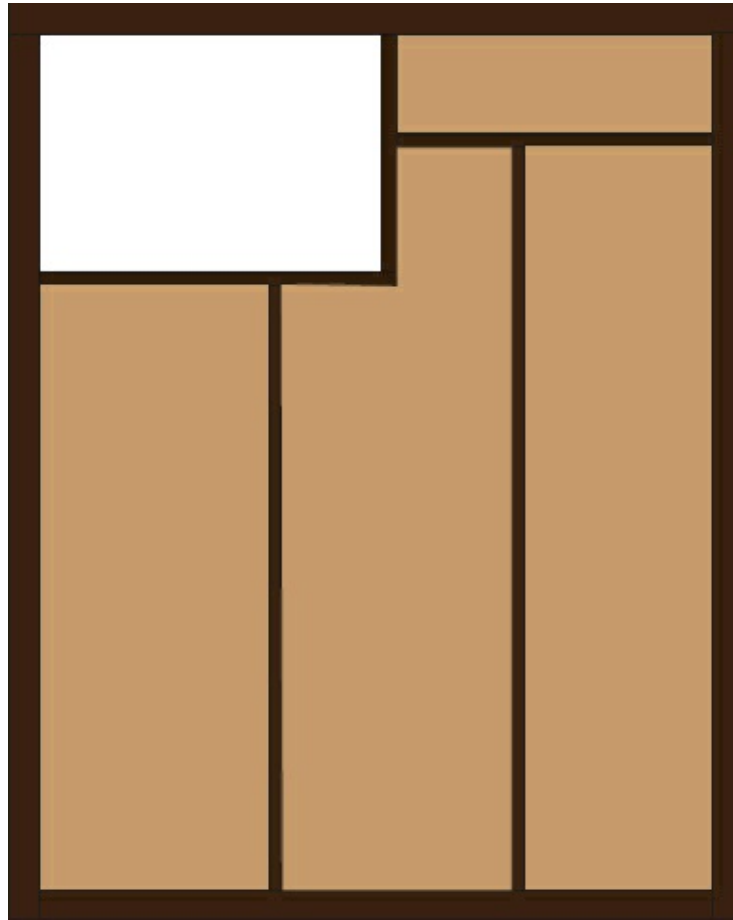
Tools and Materials Needed: A $\frac{3}{4}$ " thick board about 2" wide \times 20-24" long, some border strips (outer border pieces are $\frac{3}{8}$ " wide, the two window strips are $\frac{1}{4}$ " wide, and the two long narrow strips are $\frac{1}{8}$ " wide), table saw, PVA yellow glue, hand drill, 1" brads (or an air gun and $\frac{3}{4}$ " – 1" nails) and clamps.

Make the Board: This board can be made from almost any thickness and width of wood. I used $\frac{3}{4}$ " thick and 2" wide red oak. The thinner strips are walnut See [Fig. 1F-D1](#).

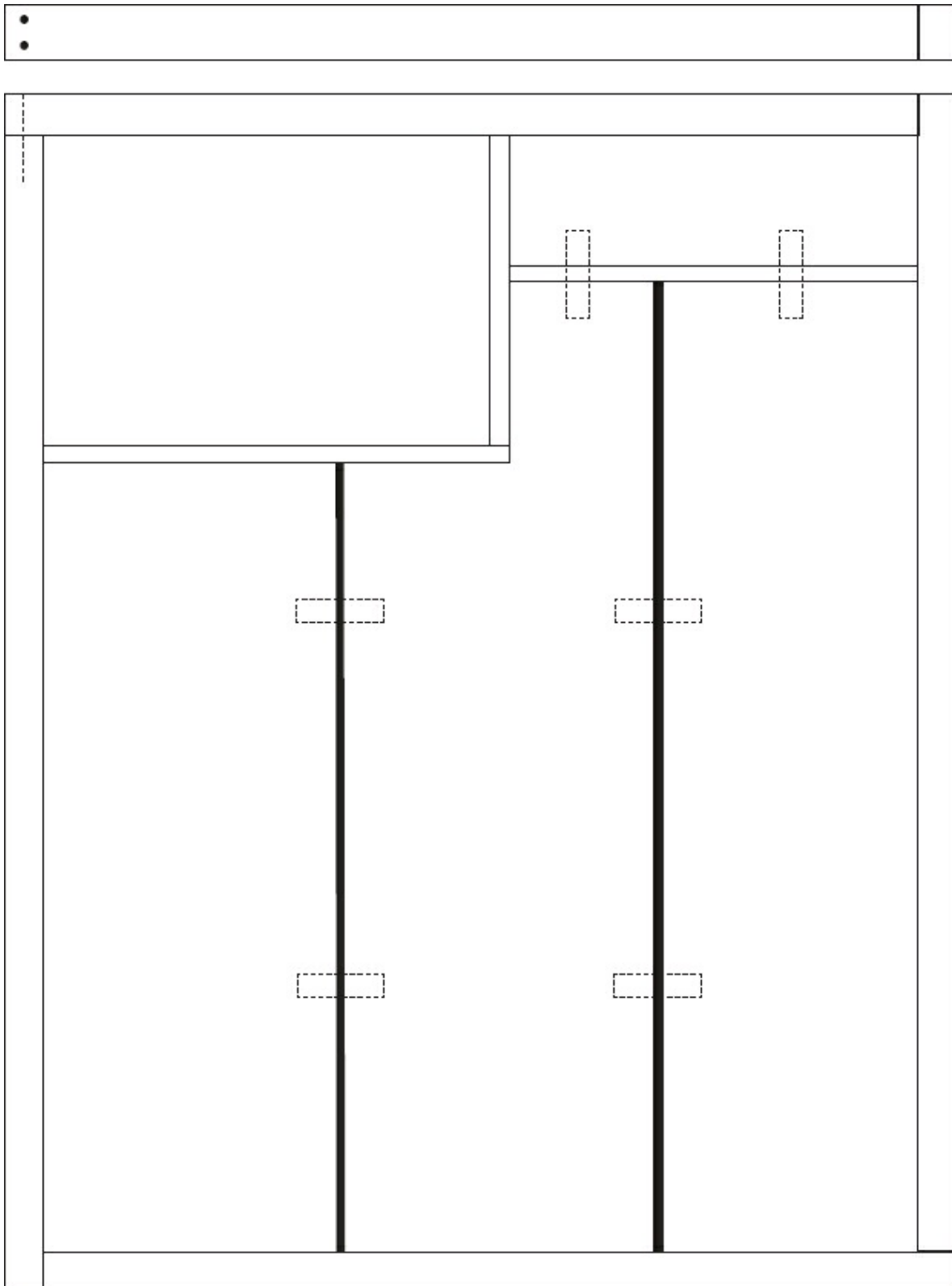
1. Prepare the main wood strips; two at 6- $\frac{5}{8}$ " long and one at 5- $\frac{3}{8}$ " long.
2. Use dowels and glue to fasten the three pieces together with veneer pieces in between, see [Fig. 1F-D2](#).
3. Square the glued-up piece and cut the small window with a band saw or

hand backsaw.

4. Use glue and small brads to fasten the $\frac{1}{4}$ " banding to the window.
5. Add the small cross piece at the top with glue and dowels.
6. Square up the piece and add the outer banding; fasten with glue and brads.
7. Drill and insert small dowels at the upper left corner.
8. Finish with wipe-on poly followed by full-strength polyurethane.



1F-D1. The Sandwich Board. Size is about 6 to 7" wide \times 8 to 8- $\frac{1}{2}$ " long.



1F-D2. Pattern. Over-all size, $6\frac{3}{8}$ " wide \times $8\frac{1}{8}$ " long. The outer border wood strips are $\frac{3}{8}$ " wide, the two inner-window strips are $\frac{1}{4}$ " and the two inner strips are $\frac{1}{8}$ " wide. Use glue and dowels to fasten the pieces together.

CHAPTER 2

TRIVETS & HOT DISH SUPPORTS

There are eight types described here: (A) **Wooden Frame with Tile Insert** (see [Photo 2A](#)) for very hot dishes, (B) **Six-Pointed Star Trivet** (see [Photo 2B](#)) with different woods on the top and bottom, (C) **Spiral Design** (see [Photo 2C](#)) that comes apart to make two trivets, (D) **Pinwheel Trivet** (see [Photo 2D](#)) that is quite elegant, (E) **Rosetta Trivet** (see [Photo 2E](#)) with a pattern that can be made into at least six different designs. These first six are all fairly easy projects and take very little wood. I think you'll agree that they do look nice on the table or on the serving buffet and they protect delicate surfaces.



Photo 2A

The sixth project, **Expandable Trivet with Pyrography and Coloring** (see [Photo 2F](#)) however is a bear. It's not easy, it's not fast and you probably won't complete it over a weekend. I've put it near the end so you can work through the

others before you tackle this one. Become proficient, get good at building these first six before you confront this one. Just follow the instructions, take it step-by-step and you'll be OK.

A. Wooden Frame with Tile Insert. This is an easy-to-make project that will protect the table and counters from hot dishes. It is 8" × 10" overall with a 5-¾" square tile inset. Buy the tile first and make the frame to fit. This trivet can be used for a casserole just out of the oven; no wood touches the dish and nothing can burn. I've suggested putting cork pads under this trivet. If you think it's necessary, put them under the other trivets in this chapter also.

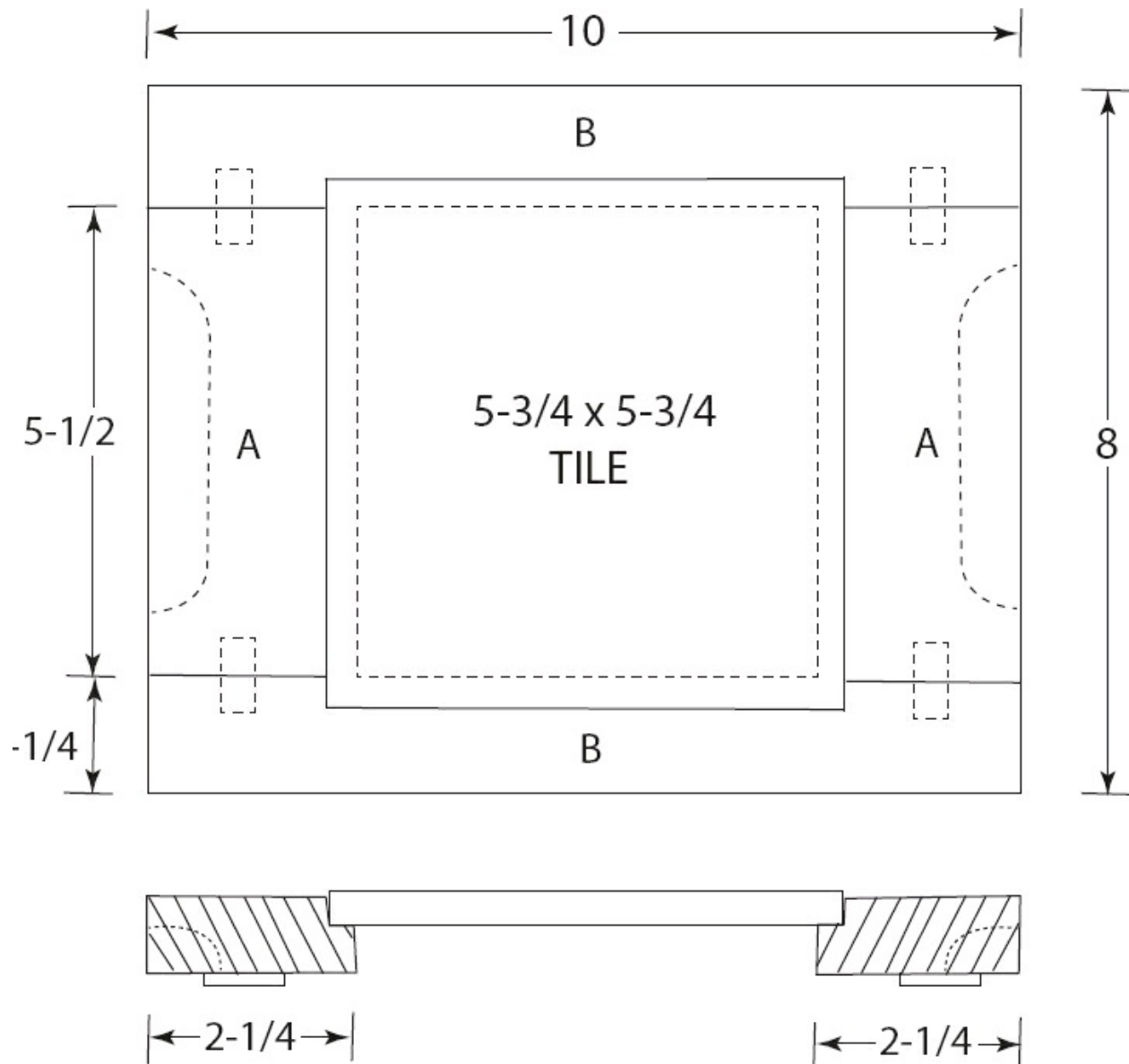
Tools and Materials Needed: Tile, wood (red oak in [Photo 2A](#)), table saw, dowels, PVA glue, router, wood chisel, polyurethane, hot melt glue (See **Appendix, Glues**) and cork pads.



TO PROTECT YOUR DINING TABLE, glue cork pads on the trivet bottom.

Build the Piece: It is important that the tile sets proud of the wooden frame.

1. Use ¾" stock and cut all pieces to size. The two end pieces (A) are 2-¼" wide × 5-½" long. The two side pieces (B) are 1-¼" wide × 10" long. See [Fig. 2A-D1](#).
2. Drill ⅜" diameter holes in mating pieces for dowels to join side pieces (A) to end pieces (B).
3. Glue the pieces together with yellow PVA glue.
4. Use a router with a ½" flat bit and cut the top rabbets for the tile inset. Finish the corners of the rabbets with a sharp wood chisel. Be sure the tile sets proud of the wooden frame.
5. Use the router with a ½" core-box bit and shape the finger grips underneath the end pieces.
6. Finish the piece with polyurethane and affix the tile with hot melt glue or tile mastic. (See **Appendix, Glues**)
7. Stick on the cork pads to protect your nice dinner table and you are through.



2A-D1. Frame with Tile; Top and Side View. The pieces are glued together using dowels for strength and then the rabbets are routed for the tile inset. The finger grips are also routed after the frame is assembled. Rubber or cork pads protect the table surface.

B. Six Pointed Star Trivet. This one is not complicated but it does entail a lot of scroll-saw work first and then a lot of sanding later. [Photo 2B](#) shows a trivet made with walnut and maple. [Fig. 2B-D1](#) shows the layout; enlarge the pattern to about 8" x 8".



Photo 2B

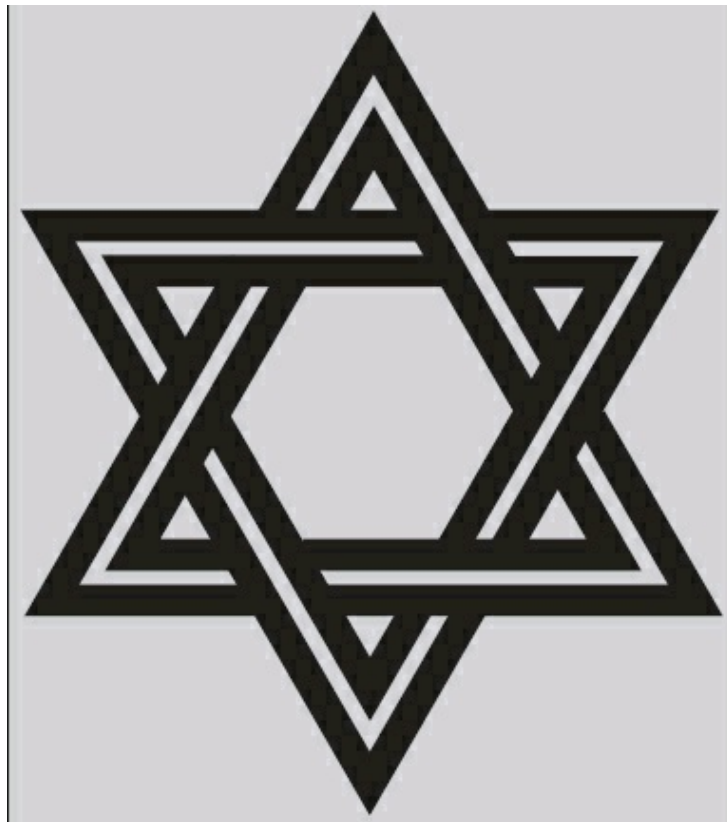
Tools and Materials Needed: Walnut and maple stock ($\frac{1}{4}$ " thick \times 9" square), band saw, yellow glue, drill, scroll saw, sander and polyurethane finish.

Make the Six Pointed Star Trivet: This trivet can be used walnut side up or maple side up depending on the color of the dining table cloth.

1. Gather $\frac{1}{4}$ " thick maple and walnut stock and make two boards, each 9" \times 9".
2. Rotate these pieces 90° and glue them together face-to-face. This is stronger than using one piece of $\frac{1}{2}$ " wood.
3. Glue pattern [Fig. 2B-D1](#) to one of the sides and drill $\frac{1}{8}$ " holes wherever needed for scroll saw blade access.
4. Use the scroll saw and cut out all internal waste.
5. Use a band saw and cut along the outside lines.
6. Use sandpaper and files to smooth all edges.
7. Sand the tops of each side and finish with polyurethane.



CHANGE DECIMALS TO FRACTIONS. Multiply the decimal by 8. Example: $0.395 \times 8 = 3.16$. Therefore 0.395 is close ($3.16/8$ vs. $3.00/8$) to $3/8$.



2B-D1. The Six Pointed Star. Make one side of walnut and the other side of maple. Cut the inner pieces with a scroll saw and the outer edges with a band saw.

C. Double Spiral Trivet. This complicated trivet was shown to me by my friend Tom Dotta of Hollister, California. He made his out of olive wood and it was about 11" across but you can make yours any size. The trivet in [Photo 2C](#) is made of walnut and maple glued together face-to-face and at 90° (cross grain) to give the final piece more strength. The spiral comes apart to make two trivets and each can be flipped while in use to have either the dark or the light wood up.

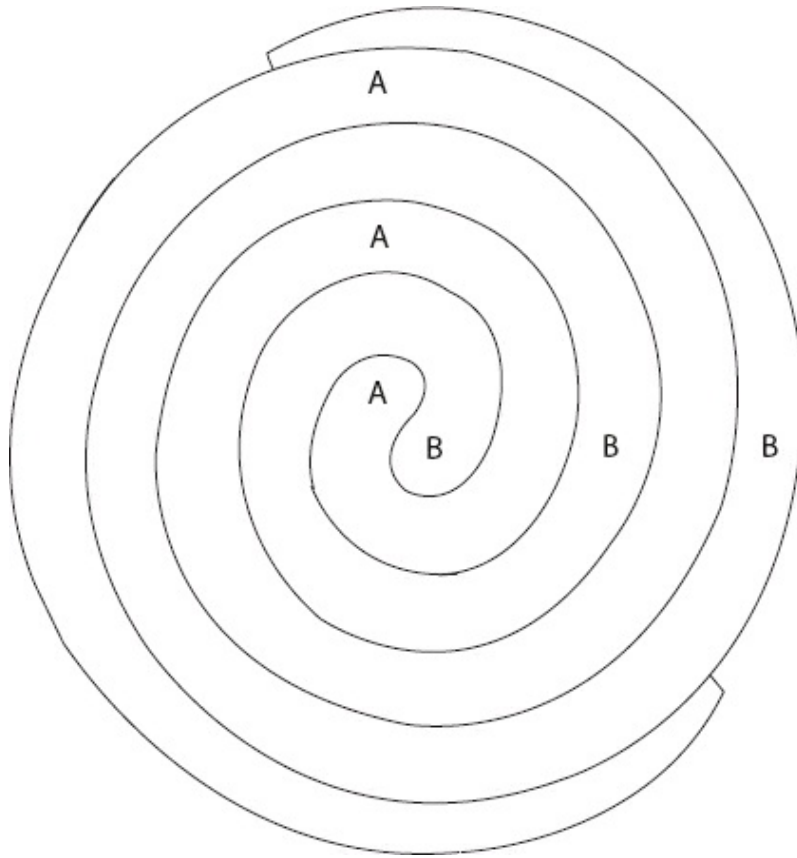


Photo 2C

Tools and Materials Needed: One inch maple and walnut stock, jointer or hand plane, yellow PVA Glue, paper glue, band saw (or scroll saw, fret saw or coping saw), router, sanders, rasps and polyurethane finish.

Build the Spiral Trivet: Make two boards each $\frac{3}{8}$ " thick \times 12" square.

1. Prepare one piece of maple stock 1" thick \times 6" wide \times 12" long.
2. Also prepare a piece of walnut stock the same size.
3. Resaw these boards to make two walnut and two maple pieces each about $\frac{3}{8}$ " thick.
4. Joint the edges of these boards on a jointer or with a hand plane and glue each together to make a 12" \times 12" walnut board and a 12" \times 12" maple board each $\frac{3}{8}$ " thick.
5. Rotate the maple and walnut boards 90° and glue them together, face-to-face. Smooth the two new faces.
6. Glue the pattern ([Fig. 2C-D1](#)) onto the face of the new two-ply stock and cut out the trivets.
7. Ease the edges on a router table with a round over bit.
8. Finally use sanders, rasps and files to chamfer the edges of the coils.
9. Finish with polyurethane finish. (see **Appendix, Finishes**)



2C-D1. Spiral Pattern. Copy and enlarge the pattern to about 12" square. Note: Piece A is one trivet section as is piece B.

D. Pinwheel Trivet. The ten pieces for this trivet should be precisely cut so when they are joined, the junctions are tight. ([Photo 2D](#)) One little trick is to glue only five pieces together and then use a shooting board to set a straight line on each of the one-half sections before joining the two sides. Use a wood with visible grain so the individual pieces stand out. I used white oak with the grain all running in one direction, around in a circle.



Photo 2D

Tools and Materials Needed: White oak lumber ($\frac{1}{2}$ " thick \times $3\text{--}\frac{3}{4}$ " wide \times 17" long), triangle pattern (36°), table saw, band saw, PVA glue, shooting board, block plane, drill press, $\frac{3}{4}$ " Forstner bit, wooden pads (peg heads), scroll saw and polyurethane finish.

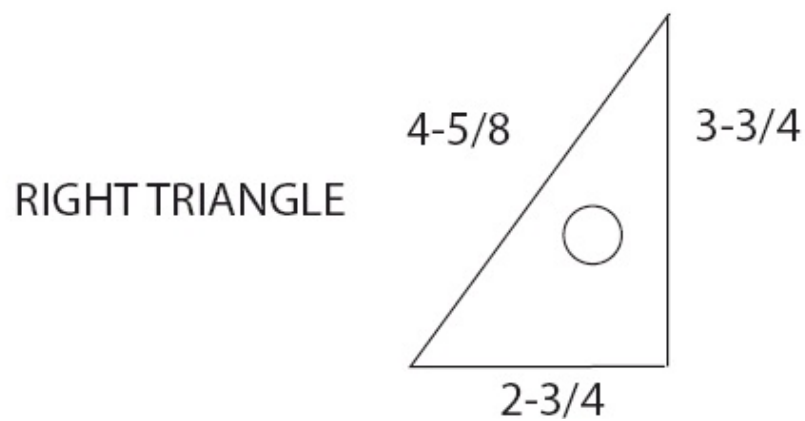
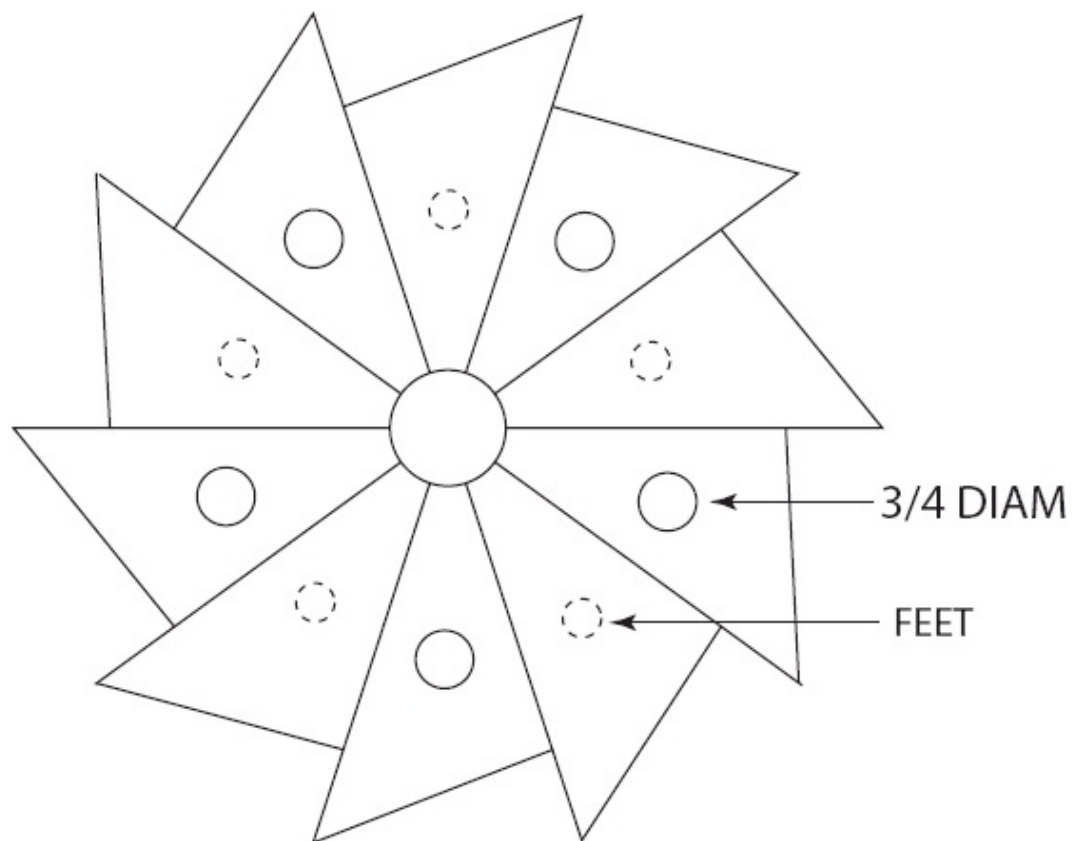
Build the Pinwheel Trivet: Make a triangle pattern out of plastic or posterboard: Base = $2\text{--}\frac{3}{4}$ ", side = $3\text{--}\frac{3}{4}$ ", hypotenuse = $4\text{--}\frac{5}{8}$ ". See [Fig. 2D-D1](#). This makes the internal angle = 36° . Note: $10 \times 36^\circ = 360^\circ$.

1. Cut $\frac{1}{2}$ " stock to $3\text{--}\frac{3}{4}$ " wide \times 17" long. This leaves about $2\text{--}\frac{1}{2}$ " extra stock.
2. Set a stop on the table saw and cut 5 squares, each $3\text{--}\frac{3}{4}$ " wide \times $2\text{--}\frac{7}{8}$ " long. See [Fig. 2D-D2](#).
3. Use a band saw and the pattern to cut each square in half to make the ten triangles.

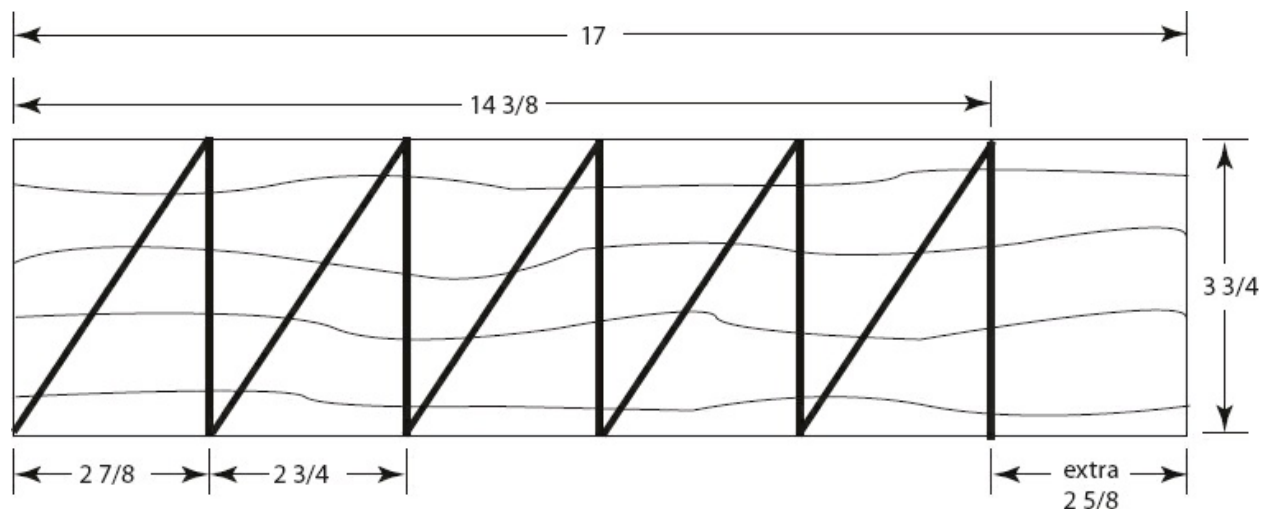


USE POLYURETHANE finish on the trivets

4. Smooth the cut edges with a sanding block and check the angle with the pattern.
5. Dry fit five pieces together to make one half of the trivet. If the side is not straight, adjust the angles of the pieces using a wood plane and a shooting board.
6. Round over the short edge of each triangle (the eventual outside edges of the trivet) and glue the five pieces together.
7. Use a shooting board and a block plane and make the long edge straight.
8. Make a second 'half trivet' and again adjust the long straight edge.
9. Glue the two halves together.
10. Drill five holes ($\frac{3}{4}$ " diameter) in the triangle pieces as shown in [Fig. 2D-D1](#).
11. Drill a hole in the center of the trivet and use a scroll saw to cut a 1- $\frac{1}{2}$ " hole in the middle as shown.
12. On the bottom side, drill shallow holes and glue in the five short pegs for feet or glue on cork pads.
13. Sand smooth and finish with polyurethane.



2D-D1. Pinwheel Trivet Pattern. The ten pieces are cut at 36° and assembled five at a time. The center hole and the five smaller holes are cut after the trivet has been glued together. Five wooden pegs (the feet) are also added.



2D-D2. Pinwheel Trivet Stock. Prepare $\frac{1}{2}$ " white or red oak stock to $3\frac{3}{4}$ " wide \times 17" long. Set a stop on the table saw and cut five pieces to $2\frac{7}{8}$ " length. Use a band saw and cut across, from corner-to-corner, to make the individual triangles. Grain direction and saw kerfs are shown.

E. Rosetta Trivet. This is not difficult but cutting the 40 small triangles does take time and patience. [Photo 2E](#) shows a trivet made with walnut, maple and cherry. [Fig. 2E-D1](#) shows six patterns that can be used to make different trivet designs, all using the same walnut, cherry and maple diamonds. You might also try your own design.



Photo 2E

Tools and Materials Needed: maple, walnut and cherry stock ($\frac{1}{4}$ " thick \times 1" wide), MDF backer board (10" \times 10" \times $\frac{1}{4}$ " thick), router or planer with round-over bit, table saw with 45° jig, 1" belt sander, yellow PVA glue, band saw, triangular file and polyurethane finish.

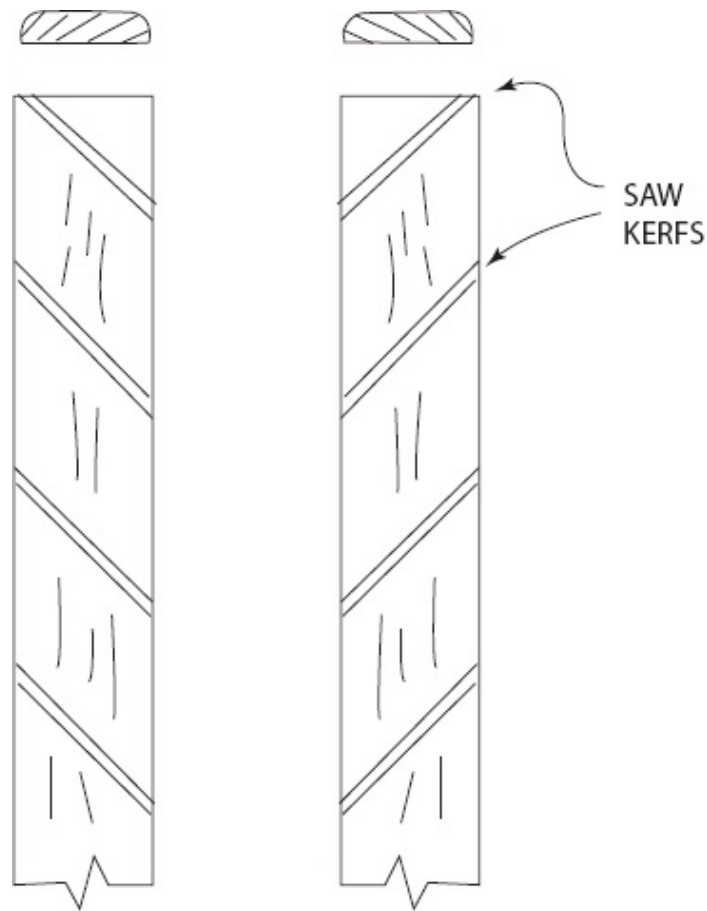
Make the Rosetta Trivet: Each diamond requires about 2- $\frac{1}{2}$ " of length along the stock so if you need eight pieces (e. g. the walnut center section) multiply 8×2.5 " = 20" plus a little extra. So start with 24" of walnut stock. In [Photo 2E](#) there are eight walnut, 16 cherry and 12-15 maple pieces.



2E-D1. Six Possible Rosetta patterns. Once you choose a design, count the walnut, cherry and maple diamonds you will need. Cut enough little pieces, each diamond is 1- $\frac{1}{2}$ " long.

1. Prepare three wood pieces each 1" wide, $\frac{1}{4}$ " thick and the required length. These can be maple, walnut and cherry woods.
2. Use a round-over bit in a router/planer and ease the long edges of the pieces, see [Fig. 2E-D2](#).
3. Use a 45° jig on the table saw and cut 4 Walnut pieces from one end of the strip and 4 pieces from the opposite end, see [Fig. 2E-D2](#). This method of cutting is necessary to get the grain direction as in [Fig. 2E-D3](#).

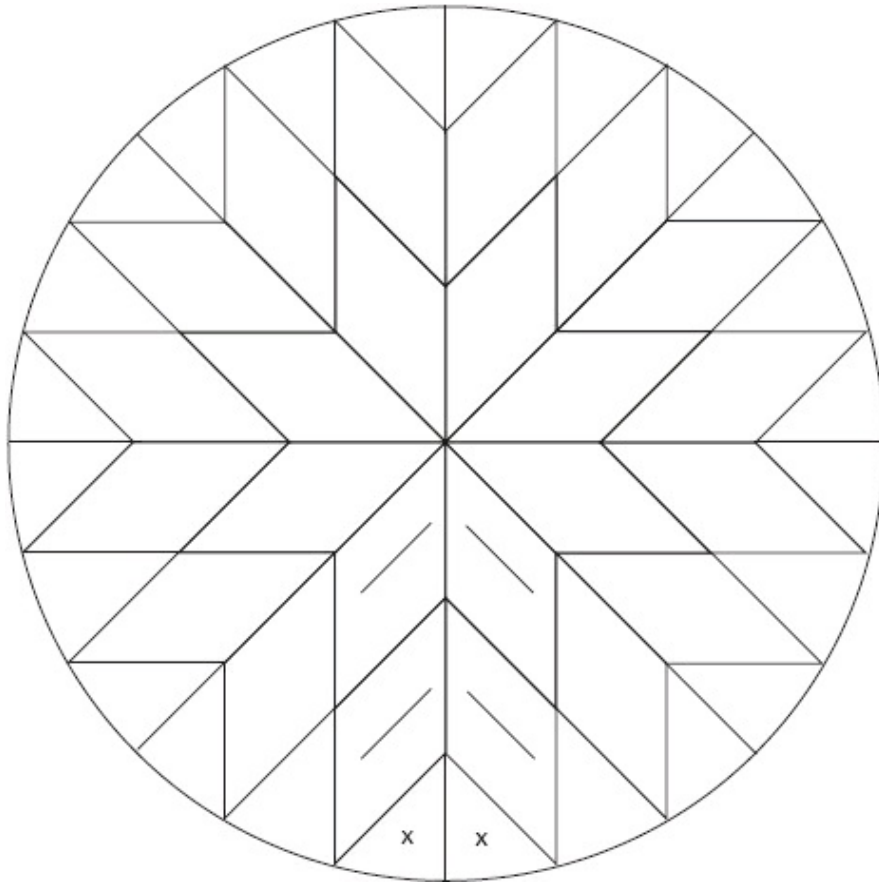
4. In a like manner, cut the cherry and the maple pieces as needed. Make sure that the sides of the diamonds are all the same length.



2E-D2. Cut the Diamonds. Round over the long edges of the wood strips before cutting at 45°. Cut from both ends of the strip to give the left-handed and right-handed diamonds.

5. Hold each diamond piece against a 1" belt sander and round over the newly cut edges. Now all four of the top edges have been rounded over.
6. Mark the center of the 10" × 10" MDF piece and mark vertical and horizontal guidelines to help align the pieces.
7. Start arranging the walnut pieces in the pattern of [Photo 2E](#).
8. When the pieces fit, put yellow PVA glue onto the back of each walnut piece, rub it into place and press with the fingers for just a bit. Try to keep glue from squeezing out between the pieces.
9. Put on the cherry diamond pieces in a similar manner.
10. Add the maple diamonds next.
11. Mark and cut 12 of the maple diamonds in half. Glue these pieces in place on the outer edges.

12. After the pieces have set for 1-½ to 2 hours, use a triangular file and ‘sharpen’ the spaces in between the diamonds.
13. Use a band saw and cut the outer circle.
14. Sand and finish with polyurethane finish.



2E-D3. Rosetta Trivet Pattern. Grain direction is shown. Each diamond is 1" wide × 2-½" long. The small pieces (marked 'x') are half diamonds.

F. Expandable Trivet. This one is complicated; you'll need to cut seven pieces of wood and drill 40 holes with three different sized bits. Then insert 12 wooden pegs of three different lengths; and all the holes and pegs must align. The [Photo 2Fa](#) and [Photo 2Fb](#) show the trivet closed and open. In both photos the Flower Pattern was burned in with a wood-burning set and then the design was painted with colored pens. (See **Appendix, Prisma Pens**)



Photo 2Fa

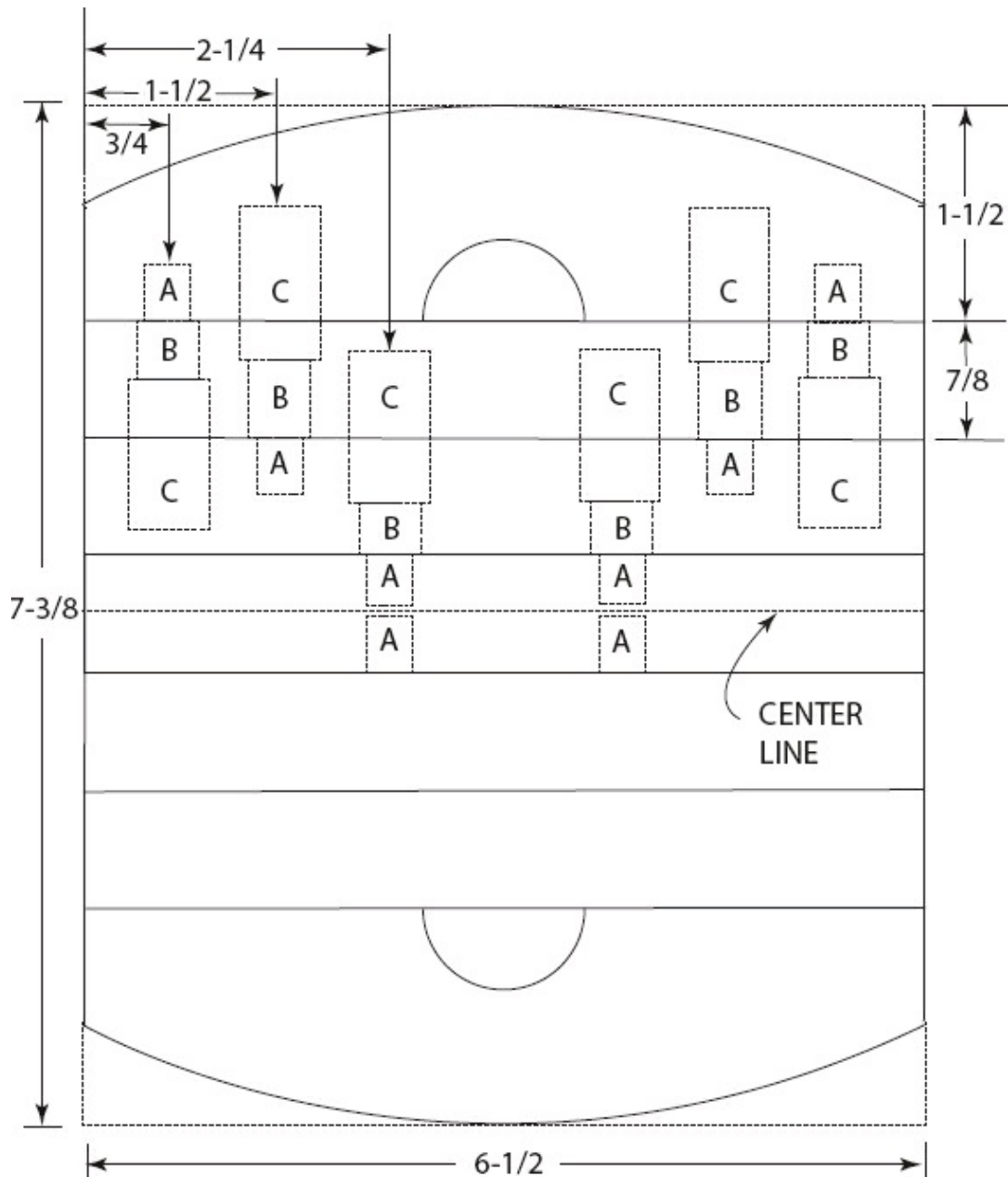


Photo 2Fb

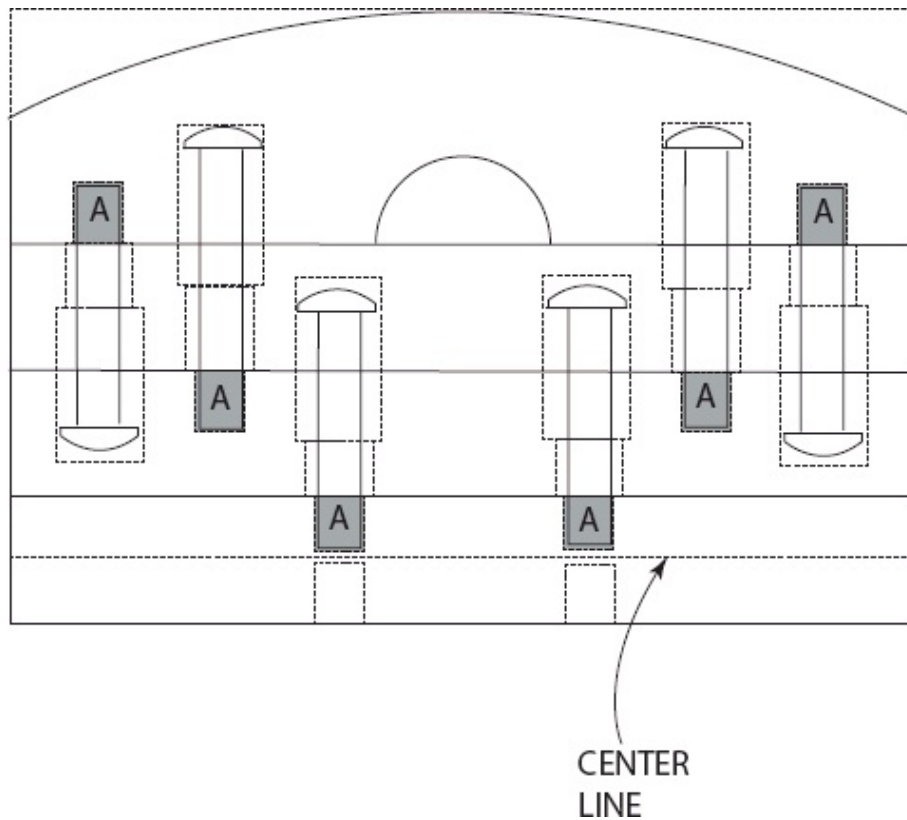
Tools and Materials Needed: Wood stock, table saw, drill press, three Forstner bits ($\frac{3}{8}$ ", $\frac{7}{16}$ " and $\frac{9}{16}$ "), wooden axle pegs ($\frac{5}{16}$ " diameter shaft, $\frac{1}{2}$ " head, at least 2- $\frac{1}{2}$ " long, available from Caseyswood.com), PVA glue, band saw, shellac (See **Appendix, Finishes**), polyurethane, a pyrography (wood burning) set and colored marking pens.

Build the Piece: Enlarge the pattern ([Fig. 2F-D1](#)) to full size (7- $\frac{3}{8}$ " long) and use it for hole placement and hole depth.

1. Start with $\frac{3}{4}$ " stock ([Photo 2Fa](#)) shows red oak) and cut two end pieces 1- $\frac{1}{2}$ " wide \times 6- $\frac{1}{2}$ " long. Do not round over the ends until the drilling has been done; see [Fig. 2F-D1](#).
2. Next cut the five center pieces $\frac{7}{8}$ " wide \times 6- $\frac{1}{2}$ " long.
3. Set a depth stop block on the drill press fence and drill all $\frac{3}{8}$ " holes (marked A) at the specified places in all of the pieces ([Fig. 2F-D1](#) and [Fig. 2F-D2](#)).
4. Next drill all $\frac{7}{16}$ " holes (marked B) and then all $\frac{9}{16}$ " holes (marked C). Be careful here as the holes must all align between neighboring slats.
5. Check the peg heads and shafts to make sure that they slide in and out easily. If not, sand the pegs a little.
6. Temporarily clamp the two end pieces together and drill the 'half-round, finger holes' at 1- $\frac{1}{8}$ " diameter.
7. Cut the pegs to length, dry fit them and try opening and closing the trivet.
Note: peg #1 (see [Fig. 2F-D3](#)) is 1- $\frac{3}{4}$ " long (measured from under the head to the end of the shaft), peg #2 is 2" long and peg #3 is 1- $\frac{3}{4}$ " long. There are four pegs 2" long and eight pegs 1- $\frac{3}{4}$ " long.

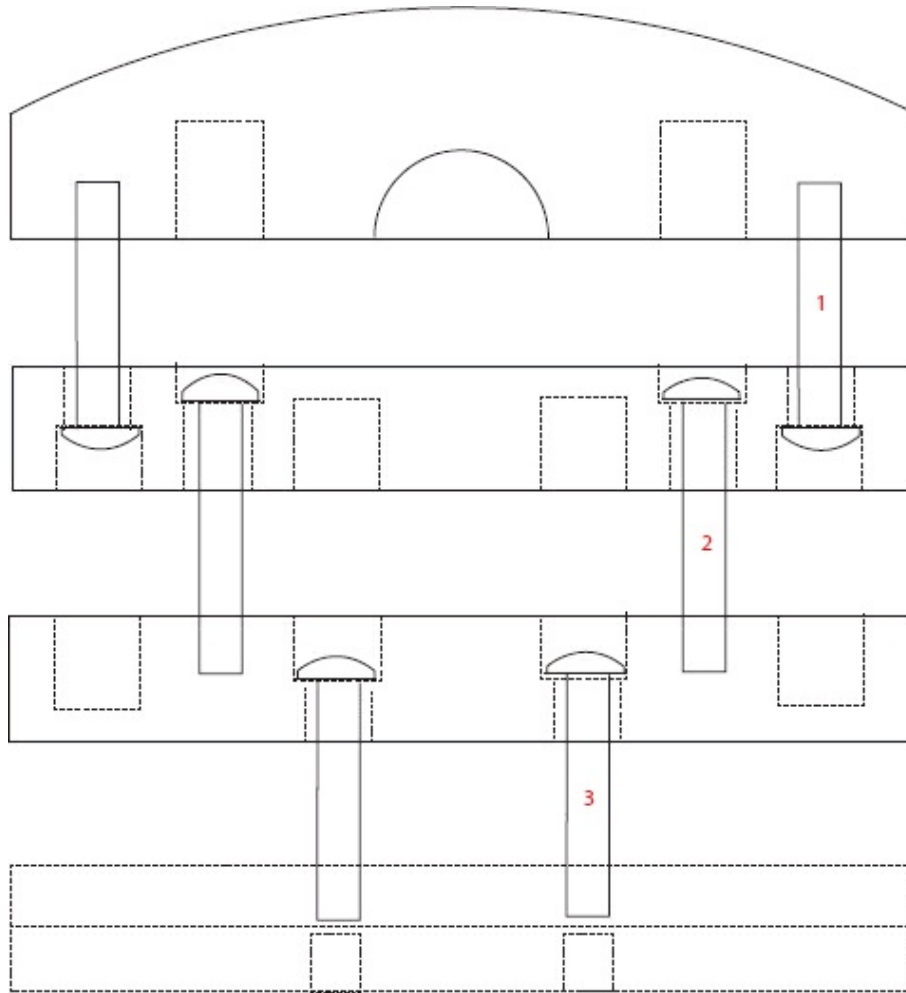


2F-D1. Drill the Holes. Set depth stops on the drill press fence ($\frac{3}{4}$ ", 1- $\frac{1}{2}$ " and 2- $\frac{1}{4}$ " from edge) and drill all holes. The holes marked (A) are $\frac{5}{16}$ " diameter, those marked (B) are $\frac{3}{8}$ " and those marked (C) are $\frac{9}{16}$ ". Clamp the two end pieces together and drill a 1- $\frac{1}{8}$ " diameter hole for the finger holes.

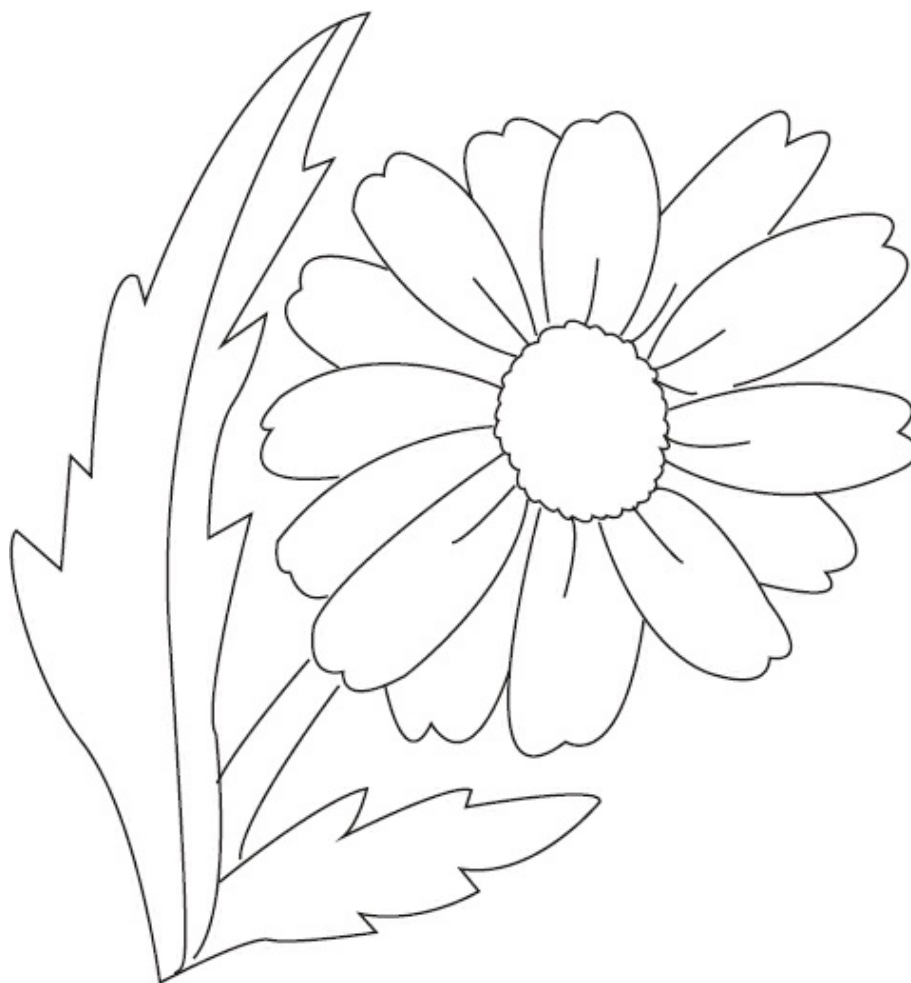


2F-D2. Trivet Closed. The peg holes (A) are $\frac{3}{8}$ " deep and the pegs are glued into them.

8. If all works OK, glue the pegs into the holes marked (A).
9. Cut off the corners of the end pieces to make the end arcs.
10. Seal it all with shellac.
11. Trace the daisy flower pattern ([Fig. 2F-D4](#)) onto the trivet. Note: by tracing onto the shellac surface instead of onto bare wood, the grease from the carbon paper will not transfer into the wood pores.
12. Burn the flower design with a pyrography pen.
13. Sand lightly and color with Prisma pens.
14. Finish with multiple coats of polyurethane.



2F-D3. Trivet Open. The trivet stops opening when the head of each peg hits a 'stop' area. In the 'closed' version, the head is buried in a larger hole. The pegs (1) and (3) are 1- $\frac{3}{4}$ " long and pegs (2) are 2" long.



2F-D4. Daisy Flower Pattern. Adjust this pattern to fit your trivet. Put shellac on the trivet and then trace the pattern onto the wood pieces. Next burn the outline with a hot pyrography tip and color with Prisma pens.



VERY HOT DISHES from the oven might sear a wooden trivet.

CHAPTER 3

THREE SPOONS, A SALAD SET, AN OVEN HOOK & A SPOON HOLDER

Everyone likes hand-made, wooden spoons; they feel good, nestle into your hand nicely, can be made left- or right-handed and they don't scratch your good fry pans. We have three spoons here: (A) **Slant-Bottom Stirrer** (See [Photo 3A](#)), (B) **Free-Form Spoon** (See [Photo 3B](#)) that can be personalized for the left or right hand and (C) **Big Stirring Spoon** (See [Photo 3C](#)). There is (D) **Salad Fork and Spoon Set** (See [Photo 3D](#)) plus (E) **Oven Hook** (See [Photo 3E](#)) to push in or pull out hot oven racks. There is (F) **Counter-Top Spoon Holder** (See [Photo 3F](#)) to keep all your new wooden spoons close at hand and easy to reach. And the Spoon Holder is very nice to look at too.



Photo 3A

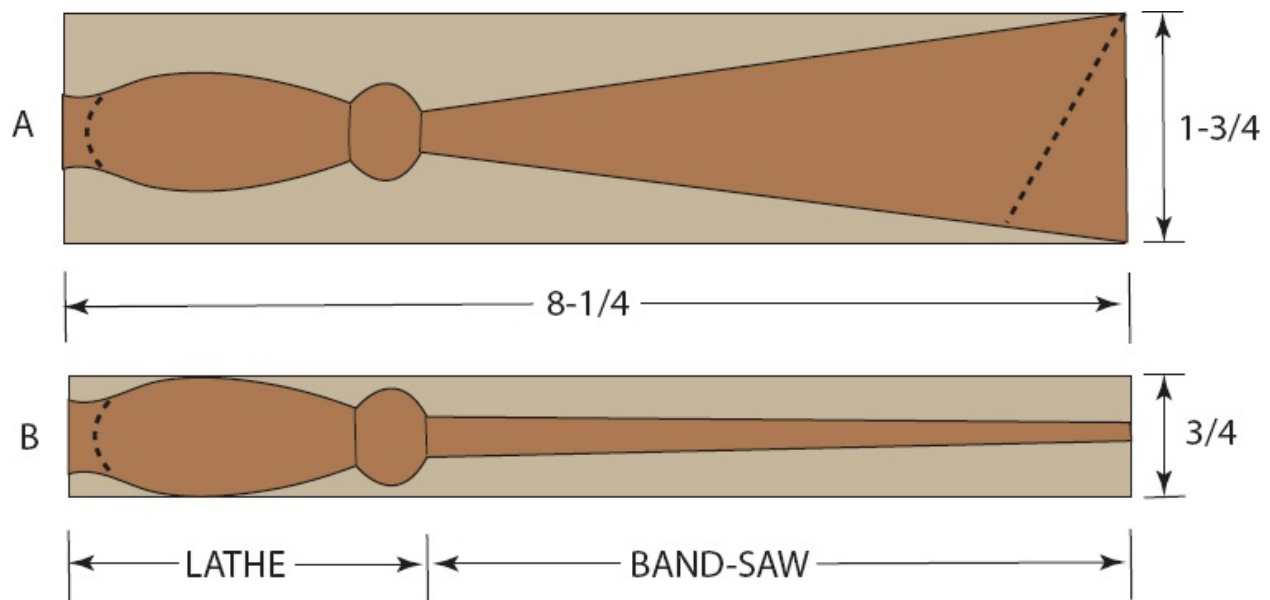
A. Slant-Bottom Stirrer. Make two or three of these; they're always in use. See

Photo 3A. The handle part of this stirrer is turned on a lathe, while the blade part is formed on a band saw. The blade is flat so they work nicely for right-hand or left-hand use.

Tools and Materials Needed: Walnut or maple wood, band saw/coping saw, wood lathe, slotted face plate holder (see [Fig. 3A-D2](#)) and mineral oil. (See **Appendix. Finishes, Mineral Oil**)

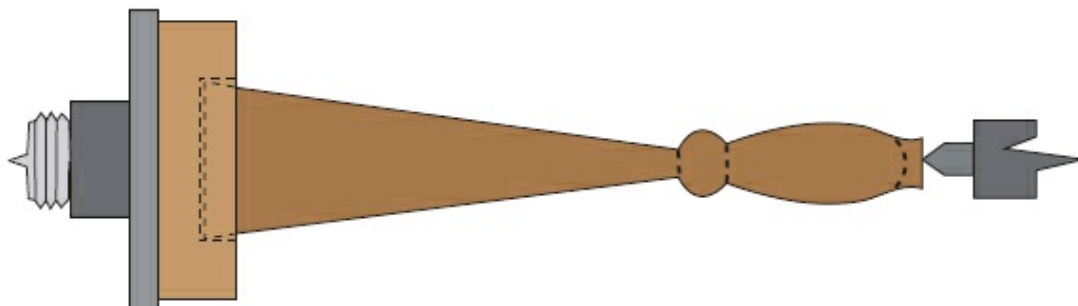
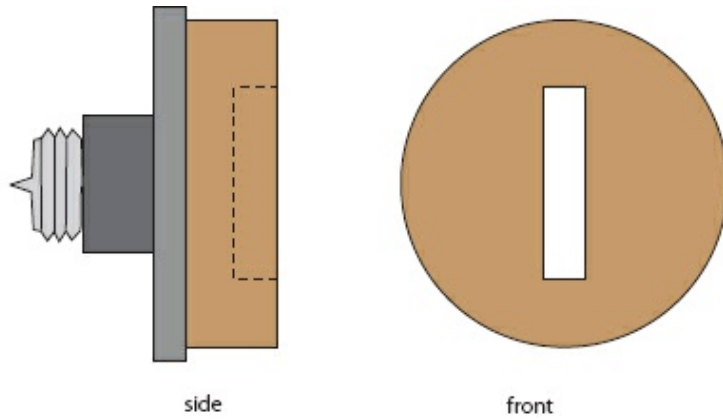
Make the Stirrer: Use a nice hardwood like maple or walnut. A closed grain wood is easier to maintain than a soft, open grain wood.

1. Start with walnut stock about $\frac{3}{4}$ " thick \times $1\text{-}\frac{3}{4}$ " wide \times $8\text{-}\frac{1}{4}$ " long.
2. Trace pattern [Fig. 3A-D1a](#) onto the wood and use a band saw or a coping saw and cut it out. Note: Do not cut along the dashed line yet.



3A-D1. Spoon Pattern and Cut-away View. Use $\frac{3}{4}$ " thick \times $1\text{-}\frac{3}{4}$ " wide \times $8\text{-}\frac{1}{4}$ " long hard wood. Cut away extra material from the 'side' area (A) and from the 'blade' area (B).

3. Turn the piece on edge and saw away the extra material from the 'blade' area, see [Fig. 3A-D1b](#).
4. Now do the lathe work; place the blank on the lathe as shown in [Fig. 3A-D2](#) and turn the 'handle' area round.
5. Remove the piece from the lathe and shape the stirrer by cutting at the dashed line as in [Fig. 3A-D1a](#).
6. Sand, shape and finish with mineral oil.



3A-D2. On the Lathe. Use a slotted face-plate to hold the lathe blank; then turn away the extra material from the 'handle' area.

B. Free-Form Spoon. These free-form spoons [Photo 3B](#) can be made for right-handed or left-handed use. The pattern, [Fig. 3B-D1](#), shows the right-handed option. Reverse this for a left-handed spoon.

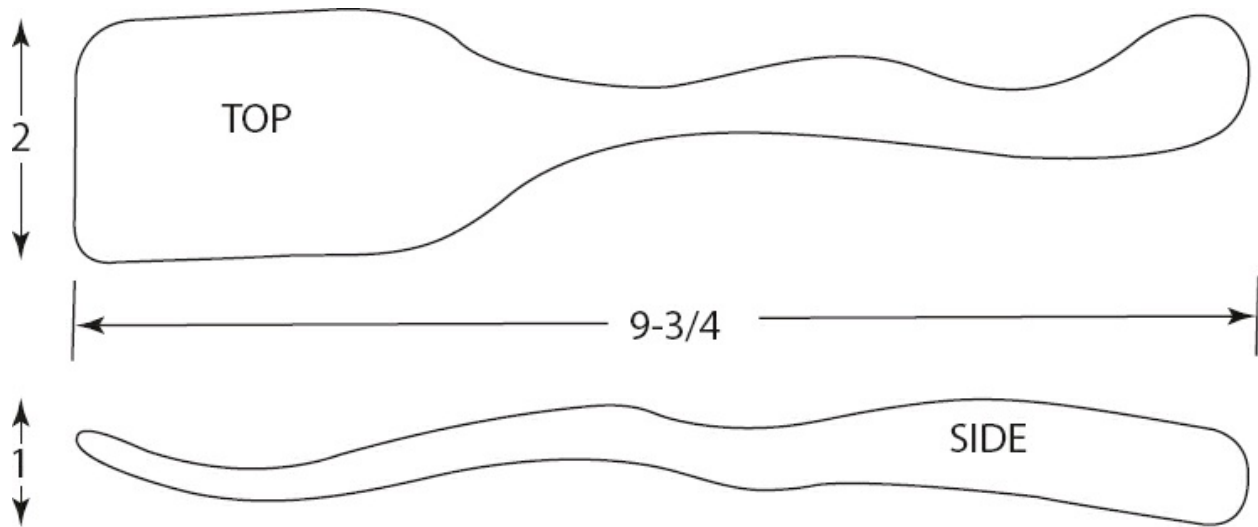


Photo 3B

Tools and Materials Needed: Hardwood, band saw/coping saw, rasp and files, oscillating spindle sander/drum sander and mineral oil.

Make the spoon: Use pattern [Fig. 3B-D1](#) for a right-handed spoon; reverse the pattern for left hand.

1. Cut 1" walnut or maple stock to 2" wide \times 9- $\frac{3}{4}$ " long.
2. Enlarge pattern [Fig. 3B-D1](#) to full size and trace the side pattern onto the side of the blank.
3. Use a band saw to cut the side profile. Tape the pieces back on.
4. Trace the top pattern onto the top of the blank.
5. Use a band saw to cut the top profile.
6. Use wood rasps, files, sanders etc. to shape the spoon.
7. When it feels comfortable, sand smooth and finish with mineral oil.



3B-D1. Top View and Side View. Cut the side section first, tape the cut-offs back on and then cut the top section. Shape the spoon until it feels comfortable. The right-handed version is shown.

C. Big Stirring Spoon. Cut the spoon from a nice hard wood; [Photo 3C](#) shows maple. Shape with rasps, sanders and sand paper. Harder woods are less porous and are easier to maintain with oil.



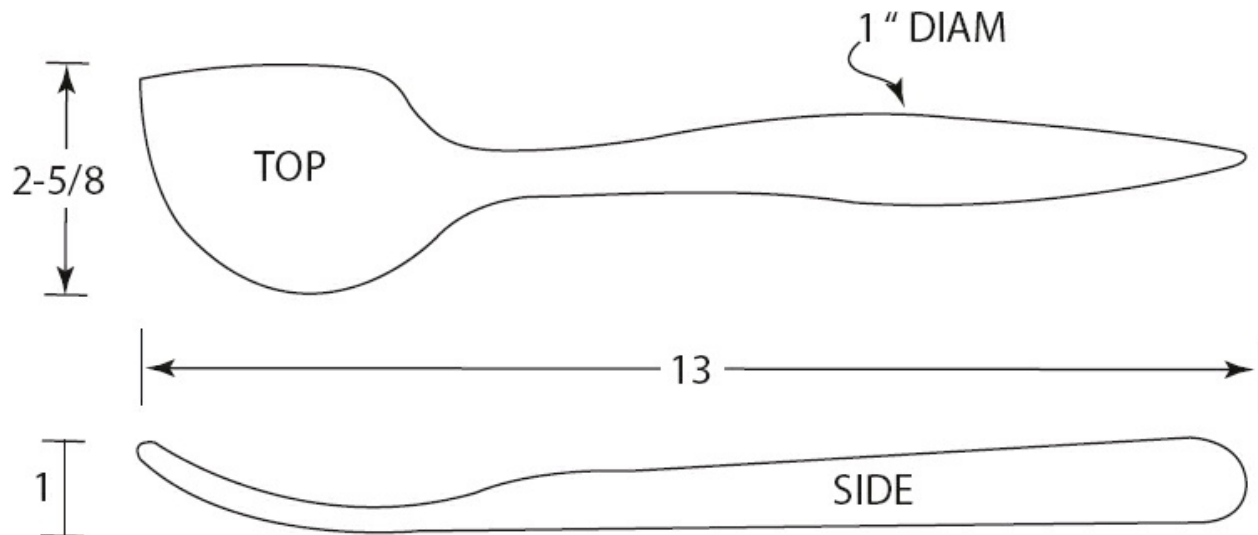
Photo 3C

Tools and Materials Needed: Hard wood, band saw, rasps, files and mineral oil.

Make the Spoon: This big spoon can be made for either left-handed or right-handed use.

1. Choose good 1" hardwood about 3" wide × 13-14" long.
2. Enlarge pattern [Fig. 3C-D1](#) to full size and trace the side pattern onto the side of the blank.
3. Use a band saw to cut the side profile. Tape the pieces back on.
4. Trace the top pattern onto the top of the blank.
5. Use a band saw to cut the top profile.
6. Cut to size and shape; see pattern [Fig. 3C-D1](#).

7. Shape with rasps, sanders etc. until it feels comfortable and is smooth.
8. Finish with mineral oil.



3C-D1. Top and Side Views. Cut the side section first, tape the cut-offs back on and then cut the top section. Shape the spoon until it feels comfortable. The right-handed version is shown.



TO FIND TRUE HORSEPOWER, multiply amps \times volts and divide by 1,000. Example: 30 amps \times 110 volts / 1000 = 3.3 Hp.

D. Salad Fork and Spoon. This set was made of olive wood and partially carved by hand, see [Photo 3D](#). Here in the south San Francisco bay area, there are lots of olive trees. I've also carved this set using carob, pepper, ash and holly, all trees that flourish here. When trees are trimmed, the limbs are hauled away or burned. I've put out the word and quite often I get beautiful wood free.

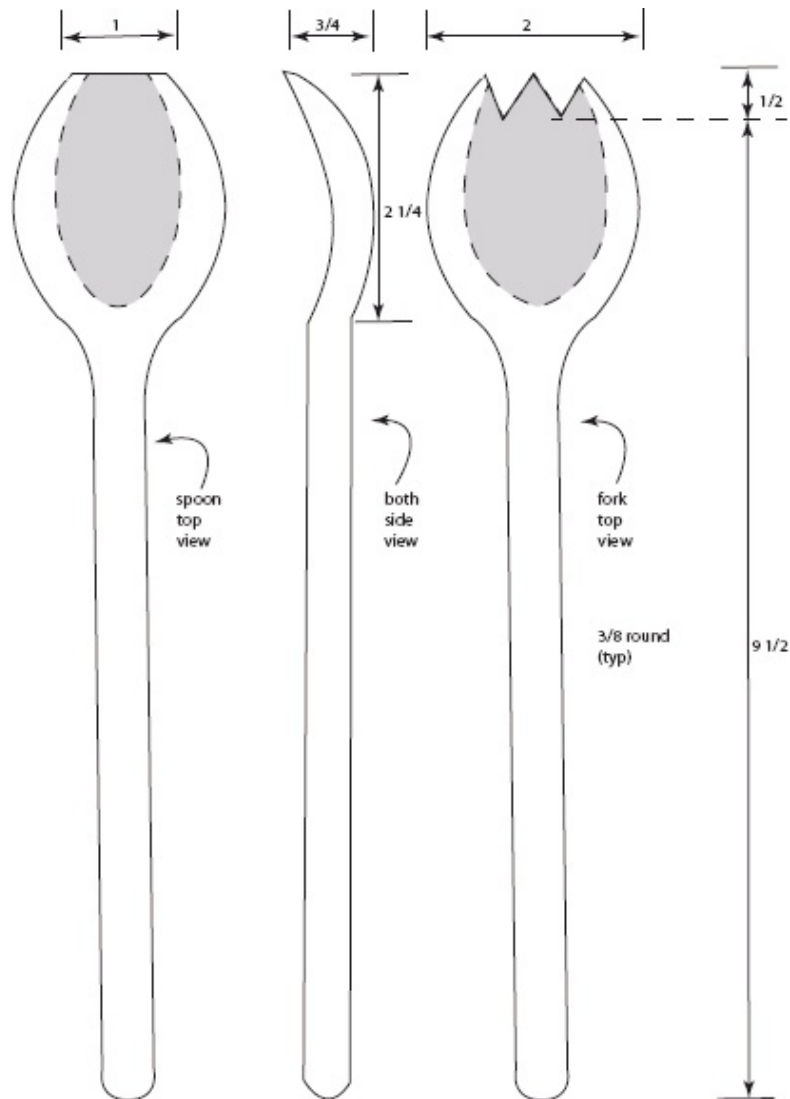


Photo 3D

Tools and Materials Needed: Olive wood, or some other pretty hardwood, band saw or scroll saw, carving tools, sand paper, scraper and mineral oil to finish.

Start Carving: Start with two pieces of $\frac{3}{4}$ " hardwood stock about 2- $\frac{1}{4}$ " wide \times 10" long.

1. Enlarge the pattern [Fig. 3D-D1](#) to full size and trace the side pattern onto the side of the blank.
2. Use a band saw or a scroll saw and cut out the side profile. Tape the pieces back on.
3. Trace the top pattern onto the top of the blank.
4. Use a band saw to cut the top profile.
5. Use carving tools, knives and scrapers to get final shapes.
6. Sand smooth and finish with mineral oil.



3D-D1. Top and Side Views. The fork and spoon have the same top and side profiles. Make two and then cut the tines for the Fork.

E. Oven Hook. Make this wooden oven hook to suit your needs; a good size is 13" to 15" long and about 1" wide. In [Photo 3E](#) I used red oak.

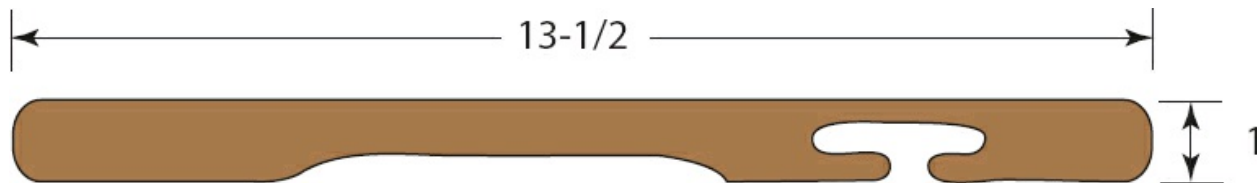


Photo 3E

Tools and Materials Needed: Red oak $\frac{3}{8}$ " stock, band saw/coping saw, sand paper and polyurethane finish.

Make the Hook: Use a hardwood here. Red oak or maple are good choices.

1. Enlarge the pattern [Fig. 3E-D1](#) to about 15" long.
2. Use $\frac{3}{8}$ " thick stock and cut the outline using a band saw, scroll saw or a coping saw.
3. Sand the piece smooth and finish with polyurethane.



3E-D1. Oven Hook. Use this hook to both push in a hot oven rack and to pull the rack from the oven.



WOODS AND FINISHES. Before you begin a project, consider the type of wood to use. In this book we use walnut, maple, cherry, oak, olive and a few other easily acquired woods. Walnut and oak are partially open grained. If the item is to be used only on the dinner table or on a counter top (i.e. not used to stir hot liquids or pull hot items from a boiling pot), the finish can be varnish or shellac. If the kitchen item will come into contact with food, especially hot or oily types; it will require washing and should be protected.

My favorite is mineral oil. I apply the oil liberally to the wood and then sand it with 220 grit paper while still wet. This process fills the pores and protects the wood. When the spoon or stirrer starts to get rough, apply mineral oil again to reseal the pores.

F. Stove-Top Spoon Holder. This stove-top or counter-top spoon holder is big enough to hold a lot of wooden spoons. [Photo 3F](#) shows ash with paduk inserts. These woods are somewhat hard to come-by so we'll make this holder out of maple and walnut. To figure the blade angle to cut the slats, first find the angle of the joins i. e. divide 10 slats into $360^\circ = 36^\circ$. There are two staves at each join therefore 36° divided by 2 = 18° . For more on segments and angles, see *More Woodworkers' Essential, Facts, Formulas & Short-Cuts*, by Ken Horner, 2006,

Cambium Press and Fox Chapel, Chap. 18, p. 258, Segmentation Turning.



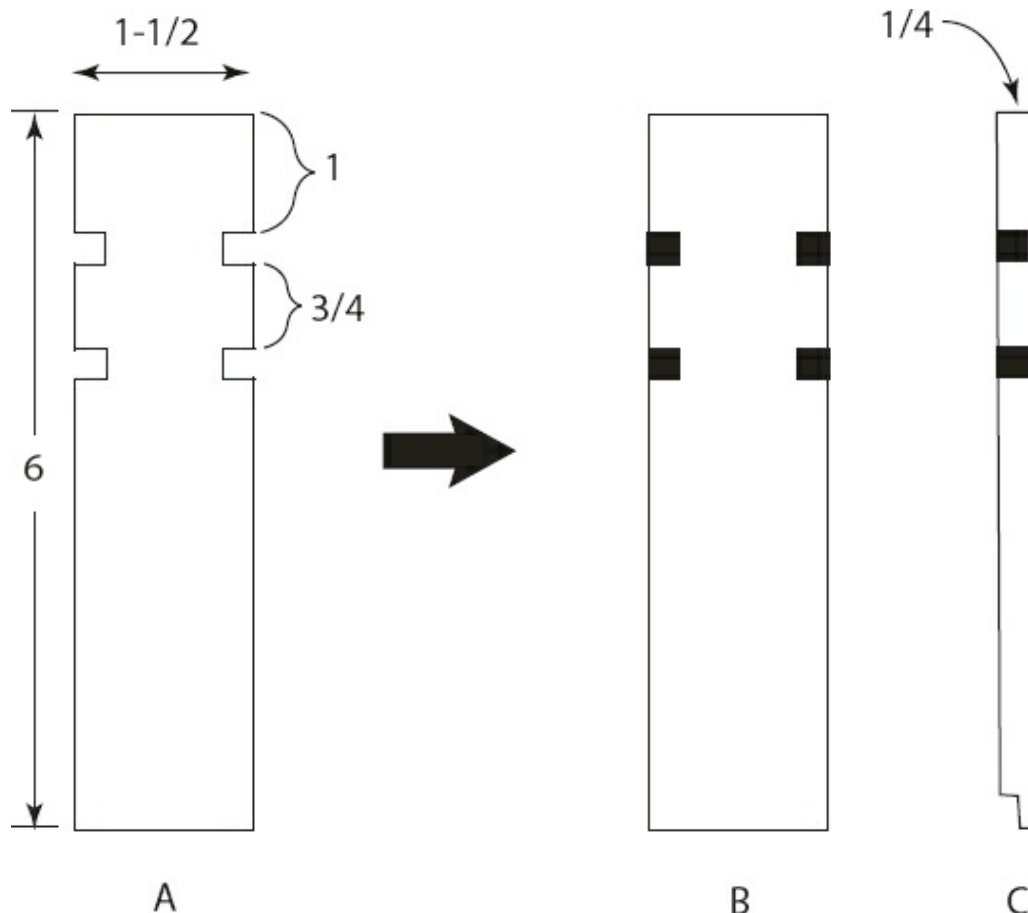
Photo 3F

Tools and Materials Needed: maple stock ($\frac{1}{4}$ " thick), walnut pieces, table saw with dado blades, PVA glue, blue tape (See [Appendix. Tapes](#)) and rubber clamping straps.

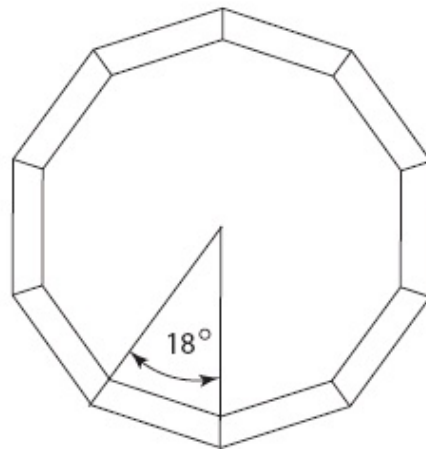
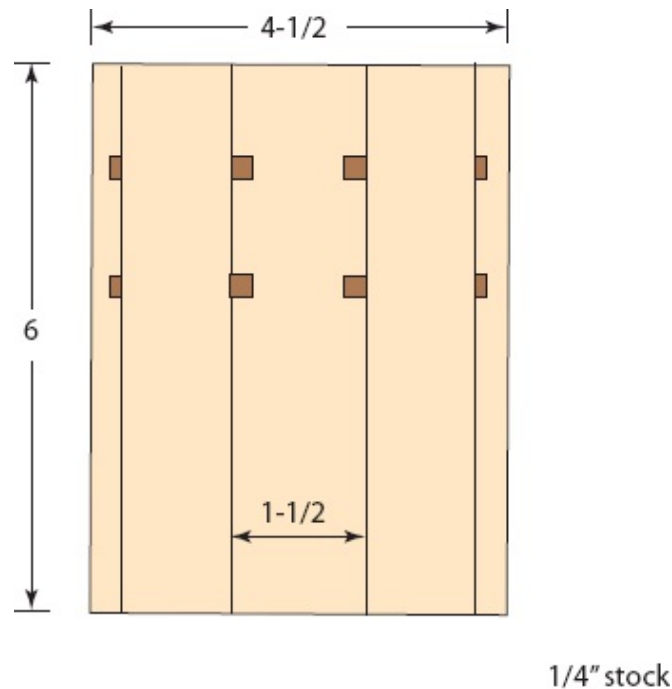
Make the Holder: Initially set the table saw blade to 90° ; later we'll set it to 18° to cut the sides of the slats. Note: Only five of the staves have walnut insets and the other five are plain.

1. Cut 12 pieces of $\frac{1}{4}$ " maple stock to size; $1\frac{1}{2}$ " wide \times 6" long [Fig. 3F-D1](#).
Note: We only need 10 but cut two extra, 'just in case'.

2. Change the blade in the table saw and put in a $\frac{1}{4}$ " dado set or figure a way to cut $\frac{1}{4}$ " wide \times $\frac{1}{4}$ " deep dados using your regular saw blade.
3. Set stops and cut $\frac{1}{4}$ " wide \times $\frac{1}{4}$ " deep dados in 6 of the slats, [Fig. 3F-D1a](#).
4. Use the dado set and also cut a small rabbet in the bottom of each piece for a $\frac{1}{4}$ " bottom, [Fig. 3F-D1c](#).
5. Put the regular blade back in the table saw and cut $\frac{1}{4}$ " wide slats from a piece of $\frac{1}{4}$ " thick walnut stock.
6. Cut $\frac{5}{16}$ " long walnut pieces and glue them into the dados in 6 slats, [Fig. 3F-D1b](#).
7. Sand and flatten the surface of the maple pieces with the walnut inserts.
8. Set the table saw blade tilt to 18° .
9. Rip-cut the 12 maple pieces at 18° on both edges; six with walnut insets, six plain. Keep the width to $1\frac{1}{2}$ " at the outside/big edge, [Fig. 3F-D2](#).
10. Lay two 16" long strips of blue tape on your bench top, sticky-side-up, parallel and about 3" apart.
11. Place the ten staves on the tape, wide face down, edges tightly together.
12. Roll the ten staves up into a cylinder and check for fit.



3F-D1. Stove Top Spoon Holder. Cut five maple slats (A) from $\frac{1}{4}$ " stock and cut $\frac{1}{4}$ " dados as shown. Glue in $\frac{1}{4}$ " walnut pieces (B) and cut $\frac{1}{4}$ " rabbets (C) in the bottom.



3F-D2. Stove Top Spoon Holder. Rip each slat at 18° (Bottom) so it is $1\frac{1}{2}$ " wide. Glue the ten slats together (top) to form the holder.

13. If the pieces do not fit together tightly, change the saw tilt angle slightly and resaw one edge of one of the five plain slats. Again, check for fit. Do this on additional plain slats until you are satisfied with the fit. Try to keep the width at $1\frac{1}{2}$ ". Remember you have extra slats to use if needed.
14. Trace the inside bottom shape of the holder onto a piece of $\frac{1}{4}$ " Maple and cut this out.
15. Put yellow PVA glue on all the slats and roll the Holder together, holding it

with the blue tape.

- 16.** Add glue to the rabbets and push the bottom in.
- 17.** Tie rubber strips around the outside, [Fig. 3F-D2](#).
- 18.** Sand and finish with polyurethane.

CHAPTER 4

SIX SALT AND PEPPER SETS

Make a different set of shakers to use for each occasion. There are step-by-step instructions for six different styles here; **(A) Round Shakers** (See [Photo 4A](#)) with either cork or red-rubber stoppers, **(B) Hexagonal Shakers** (See [Photo 4B](#)) with different colored wood strips, **(C) Tubular Shakers** (See [Photo 4C](#)) with rubber stoppers, **(D) Tubular Shakers** (See [Photo 4D](#)) with plastic inserts and **(E) Marquetry Band Shakers**. (See [Photo 4E](#)). And finally **(F) Tall Shakers** (See [Photo 4F](#)) made without a lathe. The last set is fairly large and uses a cork stopper.



Photo 4A

A. Round Shakers. This set will have the same woods for both pieces but uses a walnut top (dark) for pepper and a cherry top (light) for salt. See [Photo 4A](#) where I used maple, walnut and cherry.

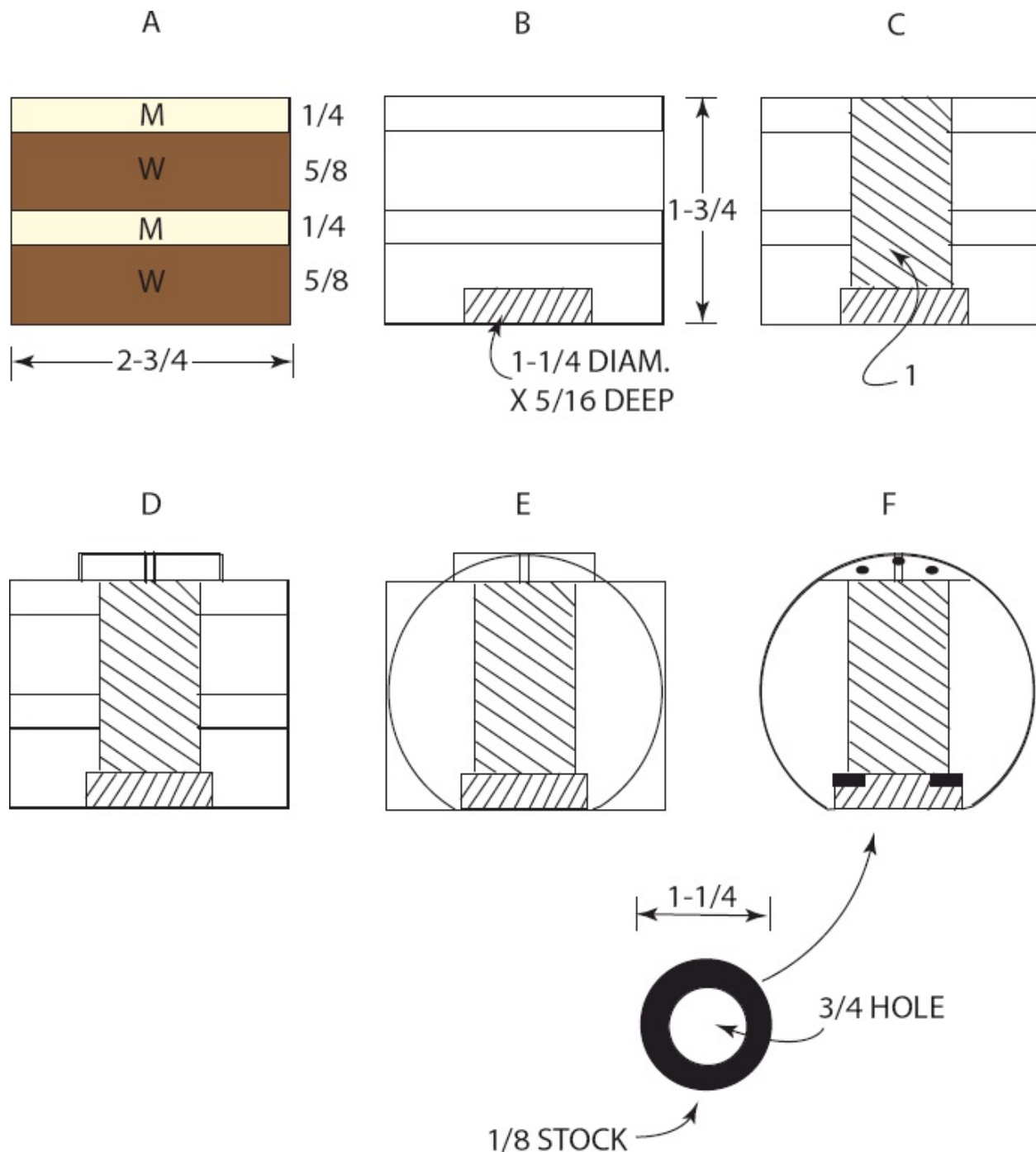
Tools and Materials Needed: Cherry, maple and walnut woods, cork or rubber stoppers (Craft Supplies USA, Provo, Utah), drill press, band saw and a lathe with a jam chuck.

Make the Shakers: Use walnut, maple and cherry woods here.

1. Glue up walnut ($\frac{5}{8}$ " thick) pieces and maple ($\frac{1}{4}$ " thick) pieces to make two blocks $2\text{-}\frac{3}{4}$ " \times $2\text{-}\frac{3}{4}$ " \times $1\text{-}\frac{3}{4}$ " high; see [Fig. 4A-D1a](#).
2. Drill a $1\text{-}\frac{1}{4}$ " diameter hole in the bottom of the block, $\frac{5}{16}$ " deep; see [Fig. 4A-D1b](#).
3. Drill a 1" hole all the way through the block; see [Fig. 4A-D1c](#).
4. Glue a $\frac{1}{4}$ " thick \times $1\text{-}\frac{1}{4}$ " wide piece to the top; maple for salt, walnut for pepper. See [Fig. 4A-D1d](#).
5. Drill a $\frac{1}{8}$ " hole in the top piece; see [Fig. 4A-D1d](#).
6. Use a band saw and cut off the corners so the block is nearly round. See [Fig. 4A-D1e](#).
7. Put the piece on the lathe using a jam chuck or a pin chuck and turn it round; Drill additional holes in the top as needed; five for pepper and three for salt.
8. Use a cork stopper in the bottom or glue a $\frac{1}{8}$ " disk into the bottom of the shaker to seat the rubber plug; see [Fig. 4A-D1f](#) and [04B-D4](#).
9. Finish with polyurethane.



DUST COLLECTION & STATIC ELECTRICITY. The small static charge you feel around a PVC duct pipe is harmless. There has never been a documented case of fire using PVC.



4A-D1. Round Shakers. Make each shaker $2\frac{3}{4}'' \times 2\frac{3}{4}'' \times 1\frac{3}{4}''$ high. Use $\frac{1}{4}''$ maple stock and $\frac{5}{8}''$ walnut stock (a). Drill a $1\frac{1}{4}''$ diameter hole in the bottom (b). Drill a $1''$ hole through the block (c). Glue to the top, a $\frac{1}{4}''$ thick $\times 1\frac{1}{4}''$ square piece of cherry or maple (d). Turn the piece round (e). Put in the rubber stopper disc and drill holes in the top (f).

B. Hexagonal Shakers plus Cheese or Red Pepper Shaker. This set matches the wine bottle cylinder and cooler made in [Chapter 6](#). The salt/pepper shakers are $3\frac{1}{2}''$ tall; the spice shaker is $5''$ tall, see [Photo 4B](#) where I used English sycamore

(similar to our maple) and walnut.



Photo 4B

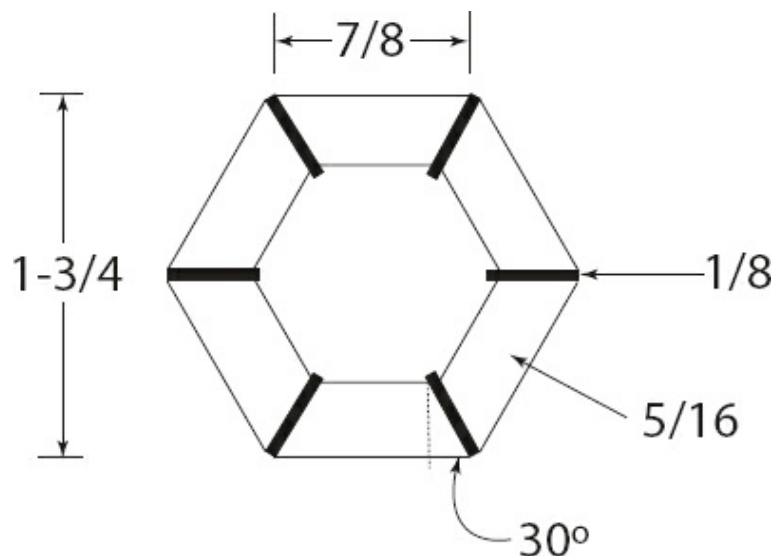
Tools and Materials Needed: walnut and maple woods, table saw, wood lathe with an expandable jaws chuck, shaper with 30° bit, drill press, counter-sink drill bit, yellow PVA glue, blue tape, rubber straps and rubber stoppers (Craft Supplies USA, Provo, Utah).

Make the Shakers: You can make just the salt and pepper shakers or add the cheese/spice shaker too. We keep New Mexico red chili-pepper flakes in ours for all those great spaghetti dinners.

1. Prepare about 6 ft. of $\frac{5}{16}$ " thick pieces of maple stock, $\frac{7}{8}$ " wide. The two

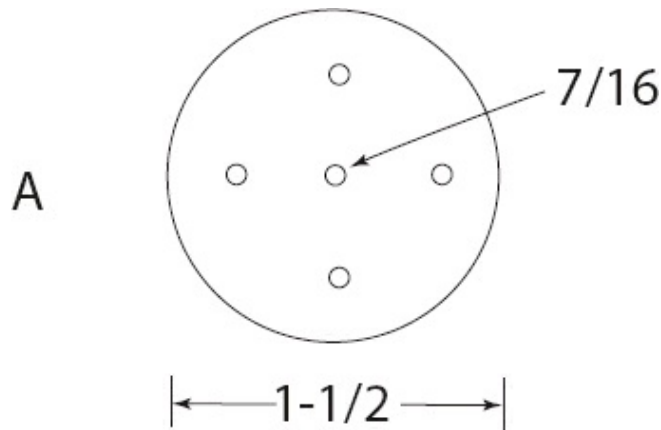
salt and pepper shakers together require about 41" and the spice shaker needs another 30".

2. Use a 30° shaper bit to form each side to 30° or cut these angles on a table saw, [Fig. 4B-D1](#).
3. Cut 13 pieces of maple (6 per unit plus one extra) to 3-¼" long for the salt and pepper.
4. Cut 6 pieces of maple to 4-¾" long for the spice shaker.
5. Cut 12 walnut strips ⅛" thick × ⅜" wide × 3-¼" long for the salt and pepper.
6. Cut 6 walnut strips ⅛" thick × ⅜" wide × 4-¾" long for the spice shaker.
7. Lay the pieces out on blue tape and put glue onto the edges.
8. Pull the pieces together and secure them with blue tape ([Fig. 4B-D1](#)).



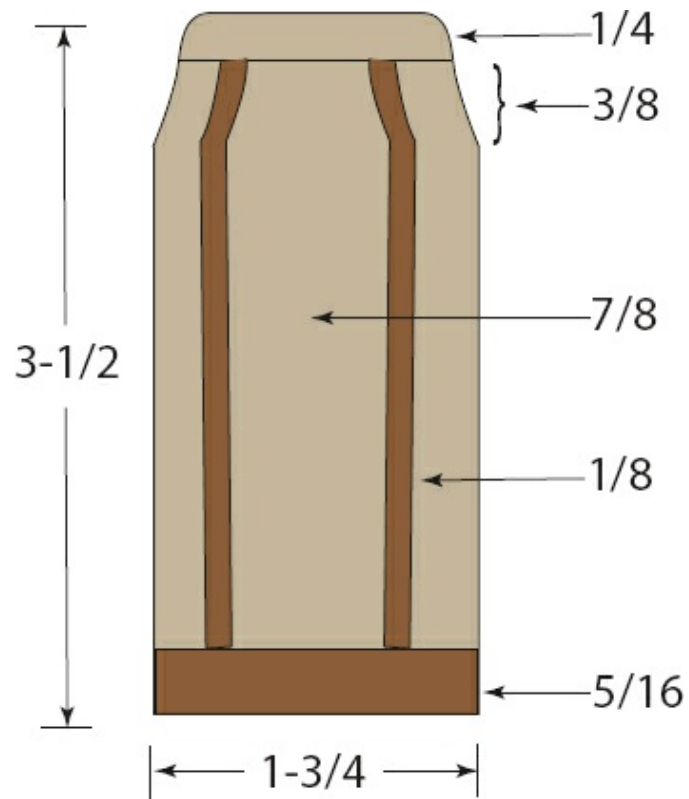
4B-D1. Top View. The ⅜" wide maple slats (use 5/16" stock) are cut at 30° and glued together with ⅛" thick walnut pieces in between.

9. Use rubber strips or band clamps to hold all the pieces together firmly.
10. Wait one-half hour, then unclamp and cut the tops even across.

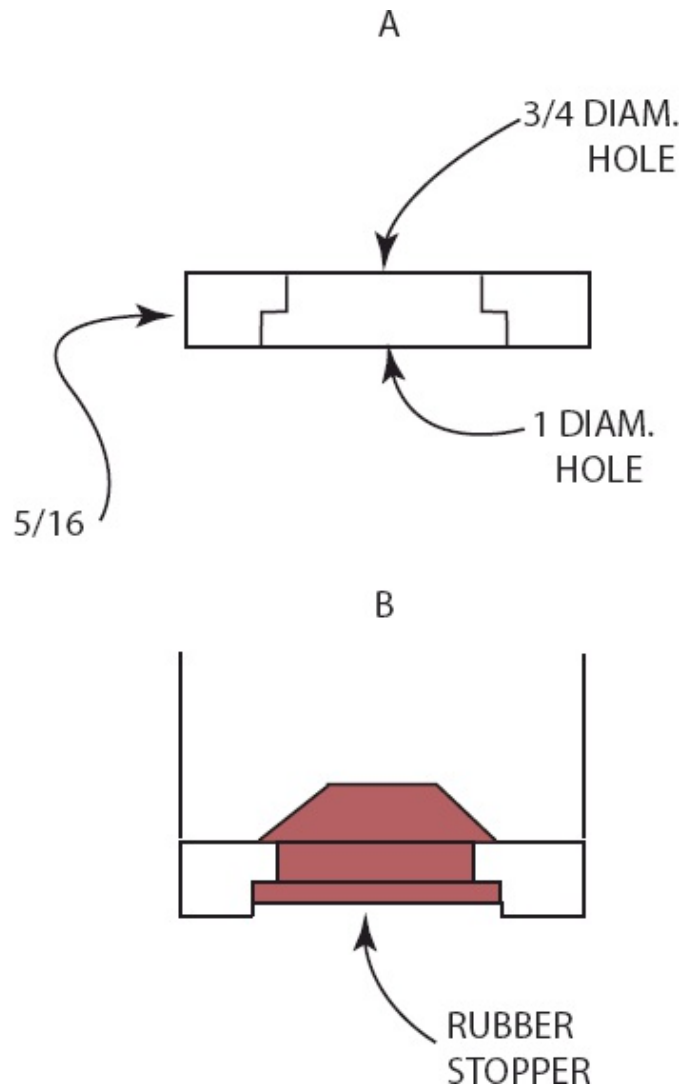


4B-D2. Shaker Top. The tops have $\frac{7}{16}$ " diameter holes pre-drilled (a) and counter-sunk (b) below.

11. Smooth the tubes with a scraper and smooth with sand paper.
12. Make two walnut tops (pepper and spice) and a maple top (salt); each 2" diameter circle $\times \frac{1}{4}$ " thick.
13. Drill 5 holes in each top (see [Fig. 4B-D2a](#)), counter sinking the underside of each hole to allow the salt and pepper to flow better, [Fig. 4B-D2b](#).
14. Glue the tops on.
15. Put the piece in lathe jaws; use the center hole in the top as a guide for a 'V' shaped tail guide.
16. Turn the top round, easing it $\frac{3}{8}$ " down the body, [Fig. 4B-D3](#).
17. Cut the Salt/Pepper assembly to 3" long and the Spice unit to 4- $\frac{1}{2}$ " long.
18. Make the Bottoms as in [Fig. 4B-D4a](#) using walnut ($\frac{5}{16}$ " thick \times 2" diam.) and glue these on [Fig. 4B-D4b](#).
19. Finish with polyurethane and install the red rubber stoppers.



4B-D3. Side View. Use maple (salt) or walnut (pepper) for the tops. All pieces have walnut for the bottoms.



4B-D4. Rubber Stopper. Drill $\frac{3}{4}$ " and 1" holes in the bottom before gluing it on.

C. Tubular Shakers. This salt and pepper set uses maple for the bodies of both shakers but has a maple top and bottom for the Salt and a walnut top and bottom for the Pepper shaker, see [Photo 4C](#). walnut or other dark veneer strips are placed between the maple slats at glue-up. The two shaker pieces are $3\frac{1}{2}$ " tall \times $1\frac{3}{4}$ " in diameter. Once glued up, the shakers are turned round using a lathe.



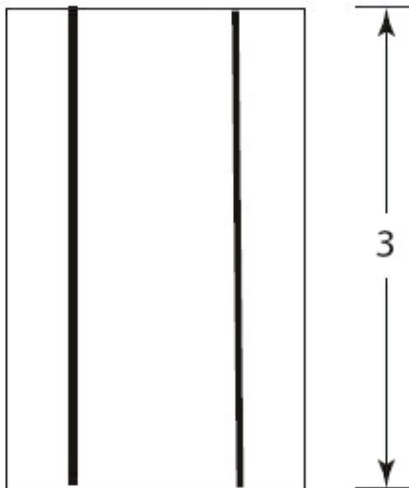
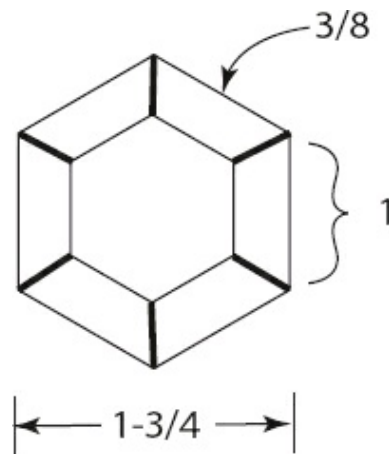
Photo 4C

Tools and Materials Needed: walnut and maple wood, commercial walnut veneer (about $\frac{1}{30}$ " thick), table saw, shaper with 30° bit, drill press, counter-sink drill bit, lathe with a jam chuck, yellow PVA glue, blue tape, rubber straps and rubber stoppers (Craft Supplies USA, Provo, Utah).

Make the Shakers: These tall, round shakers look very nice on the table.

1. Prepare about 4 ft. of $\frac{3}{8}$ " thick pieces of maple stock, 1" wide. The two salt and pepper shakers require about 20" each.
2. Use a 30° shaper bit to form each side of the slats to 30° or cut these angles on a table saw, [Fig. 4C-D1](#).
3. Cut 14 pieces of maple (6 per unit + 2 extra) to $3\frac{1}{4}$ " long for the salt and pepper.
4. Cut 14 walnut veneer strips $\frac{3}{8}$ " wide \times $3\frac{1}{4}$ " long.
5. Glue the maple pieces and the veneer strips together with yellow PVA glue and secure them with blue tape ([Fig. 4C-D1](#)).
6. Use rubber strips or band clamps to hold all the pieces together firmly.

7. Cut the salt and pepper assemblies to 3" length.
8. Make walnut (pepper) and maple (salt) tops as shown in [Fig. 4C-D2a](#).
9. Drill 5 holes in each top; counter-sink each hole on the underside, [Fig. 4B-D2b](#).
10. Make bottoms for a cork or rubber stopper hole as in [Fig. 4B-D4](#).
11. Glue these top and bottom pieces onto the salt and pepper shaker bodies.

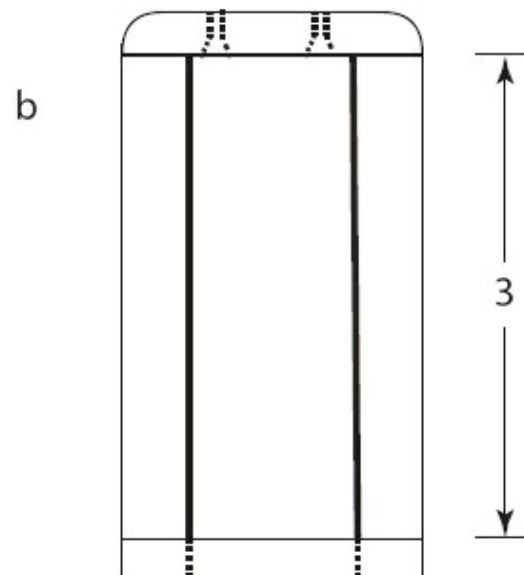
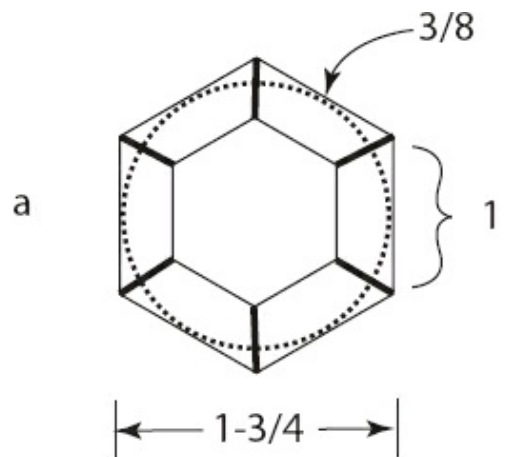


4C-D1. Top and Side Views after Glue-up. The 1" wide \times $\frac{3}{8}$ " thick maple slats are cut at 30° and glued together with $\frac{1}{32}$ " thick walnut veneer pieces in between.



Be sure the holes are big enough if you use coarseground pepper.

12. Put each shaker body on the lathe; use a pin-chuck or a jam chuck at the driver end and use the center hole in the top with a 'V' shaped tail guide.
13. Turn the body (including the top and bottom) round.
14. Finish with polyurethane and install the corks or the red rubber stoppers.



4C-D2. Top and Side Views after Turning. Turn the shakers round, as in dashed line (a). Both salt and pepper bodies are made of maple. The top and bottom of the pepper shaker is walnut; the salt shaker has maple top and bottom. The underside of both tops are counter-sink bored to allow free salt/pepper flow (b).

D. With Plastic Inserts. Use walnut (pepper) and maple (salt) wood here; see [Photo 4D](#). The plastic inserts with chrome-plated brass caps come from Craft Supplies USA, Provo, Utah (about \$4.00 per pair).



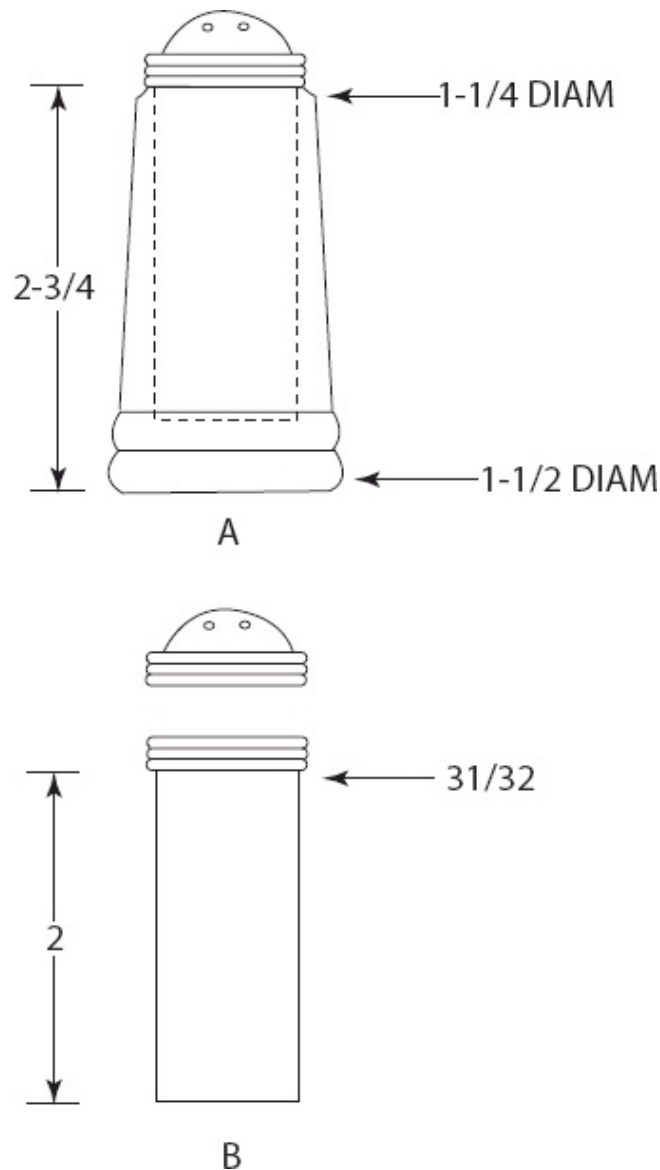
Photo 4D

Tools and Materials Needed: Wood, drill press, $\frac{15}{16}$ " Forstner bit, lathe with a jam chuck or pin chuck, plastic inserts, CA glue, shellac, polyurethane and wax.

Make the Shakers: These shakers are quite easy to make, the hole for the plastic insert is made with a Forstner bit, the insert is glued in and the metal top screwed on.

1. Start with two pieces of $\frac{3}{4}$ " thick wood stock $3\frac{1}{2}$ " long \times $1\frac{5}{8}$ " wide.
2. Glue these two pieces together to give a piece $3\frac{1}{2}$ " long \times $1\frac{1}{2}$ " \times $1\frac{5}{8}$ ".
3. Drill a $\frac{15}{16}$ " diam. hole in one end, 2" deep, [Fig. 4D-D1a](#).
4. Mount the piece on a lathe using a jam chuck or a pin-chuck as a driver and a 'V' shaped tail stock.
5. Square off the top always keeping the hole 2" deep.

6. Turn to dimensions and 2- $\frac{3}{4}$ " to 3" length; see [Fig. 4D-D1a](#).
7. Sand smooth, starting with 120 grit and finishing with 320 grit.
8. Finish with shellac, polyurethane and wax.
9. Put a little CA glue in the cavity and insert the plastic insert, see [Fig. 4D-D1b](#). Note: One chrome-plated brass lid has one hole for salt, the other has four holes for pepper.



4D-D1. The Plastic Insert inside the Wooden Holder. Drill a 15/16" hole in the stock (maple for Salt and walnut for pepper) and turn to shape (A). The Insert is glued into the hole (B).

E. Marquetry Band across the Top. This set uses store-bought, glass salt and pepper shakers to start with. See [Photo 4E](#). Wooden tops with marquetry are then

made to fit. The caps of my shakers measured $\frac{1}{2}$ " high \times $1\text{-}\frac{3}{8}$ " diameter and fit nicely into a $1\text{-}\frac{3}{8}$ " hole drilled with a Forstner bit.

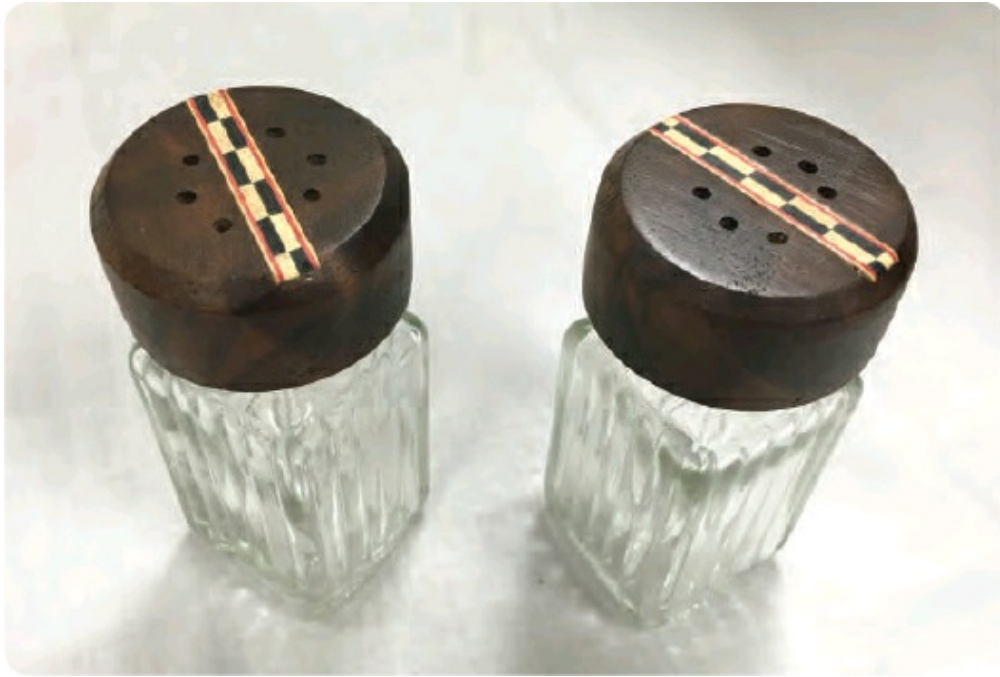
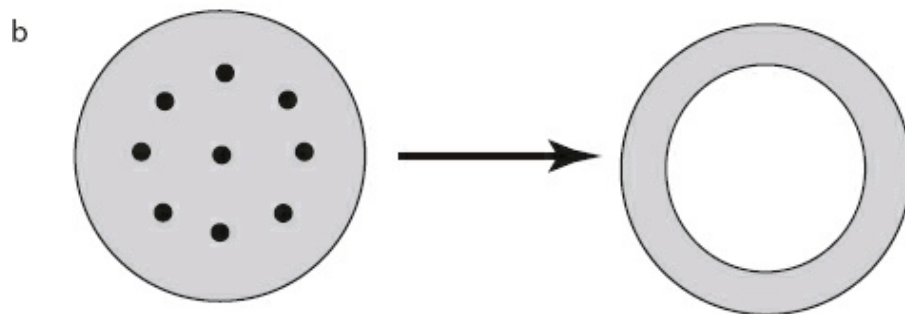
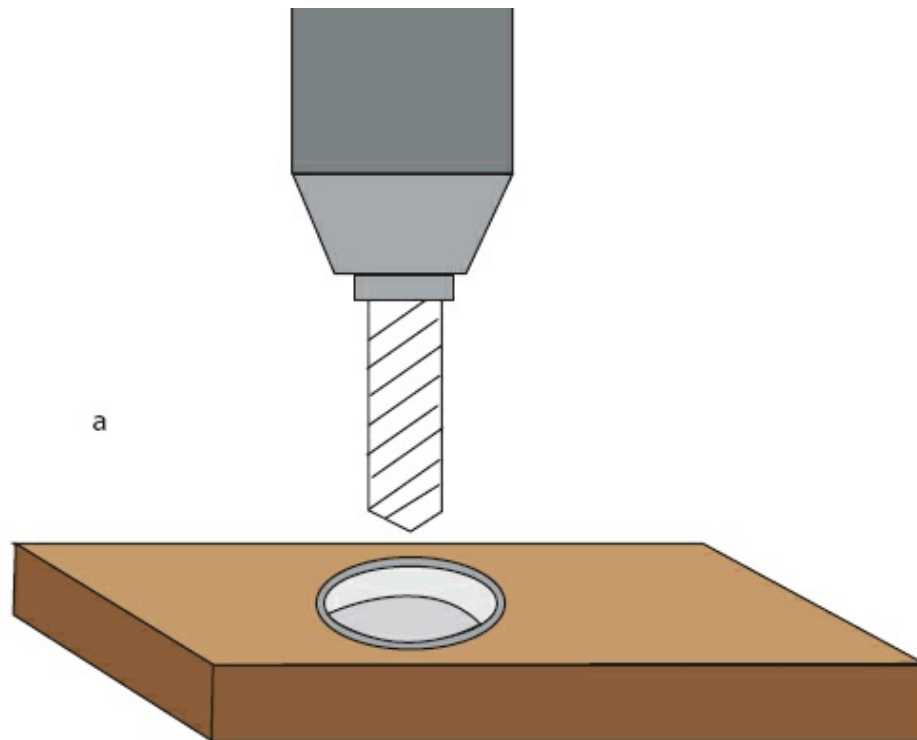


Photo 4E

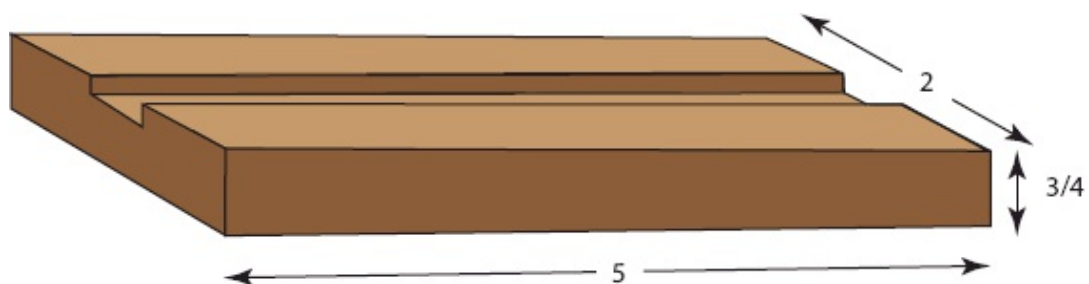
Tools and Materials Needed: Walnut wood, marquetry strip (See [Appendix, Thin Strip Cutting Jig](#)), set of salt and pepper shakers, drill press, wood lathe, $1\text{-}\frac{3}{8}$ " Forstner bit, hot-melt glue (See [Appendix, Glues](#)) and wipe-on poly finish. Purchase the salt and pepper sets before you begin.

Make the Lids: The wooden lids are made specially to fit store-bought metal lids. My veneer banding was $\frac{1}{4}$ " wide.

1. Make a jig from scrap wood to hold the metal cap as in [Fig. 4E-D1a](#). Use a drill press and a $\frac{3}{8}$ " bit to hog out most of the inside metal of the metal tops.
2. Use a round file and finally sand paper to make the edges smooth, see [Fig. 4E-D1b](#).
3. Use $\frac{3}{4}$ " walnut stock, 2" Wide \times 5" Long and route a very shallow groove to fit the width of the $\frac{1}{4}$ " wide marquetry strip on the top. See [Fig. 4E-D2](#).

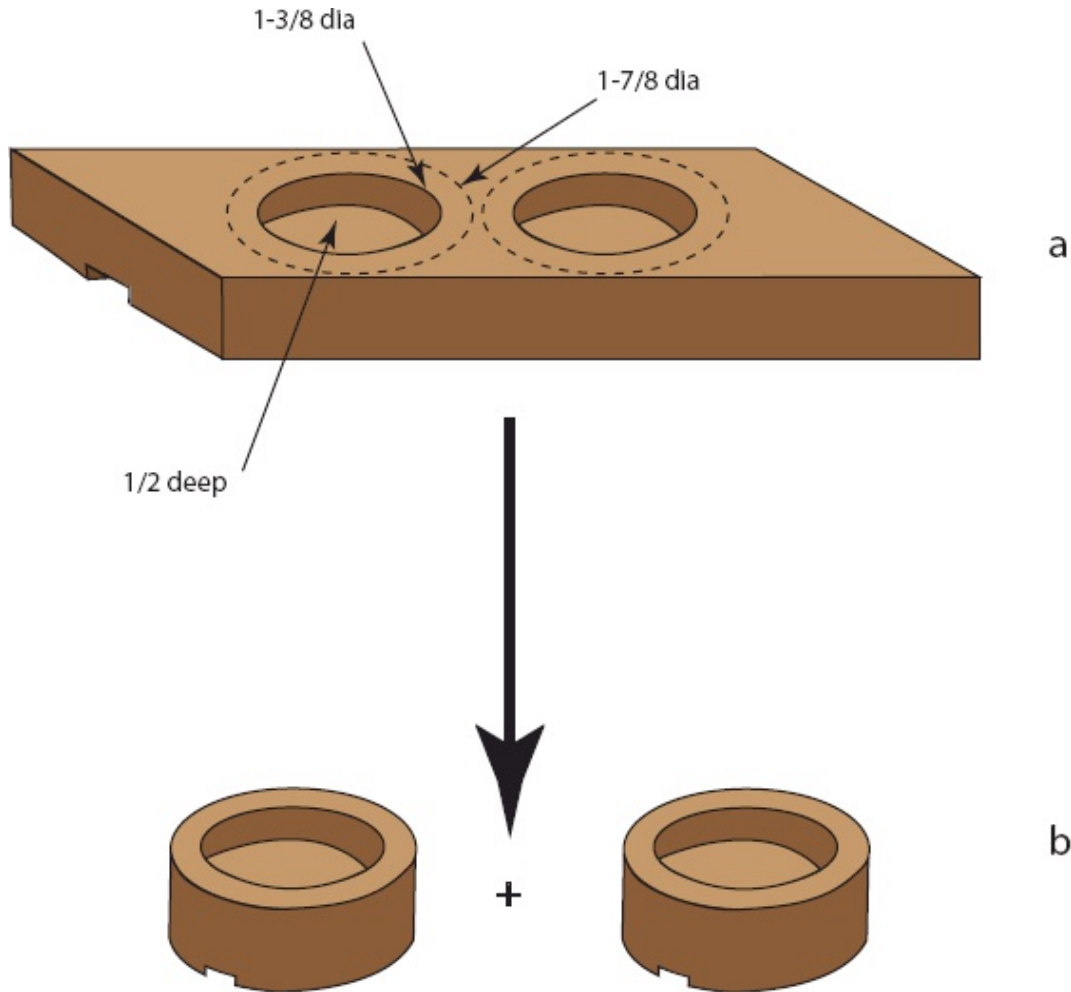


4E-D1. Drill out the Metal Centers. Make a wooden cup to hold the metal shaker top (a). Use a drill press to hog out most of the metal and then file out the center (b).



4E-D2. Rout a Groove to Receive the Marquetry Strip. If your veneer border strip is $\frac{1}{4}$ " wide, then cut a

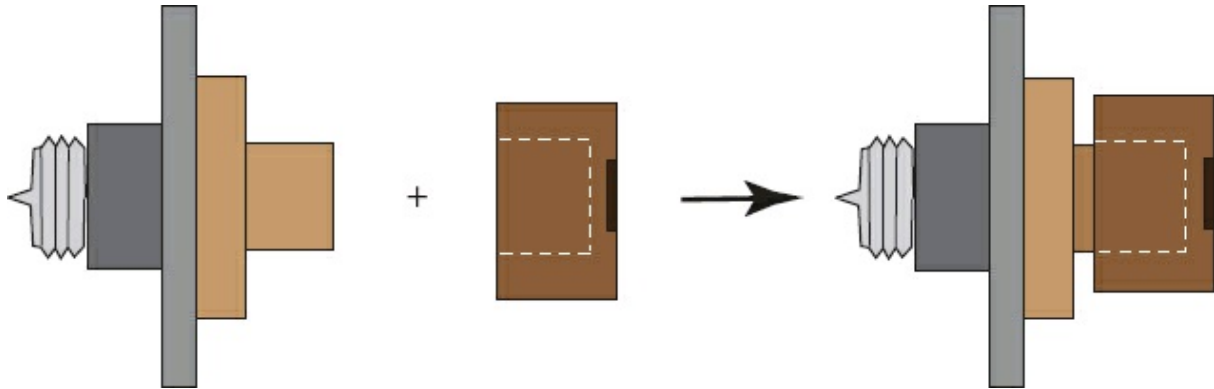
¼" wide dado in the wood strip.



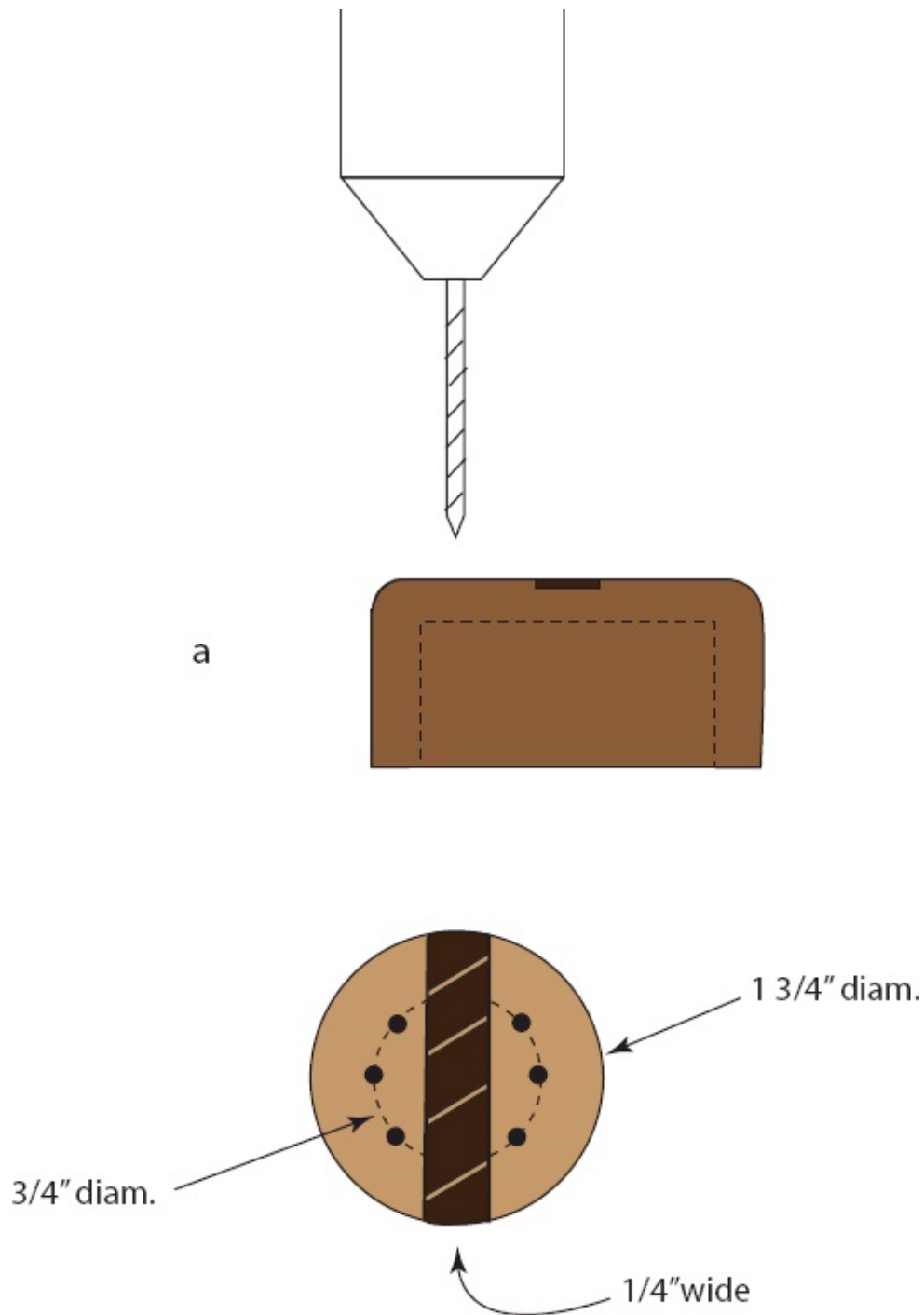
4E-D3. Drill two 1- $\frac{3}{8}$ " holes (a) to $\frac{1}{2}$ " deep and use the band-saw and cut out the disks (b).

4. Use a drill press and a 1- $\frac{3}{8}$ " Forstner bit and drill two holes in the walnut strip $\frac{1}{2}$ " deep on the bottom side. See [Fig. 4E-D3a](#). These concavities are to hold the metal shaker tops.
5. Draw 1- $\frac{7}{8}$ " circles around the holes and cut the disks out with a band saw. See [Fig. 4E-D3b](#).
6. On the lathe, use a face-plate and wooden block. Turn the end of the block to 1- $\frac{3}{8}$ " diameter to mount each disk, see [Fig. 4E-D4](#).
7. Turn the outside of each shaker top round and ease the top edges.
8. Use a drill press and drill six holes with a $\frac{3}{32}$ " bit, see [Fig. 4E-D5](#).
9. Turn the tops upside down and counter-sink each hole.
10. Glue in the veneer banding and when dry, sand the edges smooth.
11. Use hot melt glue and fasten the metal shaker rims inside the wooden tops.

12. Sand the wooden tops smooth and finish with wipe-on polyurethane.



4E-D4. Turn the tops. Use a 1- $\frac{3}{8}$ " jam chuck and push-fit the lids on. Turn the lids round and ease the top edges.



04E-D5. Drill six $\frac{3}{32}$ " holes in each top.

F. Tall Shakers. As noted in the chapter introduction, these shakers can be made without a lathe and they can be tailored to any size; your choice. These were first made by Linda Horner to sell at craft fairs around the Bay Area many, many years ago. [Photo 4F](#) shows red oak and rosewood.



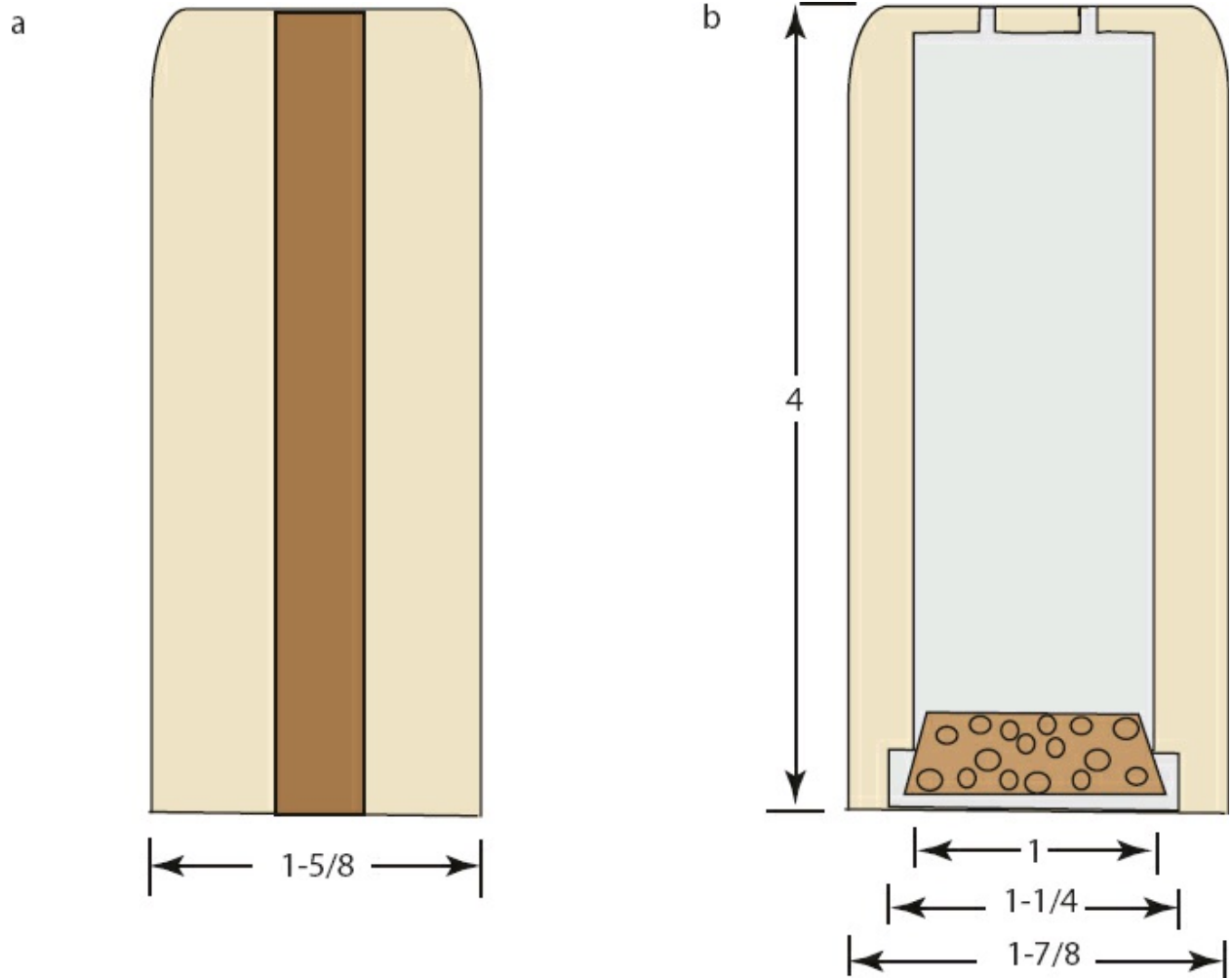
Photo 4F

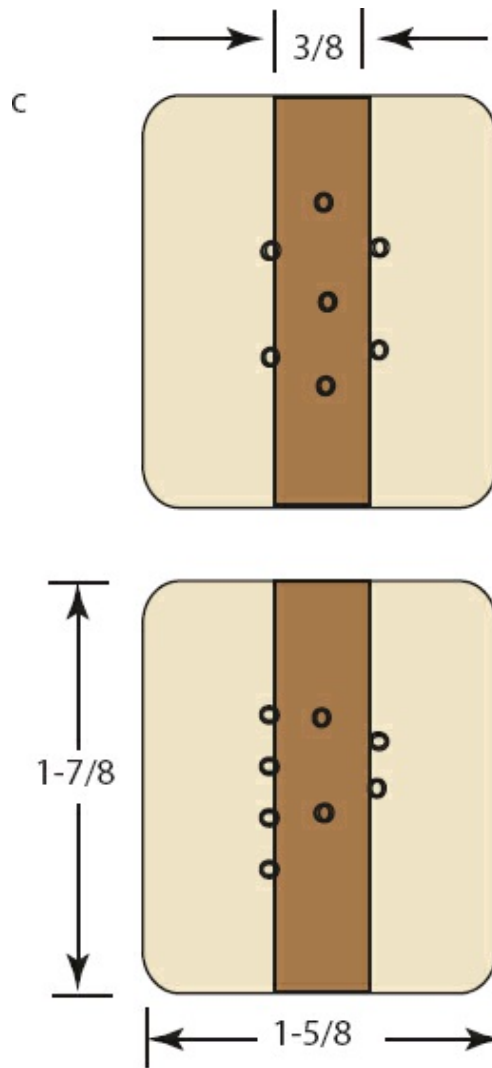
Tools and Materials Needed: Red oak and rosewood stock, table saw, PVA glue, router with round-over bit (or use a rasp, files and sandpaper), drill press, two Forstner bits (1" and 1- $\frac{1}{4}$ "), cork stopper and wipe-on polyurethane finish.

Make the Shakers: Gather enough red oak ($\frac{5}{8}$ " thick) and rosewood/walnut ($\frac{3}{8}$ " thick) to make your shakers. Note: One set of 4" high shakers will require about 9" of walnut and 18" of red oak.

1. On a table saw, cut the $\frac{5}{8}$ " oak and $\frac{3}{8}$ " walnut stock to 2" wide.
2. Glue the strips together to make one 9" long piece, see [Fig. 4F-D1a](#).
3. Wait about 30 minutes, remove the clamps and scrape off the extruded glue.
4. Use files and rasps or use a router and a round-over bit to ease the four long corner edges.
5. Square off one end and cut two 4" long pieces.
6. Drill a 1- $\frac{1}{4}$ " diameter \times $\frac{1}{4}$ " deep hole in both pieces. See [Fig. 4F-D1b](#).

7. Change to a 1" Forstner bit and drill to within $\frac{3}{16}$ " of the top. See [Fig. 4F-D1b](#)
8. Finally ease/round-over all four of the top corners.
9. Sand smooth and finish with polyurethane.
10. Drill $\frac{3}{32}$ " holes in the tops; 'S' shape for salt and 'P' shape for pepper. See [Fig. 4F-D1c](#).
11. Cut corks to length and install.





04F-D1. The Salt and Pepper shakers are identical except for the 'S' and 'P' drilled into the tops.



A set of shakers for every third couple at the table is the rule.

CHAPTER 5

TWO SALAD SERVERS, PLUS TONGS FOR TOASTER, OLIVES AND CORN

We will make a **Salad Server (A)** (See [Photo 5A](#)) with split ends for one-handed use and a **Four Finger Set (B)** (See [Photo 5B](#)) for tossing and serving a salad. There are many different kinds of tongs because a lot of foods need tonging so we present four here. A small **Olive Tong set (C)** (See [Photo 5C](#)), good for picking up small items at the dining table, a set of **Toaster Tongs (D)** (See [Photo 5D](#)) to pull hot toast or bagels from a toaster or toaster oven, a set of **Long Toaster Tongs (E)** (See [Photo 5E](#)) and a set of **Corn Tongs (F)** (See [Photo 5F](#)). Tongs, tongs; you want tongs, we got tongs.



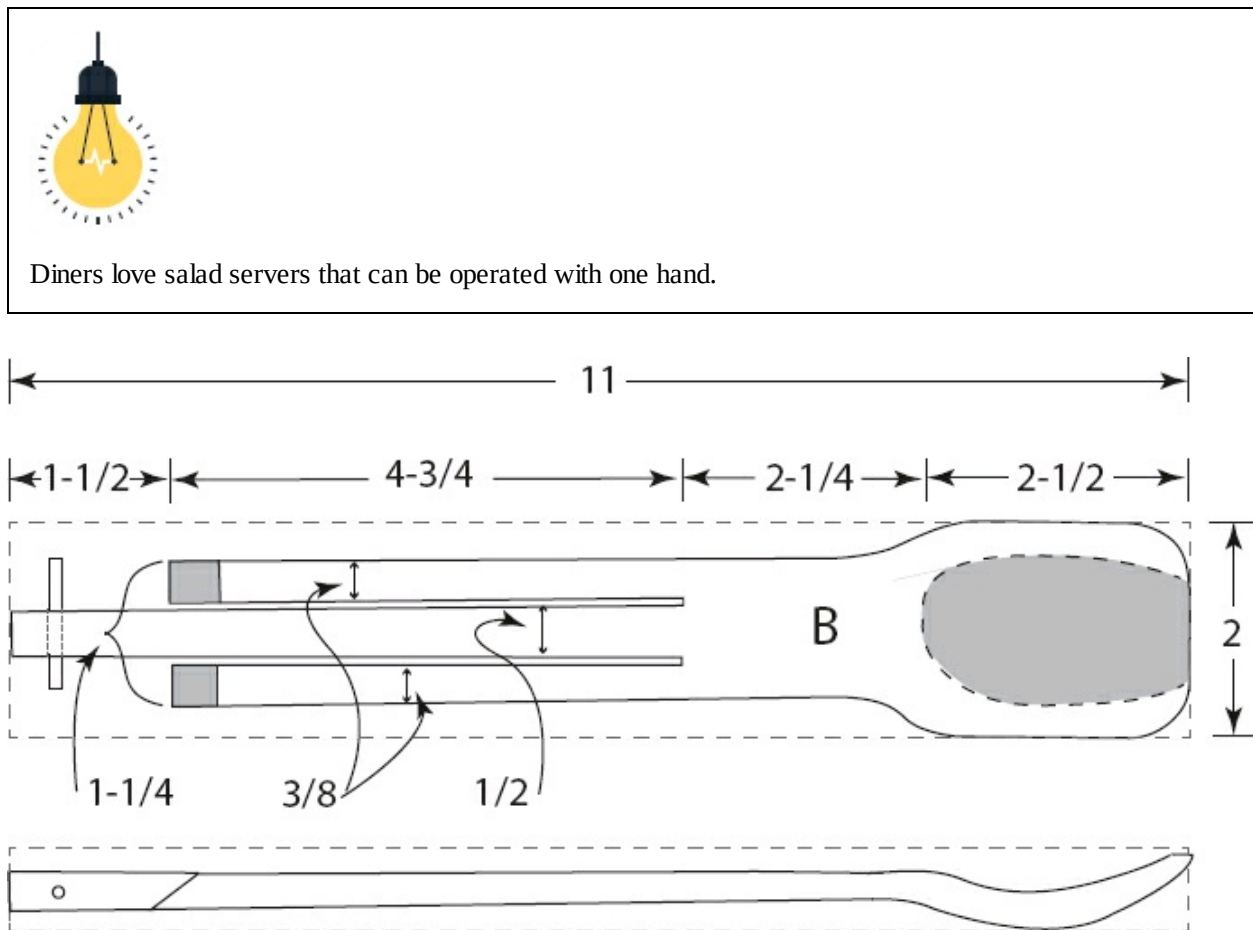
Photo 5A

A. Split-End Salad Tongs. This project takes very little wood and can be completed in a short time. These tongs are quite handy as they can be manipulated with one hand; when squeezed, they spring back. See [Photo 5A](#).

Tools and Materials Needed: Hardwood $\frac{3}{8}$ " stock, ([Photo 5A](#) shows red oak), band saw/scroll saw, $\frac{1}{8}$ " brass rod, 2 brass washers, CA glue and food-safe mineral oil.

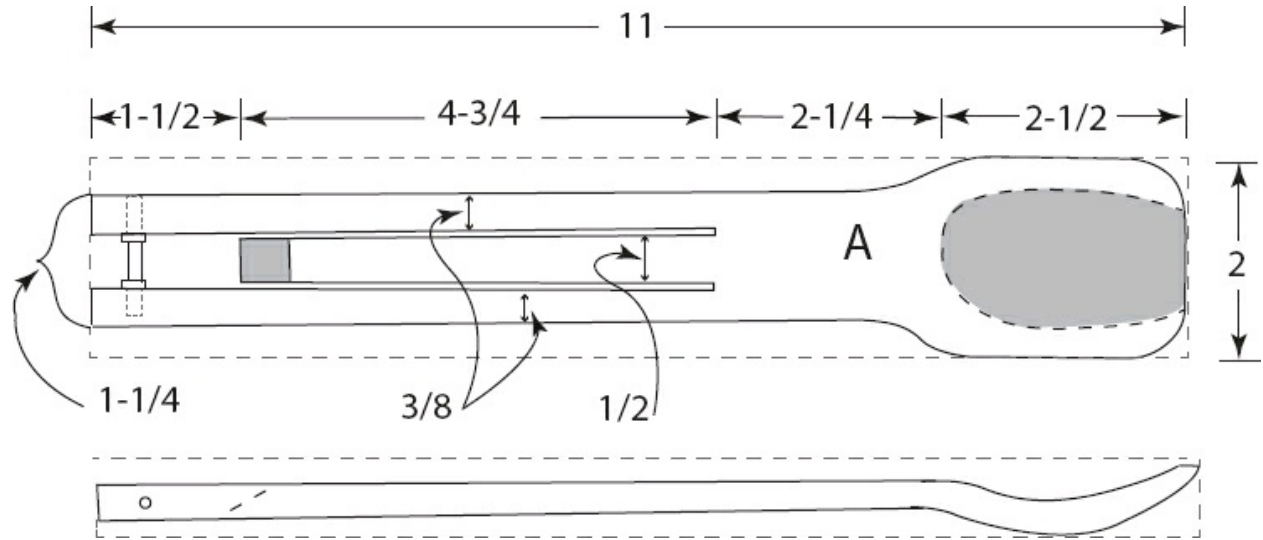
Make the Tongs: Start with $\frac{3}{8}$ " thick hardwood.

1. Cut two pieces to 2" wide \times 15" long. Use pattern [Fig. 5A-D1](#) and cut the one piece to shape.
2. Use pattern [Fig. 5A-D2](#) and cut the other piece to shape.
3. Fit the two pieces together and drill a $\frac{1}{8}$ " hole in both pieces as shown. Note stopped hole in one finger of spoon. [Fig. 5A-D2](#).
4. Put a little CA glue into the stopped hole and fit the two spoons together.
5. Slide the two brass washers into place and tap the brass rod through the holes and into place.
6. Cut the brass rod off.
7. Sand the pieces smooth and finish with mineral oil.



5A-D1. Spoon, Part B. Cut this spoon part from $\frac{3}{8}$ " red oak stock. The ends of the two outside spring handles

are tapered. Drill the hole in the center piece.



5A-D2. Spoon, Part A. Drill a stopped hole in the ends. The end of the inside piece of the spring handle is tapered as shown.

B. Four Fingers Tong Set. These tongs ([Photo 5B](#)) resemble long fingers and are used to toss and serve salads; use pattern [Fig. 5B-D1](#) and a band saw. The two pieces are mirror images.

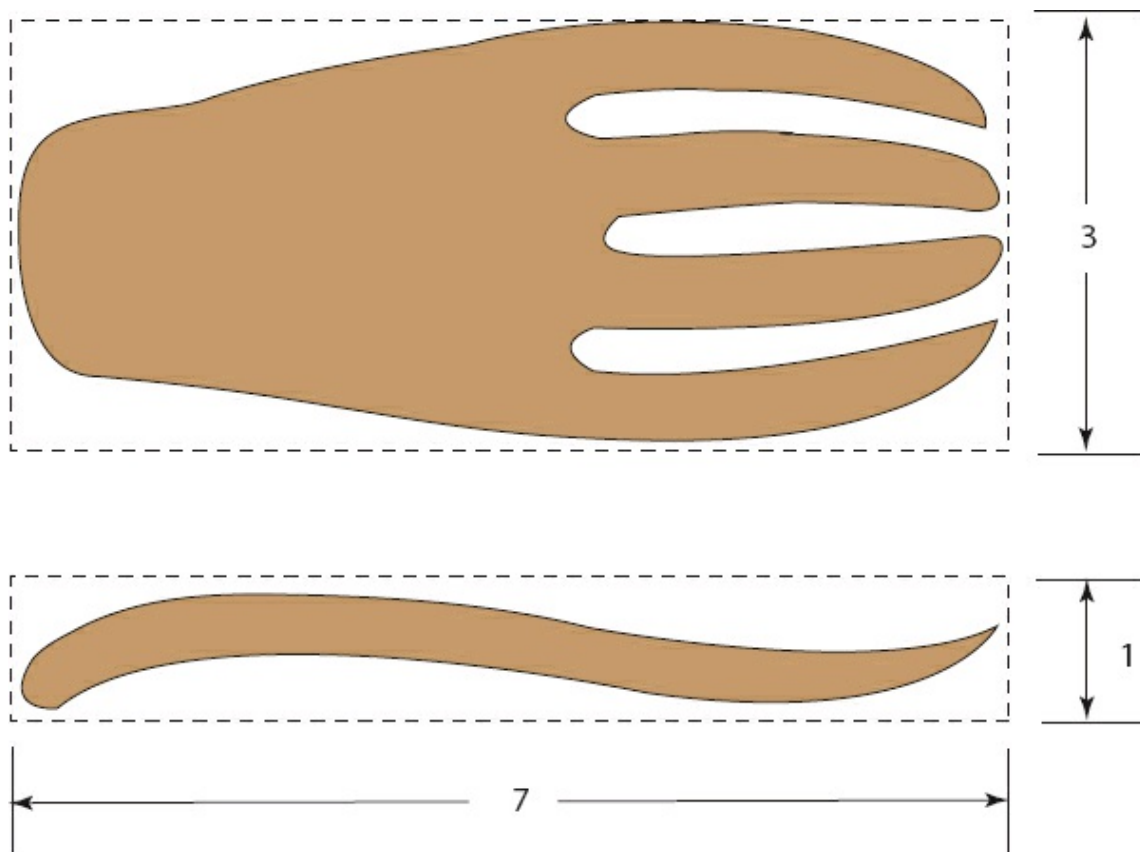


Photo 5B

Tools and Materials Needed: Walnut stock (1" thick), double-sided tape, band saw or coping saw, sand paper and mineral oil.

Make the Finger Tongs: Start with 1" thick hardwood.

1. Cut two pieces to 3" wide × 7" long.
2. Fasten the two pieces together face-to-face with double-sided tape.
3. Glue the pattern ([Fig. 5B-D1](#)) on one face and cut the shape out with a band saw.
4. While the two pieces are still joined by the tape, turn the joined piece on edge and trace the side pattern.
5. Cut as much as you can while they are joined.
6. Take the pieces apart and cut the rest to shape.
7. Use rasps, files and sand paper to smooth and shape.
8. Finish with mineral oil.



05B-D1. Enlarge this pattern to size and glue it onto the walnut wood pieces.

C. Small Spring/Olive Tongs. Use these at the table for picking olives, onions, pickles and other small items off serving plates. The wood in [Photo 5C](#) is cherry.

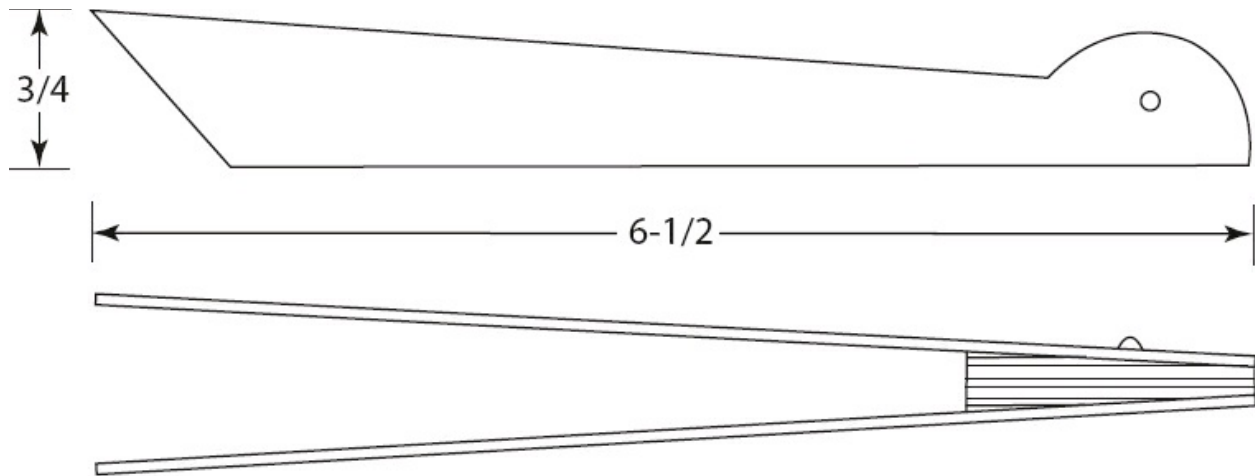


Photo 5C

Tools and Materials Needed: Hardwood ($\frac{1}{8}$ " thick), brass brad, CA glue ([See Appendix, Glues](#)) and mineral oil.

Make the Little Tongs: Use thin wood so the sides spring back easily.

1. Cut two small pieces of $\frac{1}{8}$ " thick hardwood $\frac{3}{4}$ " wide \times 7" long. [Fig. 5C-D1](#).
2. Cut the wooden wedge ($1\text{-}\frac{3}{4}$ " long) and fasten the pieces with CA glue and a small brass brad.
3. Sand and finish with mineral oil.



5C-D1. Small Spring Tongs. Change the pattern to fit your needs. The configuration shown will pick up any item less than 1" diameter.

D. Toaster Tongs, One Piece. These little tongs ([Photo 5D](#)) are cut from one piece of wood. Vary the thickness of the 'Fingers' to suit how much pressure is needed to close them.

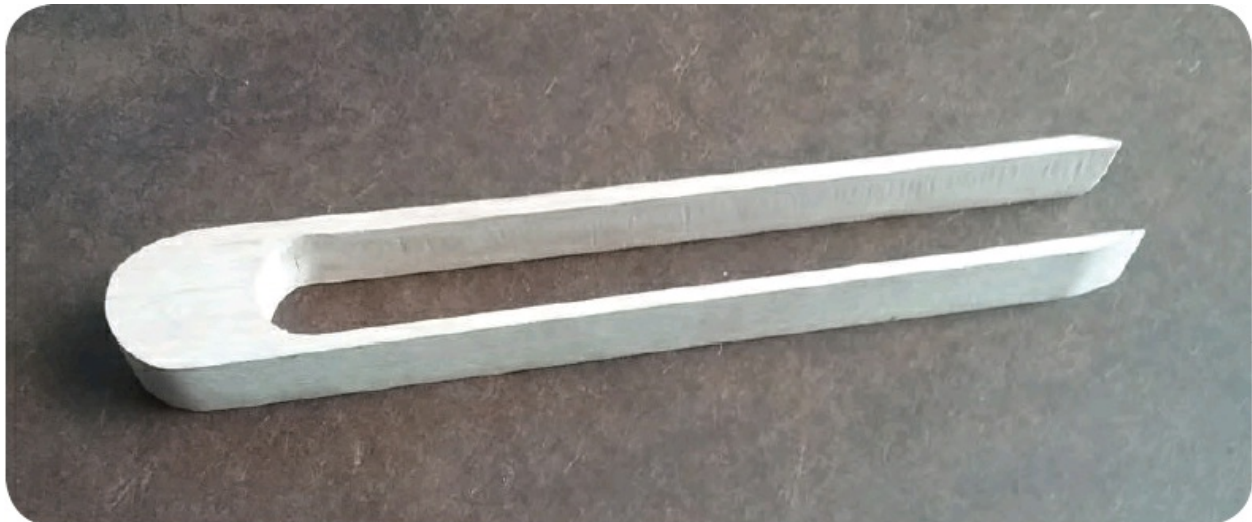


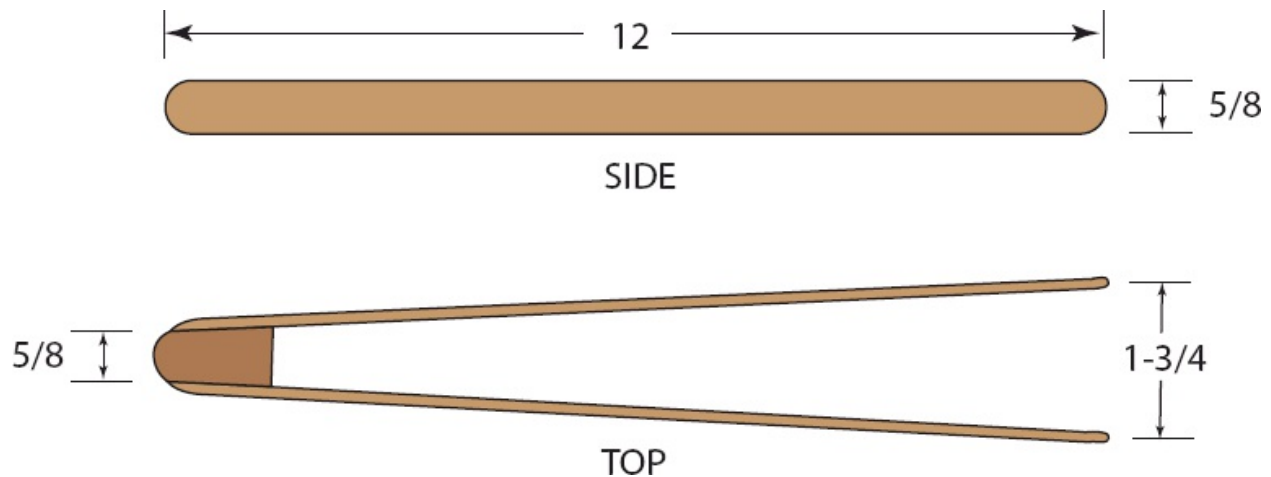
Photo 5D

Tools and Materials Needed: Maple $\frac{3}{4}$ " thick stock, band saw or coping saw, rasps, files and mineral oil.

Make the Tongs: Change the length to suit your needs.

1. The maple stock is $\frac{3}{4}$ " thick \times 1- $\frac{1}{8}$ " wide \times 7- $\frac{3}{4}$ " long.
2. Draw the pattern ([Fig. 5D-D1](#)) onto the blank and cut out with a band saw.
3. Use a rasp, files and sand paper to shape and smooth.

4. Finish with mineral oil.



5D-D1. Make this item to fit. The pattern shown will pick up any item $\frac{3}{4}$ " or smaller.

E. Long Toaster Tongs. These tongs ([Photo 5E](#)) are a longer version of the short, one-piece Toaster Tongs ([Photo 5D](#)). These are great to pull toast and muffins from the oven or toaster.



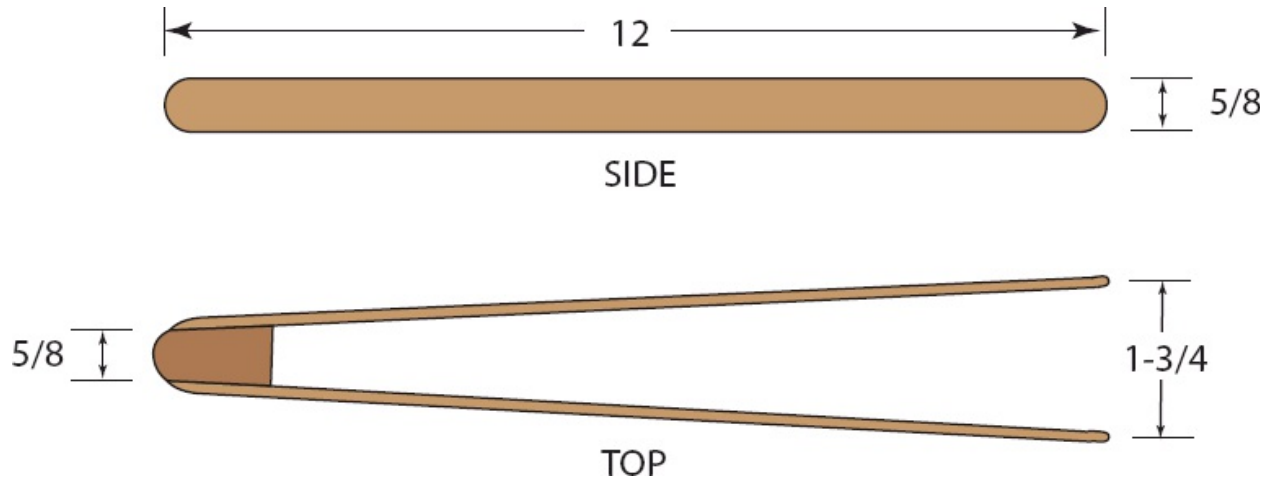
Photo 5E

Tools and Materials Needed: Maple or ash stock, band saw or coping saw, PVA yellow glue, sand paper and polyurethane finish.

Make the Tongs: These were first made by my good friend John Wilson of Redwood City, Calif.

1. Prepare $\frac{5}{8}$ " thick wood stock to $\frac{5}{8}$ " wide \times 13" long.
2. Cut two pieces to 12" long and smooth with sand paper.
3. Prepare the 'wedge' about $\frac{5}{8}$ " \times $\frac{5}{8}$ " \times 1- $\frac{1}{2}$ " long and taper as in [Fig. 5E-D1](#).

4. Clamp the 'fingers' to the wedge and measure the opening at the end.
5. Adjust the taper of the 'wedge' until the opening is about 1- $\frac{3}{4}$ ".
6. Glue the pieces together, sand smooth and finish with polyurethane.



5E-D1. Long Toaster Tongs. Adjust the shape of the 'wedge' until the opening is about 1- $\frac{3}{4}$ ".

F. Corn Tongs. These useful tongs vary in length from 12" to 16" long. (See [Photo 5F](#)) They are made similar to the split end salad tongs ([Fig. 5A-D1](#)) and are used to remove items from boiling water on the stove. Note that these tongs will fold flat for storage by flipping them 180° from their operating position. The tongs in the photo are made of red oak.



Photo 5F

Tools and Materials Needed: Wood stock, table saw, band saw or coping saw, 2" sanding drum, sand paper, drill, polyurethane finish and 1" long piece of $\frac{1}{16}$ " brass rod.

Make the Corn Tongs: If these are to go into boiling water, be sure to keep a good finish on them.

Make Part A: Cut a piece of $\frac{3}{8}$ " thick red oak stock (Fig. 5F-D1a) to 1" wide \times 12" to 16" long on the table saw.

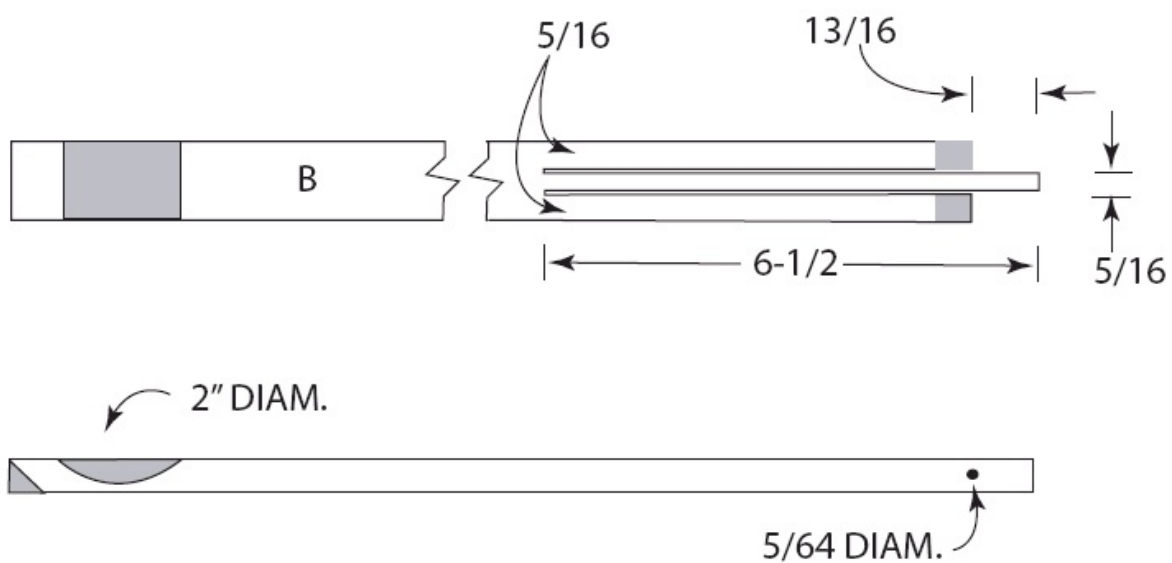
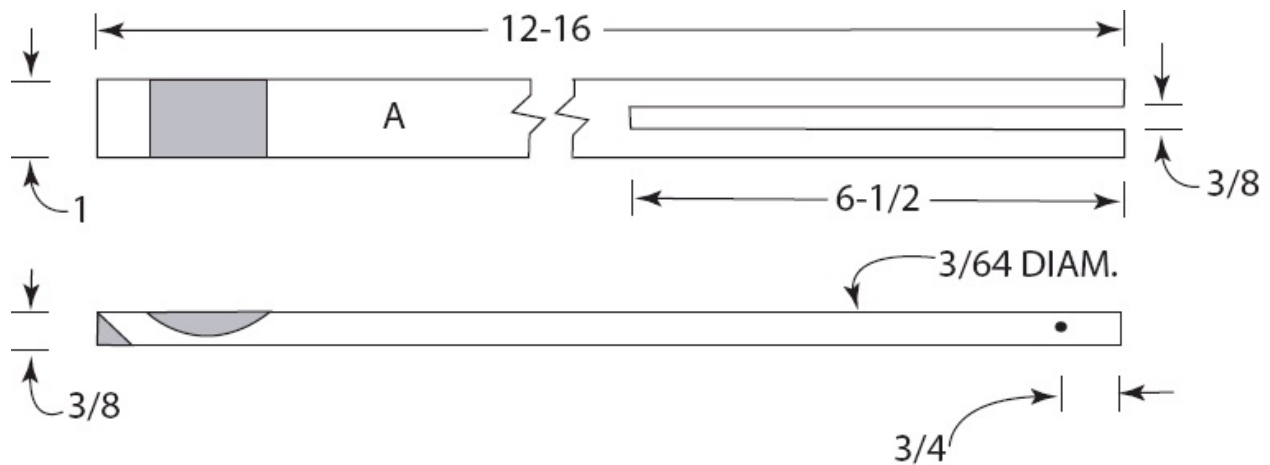
1. Bevel the 'spoon' end using a sander or a wood plane.
2. Drill a $\frac{5}{64}$ " diameter hole, $\frac{3}{4}$ " from the end of the 'handle' end.
3. Cut a $\frac{3}{8}$ " wide \times 6- $\frac{1}{2}$ " long notch out of the handle of part A.
4. Make the scoop in the 'spoon' end later.

Make Part B: Cut a piece of $\frac{3}{8}$ " thick red oak stock (Fig. 5F-D1b) to 1" wide \times 12" to 16" long on the table saw.

1. Bevel the 'spoon' end using a sander or a wood plane.
2. Drill a $\frac{5}{64}$ " diameter hole, $\frac{3}{4}$ " from the end of the 'handle' end.
3. Use a thin blade (coping saw or band saw) and cut two kerfs 6- $\frac{1}{2}$ " long.
4. Cut $\frac{13}{16}$ " off the ends of the two outside fingers and round them off.

Assemble Parts A and B: Dry fit the two pieces before final assembly.

1. Using the hole in Part A as a guide, mark where the pivot hole is to be drilled in Part B.
2. Fasten the tong parts together with a $\frac{1}{16}$ " brass pin. Note the undersized holes in Part A secure the pin and the slightly oversized holes in Part B allow the tongs to open and close easily.
3. To make the scoops in the ends of the tongs, first cut the shape with the band saw and then shape the scoops by holding them around a 2" rotating drum sander.
4. Sand all parts and finish with polyurethane.



5F-D1. Wooden Corn Tongs. Vary the length of these tongs to suit.



RUN YOUR MOTOR AT 120 VOLTS OR 240 VOLTS? Power output, torque and speed are all the same. But at 240 volts, the motor will run cooler, and probably last longer. It also is less likely to have slow starts or to stall under heavy loads.

CHAPTER 6

WINEGLASSES, BOTTLE HOLDERS & STOPPERS

The first project makes the elegant **Wineglasses with Wooden Bases (A)** ([Photo 6A](#)). For this project use glasses with chipped or broken bottoms or buy some wine glasses at Good Will. The **Bottle Rack for Glasses (B)** is clever and can sit on the table until you're ready to pour ([Photo 6B](#)). The **Bottle Holder (C)** is a balancing act for show-offs but does start conversation ([Photo 6C](#)). The **Cooler (D)** ([Photo 6D](#)) uses a metal insert to keep refrigerated wine properly chilled at the table. The three bottle stoppers use **Wood with Cork Plugs (E)** ([Photo 6E](#)), **Cabochon Insets (F)** ([Photo 6F](#)) and **Parquetry Inset (G)** ([Photo 6G](#)).



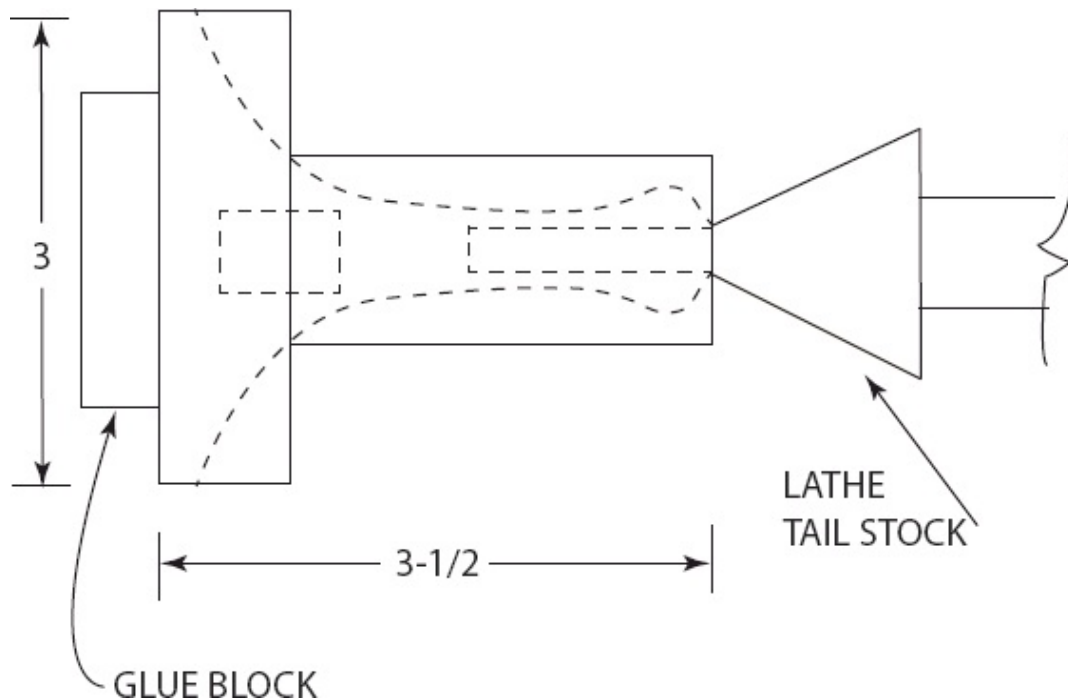
Photo 6A

A. Wood Stemmed Glasses. Wineglass anatomy lists the parts as rim, bowl, stem and foot. Wine glasses differ slightly depending on whether the wine is white or red, is chilled or drunk at room temperature, is bubbly or decanted from an ancient cask and so on. The stem and the foot together make the base. We will make the base from two pieces of wood as in [Fig. 6A-D1](#). The stem piece is dowel-glued to the base. Walnut was used in [Photo 6A](#).

Tools and Materials Needed: Walnut wood stock, wineglass bowl with stem, drill press, lathe with expansive chuck, CA or polyurethane (Gorilla) glue, $\frac{5}{16}$ " dowel and polyurethane finish.

Make the Stems: Glue the base up before turning. Cut the foot off of a wineglass by scratching across the stem with a fine file. Then hold both top and bottom of the glass in cloth towels and bend and snap the stem apart. Use the stem diameter for drill-bit measurements.

1. Cut $\frac{3}{4}$ " stock to a 3- $\frac{1}{2}$ " diameter circle for the foot.
2. Drill a $\frac{5}{16}$ " diameter hole, $\frac{3}{8}$ " deep in the center for a dowel, see [Fig. 6A-D1](#).

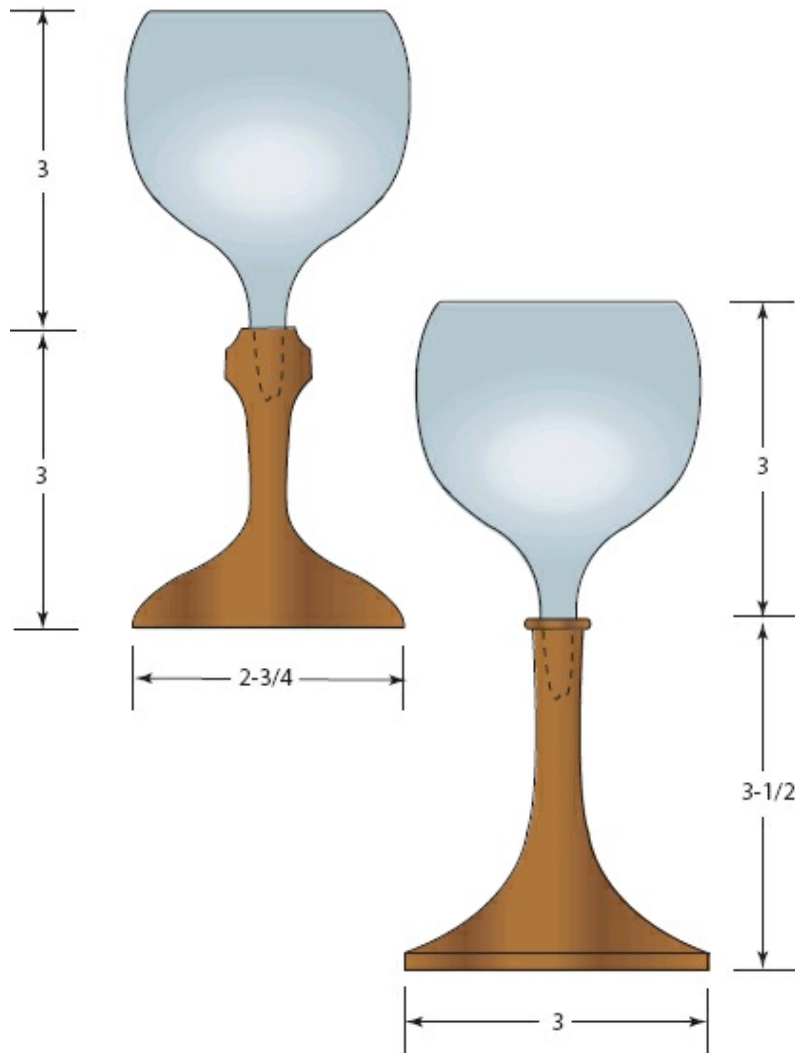


6A-D1. Lathe Set-Up. Use a glue-block, an expandable-jaw chuck and a revolving cone center to hold the foot blank. Turn the piece to shape and then part off from the glue block.

3. For the stem, cut a block 1- $\frac{1}{4}$ " \times 1- $\frac{1}{4}$ " \times sufficient length for your glass, see

[Fig. 6A-D2.](#)

4. Drill a $\frac{5}{16}$ " hole $\frac{3}{8}$ " deep in the end of the stem blank.
5. Glue the foot to the stem with yellow PVA glue and a $\frac{5}{16}$ " dowel. Measure the diameter of the stem of your wineglass.
7. Use a drill press and drill a hole in the stem top to admit the bottom of the wine glass.
8. Glue a 2" diameter round block centered onto the base ([Fig. 6A-D1](#)) to use in an expandable chuck in the lathe.
9. Put a cone-shaped, rotating head in the tail stock.
10. Turn the piece to shape, and then sand and finish with polyurethane.
11. Part the finished base off from the glue block at a slight angle to make the base concave.
12. Finish the bottom.
13. Glue in the wineglass stem using thick CA glue or polyurethane glue (Gorilla).



6A-D2. Possible Stem shapes. Drill the hole in the top of the base to match the size of the wineglass stem.

B. Wineglass Holder. This fits on the top of a wine bottle and holds two glasses. Measure a typical bottle from your collection and one of your wine glasses before you start this project. The holder in [Photo 6B](#) is made of maple and walnut and rests on a bottle of Fine Horner Estate red.



Photo 6B

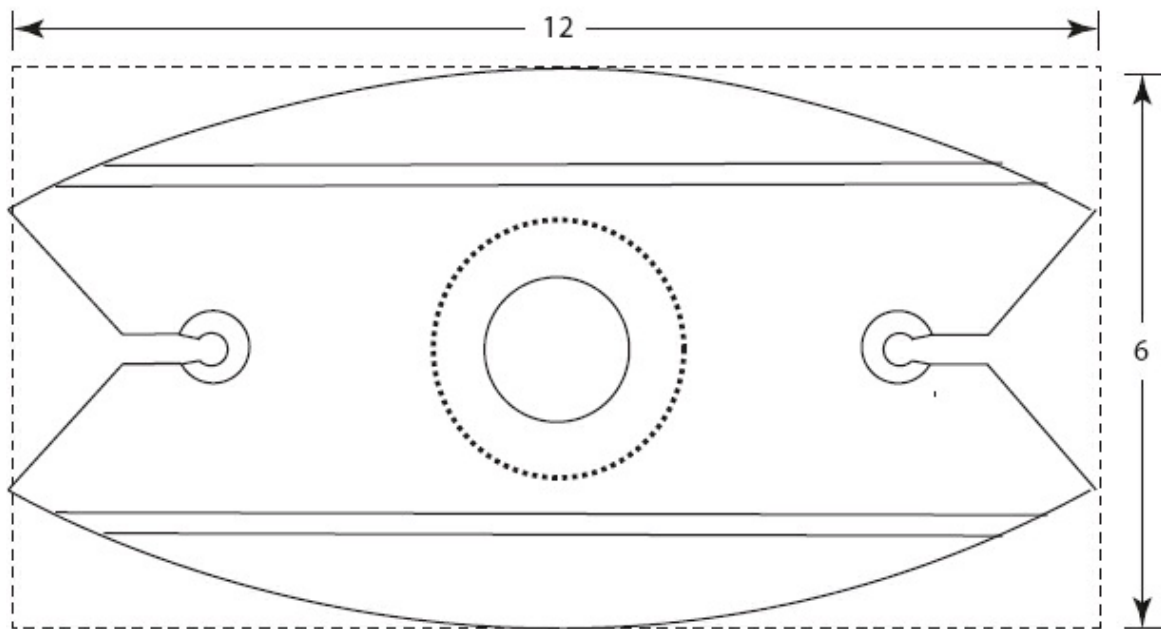
Tools and Materials Needed: A piece of $\frac{3}{4}$ " maple about 6" wide \times 12" long, walnut wood for the stripes, PVA glue, drill press, Forstner bits ($1\frac{1}{2}$ ", $1\frac{7}{8}$ ", $1\frac{3}{8}$ ", $\frac{5}{8}$ ", $\frac{1}{2}$ " and $\frac{3}{8}$ "), rasps/files and finish.

Make the Holder: Make the board from pieces of maple and walnut each about $12\frac{1}{2}$ " long.

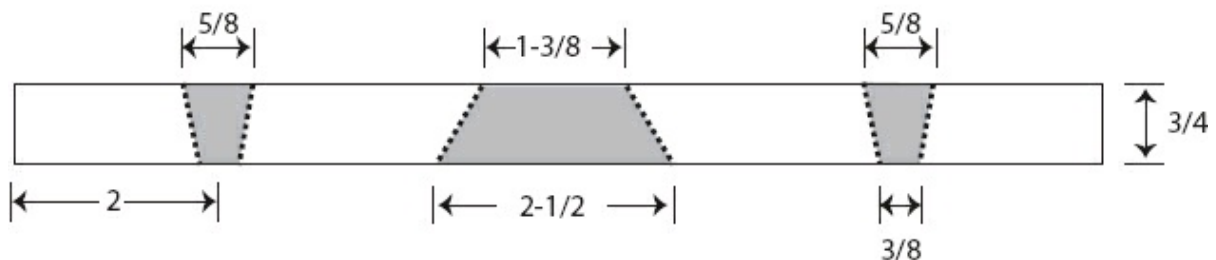
1. Cut a piece of $\frac{3}{4}$ " maple into three pieces as in [Fig. 6B-D1a](#); one 4" wide and two 1" wide.
2. Cut two $\frac{3}{4}$ " walnut strips $\frac{1}{4}$ " wide and $12\frac{1}{4}$ " long.
3. Glue the pieces together.
4. Cut the glued-up piece to 6" wide \times 12" long. Note: cut a little off both sides to keep the maple accent lines centered.
5. Use [Fig. 6B-D1b](#) and mark the position of the large center hole.
6. Drill a $\frac{1}{8}$ " pilot hole through the board at this center position.
7. Consult [Fig. 6B-D2](#) and work with the bottom of the board up; drill a $\frac{1}{8}$ " deep hole with the $2\frac{1}{2}$ " Forstner bit.

8. Change bits and drill a $\frac{1}{2}$ " deep hole with the $1-\frac{7}{8}$ " bit.
9. Now use the $1-\frac{3}{8}$ " bit and drill a hole all the way through.
10. Use rasps and files and smooth out the hole to make a cone.
11. Turn the piece over and work from the top side.
12. Mark the positions of the two wineglass holes at each end of the board.
13. Drill a $\frac{1}{8}$ " pilot hole all the way through the board.
14. Use a $\frac{5}{8}$ " Forstner bit and drill a $\frac{1}{8}$ " deep hole here.
15. Change bits and drill a $\frac{1}{2}$ " deep hole with the $\frac{1}{2}$ " bit.
16. Now use the $\frac{3}{8}$ " bit and drill a hole all the way through.
17. Use rasps and files and smooth out the holes to make a cone at each end.
18. When the holder fits well on your bottle and the glasses hang nicely, sand smooth and finish with wipe-on poly.

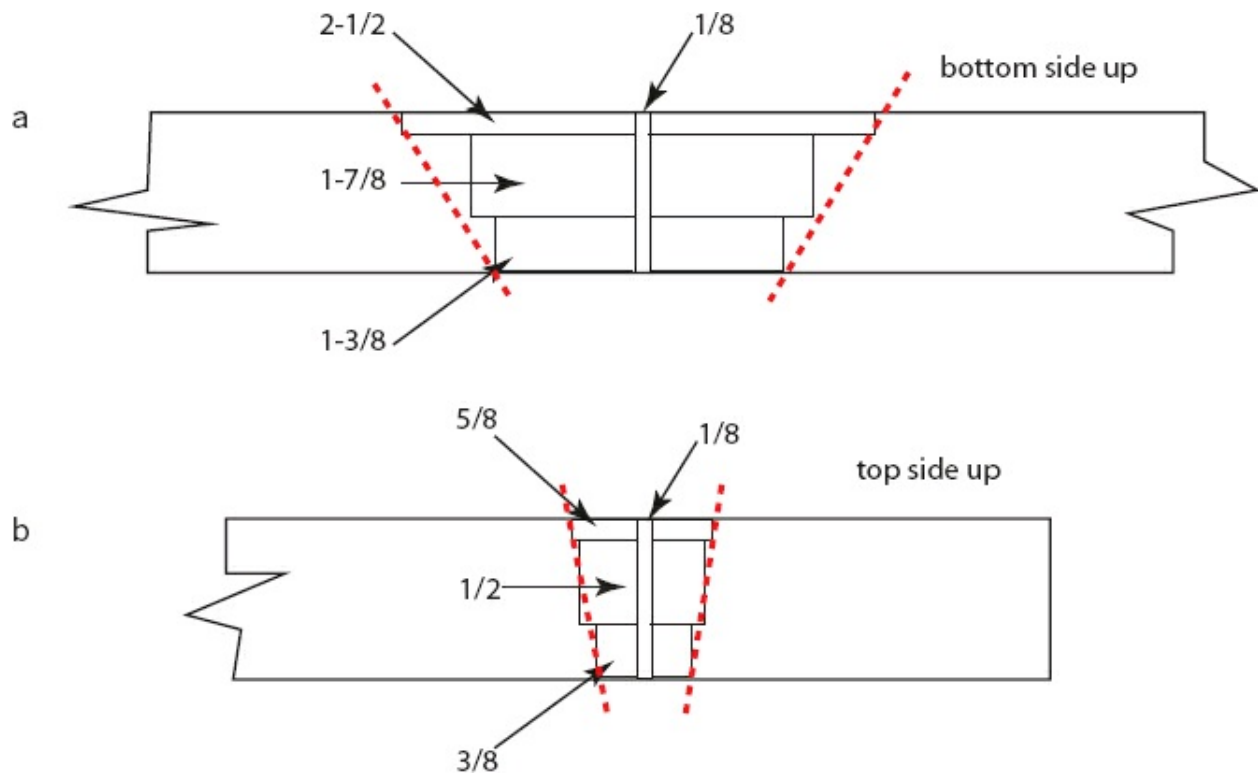
a



b



6B-D1. Bottle Rack for Two Glasses. Mark the holder as in (a) and drill all the holes as in (b) before cutting the board to shape with the band-saw.



6B-D2. Drill Holes. From the bottom, drill three center holes (a); 2-1/2", 1-7/8" and 1-3/8". Use a rasp and shape the 'V' shaped hole. Drill holes on the top side for the glasses (b).

C. Show-off Bottle Holder. This bottle holder depends on balance and will possibly need to be altered and tweaked a few times before it is right.

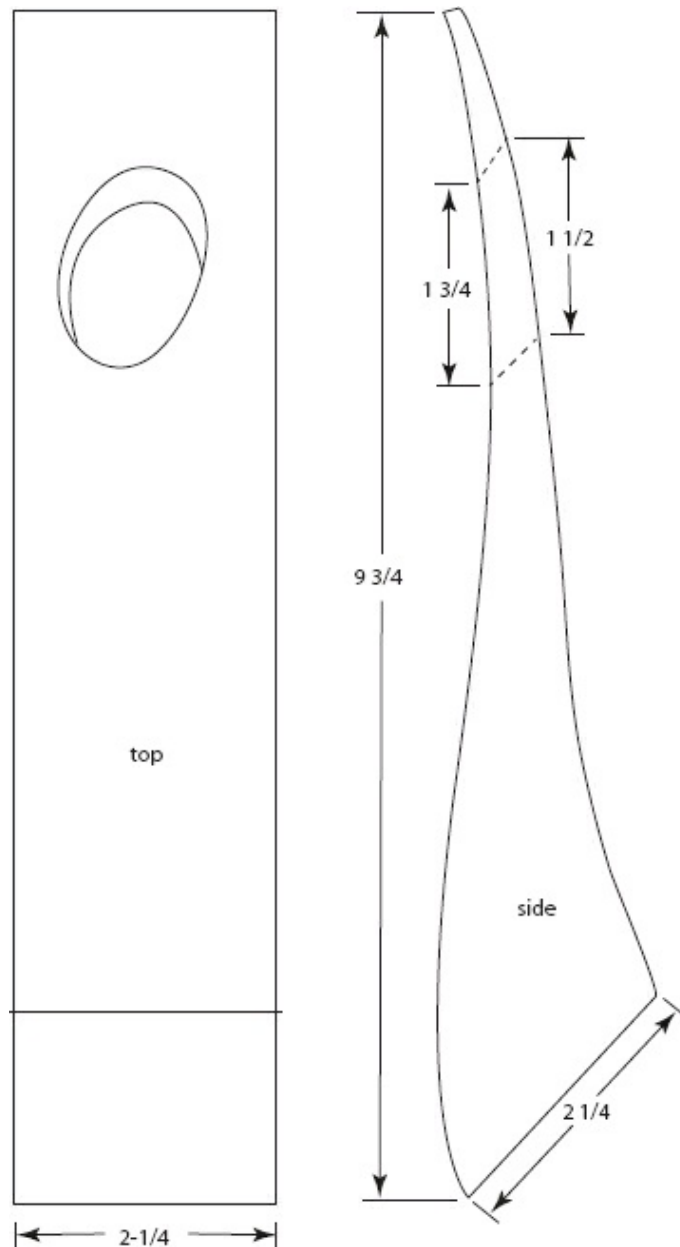


Photo 6C

Tools and Materials Needed: Solid maple stock or glued-up block, drill press and a 1-½" Forstner bit, band saw, rasps, files and polyurethane finish.

Cut it Out: Start with stock 2-¼" × 2-¼" × 10" long.

1. Cut the shape as in [Fig. 6C-D1](#) from the maple block.
2. Clamp the piece on the drill press table and use shims.
3. Drill a 1-½" diameter hole through the block.
4. Try the balance using a full bottle of wine. Note: Corked. See [Photo 6C](#).
5. Use shims at the bottom until the correct angle for the bottom is found.
6. Use a band saw and change the angle at the bottom of the holder and use a rasp and alter the size of the hole.
7. Do these until the holder works properly.
8. Finish with polyurethane.



06C-D1. Cut from Solid Stock. Cut the shape and drill a $1\frac{1}{2}$ " hole in the neck. Use a test bottle and use shims under the base until the correct angle is found.

D. Cylinder for Chilled Wines. This project involves some precise work on the table saw (rip-cutting ten staves at 18° on both sides) and gluing them together. Make this cooler so the $3\frac{3}{4}$ " diam. \times $6\frac{1}{2}$ " high (lip to bottom measure) metal insert fits inside, [Photo 6D](#). Note that this cooler matches the salt, pepper and spice shakers from [Chapter 4](#).



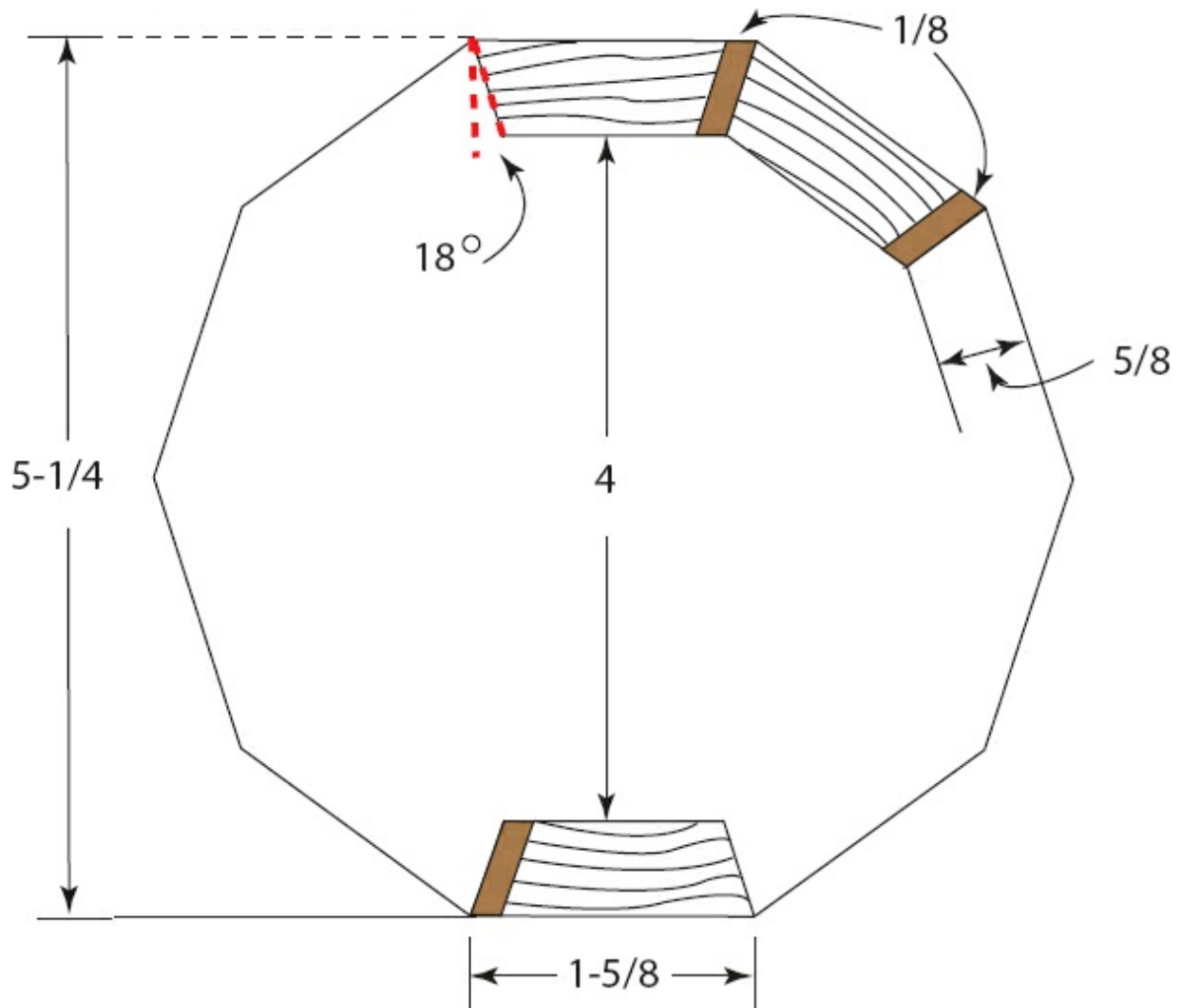
Photo 6D

Tools and Materials Needed: Wood stock ($\frac{5}{8}$ " thick maple) for staves, $\frac{1}{8}$ " thick walnut for the insert pieces, table saw, hand plane, stainless steel insert (available from Craft Supplies USA, Provo, Utah. About \$12.00.), digital angle guide, PVA glue, rubber bands or nylon clamps, band-saw and polyurethane finish.

Make the Cylinder: The stainless-steel insert stands 7" high, the cylinder is $3\frac{3}{4}$ " in diameter and has a $4\frac{1}{2}$ " diameter lip. The wood cylinder is made to

accommodate this insert.

1. For the staves (note: make 12 just in case) cut $\frac{5}{8}$ " thick stock to 2" wide \times 7- $\frac{3}{4}$ " long.
2. Rip one edge at 18°, see [Fig. 6D-D1](#).
3. Glue a $\frac{1}{8}$ " thick \times 7- $\frac{3}{4}$ " long walnut strip to the mitered edge.
4. Use a hand-plane and even out the walnut add-on so top and bottom edges are flat.
5. Rip-cut the opposite side of the stave at 18° so it is 1- $\frac{5}{8}$ " wide (big edge); [Fig. 6D-D1](#).
6. Fasten two 16" strips of blue tape on the workbench, parallel and face-up.
7. Place 10 staves (wide-side down) onto the tape strips, grab the blue tape and roll the staves into a cylinder; fasten with the blue tape.
8. Re-cut any staves as necessary to close all gaps.
9. Rub yellow PVA glue into each joint, roll the staves into a cylinder and fasten with tape.
10. Put two band clamps around the cylinder, top and bottom.
11. Later, remove the clamps and use a band saw to trim the ends of the cylinder to 7- $\frac{1}{4}$ inches long.



6D-D1. Wine Bottle Cooler. Use these dimensions for a metal insert with $3\frac{3}{4}$ " diameter.

Make the Cylinder Top and Bottom: Cut and fit two walnut pieces for the top and bottom.

1. Glue a $\frac{3}{16}$ " thick piece of walnut, $5\frac{1}{2}$ " diameter to the bottom of the cylinder.
2. Use a band saw or sander to cut the bottom piece to near-size and then sand by hand to fit.



A beautiful toast, "Thank you all for joining us in this repast."

3. Make a walnut ring $\frac{3}{16}$ " thick and 5- $\frac{1}{2}$ " outside diameter and 3- $\frac{7}{8}$ " inside diameter to fit the metal insert.
4. Glue this ring to the top of the cylinder.
5. Use a band saw or sander and then hand sand to shape.
6. End up as usual; seal with shellac, scrape, sand and finish with wipe-on poly.

E. Wooden Stopper with a Cork Plug. The simplest stopper is made with a turned wooden top, a dowel and a cork. [Photo 6E](#).

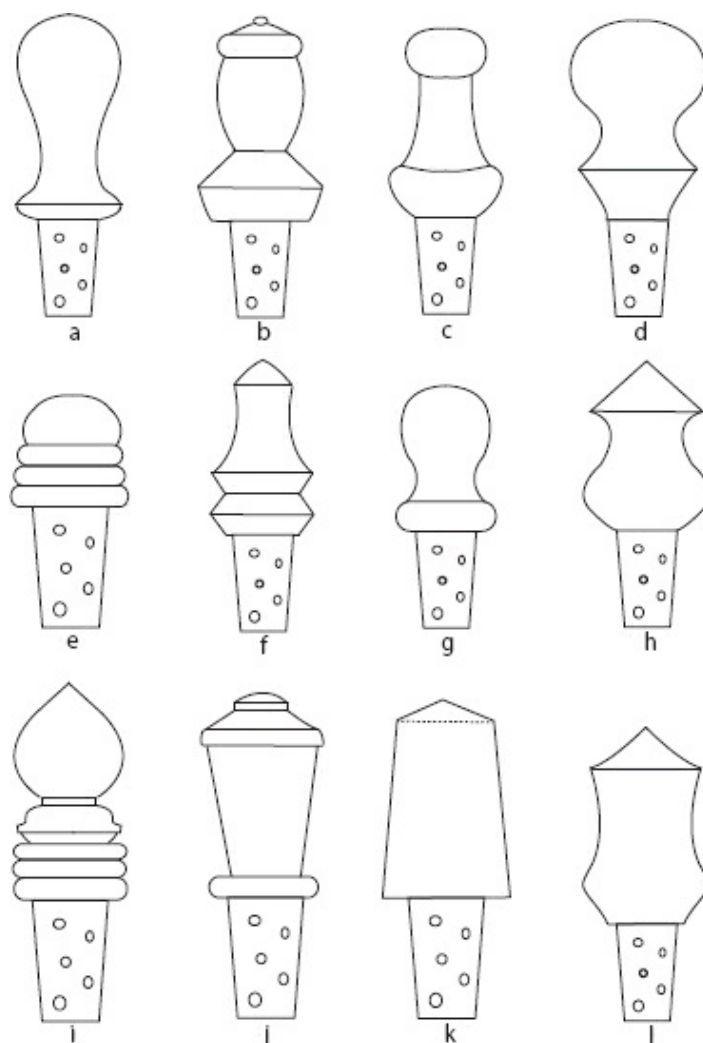


Photo 6E

Tools and Materials Needed: Hardwood stock, drill press, bottle cork, $\frac{3}{8}$ " dowel, lathe with dowel chuck, sand paper and polyurethane finish.

Make the Stopper: Start with a wood block about 1- $\frac{1}{2}$ " square by 3" long.

1. Drill a $\frac{3}{8}$ " diameter hole, $\frac{1}{2}$ " deep in one end and glue in the dowel.
2. Hold the piece in the lathe headstock with a dowel chuck and bring up the tailstock.
3. Turn the wood block to any of the shapes in [Fig. 6E-D1](#).
4. Sand and finish with polyurethane.
5. Glue on the cork stopper.



6E-D1. Simple Bottle Stopper Shapes. Turn to any shape and glue on the cork stopper.

F. Stopper with Cabochon Inset and Cork Plug. This stopper is made like the one above except a recess is cut into the wood top and a piece of plastic, Corian® or mineral is glued in. Photo 6F shows a piece of Corian®. You can buy minerals online or in mineral stores. See [Appendix, Cabochons](#).

Tools and Materials Needed: Hardwood stock, Cabochon/soft mineral, drill press, bottle cork, $\frac{3}{8}$ " dowel, lathe with dowel chuck, PVA glue, CA glue, sand paper and polyurethane finish.

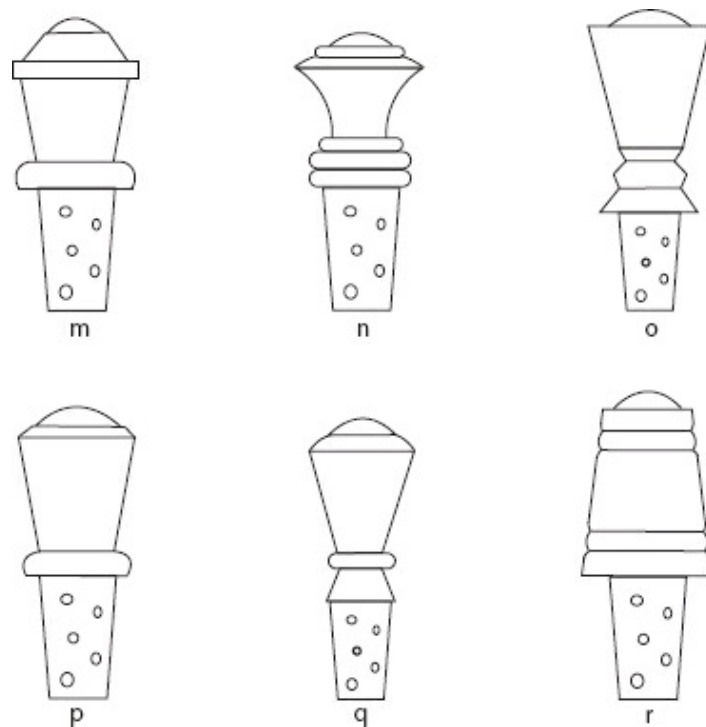
Make the Cabochon Inset Piece: Use any soft mineral for this inset piece or purchase a cabochon.

1. Prepare some inset stock to size, about $\frac{1}{4}$ " thick by 1- $\frac{1}{4}$ " square.
2. Use a scroll saw and cut the mineral piece to about a 1" diameter circle.

3. Use CA glue and attach this to the end of 1" diameter dowel held in expansive jaws on a lathe.
4. Turn the piece round to a diameter of $\frac{5}{8}$ " to $\frac{7}{8}$ ", depending on the size of the stopper recess.

Make the Stopper: Use a pretty hardwood; Photo 6F shows cocobolo wood.

1. Prepare the wood stock; 1- $\frac{1}{2}$ " square \times 3" long.
2. Drill a $\frac{1}{2}$ " deep hole in one end and glue in the dowel.
3. Hold the piece in the lathe headstock with a dowel chuck and bring up the tail stock.



6F-D1. Bottle Stopper Shapes. These all look good with a cabochon or mineral inset.

4. Turn the wood stock to shape as in [Fig. 6F-D1](#).
5. Back off the tail stock and cut a circular recess into the top about $\frac{5}{8}$ " diam. and about $\frac{1}{8}$ " deep.
6. Test-fit the inset piece and adjust the diameter of the recess until it fits.
7. Use CA adhesive and glue the cabochon into the recess.
8. Use a sharp skew chisel and the lathe to round over the edges of the stopper top and of the cabochon.
9. Sand and finish with polyurethane.
10. Glue on the wine cork.

G. Parquetry Insert Stopper. This project will introduce you to the wonderful world of parquetry; defined as marquetry using geometric figures. The inset piece will be made first and then the stopper will be turned as above with a recess cut into the top. Then the parquetry piece will be glued in. The stopper in [Photo 6G](#) was made of cocobolo wood and uses the design from [Fig. 6G-D1a](#).



Photo 6G

Tools and Materials Needed for the Stopper: Hardwood stock, drill press, bottle cork, $\frac{3}{8}$ " dowel, lathe with dowel chuck, scroll-saw/fret saw, sand paper and Hut finish.

Make the Stopper: Start with a wood block about 1- $\frac{1}{2}$ " square by 3" long. [Photo 6G](#) is cocobolo.

1. Drill a $\frac{3}{8}$ " hole, $\frac{1}{2}$ " deep in one end and glue in the dowel.
2. Hold the piece in the lathe head stock with a dowel chuck and bring up the tail stock.

3. Turn the wood stock to shape using one of the shapes in [Fig. 6F-D1](#) as a guide.
4. Back off the tail stock and cut a circular recess into the top about $\frac{5}{8}$ " diam. and about $\frac{1}{16}$ " deep.

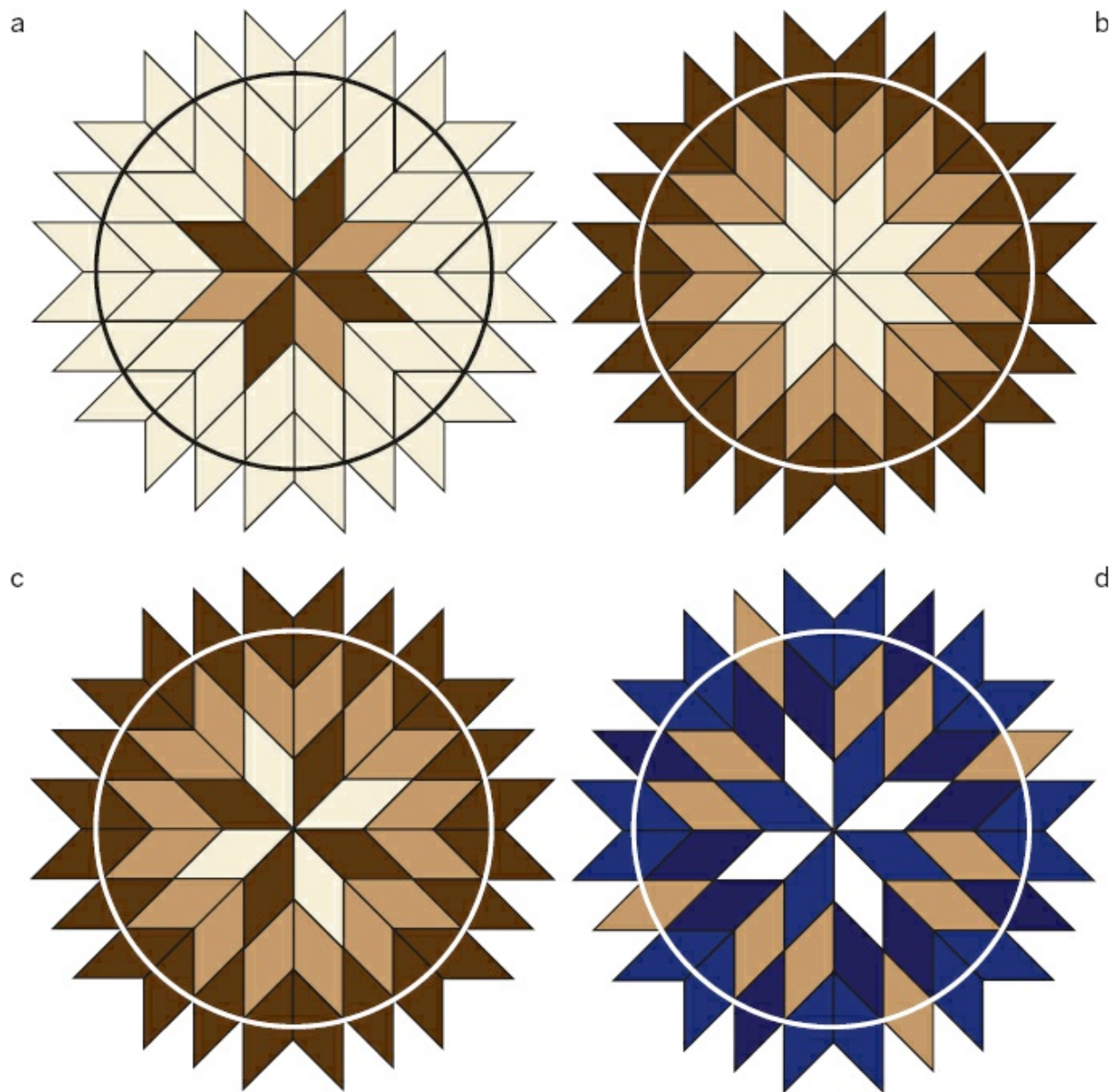
Tools and Materials Needed for the Parquetry: Three colors of veneer (light, medium and dark), a Chop-it jig (See [Appendix, Chop-It Cutter](#)), scroll-saw or fret saw, PVA glue, shellac, wipe-on poly finish and a buffing wheel.

Make the Parquetry: The Chop-it jig from Micro-Mark makes it easy to cut small 60° diamonds. For inset [Fig. 6G-D1a](#), we'll need about four diamonds of dark veneer, four diamonds of medium colored veneer and 30-40 pieces of the light-colored veneer. Cut a few extra diamonds from all colors.

1. Cut a few strips from each of the veneers using $\frac{1}{8}$ " spacers. See [Appendix, Thin Strip Cutting Jig](#).
2. Set the 60° guide on the cutter and cut equal-sided diamonds; each diamond will be about 0.34" long (approximately $1\frac{1}{32}$ ").
3. Put the pieces on a sticky surface (upside-down tape strips) and arrange the design in [Fig. 6G-D1a](#).
4. Put PVA glue on the design and clamp a piece of veneer on top.
5. Remove after 30 minutes and draw a circle around the design a little larger than you need; i.e. for a $\frac{3}{4}$ " recess, draw a 1" circle.
6. Adjust the circle so it reaches the ends or the centers of a ring of diamonds.
7. Use a saw and cut out the circle.
8. Seal the piece with shellac and sand to 320 grit.
9. Finish with wipe-on poly.

Put in the Parquetry: Carefully fit the parquetry piece into the stopper recess.

1. Test the fit of the parquetry to the inset hole; adjust either or both to fit.
2. Glue the parquetry piece into the recess with yellow PVA glue.
3. Use a sharp skew chisel and round over the edges of the stopper until it is just barely proud of the inset, i.e. a little above.
4. Sand and finish with polyurethane.
5. Polish with a buffer charged with white diamond.
6. Glue on the wine cork.



6G-D1. The Parquetry Choices. Each design is the same except for the placement of the different colored veneer diamonds.

CHAPTER 7

CANDLES: FIVE HOLDERS AND A STORAGE BOX

Candles lend grace and splendor to dining occasions and enhance those late-night events. There are plans for five Candle Holders shown here: **(A) Formal Tall Holders** with all the graceful curves (See [Photo 7A](#)); **(B) Baroque Holders** that are rustic and squat as might have been used in an old California monastery for those heavy beef-and-potato repasts (See [Photo 7B](#)); **(C) Short Tulip Holders** that are quite attractive (See [Photo 7C](#)); **(D) Votive Candle Strip** that stretches out along the table and lights up the entire length (See [Photo 7D](#)), **(E) Triple Spiral Holder** that is a very clever piece, cut entirely on a band-saw (See [Photo 7E](#)). Then **(F) Candle Box** to hold all the extra candles. The candle box top has marquetry enclosed in an eye-catching, elliptical design (See [Photo 7F](#)). Note: Three of these Candle Holders need holes drilled in the tops to accommodate candles. To save a lot of time, buy or make a special candle drill bit, See [Appendix, Candle Bit](#).



Photo 7A

A. Formal Tall Holders. Use a nice wood for this holder, perhaps walnut. The long stem will be spindle turned; the base will be turned on a face plate.

Tools and Materials Needed: Walnut wood blanks, drill press, tapered candle

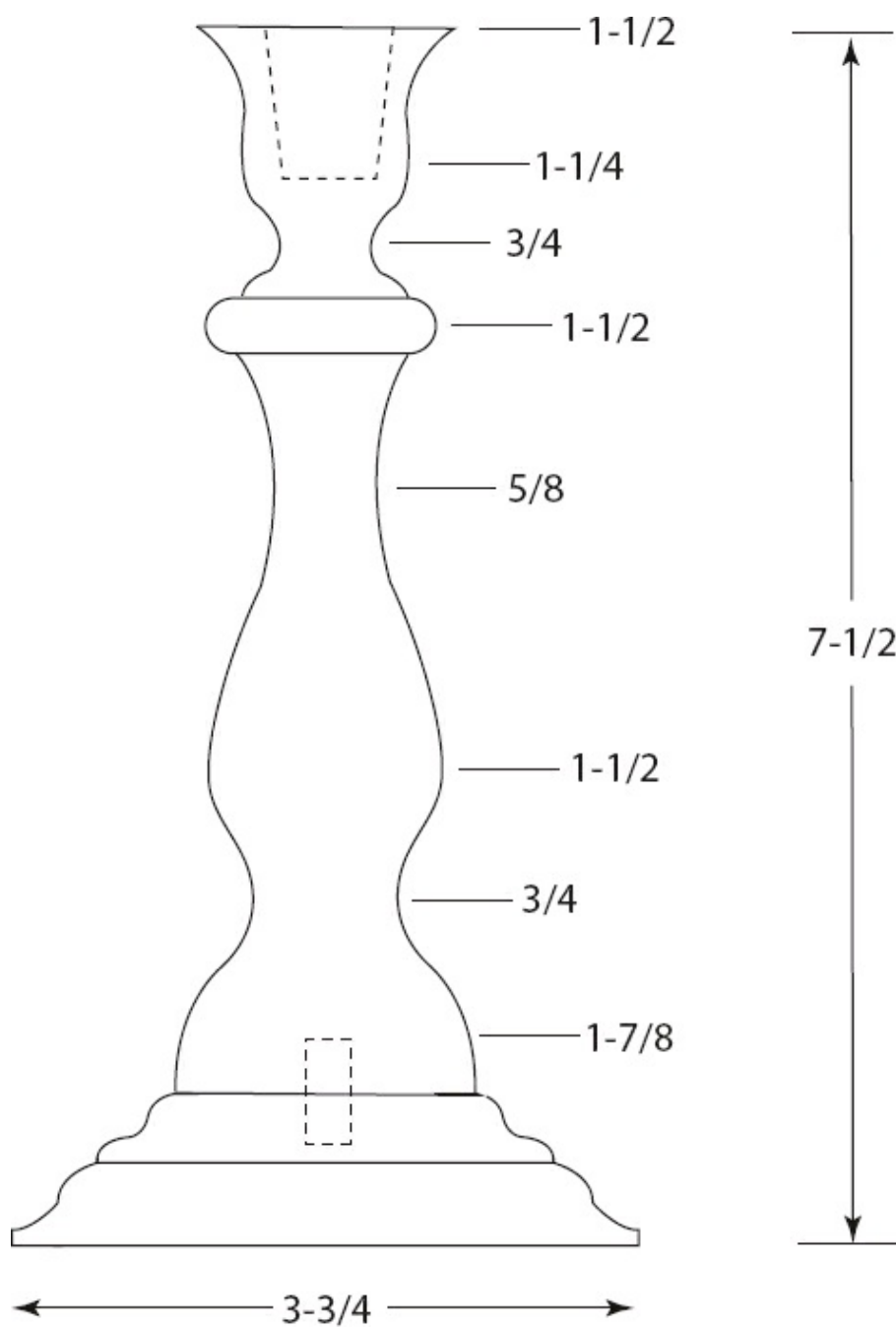
drill bit, lathe, $\frac{3}{8}$ " dowel, PVA glue and wipe-on poly.

Make the Stem: This will be a spindle turning job.

1. Start with a blank $2" \times 2" \times 7"$ long and drill a 1" deep candle-socket hole in one end. This hole needs to be $\frac{7}{8}"$ diameter at the top \times $\frac{3}{4}"$ diameter at the bottom.
2. Drill a $\frac{3}{8}"$ diameter hole, $\frac{3}{4}"$ deep in the other end for a dowel that will attach the base later.
3. Mount the piece on a lathe using an expansive jaw chuck at the head stock and a cone-shaped piece at the tail.
4. Turn to dimensions as in [Fig. 7A](#).
5. Sand and part off at $6\frac{1}{2}"$, undercutting slightly.
6. Turn the second piece to match.

Make the Base: Use a faceplate here.

1. Start with a $4" \times 4" \times \frac{7}{8}"$ thick blank and use a band saw to cut the piece round.
2. Mount the blank on a faceplate and bring the tail stock up against the bottom surface.
3. Turn the base to shape ([Fig. 7A](#)).
4. Put a $\frac{3}{8}"$ drill bit into the tail stock chuck and drill a hole $\frac{3}{8}"$ deep.
5. Sand smooth and finish.



7A. The Formal Tall Holder. Make a cardboard or thin wood pattern. Turn two on your lathe.

Glue them Together.

1. Use yellow PVA glue and fasten the pieces together.
2. Finish with wipe-on poly and then full-strength polyurethane finish.



USE AN ICE CUBE to freeze candle wax on a table top. Comes off easily.

B. Baroque Rustic Holders. This candle holder is best made from a dark wood like walnut. See [Photo 7B](#).



Photo 7B

Tools and Materials Needed: Walnut blanks, drill press, tapered candle drill bit,

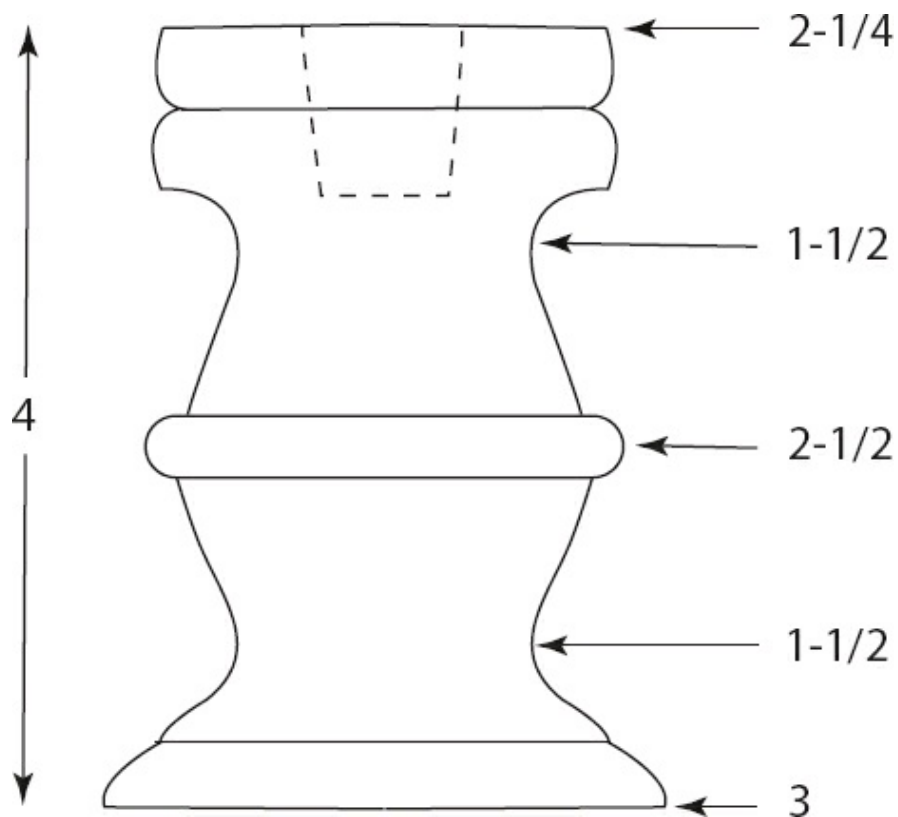
lathe and an oil finish.

Make the Candle Holders: Make these any size you like. Fig. 7B shows holders 4" high.

1. Start with two blocks of walnut 3" × 3" × 4-½" long.
2. Drill a candle socket hole in one end, 1" deep, ⅞" at the top × ¾" at the bottom.
3. Mount the piece on a faceplate and turn to the dimensions in Fig. 7B-D1.
4. Part off at 4" long.
5. Make two pieces, sand to 600 grit and rub on an oil finish.



USE A GLASS BOBECHE to keep wax from dripping.



7FB-D1. Baroque Holder. Make a cardboard or thin wood pattern and turn two holders.

C. Short Tulip Holders. The holders in [Photo 7C](#) are made of black walnut. Start with blocks about 3" × 3" × 4" long. I bought two short 8" unscented, dripless, ivory-colored candles.



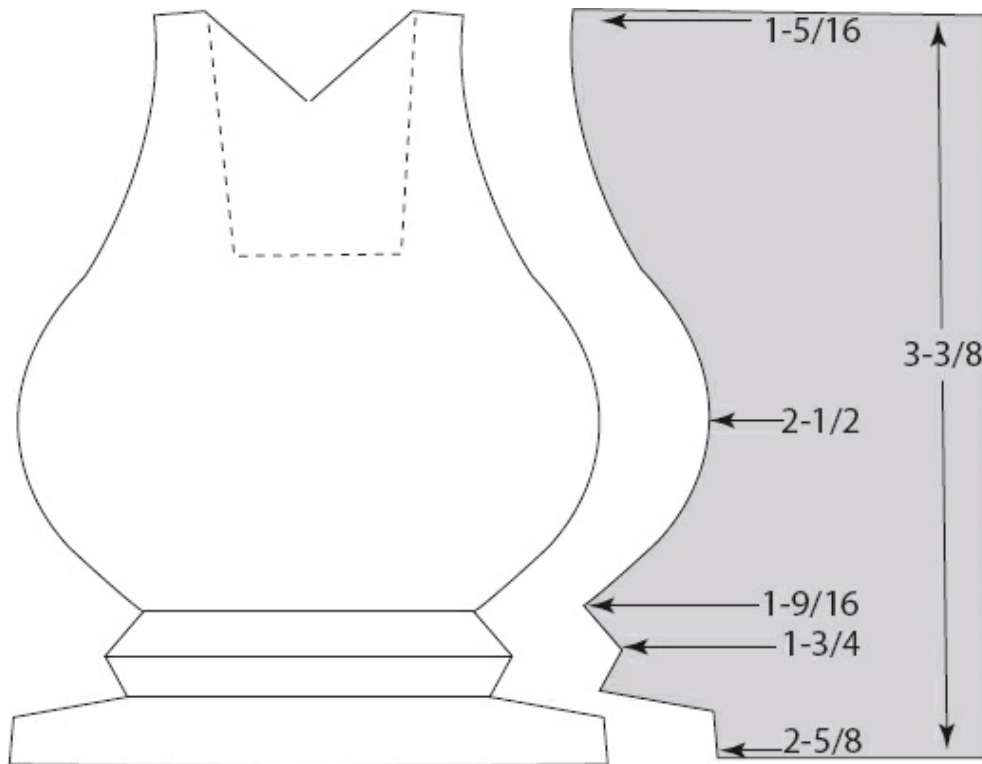
Photo 7C

Tools and Materials Needed: Walnut stock, drill press, candle-tapered drill bit, back saw or band saw, a lathe and wipe-on poly.

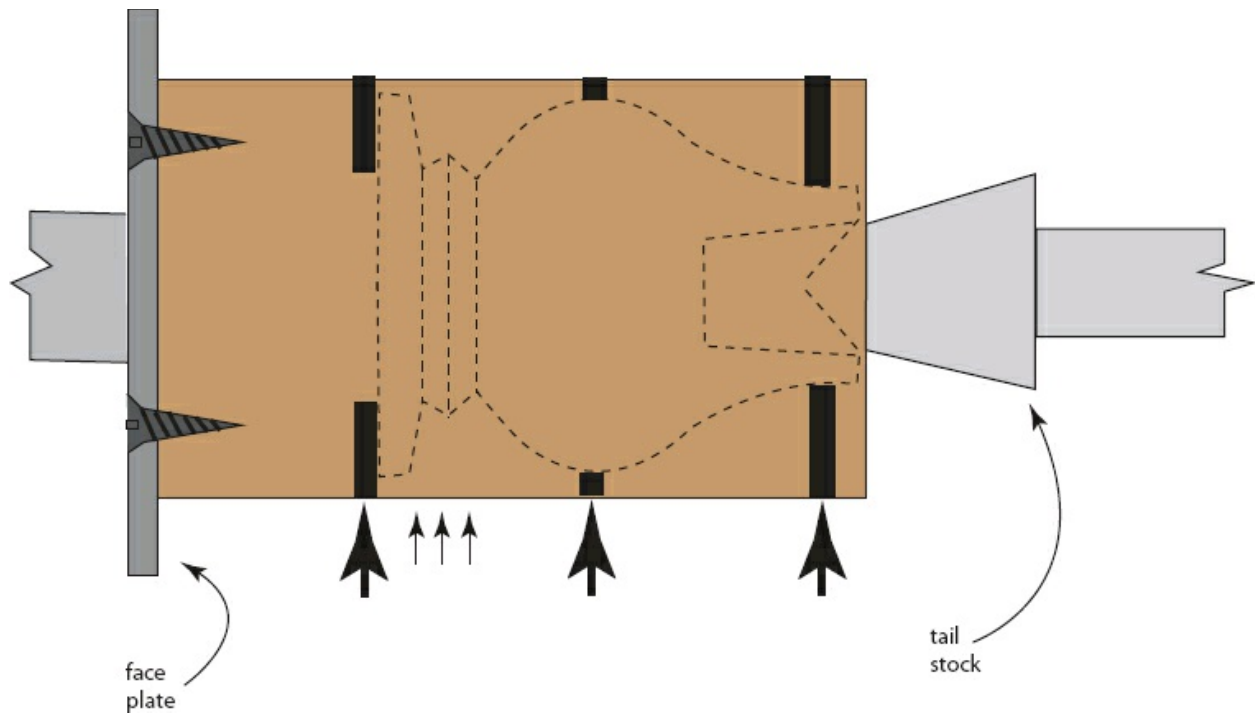
Make the Candle Holders: This holder is 2- $\frac{3}{4}$ " tall and 2- $\frac{5}{8}$ " in diameter at its widest point.

1. Use a special candle-sized bit and drill the candle hole in one end of the walnut piece.

2. Use a back saw or a band saw and cut the 'V' in the top, $\frac{3}{8}$ " deep \times $\frac{7}{8}$ " wide at the top. See [Fig. 7C-D1](#).
3. Make a cardboard guide as in [Fig. 7C-D1](#).
4. Mount the piece in a lathe using a face plate and screws. See [Fig. 7C-D2](#).
5. Use a self-centering, cone center in the tail stock.
6. Turn to a cylinder $2\text{-}\frac{5}{8}$ " in diameter, which is the diameter of the base.
7. Use the pattern and mark the cylinder shape changes with a pencil.
8. Use a parting tool to cut the cylinder to these depths; set calipers to the needed diameters and check often, see [Fig. 7C-D2](#).
9. Now cut the holder to shape based on the cut-depths and using the pattern as a guide.
10. Sand, smooth and part off the base.
11. Turn the second holder to match.



7C-D1. Small Tulip Holder. Make a pattern out of cardboard and use it as a guide to shape the Tulip Holder.



7C-D2. The Lathe Setup. Mount with a faceplate and screws. Use a revolving center cone in the tail stock and turn to a cylinder. Mark the 'shape changes' with a pencil (small arrows). Use a parting tool to cut to the required depth (big arrows). Use a gouge and a round-nose scraper for final shape, using the pattern as a guide.

12. Over at the work bench, use a file and sandpaper to ease the edges of the top 'V'.
13. Finish with wipe-on poly



SHARE YOUR ENTHUSIASM.

When you finish a project, use it and enjoy it but be ready to share your woodworking skills, especially with young people. A lot of the junior highs and high schools here in the U. S. no longer offer 'Shop Classes'. Kids can't sign up to learn how to work with wood. The next generation will completely lose the opportunity to learn wood working skills in school. You can make up for this by inviting a father-son or father-daughter to you shop and pass on your skills. You and the novices will be the better for this.

D. Votive or Prayer Candelabra. If you can find an old stave from a wine barrel, then use that. Otherwise, proceed as I did and glue up multiple pieces of thin wood strips to make this curved candle stand. Purchase the candle cups before starting.

The cups in [Photo 7D](#) are 2" high \times 1- $\frac{5}{8}$ " diameter. I used two walnut veneer strips and three $\frac{3}{16}$ " red oak strips; this enhanced the design plus made the spring-back less; See [Appendix, Spring Back](#).

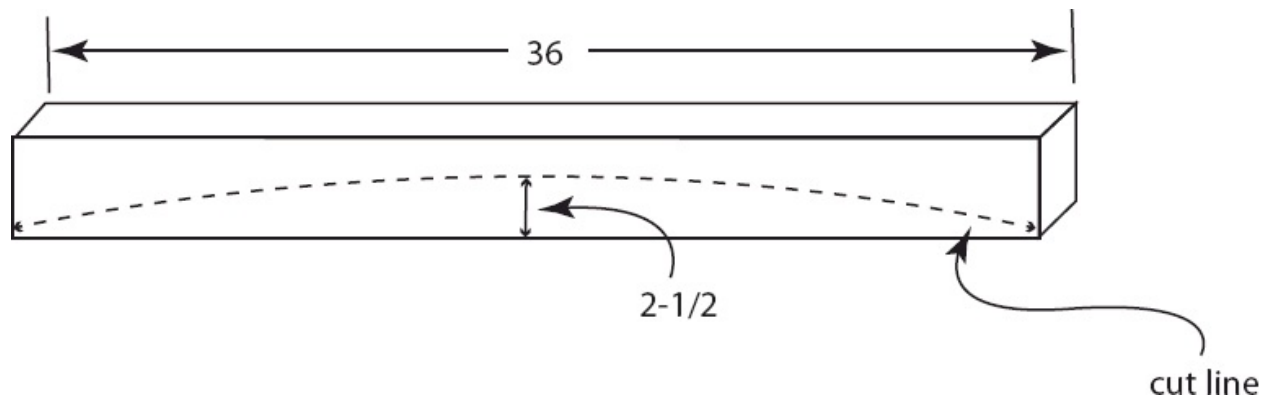


Photo 7D

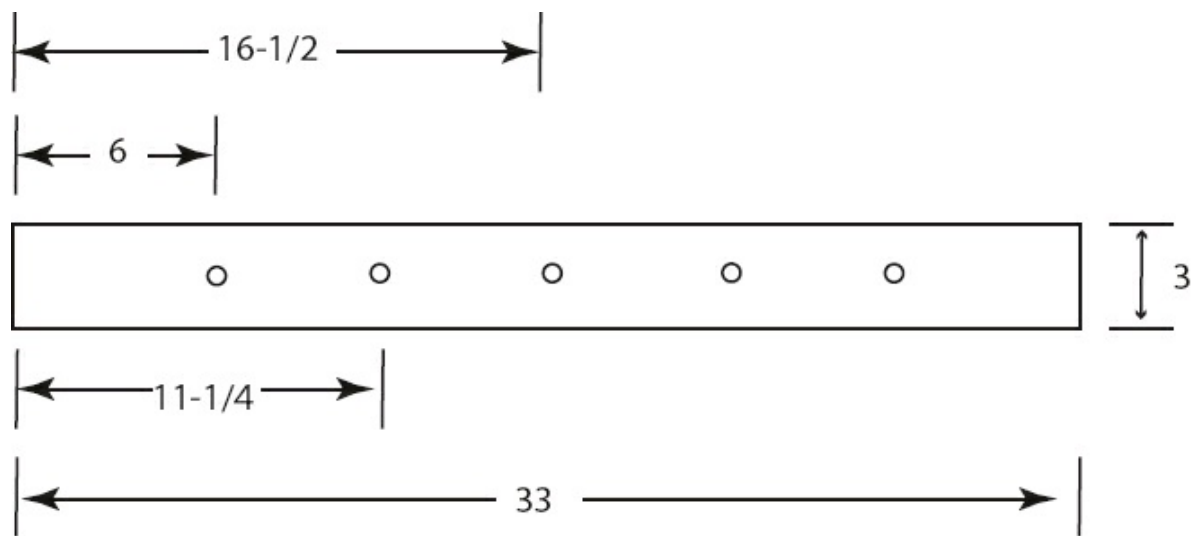
Tools and Materials Needed: A wine barrel stave or three thin wood strips ($\frac{3}{16}$ " thick \times 3- $\frac{1}{4}$ " wide \times 36" long), table saw, band saw, 2 \times 4 for the bending form, jointer or hand plane, walnut veneer, PVA glue, drill press, 1- $\frac{5}{8}$ " Forstner bit, five glass votive candle-cups, and varnish.

Make the Holder: When it is time to glue, ask someone to help; the glue will set in about ten minutes and you need to move quickly.

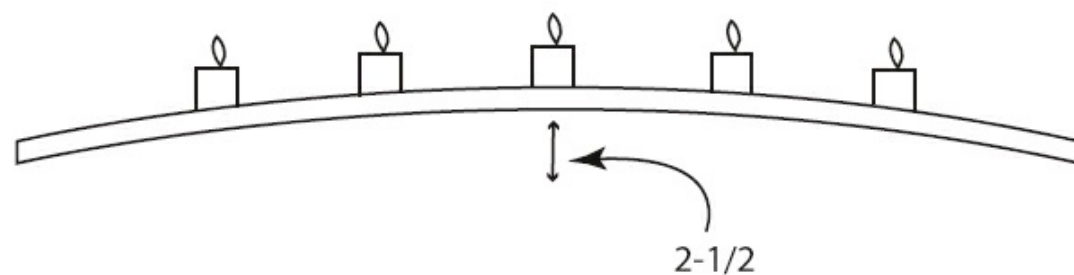
1. Cut the 2 \times 4 to 36" long and draw the arc, See [Fig. 7D-D1](#). Use a band saw and cut the bending form to shape.
2. Use a table saw or band saw to cut three strips, $\frac{1}{4}$ " thick \times 3- $\frac{1}{4}$ " wide \times 36" long from a piece of red oak. Sand the pieces smooth to $\frac{3}{16}$ " thickness.
3. Cut two walnut veneer strips 36" long \times 3- $\frac{1}{4}$ " wide. Note: commercial veneer varies from about $\frac{1}{28}$ " thick to $\frac{1}{40}$ " thick. Either thickness will work here.
4. Place wax paper on the wood form and then glue and clamp the three wood strips and the two veneer strips.
5. After 2-3 hours, remove the clamps and scrape off the extruded glue.
6. Run the piece over a jointer or use a hand plane to smooth both edges. Make it about 3" wide. I measured and the total arc was about $\frac{1}{16}$ " (or $\frac{2}{32}$ ") less than the 2- $\frac{1}{2}$ " I was shooting for. See [Appendix, Spring back](#). The calculated spring back is $\frac{3}{32}$ ", so this is pretty good for government work.



7D-D1. Bending Form. Use a $\frac{1}{2}$ " wide strip of veneer plus three small brads, and draw an arc on a 2×4 and cut as shown.



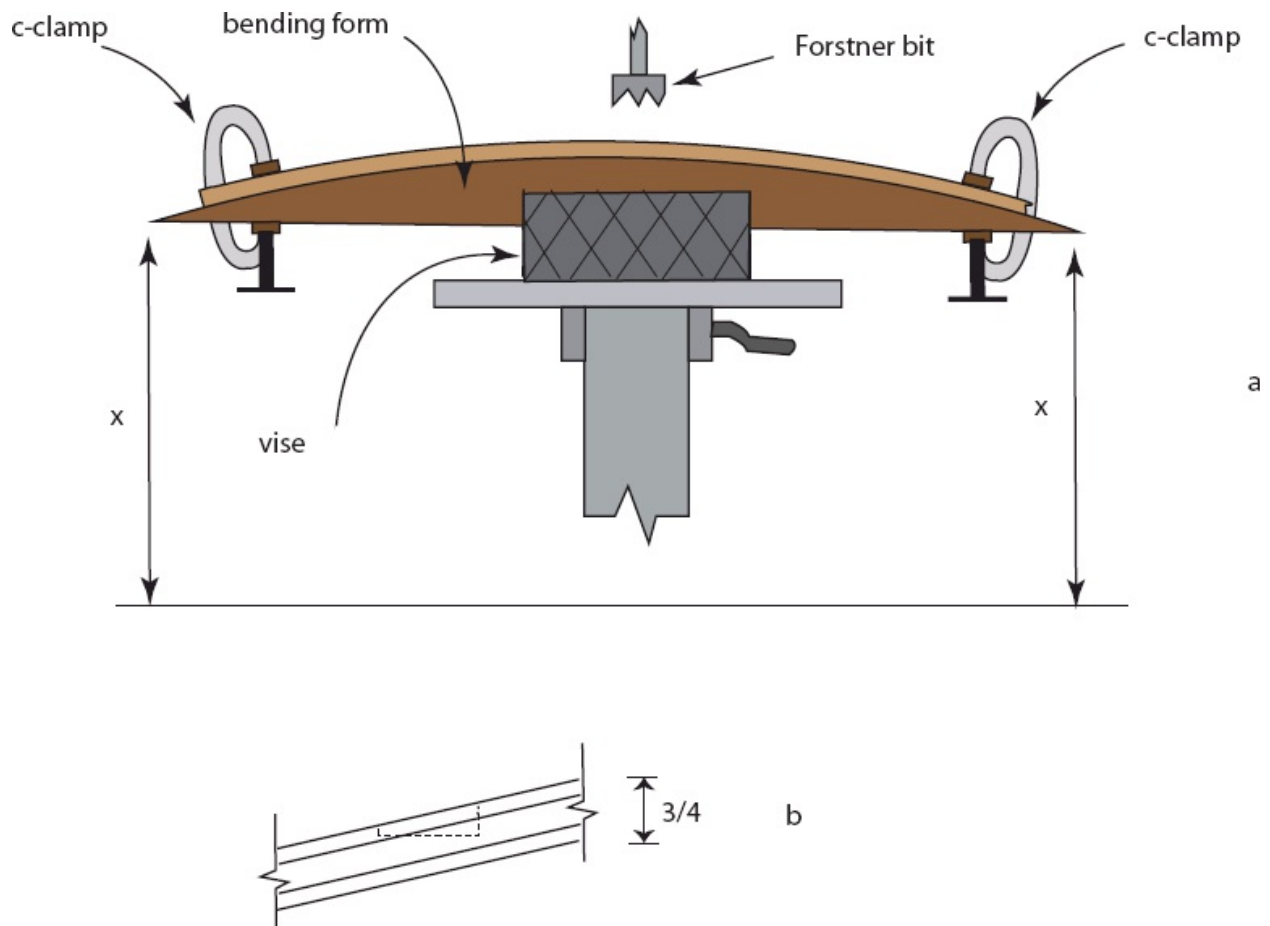
a



b

7D-D2. The Hole Layout. Mark the drill holes as shown (a); the marks are spaced $4\frac{1}{4}$ " apart. The final side view is shown (b).

7. Cut the ends square at 33" long.
8. Mark the locations where the candle cups will be located. See [Fig. 7D-D2a](#).
9. Clamp the curved holder back onto the curved form and clamp on a drill press table. See [Fig. 7D-D3](#).
10. Make the form level by measuring the distance from the floor to each end.
11. Use a 1-5/8" Forstner bit and drill the first hole 1/4" deep.
12. Move the form left and right on the drill press table keeping the candelabra piece level and drill the other four holes. The candle cups should stand at 90° to the dining table.
13. Smooth and finish the piece with varnish.
14. Use double sided tape or shelf putty to hold the candle cups in place while in use.



7D-D3. Drill the Cup Holes. Clamp the bending form in a drill press vise and clamp the candle holder to it. Make the distance (x) at each end the same to get the candle holder level. Drill all holes 1-5/8" diameter and 1/4" deep. (a). The candle holder hole should be drilled so the glass piece sets level to the dining table. (b)



SANDING ELEMENTS

Some wood-workers recommend that you should spend as much time sanding and shaping a project as you spent making it. Sanding is an abrasive operation, to shape and to smooth the wood before a finish is applied. A perfectly smooth surface is produced by repeated sanding in an orderly manner. Start with 80 grit paper (approximately 80 tiny rocks glued to a square inch of a paper or cloth) and progress to 120, 180, 220 and finally to 320 grit. It is very important that this orderly sequence is followed. Jumping from 80 grit to 320 grit merely produces well-sanded scratches. The small 320 rocks will not obliterate the big grooves left by the 80 grit paper.

E. Triple Spiral Holder. The plans for this set came from a 1983 workshop in Redwood City, California run by Shop Smith. You can start with nice walnut or maple blocks and finish with a polyurethane finish or proceed as I did and use an old 4" × 12" × 24" long block of pine salvaged from a construction site and then paint it. (See [Photo 7E](#).)



Photo 7E

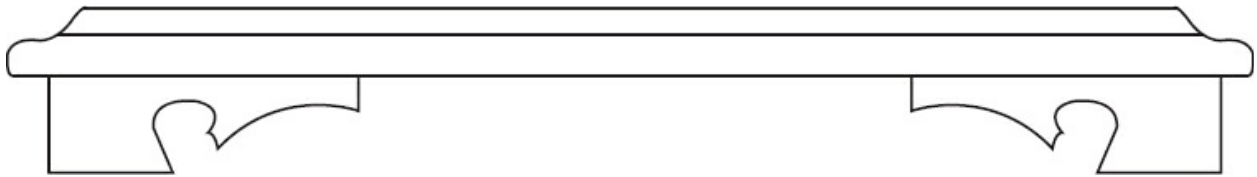
Those who are more creative (i.e. more artiste) than I, and there are a lot of you out there, told me that if I painted the triple spiral holder, I should use two shades of the same color. Put the darker shade on the base (to ground it) and use a lighter hue on the three top spirals (to lift them). Wow, who knew?

Tools and Materials Needed: Three wood blocks, table saw, band saw, glue, router, drill press, oscillating drum sander, wipe-on poly and/or paint. I used two shades of brown paint; Folk Art #940 Coffee and Folk Art #472 Mushroom. The

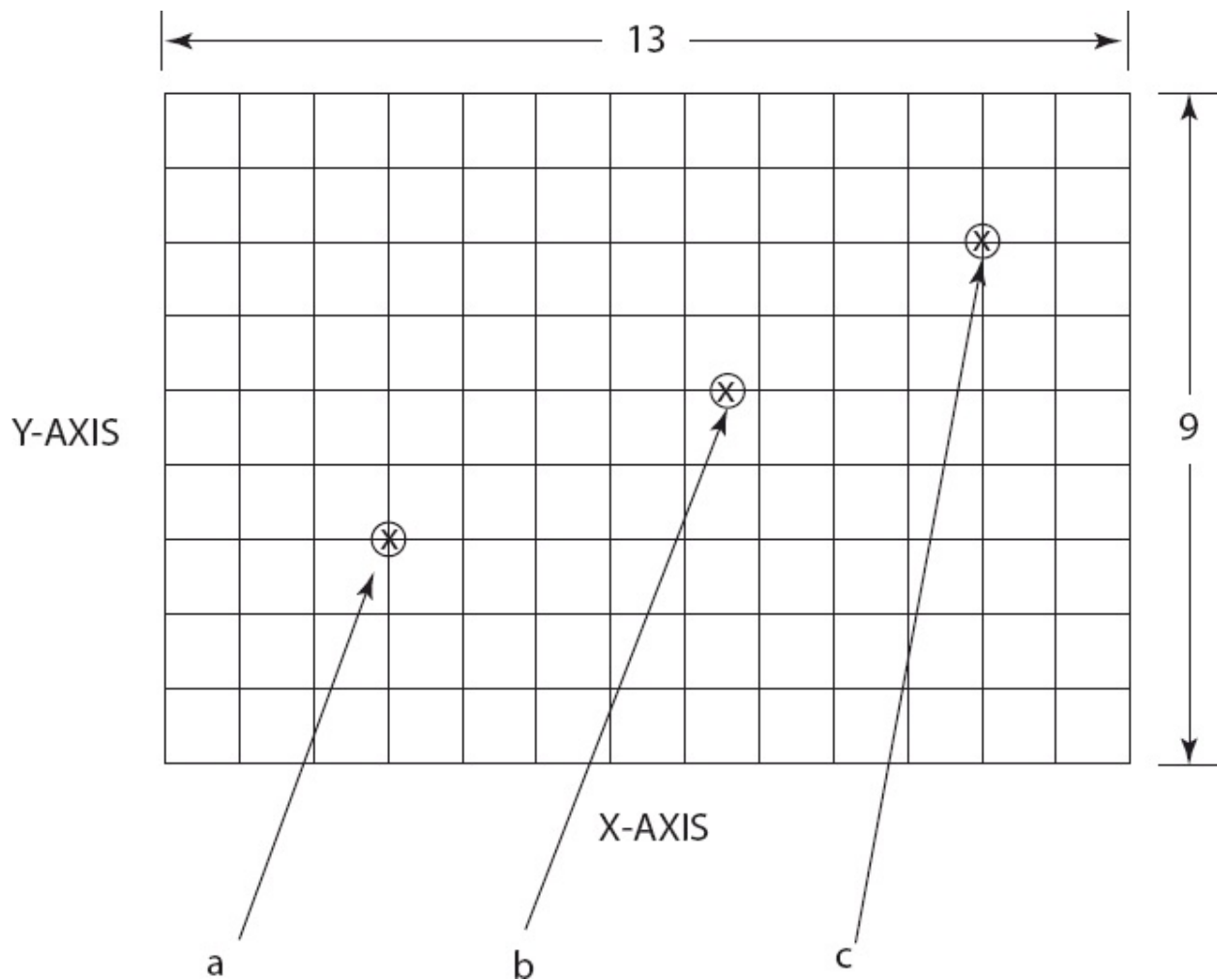
two little 2 Fl. Oz. bottles of matte acrylic paint came from Hobby Lobby. There's probably enough here to paint three spiral holder sets.

Make the Base: Glue up enough $\frac{3}{4}$ " stock to make one piece 9" wide \times 13" long.

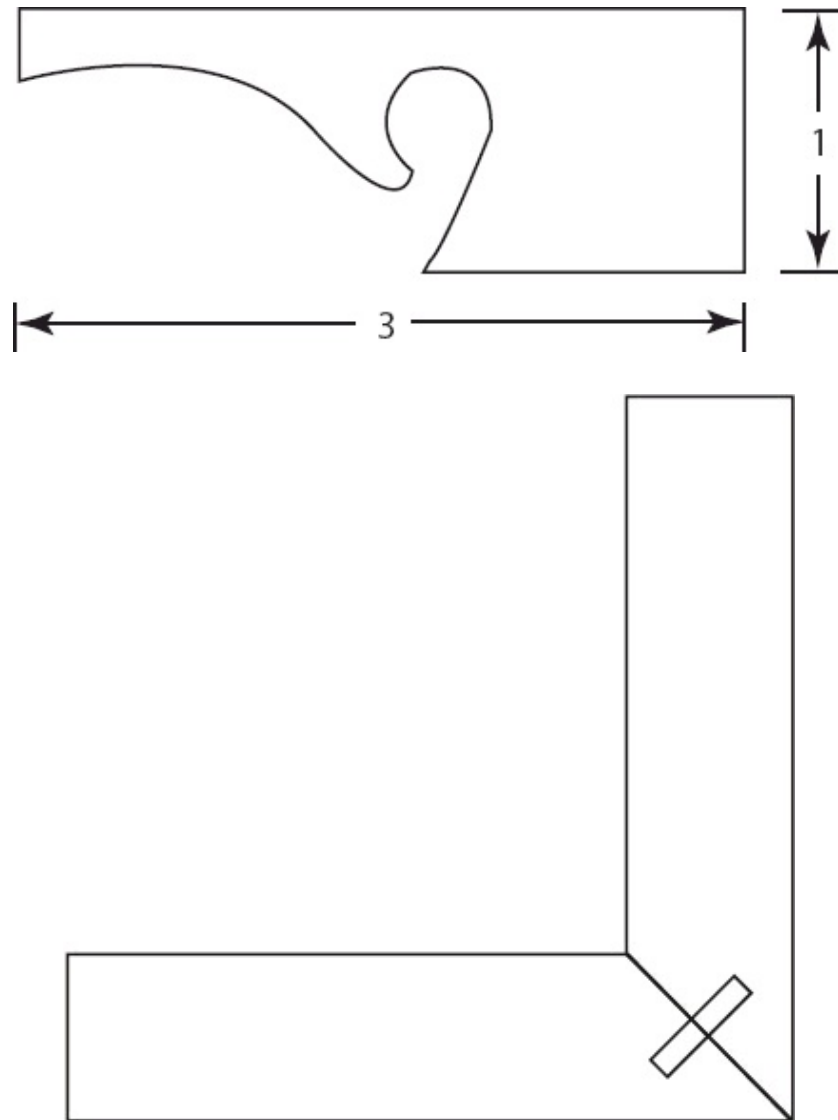
1. Use a router or shaper and cut ogee edges on the base. See [Fig. 7E-D1](#).
2. Drill three $\frac{3}{8}$ " holes $\frac{1}{2}$ " deep to mount the three blanks. See [Fig. 7E-D2](#).
3. Make four corner feet as in [Fig. 7E-D3](#).
4. Glue the feet sections to the bottom of the base, set in $\frac{3}{8}$ " from the edges.



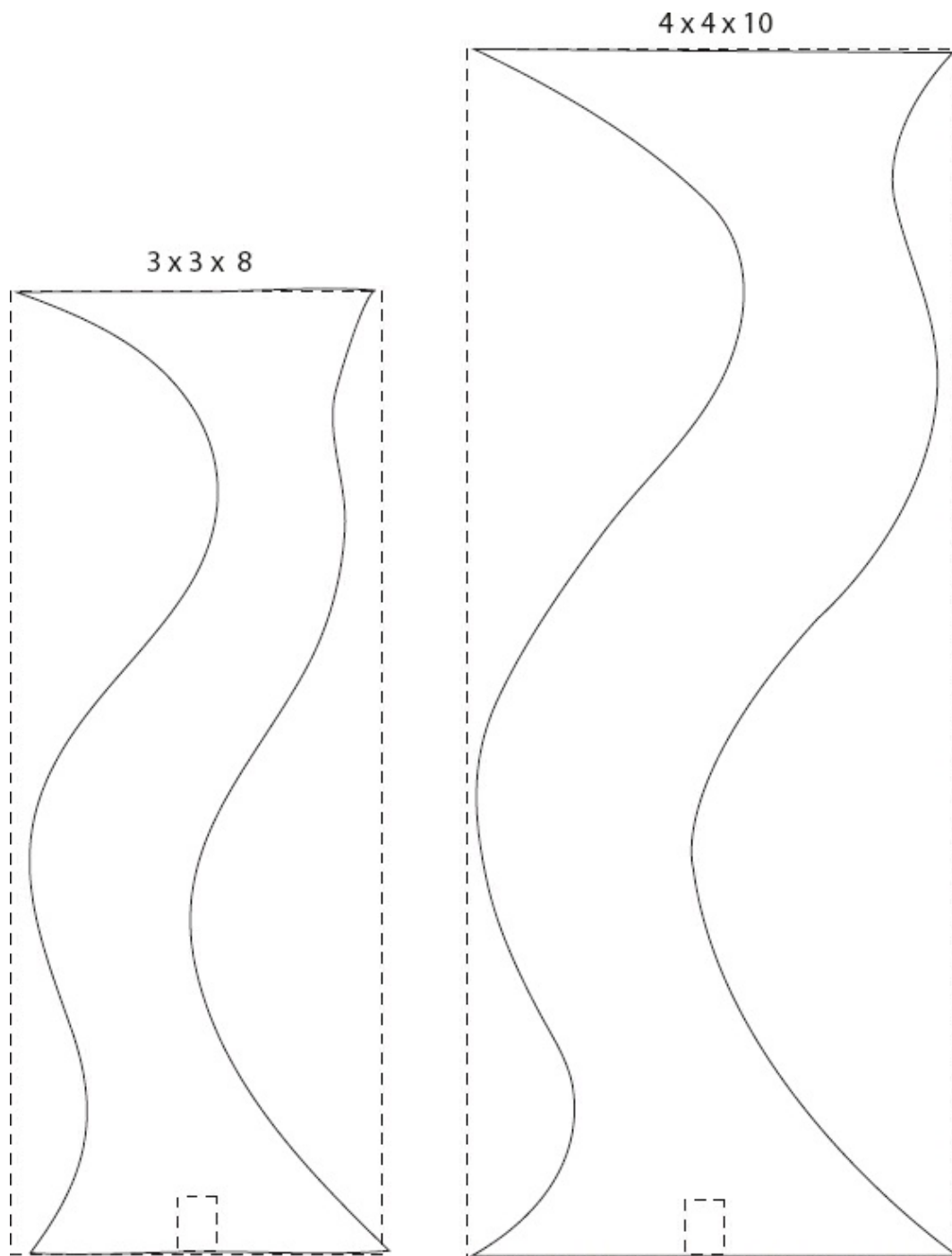
7E-D1. The Base. Paint the base a darker shade of the candle stick color.



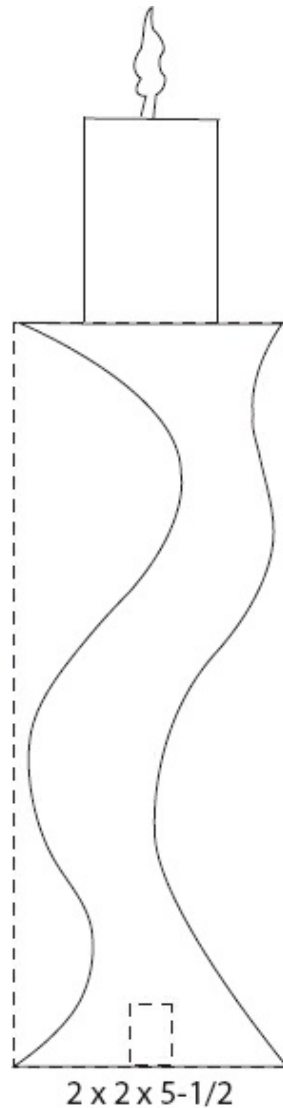
7E-D2. The Base Board. Place the large holder at (a), the medium holder at (b) and the small holder at (c).



7E-D3. The Feet. Start with $\frac{3}{4}$ " stock, 1" wide \times 26" long. Make eight 3" sections. Drill a $\frac{3}{8}$ " hole and then cut the design with a scroll saw. Cut the ends at 45° and join with a spline. Glue the four corner sections to the bottom of the base, set in about $\frac{3}{8}$ ".



7E-D4. Large and Medium Outlines. Trace the full-size patterns to both sides of the blanks.



7E-D5. Small Outline. Trace the full-size pattern to both sides of the small blank.

Make the Candle Holders: The large block should be 4" × 4" × 10" long, the medium block 3" × 3" × 8" and the small block should be 2" × 2" × 5-½" long.

1. Cut the pieces of wood and reglue until you have the three blanks to the size needed.
2. Center and drill a ⅜" diameter hole in the bottom of each blank about ¾" deep.
3. Make full-size templates for each block ([Fig. 7E-D4](#) and [Fig. 7E-D5](#)).
4. Trace the outlines on two adjacent sides of each block.
5. Use a band saw and cut along the lines. Tape the cut-off waste back on the piece, flip the piece 90° and cut the second side.
6. Use a rasp, files, sand paper or oscillating drum sander to sand the holders

smooth.

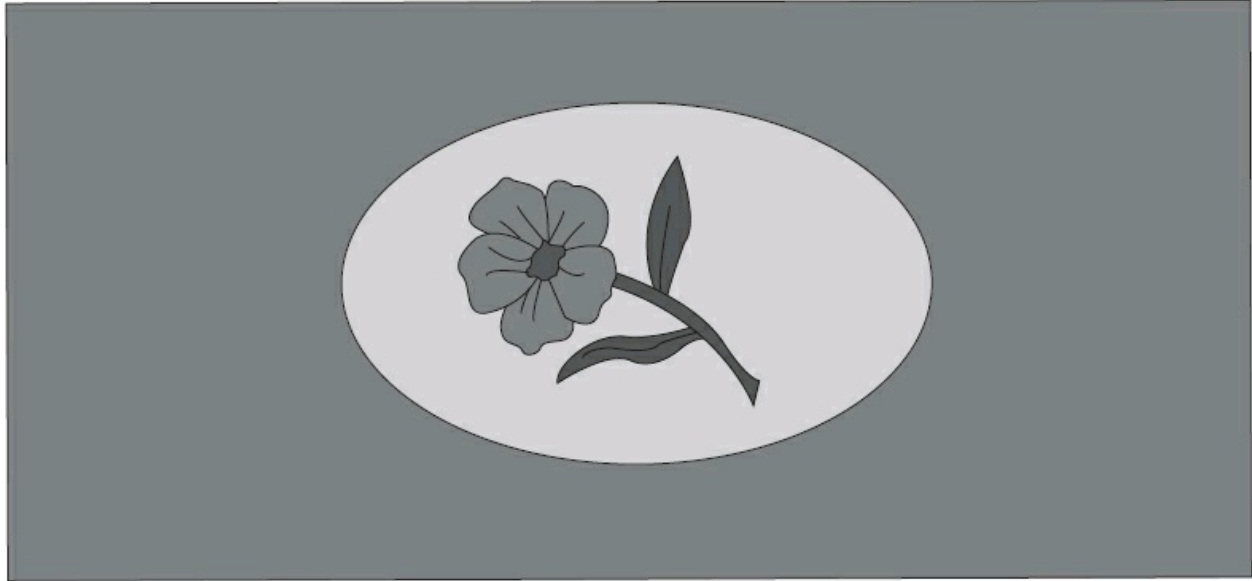
7. Paint the base a darker shade and the candle spindles a lighter shade.
8. The water based acrylic paints will raise the grain and leave the wood rough; sand smooth and seal with a brush-on varnish.
9. Glue the spiral holders to the base board using $\frac{3}{8}$ " dowels.

F. Candle Box. These boxes are easy to make and are great for storing extra candles; red and green for Christmas, orange for fall and white for late night get-togethers. The marquetry on the lid can be as complicated as you want or as simple. The lid in the photo ([Photo 7F](#)) and in the pattern ([Fig. 7F-D1](#)) show a flower set into an elliptical form. The boxes can be opened easily with one hand; just push down on either end. Follow the marquetry instructions in [Chapter 10 'Coasters'](#) to make the flower design for the top of the box. I used maple for my box.

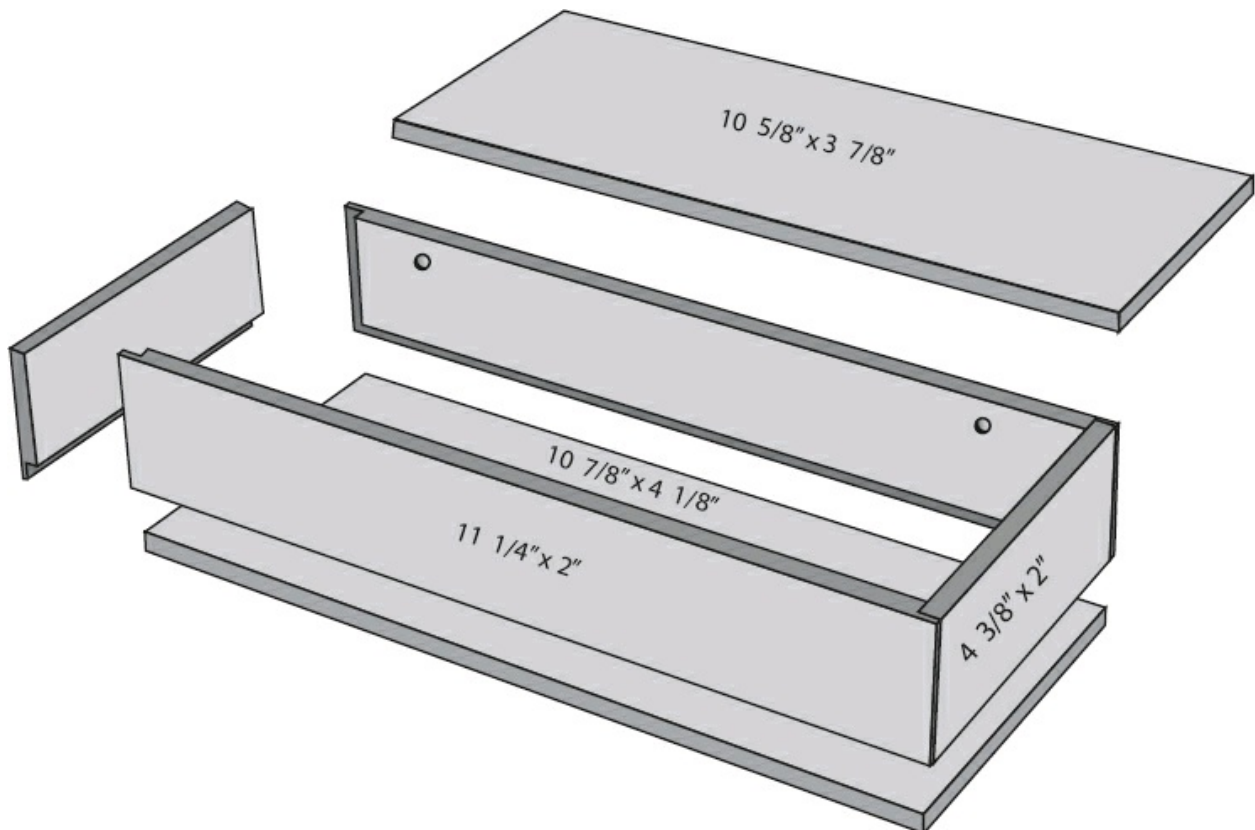


Photo 7F

Tools and Materials Needed: Box and lid stock ($\frac{5}{16}$ " solid), $\frac{1}{4}$ " plywood for bottom, four $\frac{1}{4}$ " dowels, a router, scroll or fret saw, PVA glue and veneer for the marquetry.



7F-D1. Pattern. The flower is first cut into the light-colored veneer. Next use a router and guide collars to set the light marquetry piece into the dark background.



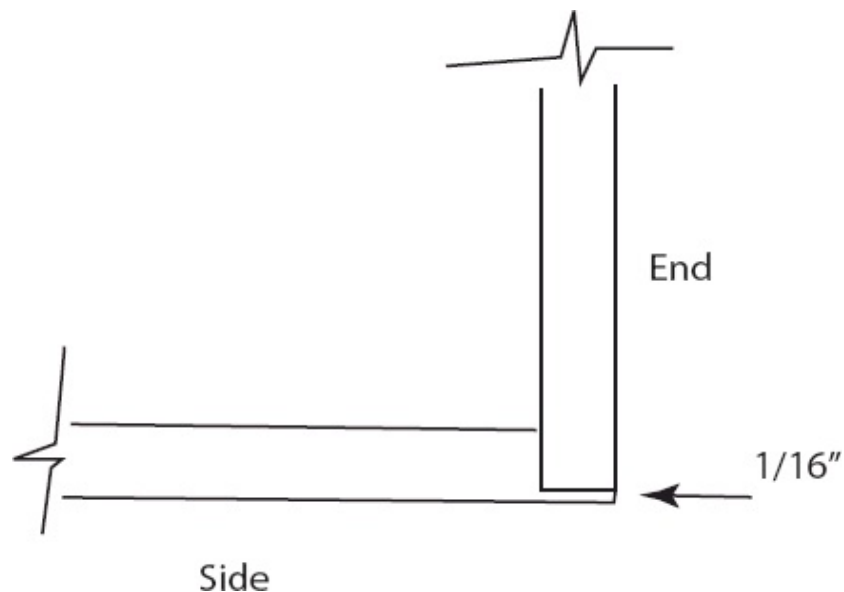
7F-D2. The Basic Box. Use $\frac{5}{16}$ " stock and set the $\frac{1}{4}$ " bottom into rabbets in the ends and sides.

Make the Box: The box is made of $\frac{5}{16}$ " stock and measures 4- $\frac{1}{2}$ " wide \times 11- $\frac{1}{4}$ " long \times 2" high; see [Fig. 7F-D2](#) for an exploded view of the box. The lid is also $\frac{5}{16}$ "

and rests on four $\frac{1}{4}$ " dowels set into the sides. The lid can be made of any wood. The bottom is made of $\frac{1}{4}$ " stock and is captured by rabbets cut into the sides and ends; the corner connections are modified butt joints, see [Fig. 7F-D3](#).

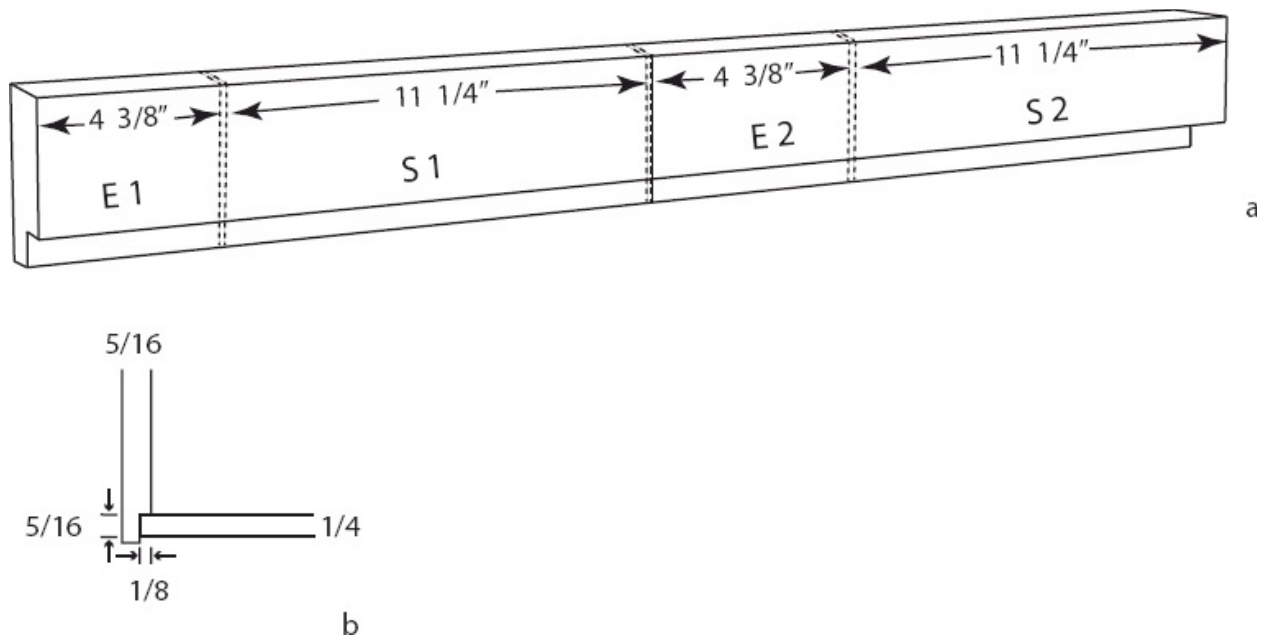
Cut the Pieces to Length: Use cherry, walnut, maple or any hardwood that will finish nicely. Follow the guidelines in [Fig. 7F-D4a](#) so the grain is continuous around the box except for one corner.

1. Resaw the stock to $\frac{3}{8}$ " thick and sand smooth to a finished $\frac{5}{16}$ ".
2. Cut the stock to 2" wide by 34" long; enough for two sides and both ends.



7F-D3. The End-Side Joinery. Use a modified butt joint. The sides and ends are $\frac{5}{16}$ " thick.

3. Cut a rabbet on the inside bottom edge of the long piece. See [Fig. 7F-D4b](#).
4. Mark the board with the box parts and cut ends 'E1' and 'E2' to $4\frac{3}{8}$ " and sides 'S1' and 'S2' to $11\frac{1}{4}$ ".
5. Cut rabbets on both ends of the two sides as in [Fig. 7F-D3](#).



7F-D4. Mark the $\frac{5}{16}$ " Stock. Mark end-1, side-1, end-2 and side-2 so the box will be made of continuous grain pieces (a). Cut the strip where indicated. Cut a rabbet along the bottom edge $\frac{5}{16}$ " high and $\frac{1}{8}$ " deep. The $\frac{1}{4}$ " bottom fits into the rabbet.(b).

Make Dowel Holes: The correct placement of the dowels is important so the lid does not rock and tips up easily. The lid can be even with the top of the box or set slightly proud.

1. Drill four $\frac{1}{4}$ " holes $\frac{7}{16}$ " down from the top of the side and $1\text{-}\frac{3}{4}$ " from the end. See [Fig. 7F-D2](#).

Cut the Bottom and Put the Box Together: The bottom is made of $\frac{1}{4}$ " plywood and can be plain or have a nice piece of veneer glued to the top so it is visible from inside.

1. Cut the bottom piece to fit; approximately $10\text{-}\frac{7}{8}$ " long \times $4\text{-}\frac{1}{8}$ " wide.
2. Glue on a nice figured veneer or add a piece of marquetry here.
3. Check for fit.
4. Glue the box together; two ends, two sides and the bottom, checking for square as you clamp.
5. Sand the box to 320 grit and use a wipe-on poly for the finish.
6. Temporarily place $\frac{1}{2}$ " long dowels into the four holes.

Prepare the Lid and the Marquetry: The lid is made of solid $\frac{5}{16}$ " stock. It should be about $10\text{-}\frac{7}{8}$ " long \times $3\text{-}\frac{7}{8}$ " wide. Measure the inside dimensions of your box and make the lid smaller by about $\frac{1}{16}$ " both in length and width. Follow the Pad Marquetry Instructions in [Chapter 10 'Coasters'](#) to make the flower design for the

top of the box. Follow the instructions in the **Appendix, Guide Collars** to cut the elliptical outline and the elliptical hole in the background.

1. Prepare the marquetry for the lid, see pattern [Fig. 7F-D1](#).
2. Cut the marquetry into the background.
3. Glue the background onto the lid.
4. Put the lid into the box and if it fits properly, i.e. doesn't tip, then glue the dowels in place. If the lid needs adjustment, whittle a little bit off the top of one or two dowels and then glue them in.

CHAPTER 8

THREE ROLLING PINS, A PIN REST AND AN ON-DOOR SPICE RACK

Rolling Pins and Rest: There are three nice looking rolling pins here. **The Common Pastry or French Rolling Pin (A)**, the **Knobby-End Rolling Pin (B)** and finally, the **Traditional Rolling Pin (C)**, plus a **Pin Rest (D)** to keep the pins from rolling off the counter. Last is an **On-Door Spice Rack (E)**.



Photo 8A

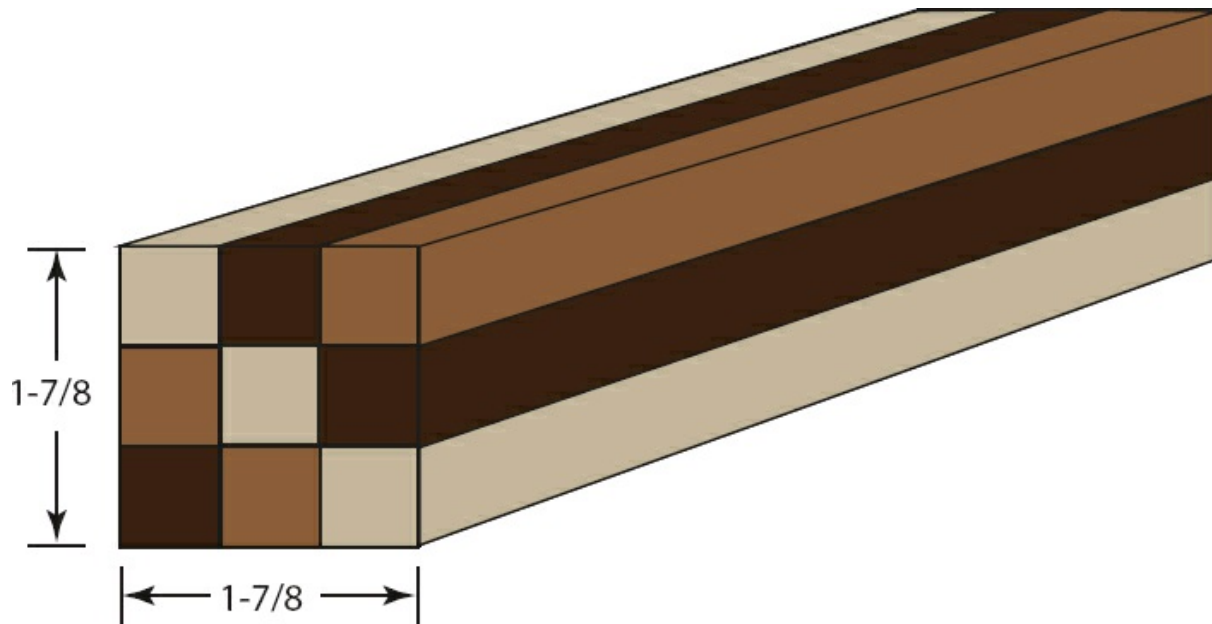
A. French Rolling Pin. This kitchen helper is about 18 - 20" long and 1-¼" in diameter at each end and 1-½" in the center. The rolling pin in [Photo 8A](#) is maple, cherry and walnut. A French-style pin differs from its American cousin in that the French model has no handles; sometimes it is bigger in the middle than it is at the two ends and at times it is the same diameter throughout the length.

Tools and Materials Needed: Nine wood strips (each ⅝" square by 19" long) of maple, cherry and walnut, yellow glue, clamps, a hand plane, a lathe and polyurethane finish.

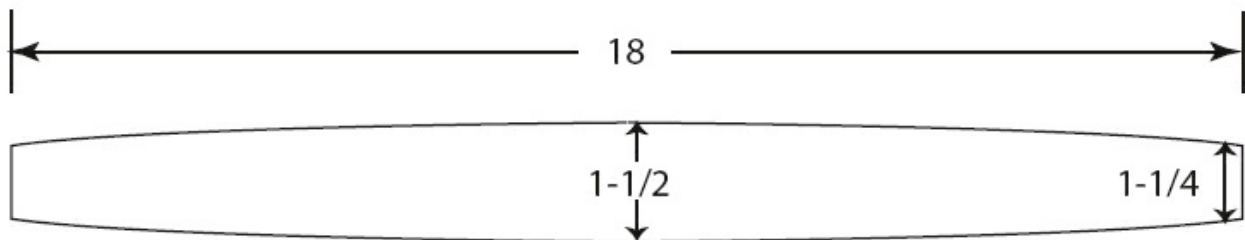
Build the Piece: This French Pin will be made of glued-up pieces.

1. Cut the nine wood strips and glue them together as in [Fig. 8A-D1a](#).
2. After one hour, remove the clamps, scrape off the extruded glue and dress the four sides with a hand plane.
3. Mount the block (it should be about 1-⅞" square × 19" long) on the lathe and turn it to a 1-½" diameter for the whole length.

4. Sand smooth and finish with polyurethane.
5. Cut the rolling pin off at 18" long.



a



b

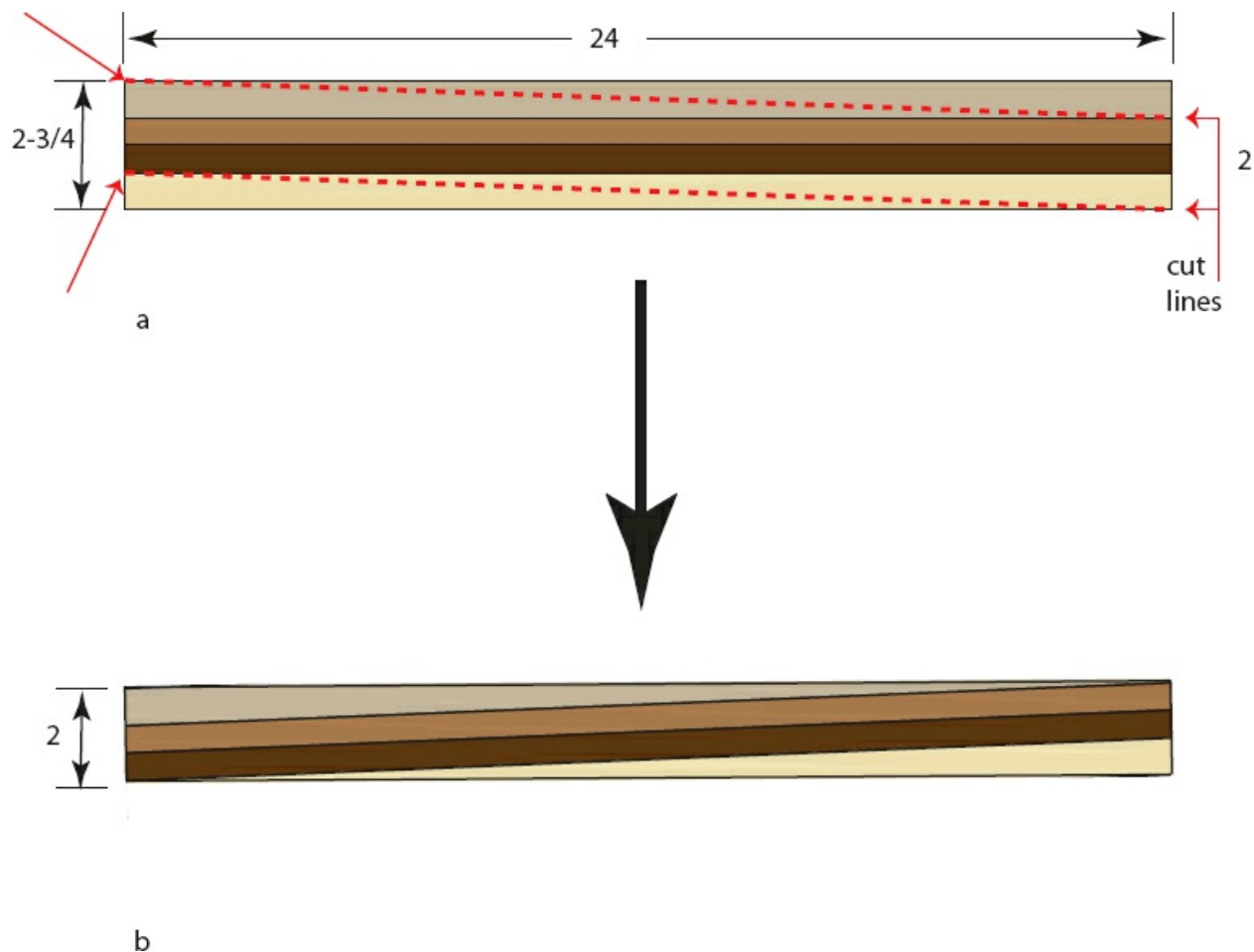
8A-D1. French Rolling Pin. Use nine pieces, each $\frac{5}{8}$ " square \times 18" Long, to make the pin blank (a). Turn to shape as in (b) or turn to the same diameter throughout the length.

B. The Knobby-end Rolling Pin. This rolling pin is made of four glued-up pieces of stock with black veneer between the pieces. The rolling pin in [Photo 8B](#) is made of two pieces of maple, one of walnut and one of cherry. Each piece of wood starts at 2-½" wide × 24" long. Two pieces are ⅝" thick and two pieces are ¾" thick.

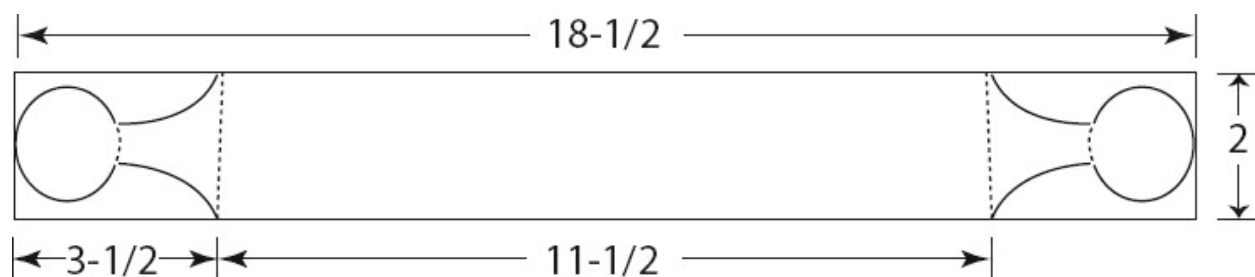


Photo 8B

Tools and Materials Needed: Cherry, maple and walnut stock, a piece of black-dyed veneer, table saw, yellow glue, lots of clamps, band saw, lathe and polyurethane for the finish.



8B-D1. The Knobby-end Rolling Pin. Glue up four pieces of wood (two are $\frac{3}{4}$ " thick and two are $\frac{5}{8}$ " thick) plus the veneer strip (a). After glue-up, use a band saw and cut the blank on a bias (red arrows) to give a 2" square blank (b). Rotate the blank 90° and cut the blank again to 2-inches.



8B-D2. The Knobby Pin Profile. Turn the blank to a length of 18- $\frac{1}{2}$ ".

Make the Rolling Pin: Gather the four 24" long pieces plus the black veneer. The two outside maple pieces are $\frac{3}{4}$ " thick, the two inner pieces (cherry and walnut) are each $\frac{5}{8}$ " thick.

1. Measure the total thickness of the bunch and make each piece so when they are all glued together, your rolling pin blank will be square.

2. Put yellow glue on all pieces, including the veneer strip, and clamp them together as in [Fig. 8B-D1](#).
3. Draw the cut lines as in [Fig. 8B-D1a](#).
4. Use a band-saw and cut along these lines to give the blank as in [Fig. 8B-D1b](#).
5. Roll the blank 90° and cut on the bias again.
6. Use a lathe and turn the rolling pin as in [Fig. 8B-D2](#). Note that the knobs on each end are slightly smaller in diameter than the barrel.
7. Sand smooth and finish with polyurethane.

ROLLING OUT PIE CRUST

When you are rolling out dough for a pie crust, try this trick. Put down a sheet of waxed paper or plastic wrap on your counter top and put the ball of dough on it. Now cover with another sheet and use the rolling pin as usual to flatten the dough. When through, remove the top sheet; the waxed paper or plastic wrap comes off easily. Now pick up the flattened pie crust using the corners of the bottom sheet. Turn it upside down over the pie plate, position the crust and remove the sheet. Using this method, neither your bread-board nor your rolling pin ever gets messy.

C. Traditional Rolling Pin. This Roller has a 12" barrel and an overall length of 21". It will be made using three maple boards: two 1" thick and one ¾" thick. The three boards will be glued together with two red strips of veneer running longwise between them. The two outside boards each have a black veneer strip inserted into an arc shape. See [Photo 8C](#)

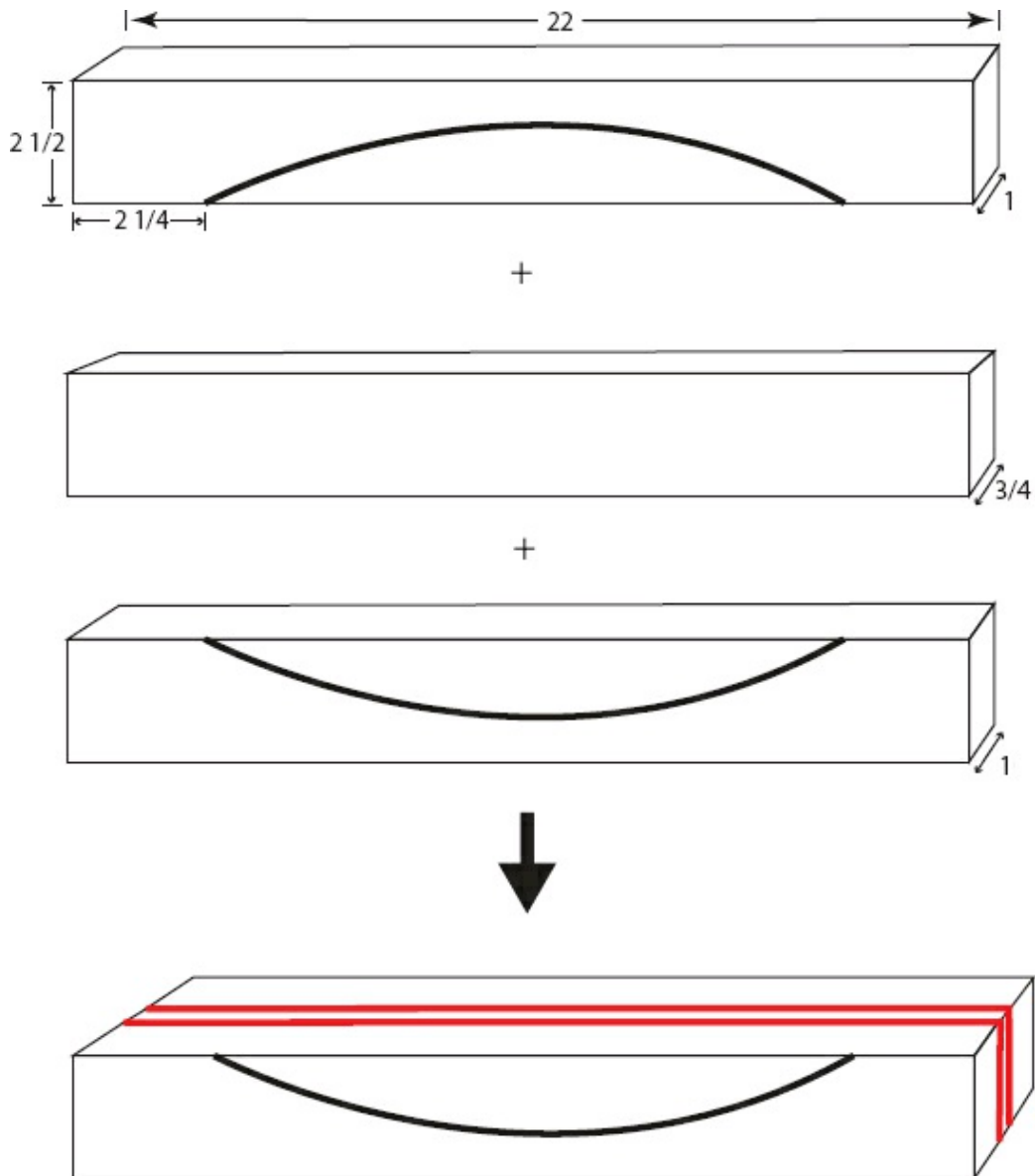


Photo 8C

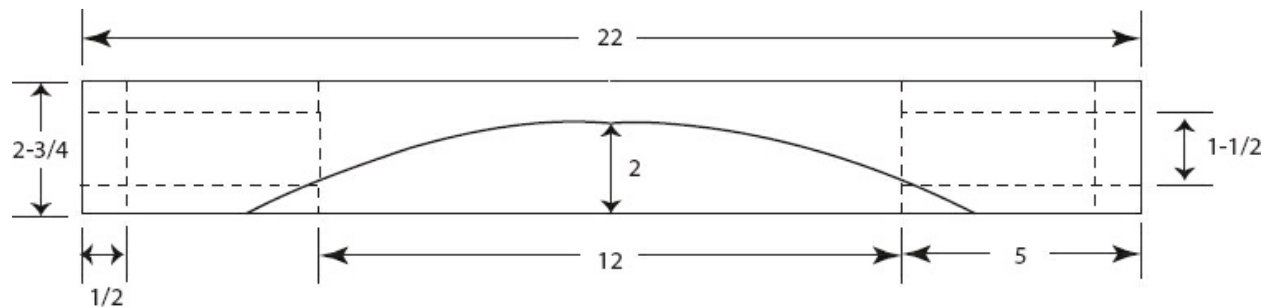
Tools and Materials Needed: Maple stock, red and black veneer, yellow glue, clamps, band saw, table saw, a lathe and polyurethane finish.

Make the Blank: We will need two 1" thick maple boards each 2-½" wide × 22" long, one ¾" maple board the same dimensions and the red and black-dyed veneer strips. See [Fig. 8C-D1](#).

1. Cut the two 1" thick maple boards to 2-½" wide × 22" long.
2. Pass them through a thickness planer to get them smooth and flat on the mating sides.
3. Use double-sided tape and fasten these two outer boards together.
4. Mark off the arc as in [Fig. 8C-D2](#) on one piece and using a band saw, cut the arc. Note: The arc has a radius of 16". See **Appendix: Arcs & Arches** on how to calculate the radius.



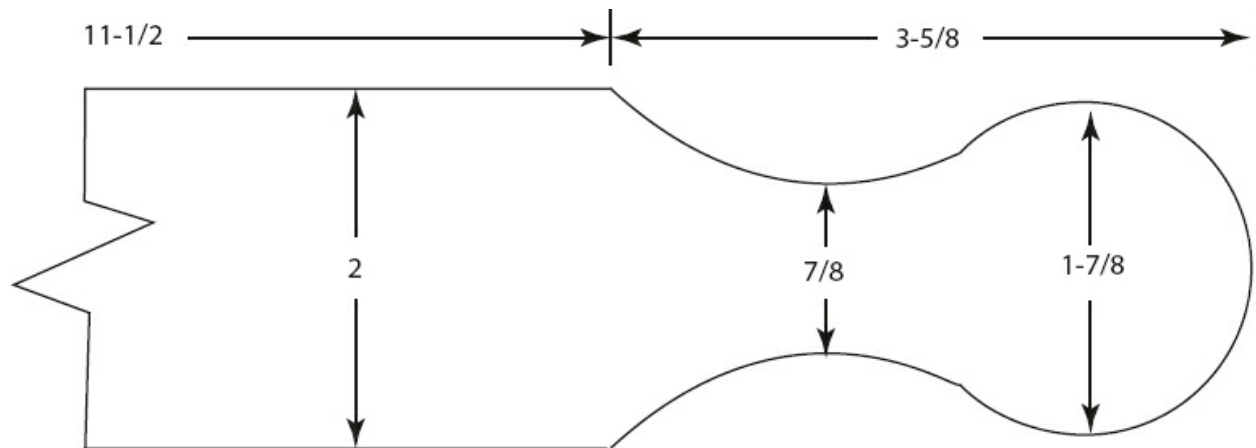
8C-D1. Rolling Pin Blank. The blank is made up of two outer 1" thick maple boards (with black -dyed veneer strips inserted in an arc shape) and an inner $\frac{3}{4}$ " board. At glue-up time, two pieces of red dyed veneer are placed between the pieces.



8C-D2. Rolling Pin Detail. The glued-up blank is marked (dashed lines) and cut to turning size with a table

saw and a band saw.

5. Separate these two outer pieces and glue each back together with black-dyed veneer in the curved surfaces between. When the glue has set (one hour usually) scrape off the extruded glue and again make sure the mating sides are smooth and flat.
6. Rotate one outer piece 180° (end for end) and then glue the three pieces together with red-dyed veneer strips between. See [Fig. 8C-D1](#).
7. Mark off the barrel size and use a table saw and a band saw and make the blank ready for turning as in [Fig. 8C-D2](#).
8. Turn the Rolling Pin and finish with polyurethane. See [Fig. 8C-D3](#) for the handle shapes.



8C-D3. Handle Shape. Turn the pin so the knobs on each end are slightly smaller in diameter than the barrel.

D. Rolling Pin Rest. This will keep your rolling pins from rolling around on the counter top and perhaps even off onto the floor. See [Photo 8D](#). Clamp a double-fence onto your table saw at the correct angle and push the wood through to make the cove.



Photo 8D

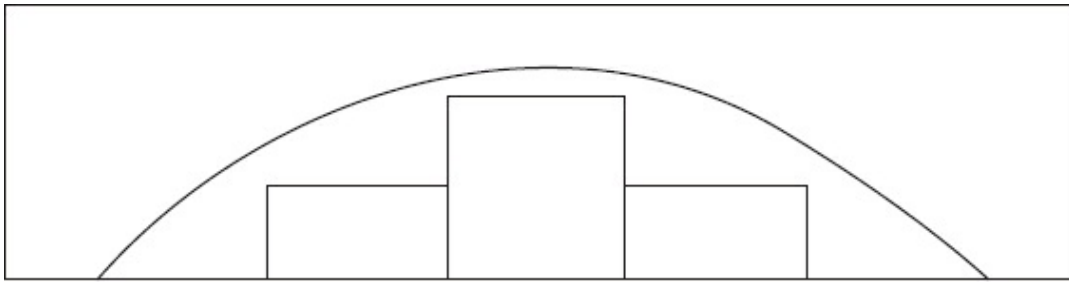
Tools and Materials Needed: Wood, table saw, two 1" × 4" guide boards, round cabinet scraper, glue and polyurethane finish.

Prepare the Blank: Start with $\frac{3}{4}$ " walnut stock. The cove will be about 2- $\frac{1}{2}$ " wide and $\frac{1}{2}$ " deep.

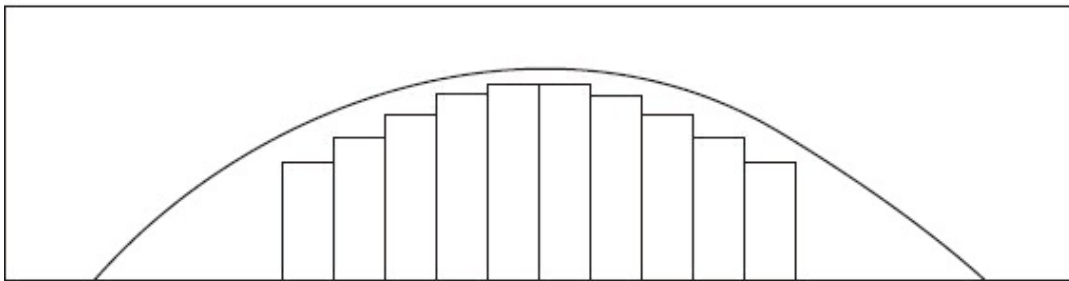
1. Cut the walnut blank to 13- $\frac{1}{2}$ " long × 3- $\frac{1}{4}$ " wide.
2. Draw the cove on the end of the board. See [Fig. 8D-D1a](#).
3. Hog out most of the material with the table saw with a dado or by multiple passes with a regular blade. See [Fig. 8D-D1b](#).

Set the Saw: Using a table saw with a 10" blade, the approach angle will be 35°. See **Appendix: Coves with a Table Saw**.

1. Use your table-saw miter gauge and mark 35° on the table top. See [Fig. 8D-D2a](#).
2. Clamp two boards to the table saw at 35° to the blade and 3- $\frac{1}{4}$ " apart. See [Fig. 8D-D2b](#).

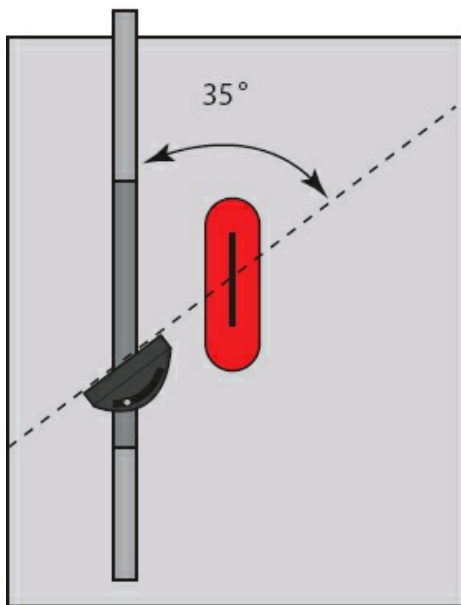


a

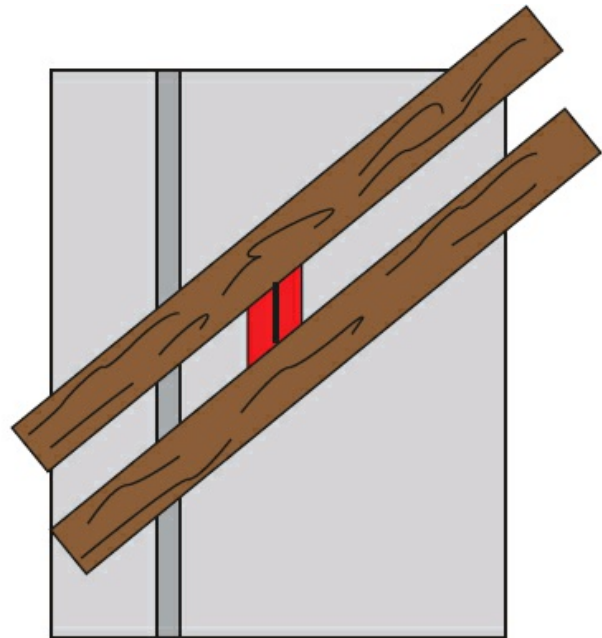


b

08D-D1. Hog Out most of the material with a dado set (a) or use multiple passes with a regular blade (b).



a



b

8D-D2. Table Saw Set-up. Use the miter gauge set at 35° to mark the angle (a). Clamp two boards to the top $3\frac{1}{4}$ " apart (b).

Cut the Cove: Now comes the fun part.

1. Make sure the $\frac{3}{4}$ " walnut blank slides along the table top smoothly between the two guide boards.
2. Raise the saw blade $\frac{1}{16}$ " and using a push stick-hold down, push the work piece slowly over and past the blade.
3. Raise the blade another $\frac{1}{16}$ " and do it again.
4. Continue until the cove is full-sized as in [Fig. 8D-D1](#). Note: If there is any burning, move the walnut board across the blade faster or lower the blade slightly.
5. Make the last cut by taking off a very small amount of wood, $\frac{1}{32}$ " or less.
6. Use a curved cabinet scraper and smooth the cove.

Finish the Pin Rest: Add sides and round the ends. See [Photo 8D](#).

1. Square up the sides of the blank and glue on thin strips of maple.
2. Round over the ends and finish with polyurethane.

E. On-Door Spice Rack. Where do you keep all your spice bottles? All mixed up in a drawer? In two or three cabinets? This handy rack gets the bottles you use often all into one space and you can even alphabetize them. In my kitchen, I hung the rack on the back side of the pantry door. Completely out of the way but quite handy. It holds 32 spice bottles. [Photo 8E](#) shows the rack made of $\frac{3}{8}$ " plywood on the back of the door. When you design the rack, make sure there is enough space behind the pantry door and to both sides.



Photo 8E

Tools and Materials Needed: Plywood or MDF ($\frac{3}{8}$ "), pine or poplar wood ($\frac{1}{4}$ "), brads, nail set, wood putty or filler, glue, white paint and a metal 'L' bracket.

Make the Rack: Get the $\frac{3}{8}$ " thick plywood or MDF ready, 2- $\frac{1}{2}$ " wide \times various lengths.

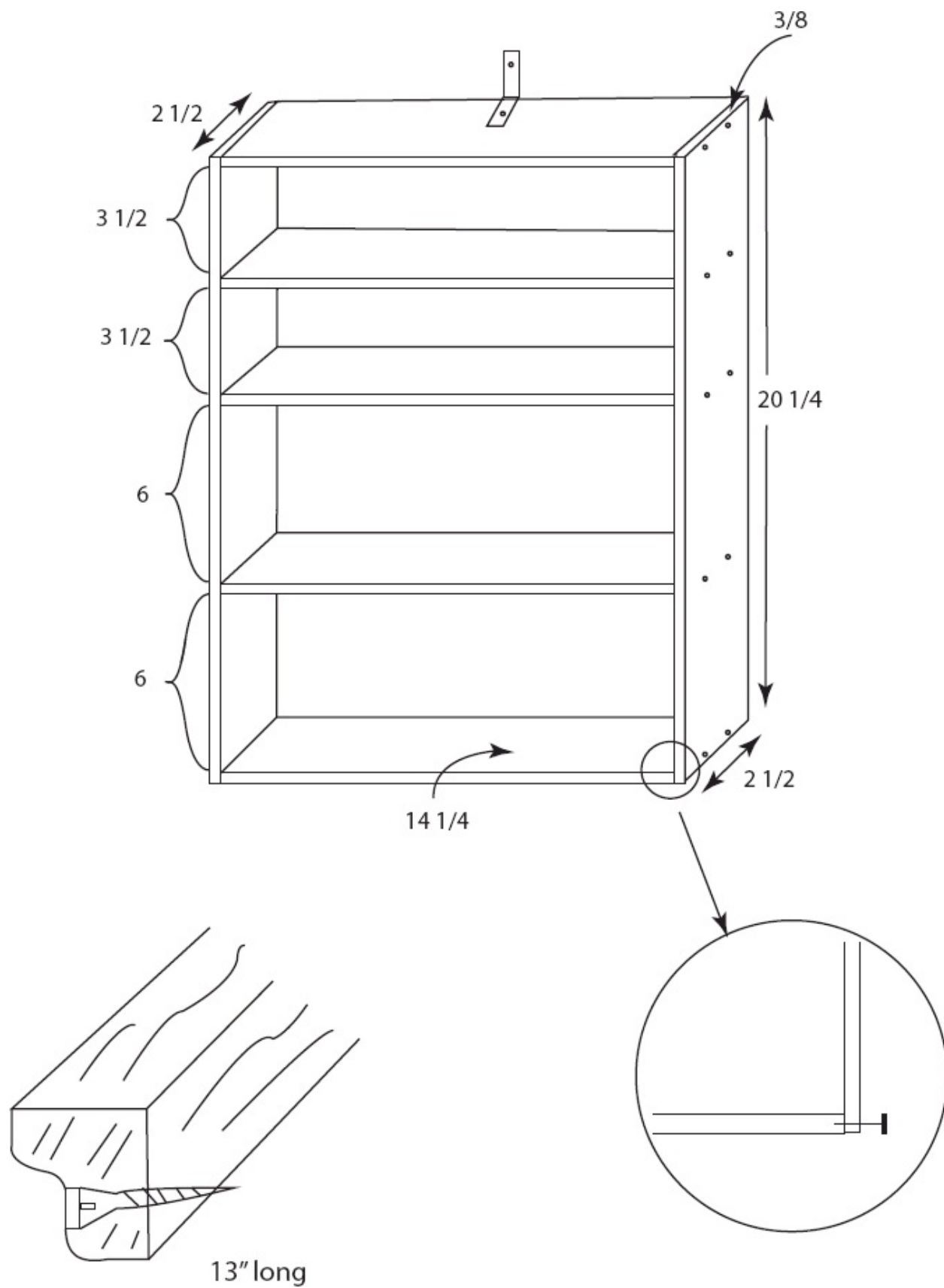
1. Cut two pieces of the $\frac{3}{8}$ " thick plywood to 2- $\frac{1}{2}$ " wide \times 20- $\frac{1}{4}$ " long. These

are the two sides. See [Fig. 8E-D1](#).

2. Cut the top and bottom cross-pieces each 2-½" wide × 8-½" long.
3. Join the four pieces together with glue and brads as in [Fig. 8E-D1](#) inset.
4. Use a nail set and set the brads beneath the surface and fill with wood putty.
5. Cut three shelves from ¾" thick plywood to 2-½" wide × 8-½" long.
6. Drill ½" holes in the side pieces so the bottom shelf is 6" up from the bottom. Use glue and small brads and install the bottom shelf.
7. Likewise put in the other three shelves spacing them as shown in [Fig. 8E-D1](#).
8. Set all brads, fill and sand smooth.

Make the Outer Facing: This facing will be made of solid wood, either pine or poplar. Cut ¼" thick poplar to dimensions as in [Fig. 8E-D2](#).

1. The bottom cross strip is 1-¼" wide × 15-¼" long.
2. The top cross strip is ¾" wide × 15-¼" long.

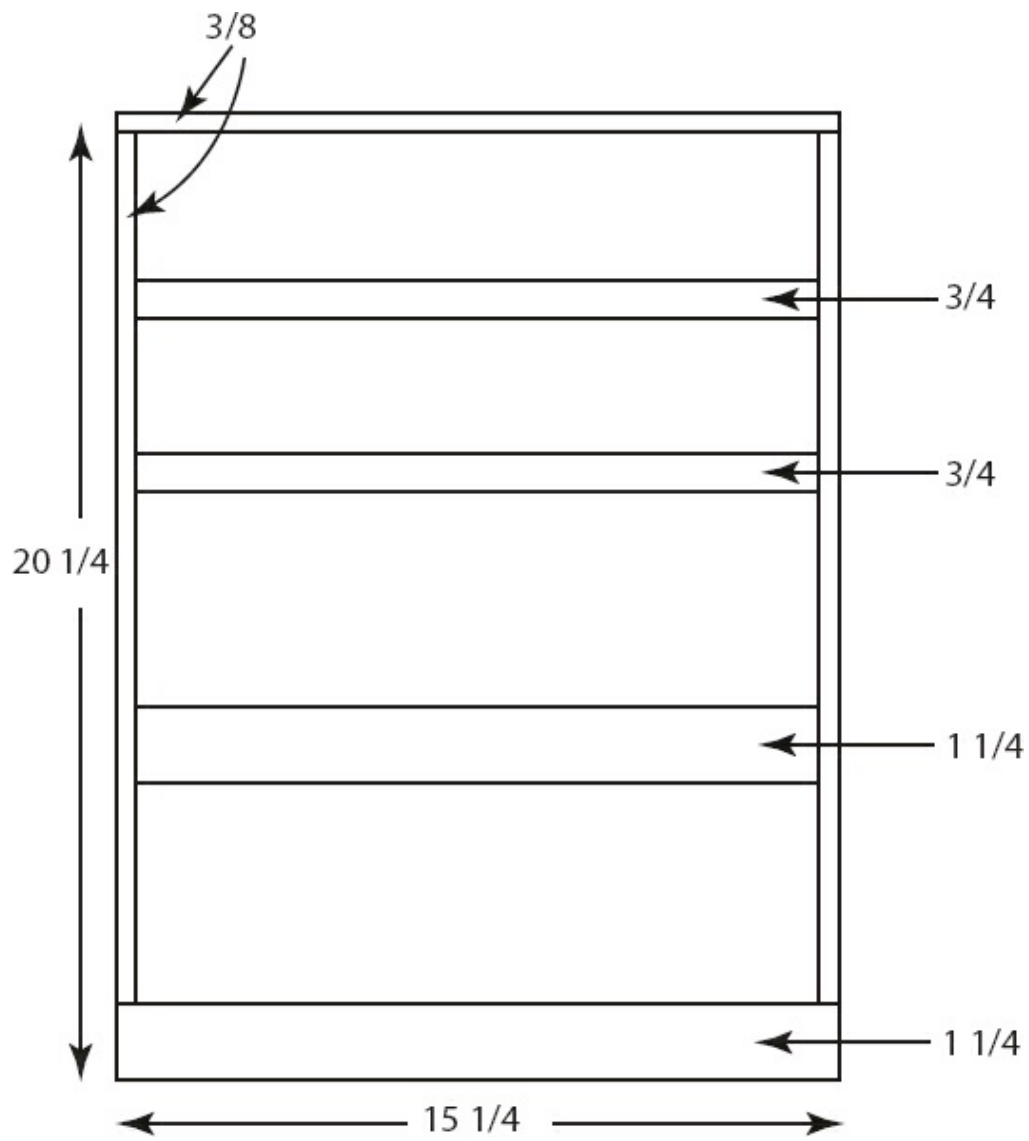


8E-D1. The Spice Rack. The basic box is made of $\frac{3}{8}$ " thick ply or MDF. Construction is with glue and brads. Adjust the distance between shelves to suit your collection of spice bottles. The two sides are $20\frac{1}{4}$ " long, the top and bottom pieces as well as the three shelves are $14\frac{1}{2}$ " long. A ledger board underneath and an 'L' bracket above holds the rack in place.

3. The two side strips are $\frac{3}{8}$ " wide \times $18\frac{5}{8}$ " long.
4. The bottom shelf strip is $1\frac{1}{4}$ " wide \times $14\frac{1}{2}$ " long.
5. The middle shelf strip and the top shelf strip are each $\frac{3}{4}$ " wide \times $14\frac{1}{2}$ " long.
6. Glue and nail these pieces to the rack. Set the nail heads and fill with wood putty.
7. Sand smooth and paint with a white enamel.

Hang the Spice Rack: Hang the rack so it's handy but not in the way.

1. Make a ledge of $\frac{3}{4}$ " poplar 13" long as in [Fig. 8E-D1](#).
2. Mount this ledge on the pantry door using two flat-head wood screws.
3. Set the rack on it and mark for two $\frac{3}{16}$ " diameter holes through the rack's bottom.
4. Screw the rack to the ledger board and put a metal 'L' bracket on the top.



8E-D2. The Solid Wood Facing. Use $\frac{1}{4}$ " thick solid poplar or pine. Cut the pieces and glue and nail to the basic rack.

CHAPTER 9

KITCHEN STOOLS

Kitchen stools can have either three or four legs. Three-legged stools are easier to make and they always have all their legs on the floor; however, they do tend to tip. The four-legged stools are more stable, rarely tip but all four legs must be the exact same length. We will make the four-legged type as in ([Photo 9A](#)). Kitchen stools have to be sturdy so use a nice hardwood such as walnut for the legs. The tops all begin as glued up 6-7" wide walnut boards with colored wood stripes set in. Adjust the stool height to fit your needs; the stools shown here are 26-½" high, just about right for my family to sit on at the kitchen island.

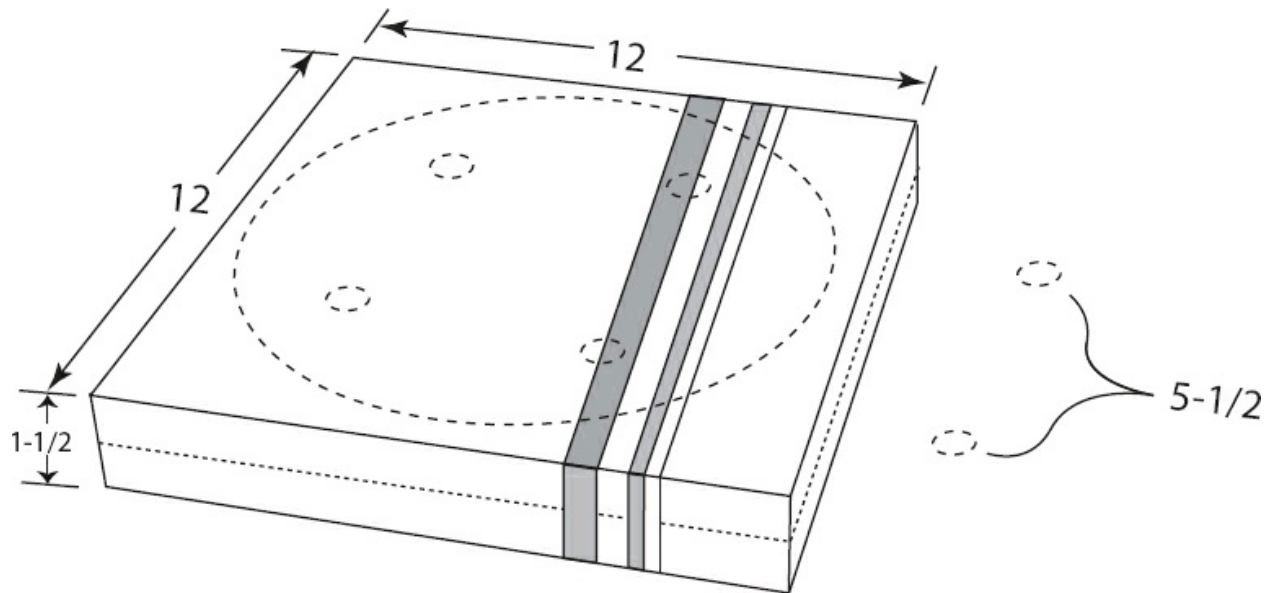


Photo 9A

Same Stool. Three different tops. Start with the stool top by gluing up stock to make a 1-½" to 2" thick piece 12" × 12" square.

Tools and Materials Needed for the Top: Seat wood (two pieces 12" × 12" × ¾" glued up), inset woods (maple, walnut, cherry, ebony, mahogany, holly), lathe, PVA glue, drill press and polyurethane finish.

Make the Top: Use solid wood pieces for the bulk and veneers or thin woods for the inserts.



9A-D1. The Stool Top. Use 1-½" stock or glue up two 12" × 12" blocks of ¾" material. Cut the stock apart and glue colored wood pieces in between the larger pieces. The leg holes/mortises underneath are spaced 5-½" apart and are drilled after the top is cut round.

1. Position the two 12" × 12" boards at 90° to each other, i.e. cross-ways and glue them together as in [Fig. 9A-D1](#) to make the top blanks.
2. Scrape off all the extruded glue and use a band saw to cut to about a 12" diameter circle.
3. Mount the blank on the lathe using a faceplate and screws.
4. Turn the top to 11-½" diameter; ease the edges.
5. Sand to 320 grit.
6. Remove the stool top from the lathe.
7. Drill four ¾" diameter holes 1" deep in the underside of the top. Drill these at a 10° angle 5-½" apart as in [Fig. 9A-D2](#).

Tools and Materials Needed for Legs: Four pieces 1-½" × 1-½" × 28" long, glue and lathe.

Make the Legs: The legs start as one piece of square stock or glued up laminates.

For solid stock, check to be sure the grain runs from one end to the other (i.e. rived, cleaved or split) for maximum strength.

1. Mount the long stock on the lathe and turn the entire length to 1-½" diameter.
2. Mark the length needed (26") and make a mark 4 ½" from the top and 4" from the bottom of the leg ([Fig. 9A-D2](#)).
3. Taper the top of the leg to 1" diameter ([Fig. 9A-D3a](#)) and cut a ¾" diameter tenon, 1" long at the end.
4. Taper the bottom of the leg as in [Fig. 9A-D3b](#) to a 1" diameter.
5. Test fit the four legs by dry-fitting them into the holes drilled in the underside of the Top. Try to have the legs form a 12" square on the floor.
6. Rotate each leg so the rays in the leg are vertical to the grain in the top, **See [Appendix, Post-and-Rung Joinery](#)**. This is important so the top won't split.
7. Mark the position of each leg in its hole in the bottom of the top.
8. Measure up 9" from the bottom of each of the four legs and make a mark as to where the mortise holes will be drilled. Legs two and three are joined by rung one and legs three and four are joined by rung two.

Drill Holes for Two Rungs: All rung holes are drilled before the legs are glued to the top.

1. Drill ⅝" diameter holes in the four legs for the lower rungs, approximately 9" up from the leg bottom. Drill these ⅝" deep and at a 10° angle. See [Fig. 9A-D2](#).
2. Put the four legs back into position in the bottom of the seat.
3. Measure from leg-hole to leg-hole to find the length of the two lower rungs.

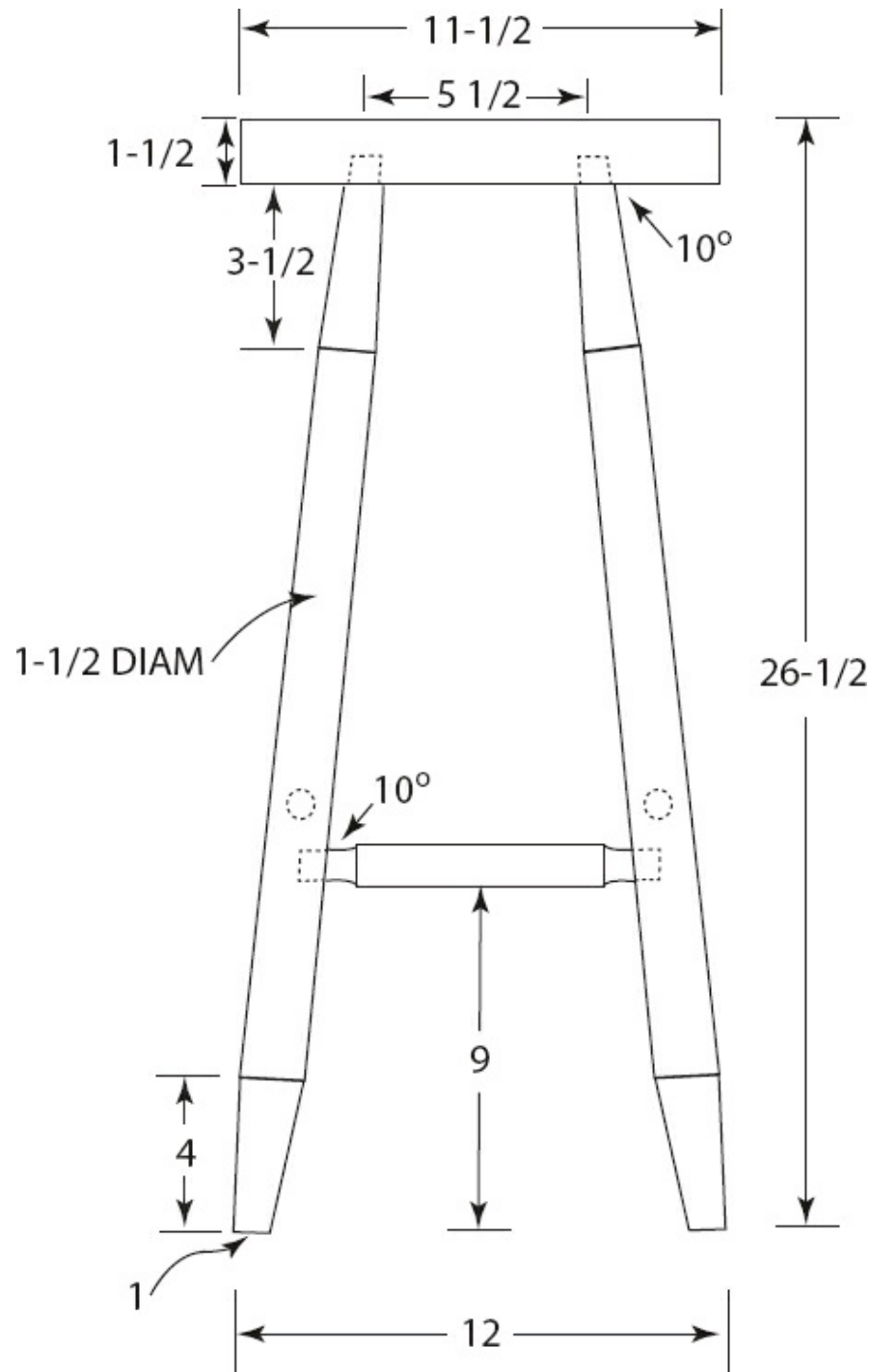
Make the Bottom Rungs: Turn these from solid stock. Use the measurements from above and turn two rungs as in [Fig. 9A-D3c](#).

1. Dry-fit these two rungs.
2. Mark the positions of the other two rungs 1" above the first holes, see [Fig. 9A-D3b](#).

Make the Top Rungs: Turn these from solid stock and use the measurements from above.

1. Measure the distance between Legs and turn the last two rungs.
2. Remove the four legs from the top and drill the last four holes ⅝" diam. and ⅝" deep at a 10° angle.

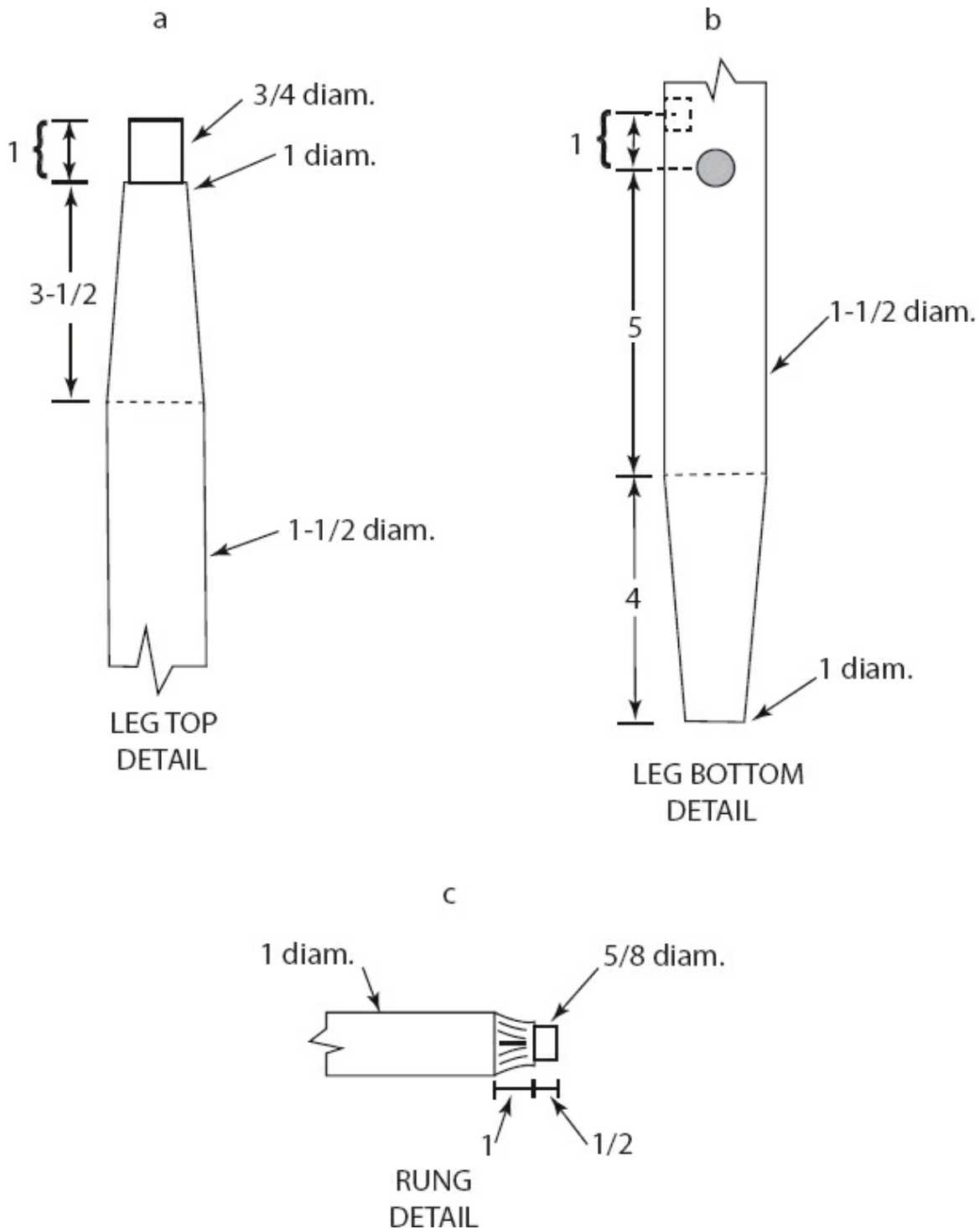
Position the Rungs: To prevent splitting, position the rungs into the legs so the growth rings of the rungs are in line with the grain of the legs, See **Appendix, Post-and-Rung Joinery**.



9A-D2. The Stool. Consists of a top, four legs and four rungs. All of the parts are turned on a lathe.

1. Examine the ends of each rung. Find the growth rings or the rays,

- whichever are most prominent. Mark these with a black marker pen.
2. Position each rung in the Hole/Mortise in the leg so the growth rings are vertical (up-and-down) and the rays are horizontal (cross-wise).



9A-D3. The Leg. Leg top (a), leg bottom (b) and rung detail (c).

Put the Stool Together: All the parts have their place and they all should be marked so the stool can be assembled properly.

1. Glue the tops of the legs (tenons) into the proper holes (mortises) in the bottom of the top. Make sure the leg grain is oriented correctly.
2. Spread the legs just enough so all the rungs can be put into their proper place.
3. Glue in the rungs; again, pay attention to the position of the 'rays'.
4. Put nylon band clamps around the legs and pull tight.
5. Use a mallet and tap the legs at each rung.
6. Stand the stool upright and put pressure/weight on the top until all four of the legs are firmly on the floor.

CHAPTER 10

SIX DRINK COASTERS, A NAPKIN HOLDER, NAPKIN RINGS & STAND

This chapter is all about making the dining table look pretty; but the accoutrements are useful too. The six **Drink Coasters (A)** will introduce you to veneers and the wonderful craft of pad marquetry. (See [Photo 10A](#)). The classy **Napkin Rings and Stand (B)** is a challenging project; but I'm sure you're up to it by now. (See [Photo 10B](#)). The beautiful **Napkin Holder (C)** is made of scrap wood but looks like a million bucks. (See [Photo 10C](#)).



Photo 10A

A. Drink Coasters. This project will introduce some readers to pad marquetry. We will use six veneers to make a set of six drink coasters, see [Photo 10A](#). The coasters will be 4" square and ¼" thick. The base board will be solid wood – maple, walnut, cherry or whatever, your choice. Each of the coasters will be different; they will all have the same flower pattern but will be made up from different veneers and thus different colors. You will also learn to sand-shade. See

[Fig. 10A-D1](#) for the flower pattern. Note: See *Basic Marquetry and Beyond* by Ken Horner (Linden Publishing, Fresno, CA) for more information on marquetry.

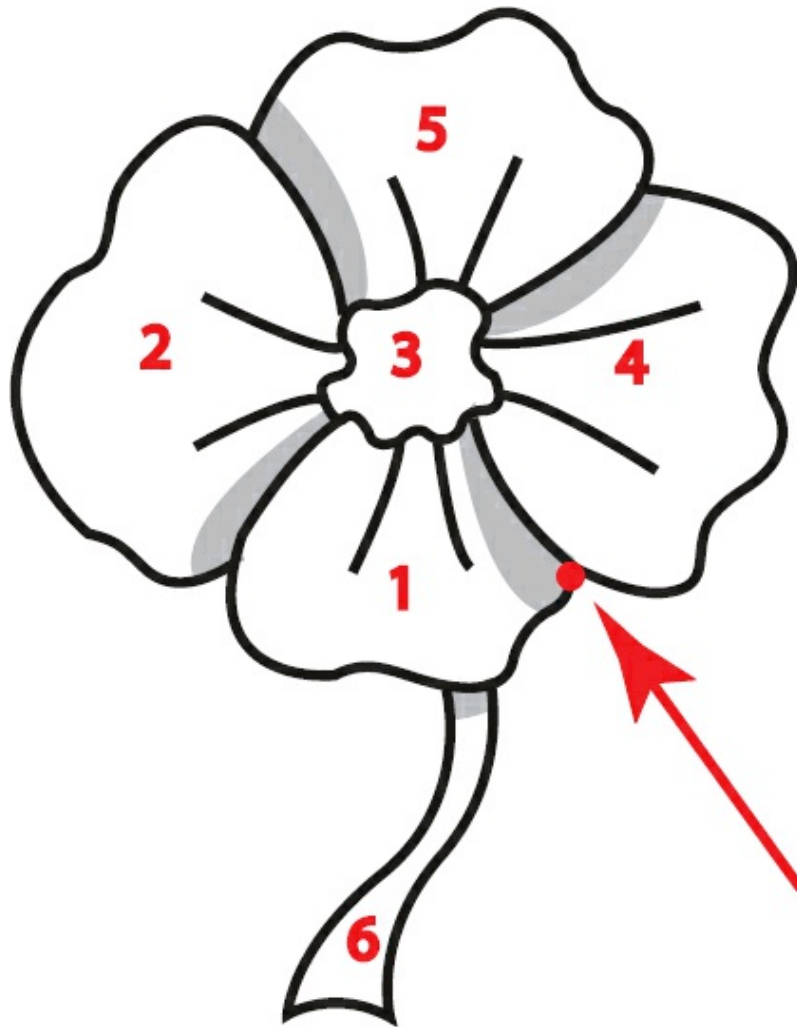
Tools and Materials Needed: Scroll saw or fretsaw, ¼" thick solid stock, six different veneers, polyurethane finish, paper glue, yellow PVA glue, metal pan with sand and a heat source (**See Appendix, Sand Shading**), blue tape, app tape (**See Appendix, Tapes**), J-roller, brass brush, muffin tin, colored wood fillers (**See Appendix, Marquetry Tools**), veneer saw, hand scraper, shellac and polyurethane finish.

Make the Veneer Pad: Gather the ¼" thick hardwood for the base board. Also, get six pieces of veneer ready.

1. Cut the ¼" base board into six 4" square pieces. Use an ink pen and put your name and the date on the back side.
2. Sand the edges smooth and apply polyurethane finish on the back side and the edges to protect them from glue during the procedures that follow.
3. Make sure the six pieces of veneer are all the same thickness and cut them into 4-½" squares.
4. Put app tape on the back of each piece and use a J-roller and a brass brush to burnish the tape into the veneer crevices.
5. Put the pieces into a pack as in [Fig. 10A-D2](#) with taped side down and fasten the pad together with blue tape on the sides.
6. Put app tape on the top and glue on the pattern.
7. Punch a small hole in the pattern at the place shown in [Fig. 10A-D1](#), Red Arrow.
8. Set the table of the scroll saw to 90° (no tilt) and thread a ⅜ scroll saw blade through the hole.

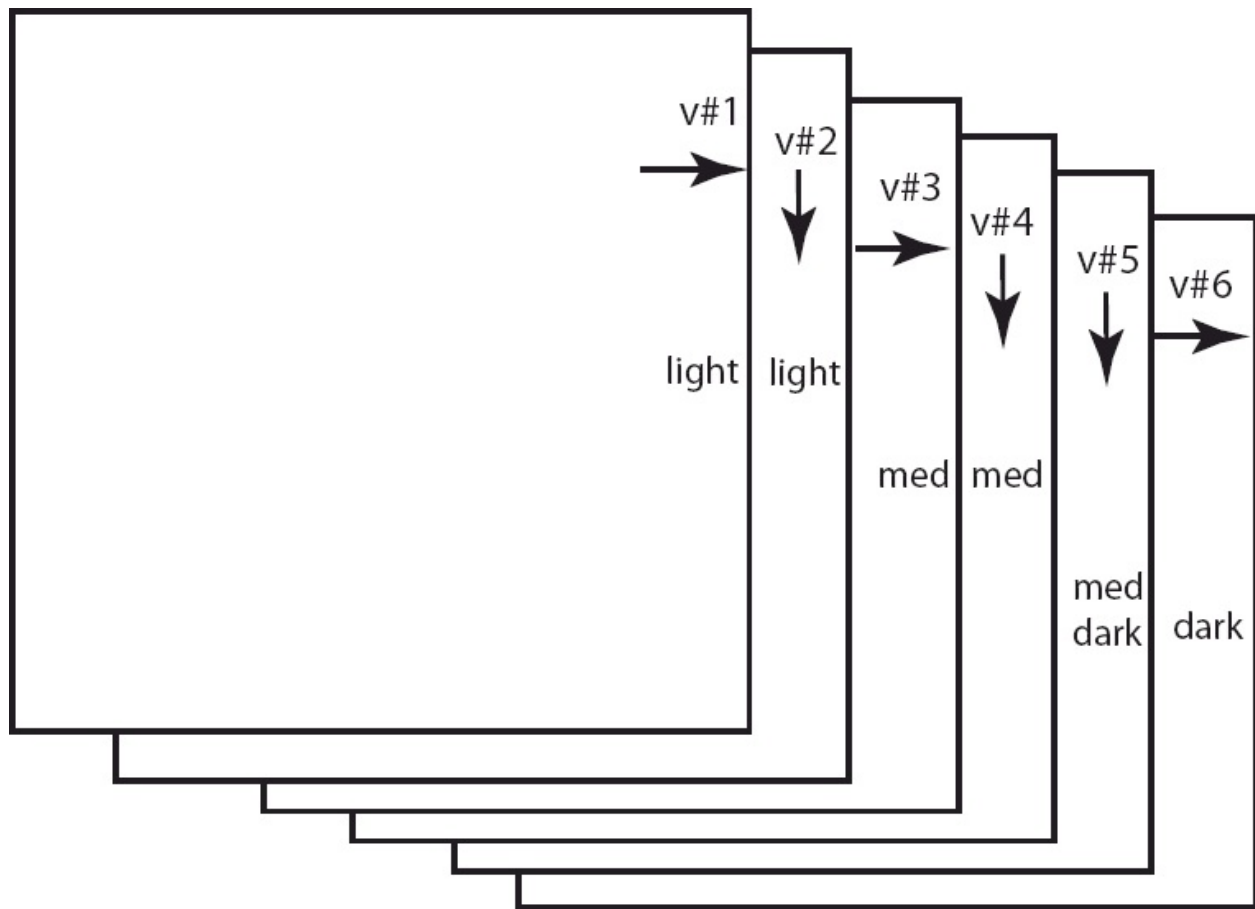
Start Cutting: In pad cutting the direction of cut is immaterial.

1. Cut along the line of petal #1 towards the center of the flower. At the center of the piece, cut into the petal to show the vein line. At the end of this cut, keep the machine running and back the blade out. On this first 'vein' cut it might be difficult to back the blade out. If this is so, make a sharp turn at the end of the 'vein cut' and saw back to the top edge of the petal.
2. Cut the second vein the same way and back the blade out. Continue cutting around petal #1 until you reach the entry hole.



10A-D1. Flower pattern. Thread the $\frac{3}{8}$ blade through the hole (arrow) and cut around the bottom petal #1 first. Cut the pieces out in the order indicated. The gray areas are to be sand-shaded.

3. Stop the scroll saw and carefully remove the six small pieces of veneer. Put them (petal #1) into one cup of the muffin tin, (cup #1).
4. Cut around petal #2 in the same manner (also cutting the two vein lines) and set these six pieces into muffin cup #2.
5. Cut out the center #3 and set these pieces in the muffin tin. (cup #3)
6. Now with the center out, cut the veins for petal #4 and petal #5.
7. Cut out petal pieces #4, #5 and stem #6 and carefully separate them into cups #4, #5 and #6.
8. When all pieces have been cut, stop the scroll saw and remove the outside marquetry pad.



10A-D2. Make up the Pack. Use four different colored veneers to make a six-pack; use two light-colored pieces, two medium-colored pieces, a medium dark and a dark piece. Cut each to 4-½" square and stack as shown; the arrows specify grain direction.

Assemble the Flowers: Match the pieces to make a pleasing effect. Each coaster should have three different veneers for the flower (petals, stem and center) and a different piece of veneer for the background.

1. Set the pad, face up, on a flat surface and carefully remove the blue tape from the pack.
2. Lay out all the six backgrounds, taped side up.
3. Cover the window areas with app tape.
4. Turn the backgrounds over so the veneer sticky side is up and the taped side is down.
5. Take the stem #6 pieces from the muffin tin and separate the parts.
6. Use a soft brush and remove sawdust and tape frass. These pieces still have app tape on the back.
7. Place the six #6 stem pieces into a background (app tape side down). Move the pieces around until the mix is pleasing.

8. Next take the six #1 petal pieces and place them in backgrounds; remember that the #1 petal should not go into a background with color #1 or into a background where you have placed stem #1.
9. Fill out each flower with petals #2, #4 and #5 of the same veneer.
10. Add the center pieces #3 to each flower. Move pieces around until the colors and grain direction are pleasing. See [Photo 10A](#) for possible arrangements.
11. Put a large piece of app tape over the flower and stem (this is the front side).
12. Turn the piece over and remove all the tape from the individual pieces. It is less likely that you'll break a piece if you remove tape when the piece is still in the background.
13. Cover this back side with app tape.
14. Turn the piece over and remove the app tape from the front. We will work from the front in the next steps.

Sand Shade: Sand shading gives the illusion of depth. Any part of the flower that is behind another petal should be shaded. The darker woods will not show the effect of sand shading as much as the lighter woods.

1. Set up a metal pan on a hot plate and add about 1" of clean sand. Turn the control to high.
2. Look at [Fig. 10A-D1](#) to see what part of each petal to sand-shade.
3. Remove the petal and use tongs and dip the part into the hot sand.
4. Put the shaded part back into the marquetry and sand-shade all of the other parts.

Close up Gaps: There will be pieces out of position and some gaps.

1. Hold the picture up to the light and adjust positions of pieces until most gaps are closed.
2. Cover the front with app tape and turn the piece over. All filling will be done on the back side.
3. Use wood putty and a spatula or putty knife and fill any gaps.
4. Push a contrasting color of wood putty through the 'petal veins' so the veins will be visible in the final picture.
5. After the putty has dried, sand lightly.

Finish Up: Use PVA glue to attach the marquetry to the backers. During the first part of the gluing process, app tape will be on the front of the marquetry piece.

1. Put yellow PVA glue on the wood square.
2. Put the marquetry piece on a flat surface, taped side down and place the wood square in the center. Hold the wood in place for a minute or so until the glue grabs.
3. Use blue tape on all four edges to keep the veneer pieces from shifting during clamping.
4. Clamp the piece for 30 minutes, remove the clamps and the app tape and scrape off any extruded glue.
5. Put a piece of waxed paper next to the veneer, then two layers of paper towels and clamp for an hour.
6. Lay the coaster face down on a cutting mat and use a sharp knife or a veneer saw to trim off the extruding veneer. Be careful here to not chip off any veneer.
7. Seal the veneers with shellac and then even the surface with a hand scraper.
8. Sand, starting at 120 and going to 320 grit. As you sand, use more shellac to seal the pieces.
9. Finish with polyurethane; start with four coats of wipe-on and then finish by wiping on a full-strength coat of polyurethane.



Make a coaster heavy enough so the wet glass doesn't pick it up.

B. Napkin Rings and Stand. Napkin rings are like jewelry settings for the table; they can be simple and fun or dramatic and elegant. This set is simple and stylish and makes attractive table pieces. It requires fairly easy lathe work. I made two sets, one of walnut and one of maple. In each, there is a base, a stem (with separate top cap) and four rings. The walnut top cap is locally harvested holly; the top of the maple stem is made of cocobolo. See [Photo 10B](#) for the walnut piece. The stand consists of two parts; the stem is spindle turned and the base is turned using a face plate. Make the four rings first and then use them to size the stem.



Photo 10B

Napkin Rings – Materials Needed: One walnut block (2" × 2" × 6" long), lathe, glue, tailstock Jacobs chuck, two Forstner bits (1- $\frac{3}{8}$ " and $\frac{3}{8}$ "), sand paper and finish.

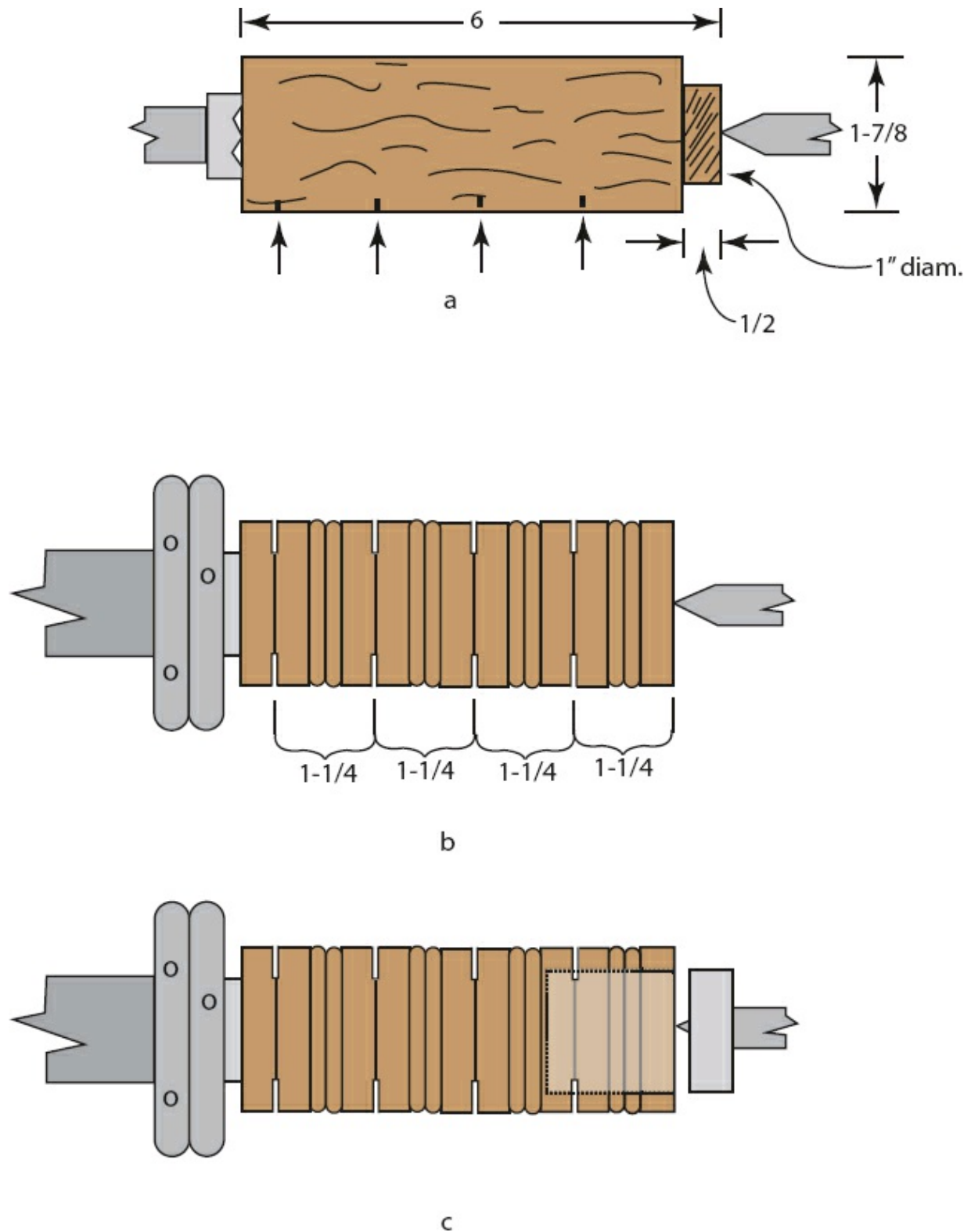
Make the Napkin Rings: Use a 2" × 2" × 6" long walnut block here to make four napkin rings.

1. Mount the walnut block between centers on the lathe and turn to a cylinder.
2. Reduce the diameter to 1- $\frac{7}{8}$ "; check with calipers.
3. Cut a spigot on one end of the cylinder to 1" diameter and $\frac{1}{2}$ " long. See [Fig. 10B-D1a](#).
4. Sand smooth and remove the cylinder from the lathe.
5. Reverse the cylinder and remount it so the spigot is held by the expandable jaws. Use the tail stock to center the end. See [Fig. 10B-D1b](#).
6. Use dividers and a pencil and mark off four 1- $\frac{1}{4}$ " sections for the four rings. Use a thin parting tool and cut $\frac{3}{8}$ " deep grooves into the cylinder at these marks.
8. Cut small decorative beads in the middle of each ring.

9. Sand smooth and finish with liquid Hut wax finish.
10. Mount a 1- $\frac{3}{8}$ " Forstner bit in the Jacobs chuck in the tailstock and drill a hole 1- $\frac{1}{2}$ " deep in the end of the cylinder. This will free ring #1. See [Fig. 10B-D1c](#).
11. Back off the tailstock and remove the ring using the thin parting tool.
12. Bring the tailstock up and drill another hole 1- $\frac{1}{2}$ " deep.
13. Now remove ring #2.
14. Follow these steps and cut off ring #3 and ring #4.

Make the Stem: Use the other walnut block here for the stem. The inside diameter of the rings will determine the outside diameter of the stem.

1. Mount the walnut block between centers on the lathe and turn to a cylinder.
2. Use dividers to reduce the diameter to a little less than 1- $\frac{1}{2}$ ", see [Fig. 10B-D2b](#).



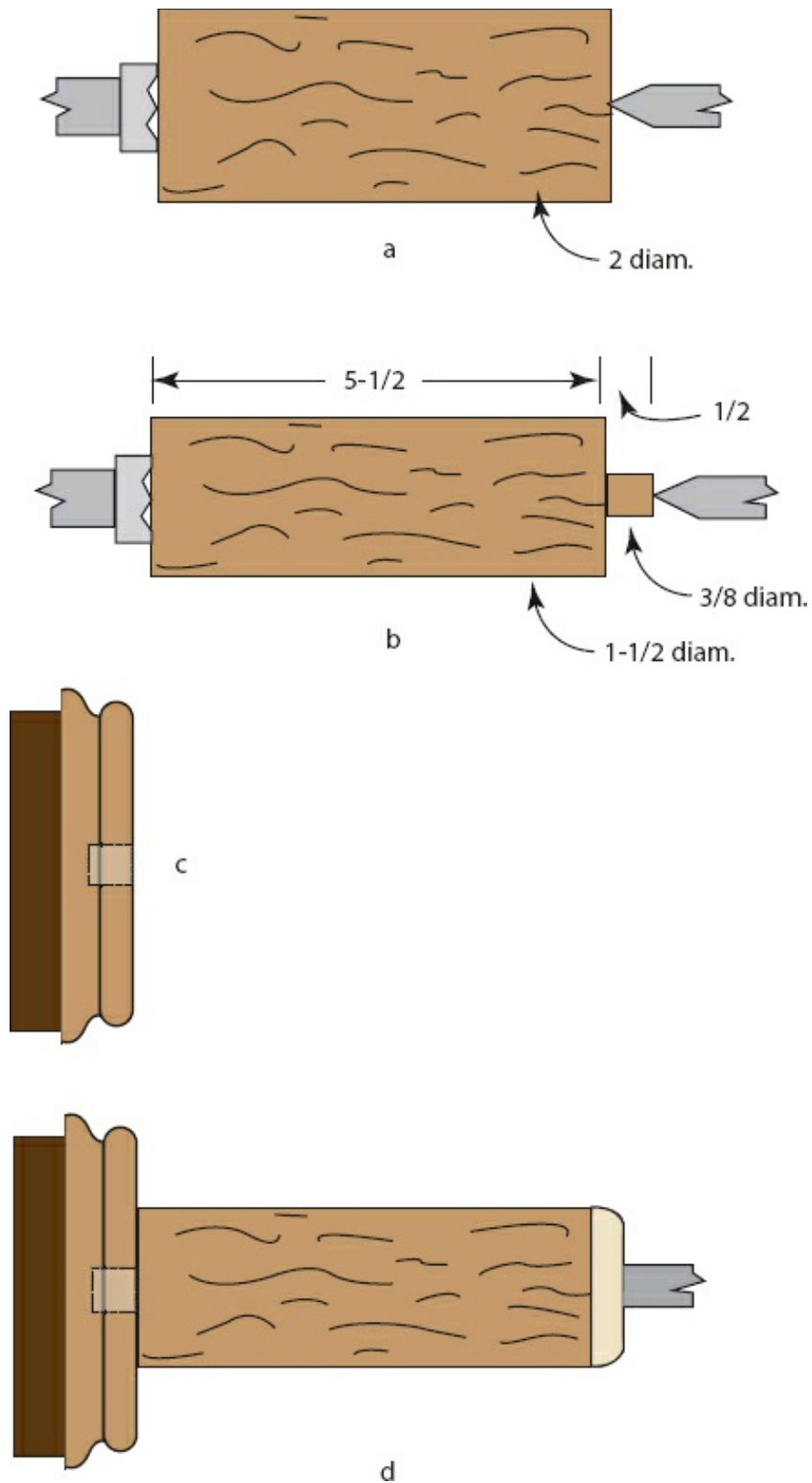
10B-D1. Make the Rings. Make a spigot 1" in diameter, and 1/2" long (a). Reverse the piece and hold the spigot in expanding jaws while you mark three 1-1/4" rings (arrows). Use a parting tool and cut 3/8" deep grooves. Also, cut decorative beads in each ring (b). Use a 1-3/8" Forstner bit in a Jacobs chuck and drill a 1-1/2" deep hole in the end of the cylinder (c). Remove one ring and repeat for three more rings.

- 3 Cut a $\frac{3}{8}$ " diameter. spigot, $\frac{1}{2}$ " long on one end of the cylinder.
4. Test to see that the rings fit over the stem. Reduce the outside diameter until they slide on easily.
5. Glue a small cap of a light-colored wood (maple or holly) on to the end of the stem.
6. Sand the stem and the cap and finish with a Hut wax.

The Base – Materials Needed: One $\frac{3}{4}$ " walnut board (4" × 4") for the base, lathe, glue, tailstock Jacobs chuck, two Forstner bits, sand paper and finish.

Make the Base: Use a 4" × 4" square, $\frac{3}{4}$ " thick walnut stock here.

1. Glue a 3" × 3" waste block to the walnut piece and attach with screws to a faceplate.
2. Turn the base to shape. See [Fig. 10B-D2c](#).
3. Mount a $\frac{3}{8}$ " Forstner bit in the tailstock and drill a $\frac{1}{2}$ " deep hole.
4. Sand smooth and glue the stem to the base.
5. Glue on a maple top piece and shape on the lathe. See [Fig. 10B-D2d](#). Note: Use a flat end-piece with a piece of leather attached so the holly cap is not damaged.
6. Part off the walnut piece.



10B-D2. Make the Stem. Turn the cylinder (a) to 1-1/2" diameter and make a spigot (b). Use the rings to size the cylinder diameter. Turn the base to shape (c), glue the stem to the base, glue on the holly top and turn to shape (d).

C. Napkin Holder. Make this table Item to a size to fit your napkins. The size shown in [Photo 10C](#) is 5-½" wide × 5-½" high. It was made of scrap woods, maple, cherry, walnut, oak and thin veneer strips.

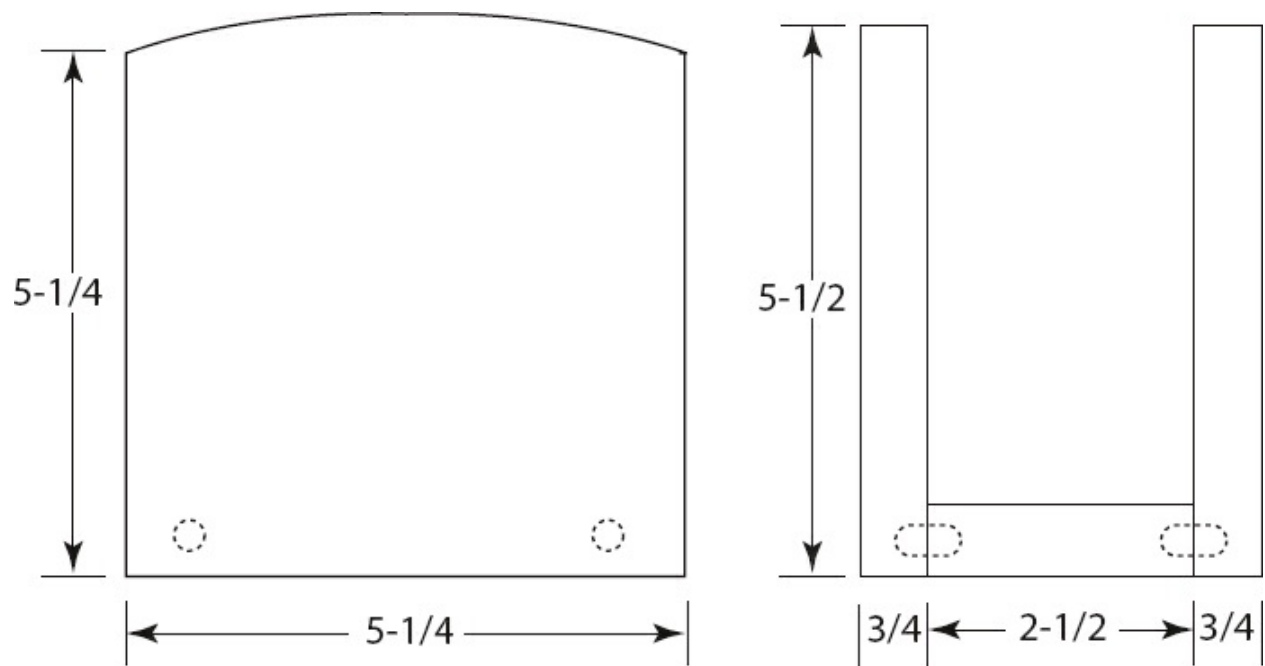


Photo 10C

Materials Needed: Scrap ¾" wood stock (about 6" long), table saw, glue, ¼" dowels (4), ½" bit, sand paper and finish.

Make the Holder: Gather all the wood and cut to approximate size.

1. Glue up different widths of ¾" stock, including thin pieces and veneer to make one board, 5-½" wide × 12" long.
2. Make a front and a back piece, each 5-¼" wide × 5-½" long. See [Fig. 10C-D1](#).
3. Make a bottom piece out of maple 2-½" wide × 5-½" long.
4. Draw an arc and cut the front and back pieces to 5-¼" long and fasten to the base with four dowels.
5. Scrape, sand and finish with polyurethane.



10C-D1. Make the Holder. The front and back can be the same or different. Fasten the two together with $\frac{1}{4}$ " dowels.

CHAPTER 11

KITCHEN KNIVES, KNIFE RACK AND CARVING SET WITH BOX

In this chapter, you will choose the exact **Set of Knife Blades** (See [Photo 11A](#)) you want for the kitchen; **(A) Large Chef's Knife** and **(B) Small Knives** (Photo 11B) and then make the handles. Next make **(C) Knife Rack** (See [Photo 11C](#)) made especially for the knives you have made. There also is **(C) Bow Bread Knife** (See [Photo 11D](#)) that uses a very sharp, butchers' band saw blade. Finally, you will make **(D) Carving Set, Knife and Fork** (See [Photo 11E](#)) for use at the dining table plus a beautiful **Box with Marquetry** ([Photo 11E](#)) to hold them. And if you choose to make multiple sets for your kids, there are great step-by-step instructions plus how to write a provenance that will be passed along from generation to generation.



Photo 11A

A. Large Chef's Knife. This is the ultimate kitchen knife set. You choose the exact blades you want, select the wood for the handles and then pick the wood and the design of the rack to hold them. See [Photo 11A](#) for a Santoku, chefs', cooks' and

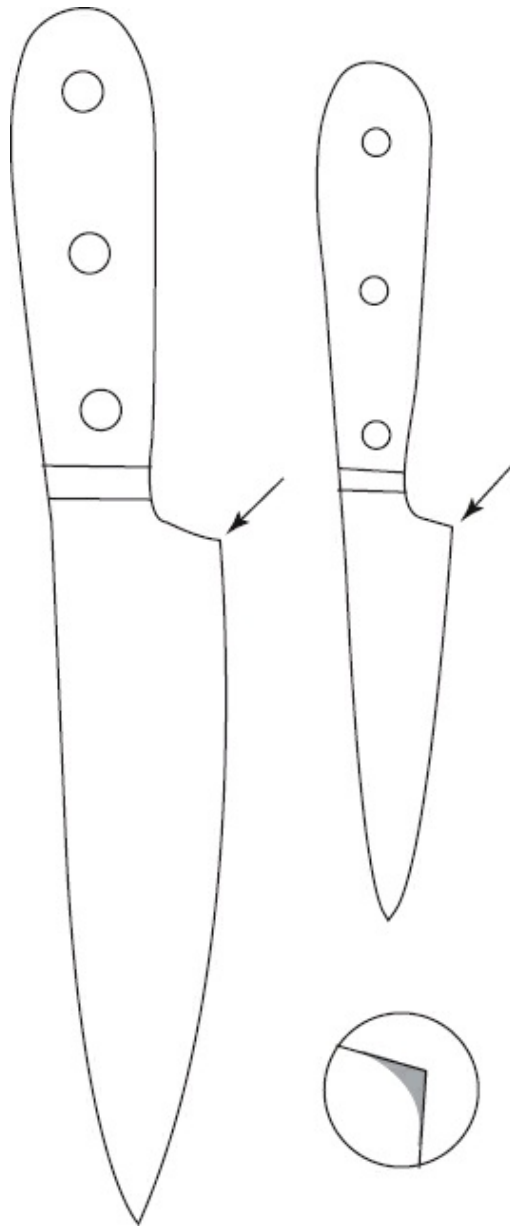
paring knife. Instructions follow on how to make nine knife handles for nine blades plus a steel hone. I bought my blades from Jantz. See **Appendix, Knife Blanks**.

Tools and Materials Needed: Knife blanks with rivets, wood for handles, double-sided tape, awl, band-saw, drill press, $\frac{5}{16}$ " Forstner bit, nippers, metal punch, file, CA Glue, hammer, anvil, flat-head punch, rasps, buffers and polyurethane finish.

Big Handle - Chefs' Knife: The following are instructions to make a large handle for the chefs' knife. All of the handles for the large knives can be made this way.

See [Fig. 11A-D1](#).

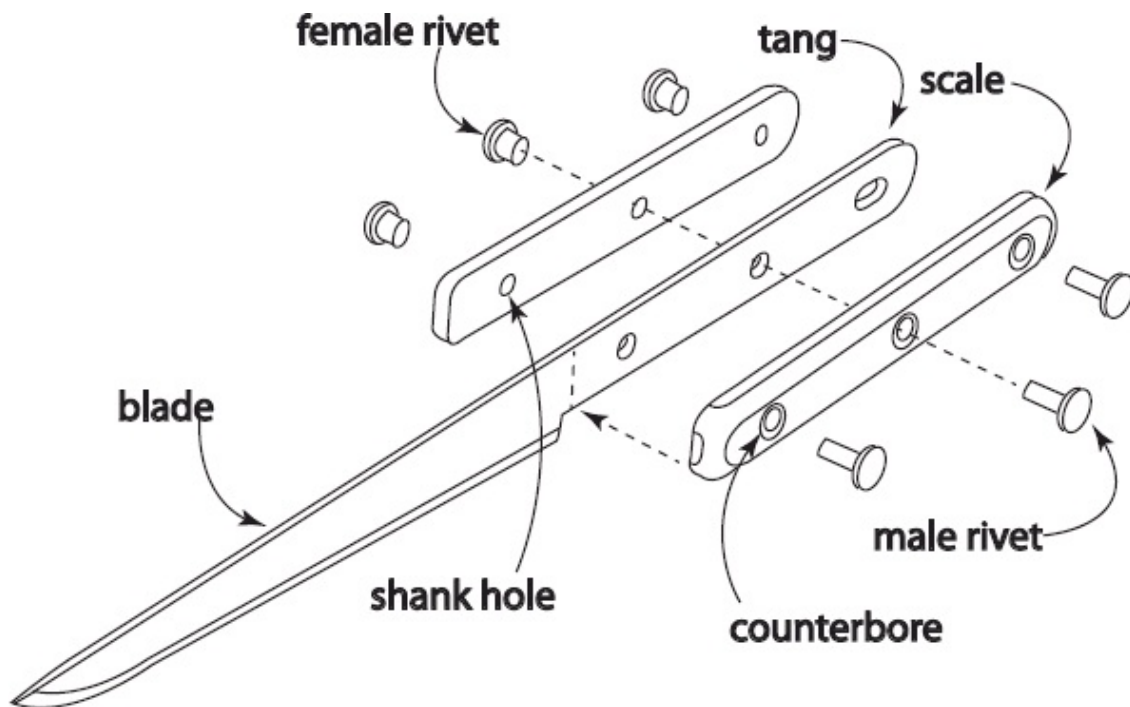
1. Resaw wood (olive) to $\frac{1}{2}$ " thick. See [Fig. 11A-D1](#).
2. Cut two wood pieces to the size needed; $4\text{-}\frac{3}{4}$ " long \times $1\text{-}\frac{1}{2}$ " wide.
3. Sand both sides of the wood pieces flat.
4. Mark inside ('N') and outside ('O').
5. Fasten the two woods pieces together with double-sided tape; 'N' sides 'in' and 'O' sides 'out'.
6. Trace the knife handle outline lightly onto the top piece.
7. Use an awl and tap small holes in the wood where the three rivets are to go.
8. Drill three $\frac{1}{16}$ " diameter pilot holes through both pieces.



11A-D1. Big and Little Knife. The chefs' blade is 10-½" long. The smaller chefs' knife is 7-½" long. Round over and dull the marked area (arrows) for safety when using the knives. The blades come with three holes drilled in the tang.

9. Use these pilot holes as guides and use a $\frac{5}{16}$ " Forstner bit to drill three insets $\frac{1}{8}$ " deep for the big rivet heads on both sides.
10. Drill three $\frac{3}{16}$ " holes on the top for the three female rivet shanks. Only drill the holes to the middle.
11. Turn the handle over and drill three $\frac{5}{32}$ " holes for male rivet shank. Note: It is best that the rivet holes are slightly large; the big rivet expands when the small rivet is driven in.

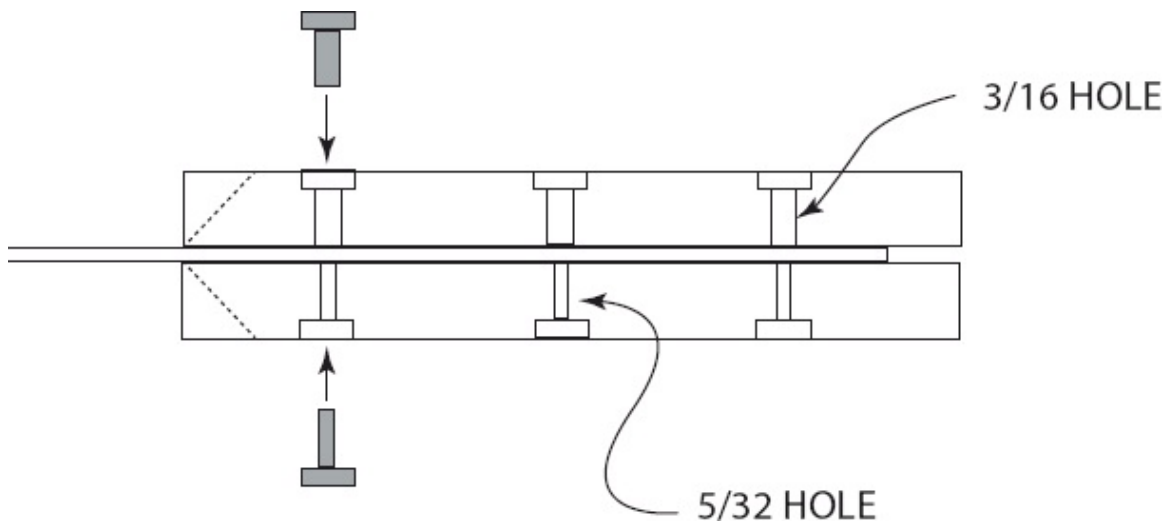
12. Put the three rivets through blade holes and line up on wood pieces. Make sure the rivets fit.
13. If the rivets are too long, grind the female rivet shorter and then expand the center hole to normal size with a metal punch. Shorten the male rivet piece with nippers and then sharpen the new end with a file. Note: rivets need only 1/8" overlap to bind.
14. Put the three female rivets in place and secure with blue tape.
15. Band saw the handle to shape staying just outside the lines. Note: the rivets will make sure the handle pieces do not shift during the sawing.
16. Separate the pieces and cut the ends of the handles to 45° at blade end, see [Fig. 11A-D3](#).
17. Sand the metal blade handle surface with 320 grit sandpaper to take off the shine.
18. Put CA glue on both sides of the metal handle and put the wood pieces on.
19. Push the female rivet parts into all three holes on the top side.
20. Turn the piece over and put the male rivets in.
21. Put the handle on an anvil and pound each male rivet piece in with a hammer.
22. Use a 1/4" diameter flat punch and hammer and set all three rivet heads slightly below the wood surface on both sides of the handle.



11A-D2. Anatomy of the Knives. All of the blades come with holes in the tang. Make the handles and drill

different sized holes for the male and female rivets.

23. Wipe off extruded glue and let set or spray with accelerator.
24. Use wood rasps, files and sandpaper to shape the handles.
25. Fill voids and cracks on handles if necessary with PVA glue and olive sawdust.
26. Dull the end of the blade where it meets at the handle so you won't get cut while using the knife, see 11A-D1.
27. Use white diamond buffing compound to smooth the olive wood.
28. Finish with polyurethane or rub on mineral oil with 220 and 320 wet-dry sandpaper.



11A-D3. Blade Handle. Big blade: The $\frac{1}{2}$ " thick handle stock is $1\frac{1}{2}$ " wide \times $4\frac{3}{4}$ " long. The $\frac{5}{16}$ " diameter rivet head insets are $\frac{1}{8}$ " deep; use a $\frac{5}{16}$ " Forstner for the big rivet heads.

B. Small Knives. The following are instructions to make a handle for the small chefs' knife, see [Photo 11A](#). All of the handles for the small knives can be made this way. Follow the above instructions for a large handle except:

1. Re-saw wood (olive) to $\frac{3}{8}$ " thickness.
2. Cut two wood pieces to the size needed; $4\frac{1}{2}$ " long \times $1\frac{1}{4}$ " wide.
3. Drill three $\frac{1}{16}$ " pilot holes through both pieces.
4. Use the pilot holes as guides and drill three $\frac{3}{16}$ " insets $\frac{1}{8}$ " deep for the small rivet heads on both sides; See [Fig. 11B-D1](#).
5. Drill $\frac{1}{8}$ " rivet shank holes on both sides for both the male and female rivets.
6. Use white diamond and a buffer to smooth.

7. Finish with polyurethane or mineral oil with 220 and 320 wet-dry sandpaper.

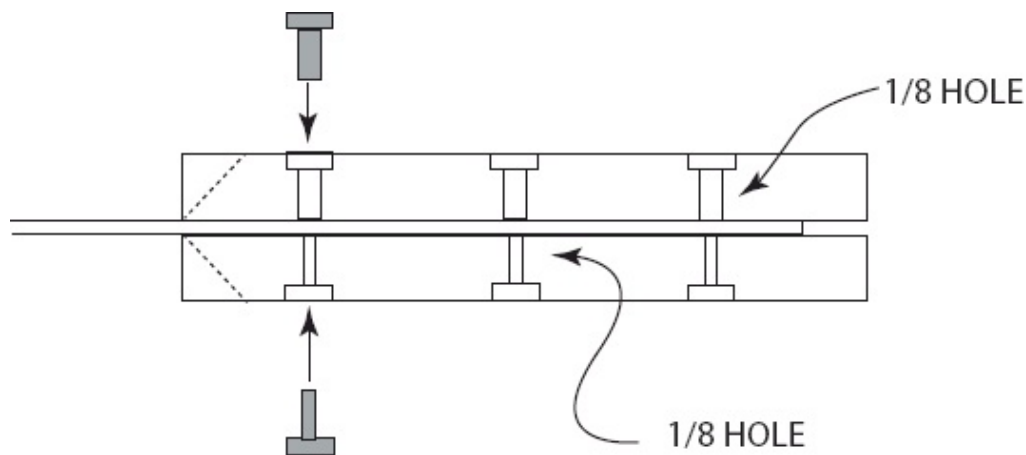
C. Knife Rack. This rack should be made to fit your knives. See [Photo 11C](#) for my rack. [Fig. 11C-D2](#) shows a knife rack that holds six large knives, three small knives and a sharpening steel. The side view ([Fig. 11C-D1](#)) shows how five $\frac{7}{8}$ " thick \times 5" wide \times 10" long pieces of maple are cut and joined. The $\frac{3}{4}$ " lower piece is added for the three small knives.



Photo 11C

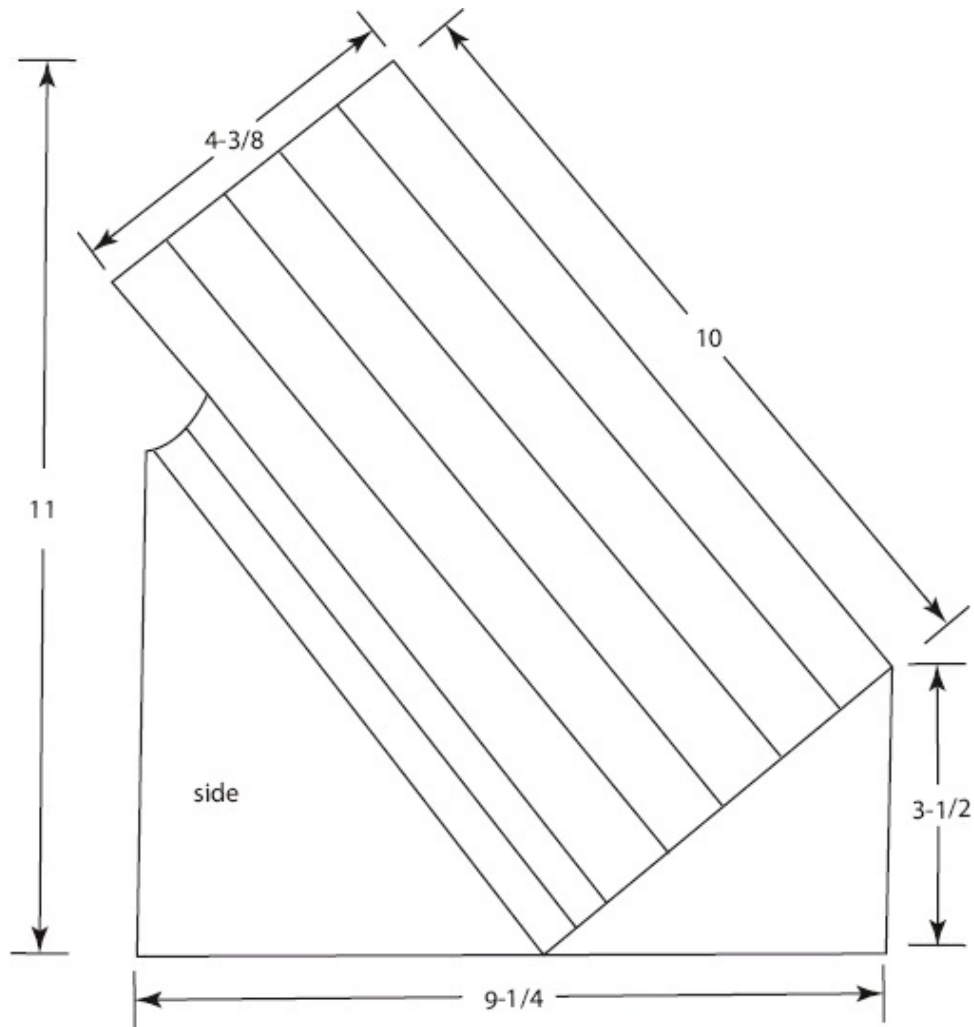
Tools and Materials Needed: Maple stock ($\frac{7}{8}$ " thick and $\frac{3}{8}$ " thick), table saw, long $\frac{1}{2}$ " drill bit, yellow PVA glue, walnut $\frac{1}{4}$ " stock (for the outer covering), polyurethane finish.

Make the Knife Rack: Start by preparing $\frac{7}{8}$ " thick maple stock to 5" wide and 10" long.

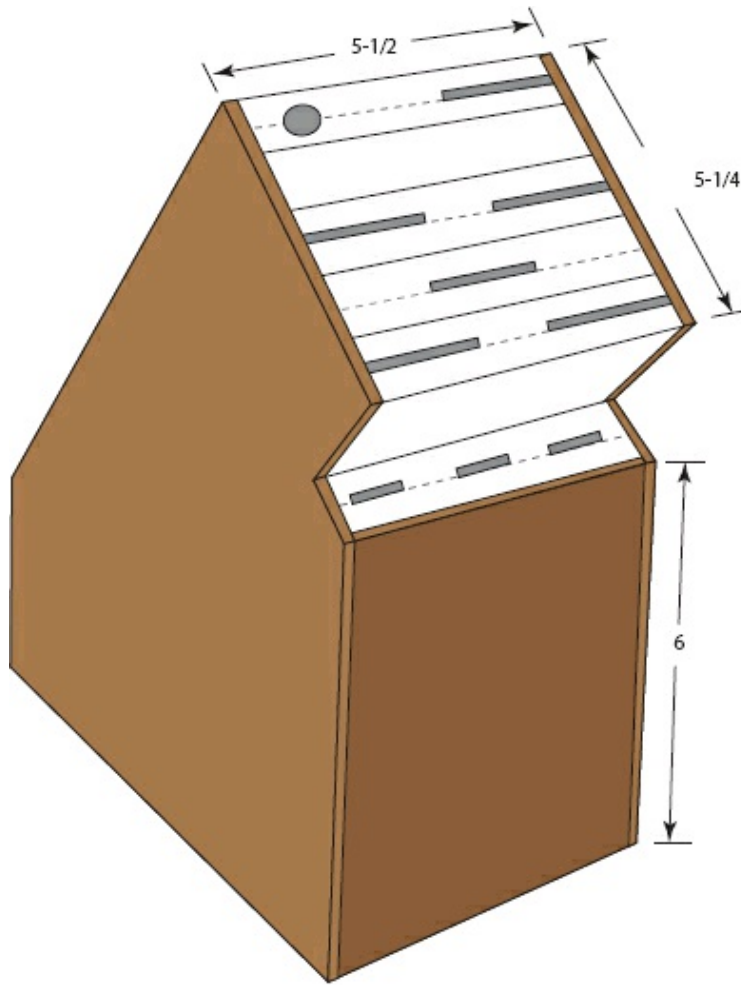


11B-D1. Small Blade Handle. The stock is $\frac{3}{8}$ " thick. The small handle blanks are $1\frac{1}{4}$ " wide \times $4\frac{1}{2}$ " long. The rivet head insets are deep; use a $\frac{3}{16}$ " Forstner for the small rivet heads.

1. Cut five pieces of the maple stock to size, 5" wide \times 10" long.
2. Start with the top piece (#1) in [Fig. 11C-D2](#). Set the table saw blade to $1\frac{7}{8}$ " height and set the fence to $\frac{7}{16}$ " from the saw blade.
3. Rip a $\frac{1}{8}$ " wide dado in the maple, $1\frac{7}{8}$ " deep.
4. Do the same with pieces #3 (both sides) and with #5 (both sides) as shown in [Fig. 11C-D2](#).
5. Use a long $\frac{1}{2}$ " drill bit and drill the deep hole in top piece #1. I held the piece in a vise on my drill press and came at it from both ends. This hole is for the sharpening steel.
6. Make sure your knives will fit in the slots. If not, adjust.
7. Make the bottom piece (#6). Use two pieces of $\frac{3}{8}$ " thick maple 5" wide \times 8" long.
8. Use a table saw or router and cut three slots as shown in [Fig. 11C-D2](#). The slots are $\frac{1}{8}$ " deep and $\frac{7}{8}$ " long. Glue the two pieces of maple together.
9. Glue all six pieces together to make the body of the knife rack.
10. Make the walnut outer shell by preparing $\frac{1}{4}$ " walnut stock to size as shown in [Fig. 11C-D2](#). The exact dimensions will depend on the final size of your maple insides.
11. Glue the walnut pieces onto the maple innards.
12. When all is put together, finish with several coats of polyurethane.



11C-D1. Rack, Side View. Five long pieces of $\frac{7}{8}$ " maple (10" long \times 5" wide) plus one short piece (made up of two $\frac{3}{8}$ " thick \times 8" long \times 5" wide sections) are assembled to make the rack. Walnut stock ($\frac{1}{4}$ ") covers both sides and the front.



11C-D2. Rack, Front View. All six of the top (big) slots are $1\text{-}\frac{7}{8}$ " long \times $\frac{1}{8}$ " wide. The bottom three slots for the small knives are $\frac{7}{8}$ " long \times $\frac{1}{8}$ " wide. The maple inner portion is clad on three sides with $\frac{1}{4}$ " walnut.

D. Bow Bread Knife. The bread knife is $16\text{-}\frac{1}{2}$ " long and uses a meat cutting blade as a cutter. Part of the job here is to attach the blade while the bow is flexed so the blade in use will always be in tension. See [Photo 11D](#).



Photo 11D

Tools and Materials Needed: Riven wood stock (split from end-to-end) for the bow, lathe for the handle, band saw, drill, dowel, small C-clamp, two pan head screws, meat cutting blade and polyurethane finish.

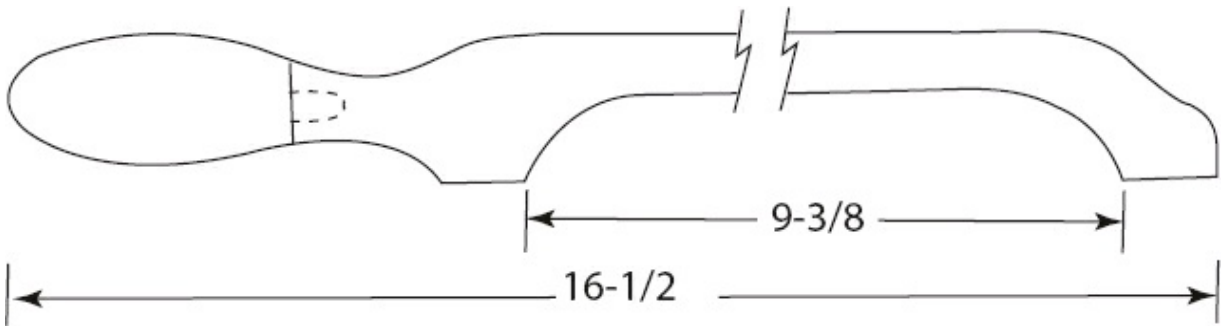
Make the Handle and the Body: The handle is made separately from the rest of the knife. The final handle size is $1\frac{1}{4}$ " diameter \times 4" long.

1. Start with $1\frac{1}{2}$ " \times $1\frac{1}{2}$ " \times $4\frac{1}{2}$ " long stock for the handle. Drill a hole in one end for the dowel and turn to shape ([Fig. 11D-D1](#)) on a lathe.
2. Cut the body from $\frac{5}{8}$ " stock $1\frac{1}{2}$ " wide \times $12\frac{1}{2}$ " long. Make sure the grain is continuous.
3. Attach the handle with PVA glue and a $\frac{5}{16}$ " dowel.
4. Smooth all parts with 220-320 sandpaper and finish with polyurethane.

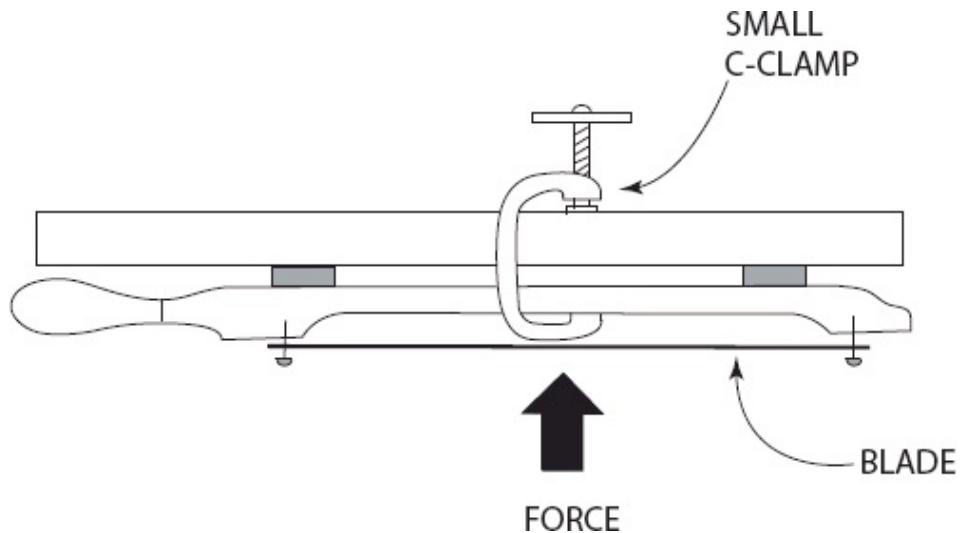
Attach the Blade: The very sharp, meat cutters blades can be purchased online (Search for 'Bow Breadknife Blades') and a set of five costs about \$28.00. The blade is 10.6" long, 0.2" thick and 0.4" wide and has holes already drilled in the ends. The price includes two screws for each blade.

1. Drill holes in the knife body but $\frac{1}{8}$ " shorter than the holes in the blade.
2. Use a $\frac{3}{4}$ " board, two small blocks of wood and a small C-clamp to bow the blade slightly and to shorten the length ([Fig. 11D-D2](#)).

3. While the knife body is under pressure, attach the blade to the body with $\frac{1}{2}$ " pan head screws.



11D-D1. Bread Cutting Knife. The handle is turned using a lathe, the bow-style blade holder is cut with a band-saw and the two parts are joined with a dowel and glue.



11D-D2. Attach the Blade. To keep the blade under tension while in-use, use a small C-Clamp, two wood spacer blocks and flex the bow as shown. The screw holes in the bow have been drilled $\frac{1}{8}$ " shorter in length than the holes in the blade. Attach the blade with two pan-head screws while the bow is flexed.

E. Carving Set Box. Make a special gift for a wedding, an anniversary or for your kids. [Photo 11E](#) shows the box with colored veneers for the rose. Cutlery sets are available with and without handles. Add a provenance to record your work.



Photo 11E

Tools and Materials Needed: Knife and fork set, wood for box, wood for knife and fork handles, lathe, table saw with 45° jig, brass hinges and magnets.

Make the handles: Turn the handles first to determine the size of the box.

1. Start with two pieces of wood each about 2" × 2" × 6" long.
2. Drill holes for the knife/fork tangs in one end.
3. Either carve or turn the handles to about 1- $\frac{3}{8}$ " diameter. See [Fig. 11E-D3](#).
4. Glue the tangs into the handles with CA or Gorilla glue.
5. Measure longest (knife or fork with handle) and make the box inside 1-inch longer.

Make the box: If this is to be a gift, use a wood that is special to the recipient; maybe wood from a tree in their yard or a wood that is native to the area.

1. Start with stock $\frac{5}{16}$ " thick and 2" wide. Cut the ends and sides to 45°. See **Appendix, Jig, Forty-Five Degree** for details on this.



Photo 11E-P2

2. Glue the sides and ends together with yellow PVA glue.
3. Make the top and bottom from $\frac{1}{4}$ " stock to fit inside the box, see [Fig. 11E-D1](#).
4. These dimensions will give $1\text{-}\frac{3}{8}$ " inside height; adjust the dimensions to fit your handles.

Make the marquetry: Follow pattern [Fig. 11E-D4](#). See **Appendix, Marquetry Tools**.

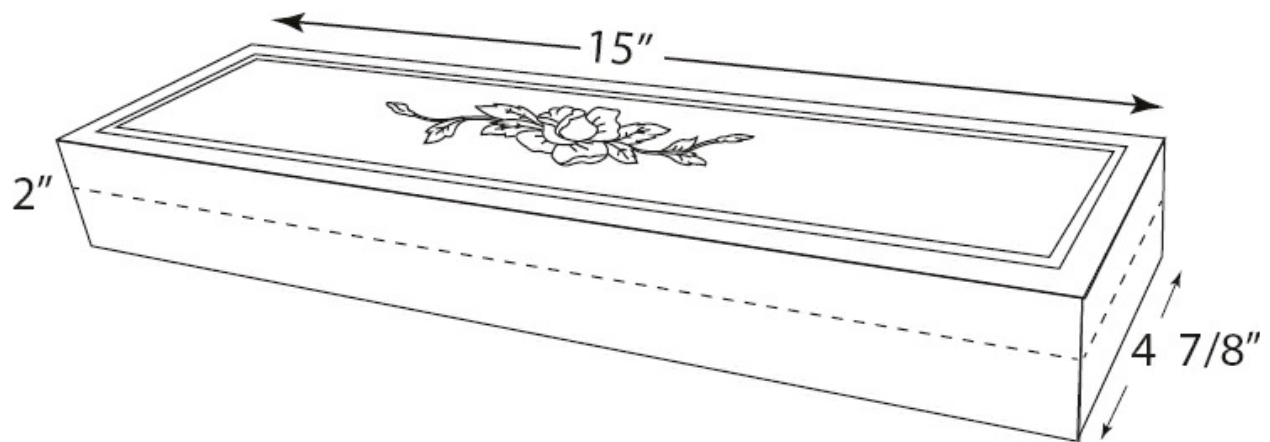
1. Cover the background veneer with app tape front and back.
2. Cut in the marquetry using either the pad or double bevel method.
3. Square up the marquetry piece to the pattern size.
4. Add the thin strips and the outer border pieces.
5. Use contact cement to fasten the marquetry to the box top.
6. Trim the excess veneer from the sides.
7. Seal with shellac, scrape and sand.
8. Add several coats of wipe-on poly.

Cut the box apart: Use a table saw or band saw to cut off the box top.

1. Set the fence to 1"
2. Saw the box apart as in [Fig. 11E-D1](#).

Install hinges and magnets: Cut the dados as you choose.

1. Install small brass hinges.
2. Drill $\frac{3}{16}$ " holes in the lid and side and install small magnets. See **‘Concepts, Magnet Placement’** for details on this.



11E-D1. The Basic Box. Make the box after you've made the knife and fork set. The interior should be 1" longer than the longest piece and $\frac{1}{8}$ " higher than the diameter of the handles. The lines show where the box will be cut apart.

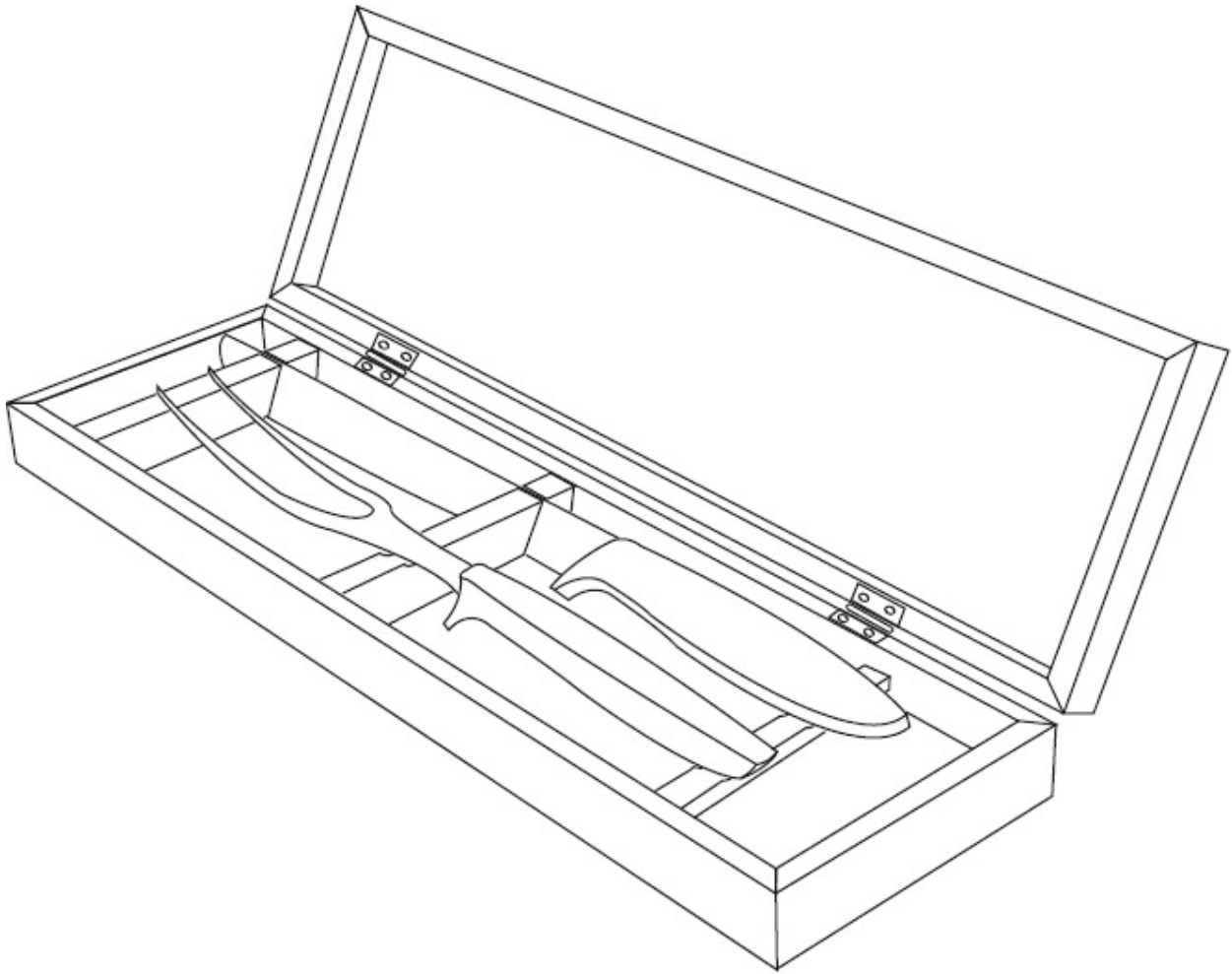


Fig. 11E-D2. A Different Knife and Fork Holder. Three little cross-bars can be used to hold the utensils instead of cutting holes in the bottom tray. Two bars are cut to hold the blade. One bar is notched to hold the fork.

Make the Tray: Cut the holes for the handles. [Photo 11E-P2](#) shows the tray in the box with the red cloth visible.

1. The bottom tray is made of $\frac{1}{2}$ " stock and is cut to fit in the box.
2. Trace the outlines of the handles and cut out the profiles with a scroll saw.
See [Fig. 11E-D3](#).
3. Add a peg to keep the fork from sliding around. [Fig. 11E-D2](#) shows another way to secure the knife and fork inside the box.
4. Line the bottom of the box with a colored cloth.
5. Cut a piece of $\frac{1}{4}$ " grey foam rubber to line the top of the box.
6. Put your provenance under the foam.

Finish: Finish the box and marquetry as you would any other piece. [Fig. 11E-D3](#) shows the knife and fork set in the box.

1. Use a soft cloth and apply three coats of wipe-on poly.

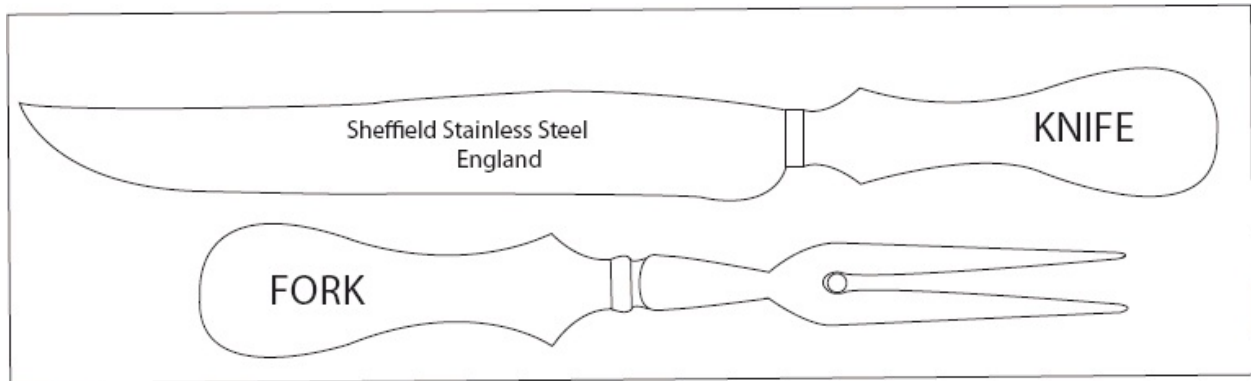


Fig. 11E-D3. Tray. Cut holes in the tray for the handles and add a peg for the tines of the fork.

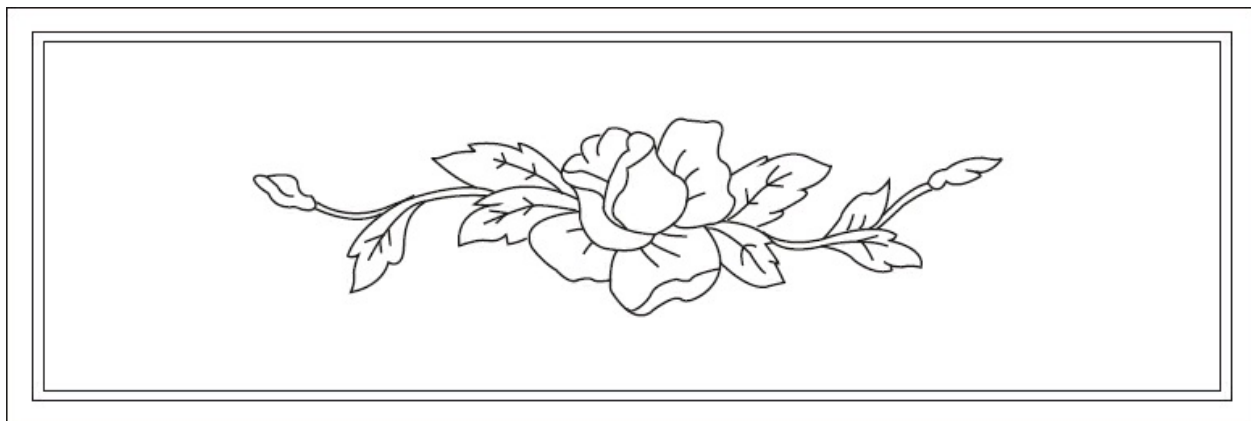


Fig. 11E-D4. Marquetry Pattern. Get the dimensions of the pattern from the finished size of the box lid. For more on how to add the marquetry top, see Ken Horner's marquetry book, *Basic Marquetry and Beyond. Expert Techniques for Crafting Beautiful Images with Veneer & Inlay*. Linden Publishing, Fresno, Calif.

Hide a provenance under the lid foam: For Christmas 2007, I made four of these boxes for my four married children. Note: Laura Lee, my wife of forty-seven years and the children's mother, died March 2004.

To: Doug & Nadine, Mary Carolyn & Paul, Cliff & Melissa and to Liz & Mark.

Your box was made from one Maple board that I scavenged when Resurrection Church was rebuilding your old grade school. I ripped the 8-ft. board to width, cut it to short lengths and then re-sawed, planed and finally sanded to get the 5/16" thick stock I needed. I glued the pieces together to make a six-sided box.

The top of each box is covered with a different veneer; Bird's-eye Maple, Cherry, Maple or Mahogany. The flower pattern is the same but the veneers (about 1/30" thick) are different. I used the double-bevel method of marquetry. Before the petals were put into the flower, I shaded the edges using hot sand and tweezers to give the illusion of depth. The border strip around the background is Walnut. The

marquetry was attached with contact cement.

I then cut the cube apart on the table saw to separate the bottom from the lid. The dados for the hinges were cut with an adjustable dado set I bought at a Used Tool Store when Laura and I were in Michigan visiting Doug.

The knife and fork are English Sheffield Steel and the handles are Apricot; turned from wood from the old tree in the back yard that died back in March 1998. We cut the trunk into 12" lengths, sealed the ends and stacked them behind your old playhouse. Nine years later the logs had not split or checked. We all enjoyed apricots from this tree for many years. Remember when we made oodles of apricot preserves – and remember how sticky the floor and counters were? What fun.

The inside trays are Black Locust from a tree I helped cut down in the Willow Glen area of San Jose. I cut the knife and fork profiles into the tray using my scroll saw.

The red corduroy cloth under the trays is a remnant from your mother's sewing cabinet upstairs. I have no idea when she bought the material or for what; maybe one of you know.

There's nothing special needed to maintain the set; just wash and dry the metal parts and store the box in a dry place and you will be cutting turkeys and hams for years to come. The finish on the Apricot handles is polyurethane.

Love, Dad
December 2007

CHAPTER 12

THREE TRAYS, A SUSHI BOARD AND CHARGER PLATES

The three trays are: **Large Serving Tray (A)** (See [Photo 12A](#)), **Domed Cheese Tray (B)** (See [Photo 12B](#)) and **Domed Cake Tray (C)** (See [Photo 12C](#)). Also, **Sushi Board with Cups (D)** (See [Photo 12D](#)) and **Plate Chargers (E)** (See [Photo 12E](#)).



Photo 12A

A. Large Tray, Navaho Indian Design. For this project we'll use a knife (or a veneer saw) to cut the thin strips and use a paper cutter for the 45° joints. The 18 strips are cut prior to construction and the finished parquetry (See [Photo 12A](#)) measures 13-½" wide × 18-⅛" long. Make the tray bottom before you make the sides and ends of the tray.

Tools and Materials Needed: Walnut, maple and bloodwood veneer, thin strip cutting jig, paper cutter, walnut stock for tray sides and ends, table saw, ¼" plywood for tray bottom, yellow glue, cork dots, app tape and a router. See

Appendix, Tapes and their Uses and Appendix, Thin Strip Cutting Jig.

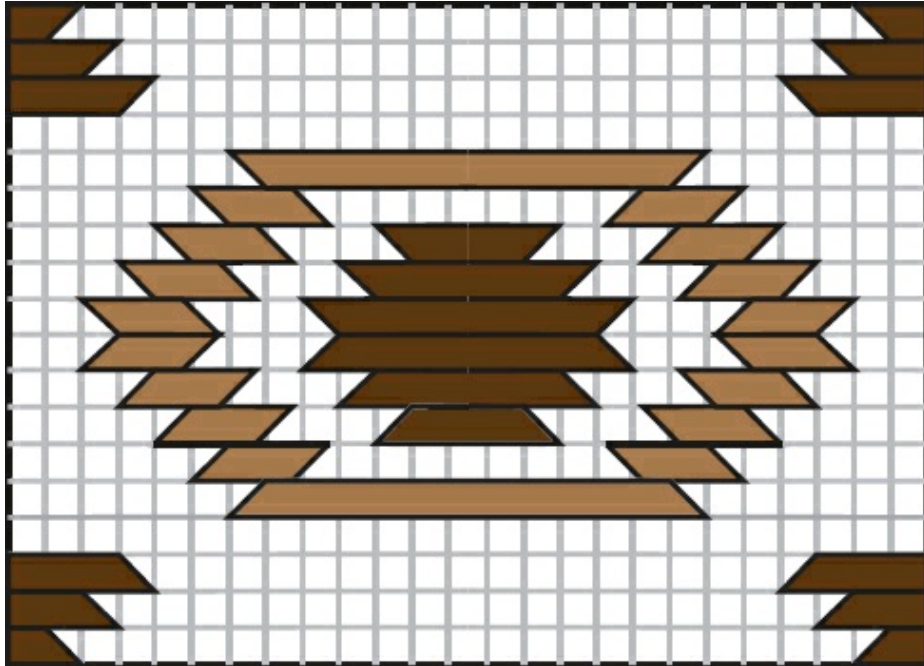
Cut the Strips: The parquetry is made up of multiple $\frac{3}{4}$ " wide, red, white and brown strips of veneer, see [Fig. 12A-D1](#). All end-joints are 45° angles. Note: strip lengths are measured to the long corner.

1. Cut the walnut (brown), maple (white) and bloodwood (red) strips to $\frac{3}{4}$ " using the thin strip cutting board.
2. Mark a rectangle $13\frac{1}{2}$ " wide \times $18\frac{3}{4}$ " long on a piece of plywood. This grid will accommodate 18 rows of $\frac{3}{4}$ " wide veneer strips from bottom to top.
3. Cut a white strip $17\frac{1}{4}$ " long with 45° angles at both ends.
4. Cut two red strips each $1\frac{1}{2}$ " long with a 45° angle at one end.
5. Place these three pieces on the plywood grid at the top. Refer to [Fig. 12A-D1](#).
6. Blue-tape them to the baseboard. Note: keep the strips in a straight line by aligning them with the top line of the rectangle. This is now the top row of the parquetry design.
7. Cut the pieces for row two and put them in position. Note: The long white strip is $1\frac{1}{2}$ " shorter than the one just cut, i.e. $15\frac{3}{4}$ " long. Use short pieces of app tape and fasten these pieces to the row one pieces. See [Fig. 12A-D2](#) for a close-up of the joinery.
8. Cut the pieces for all 18 rows, put them into position and tape them together along the joints.
9. Turn the parquetry over (blue-taped side down) and cover the top side completely with app tape.
10. Check to be sure all the joints are tight.

Glue the Parquetry to the Bottom: The baseboard should be slightly larger than the parquetry.

1. Cut a piece of $\frac{1}{4}$ " veneer-covered plywood to $14\frac{1}{2}$ " \times $19\frac{3}{4}$ " or 1" larger both directions.
2. Glue the parquetry to the plywood with PVA yellow glue leaving equal space on all sides.
3. Seal the veneer strips with shellac and then scrape and sand.
4. Apply multiple coats of wipe-on poly.
5. Cut the tray bottom to leave a $\frac{1}{4}$ " border around the parquetry. This $\frac{1}{4}$ " space will be glued into the rabbets of the ends and sides of the tray.
6. Add veneer on the bottom to make it look nice.

Build the Walnut Tray: My tray measures $14\frac{3}{4}$ " wide \times $19\frac{5}{8}$ " long. The sides and ends splay outward at 20° . A $\frac{1}{4}$ " rabbet in the bottom houses the parquetry ($13\frac{1}{2}$ " wide \times $18\frac{3}{4}$ " long).

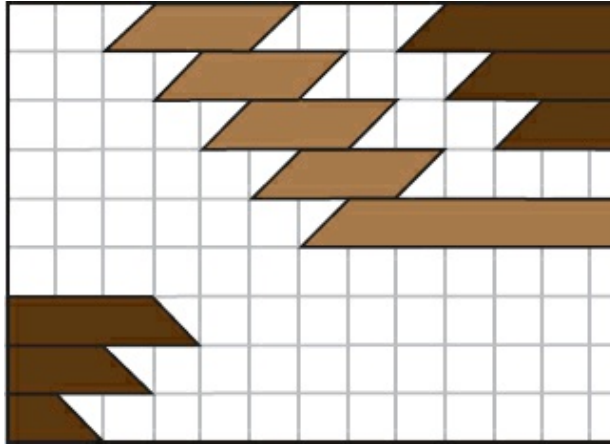


12A-D1. Colored Pattern. Each strip is $\frac{3}{4}$ " wide and the design is $13\frac{1}{2}$ " wide \times $18\frac{3}{4}$ " long. Any three colors may be used; I used maple, walnut and bloodwood veneers. The cross-hatching on the grid are $\frac{3}{4}$ " squares.

1. Cut two $\frac{1}{2}$ " \times $1\frac{3}{4}$ " boards to 22" long for the sides and two end pieces to 16" long.
2. Follow directions in **Appendix, Joints, Compound Butt** to cut the tray. Plug the rabbet holes.

Put the Bottom into the Tray: Use PVA glue.

1. Glue the parquetry and the backer board into the rabbets of the tray bottom; wipe off excess glue.
2. Add cork dots to the bottom corners and you are through.



12A-D2. Close-up. The grid squares are $\frac{3}{4}$ " each. The Brown and Tan strips have been applied.

B. Cheese Tray with Glass Dome. While you're finishing up the cooking, your guests will be sampling the cheese and crackers. [Photo 12B](#) shows a tray made of redwood with strips of maple, walnut plus a thick, dyed black veneer. The cheese cutter and cheese spreader blades came from Craft Supply. The handles were made of olive wood.



Photo 12B

Tools and Materials Needed: A 24" long \times 2" \times 6" board, red, black and white

thin strips, table saw, PVA glue, band saw, lathe, CA Glue, 6" diameter glass dome (#1043810002), and white/grey cheeseboard tile (#1043820002) both from Craft Supply, and cheese cutter and spreader blades.

Make the Blank: Use two 2" thick, 6" wide × 12" long pieces and cut one on a bias so the insert pieces can be added at glue-up.

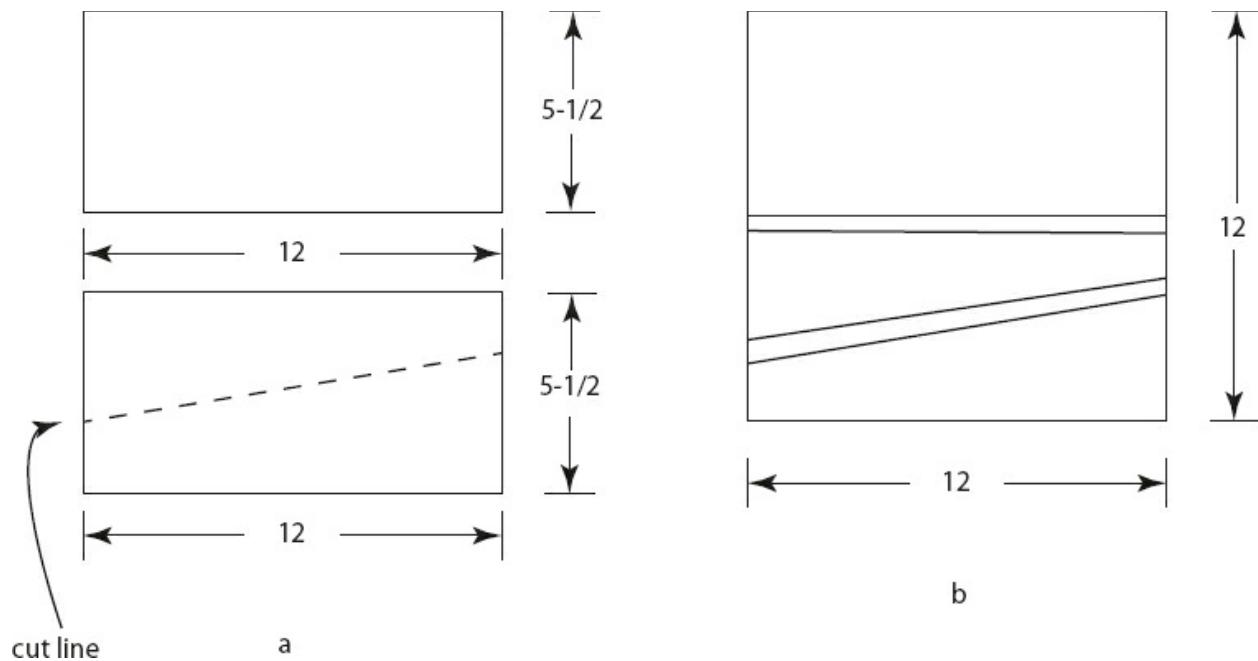
1. Cut two pieces of 2" × 6" to 12" length.
2. Joint one edge of each piece so they nestle together nicely, ready for gluing.
3. Cut one of the boards on a bias as in [Fig. 12B-D1a](#).
4. Cut all the insert pieces to length and glue the block up.
5. After 30 minutes, remove the clamps and scrape off the extruded glue.
6. Use a block plane and smooth both top and bottom. See [Fig. 12B-D1b](#).
7. Draw a 11½" circle and cut the block round on a band saw.

Turn the Bottom of the Tray: Mount the piece onto a faceplate to turn the bottom. Reverse and hold with expansive jaws to turn the top of the tray.

1. Fasten a faceplate to the top of the piece. See [Fig. 12B-D2a](#).
2. Mount the blank on the lathe and trim the rim true.
3. Next use a bowl gouge and with a pull stroke, true the bottom.
4. Use a large bowl gouge and make a smooth curve for the underside of the bowl edge.
5. Next make a dovetail recess about 2-¾" diameter to fit the expansive jaws of your chuck.
6. Sand and finish the bottom with polyurethane.

Turn the Top of the Tray: Reverse the tray and work on the top.

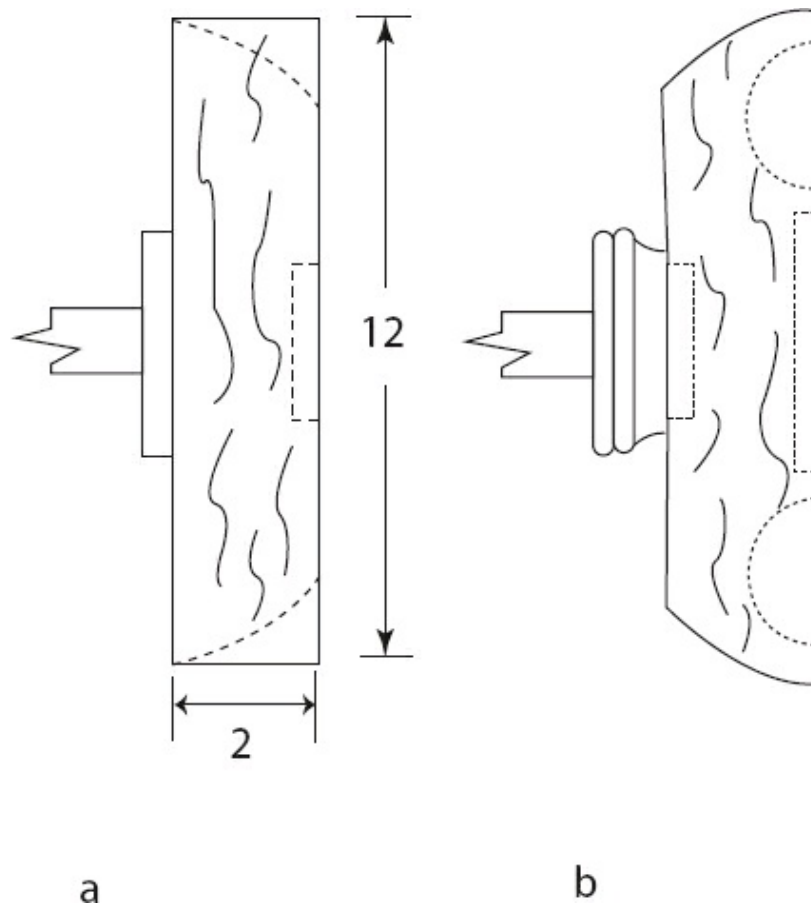
1. Mount the bottom of the tray to the lathe with an expansive chuck. See [Fig. 12B-D2b](#).
2. True the top surface with a large bowl gouge and a flat scraping tool.
3. Mark out a 5-¾" circle in the middle for the cheese tile.
4. Cut a recess about ¼" deep.
5. See [Fig. 12B-D2](#) and [Fig. 12B-D3](#). Shape the top of the tray.
6. Sand and finish.



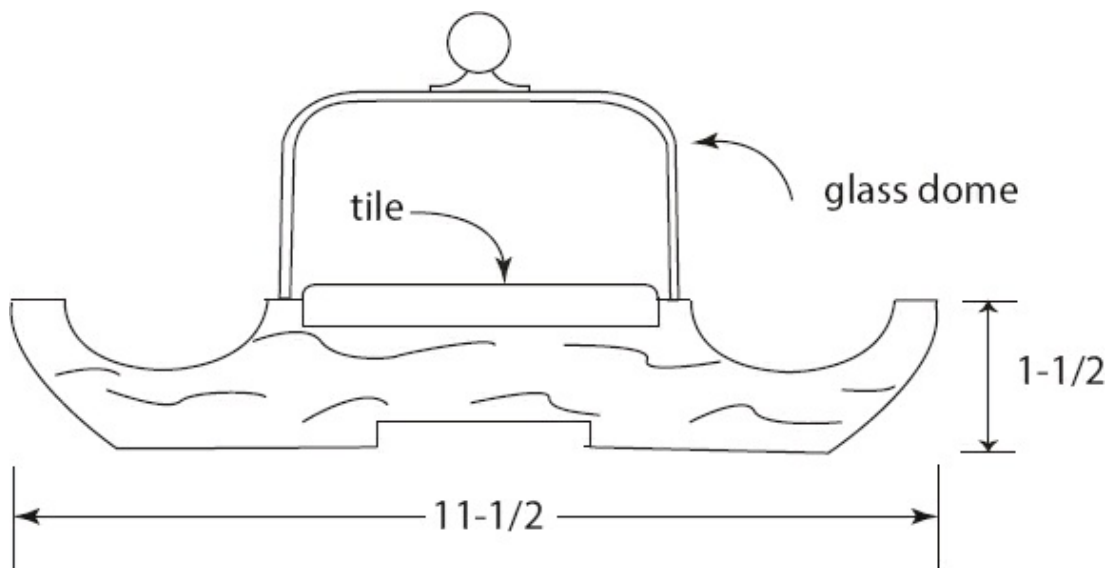
12B-D1. Prepare the Blank. Use two 6" × 12" boards and cut one on an angle (a). Glue the two boards together with thin strips in the joints (b).

Make Handles for the Cheese Cutter and Spreader: Use a nice wood here. The picture 12B shows California native olive wood.

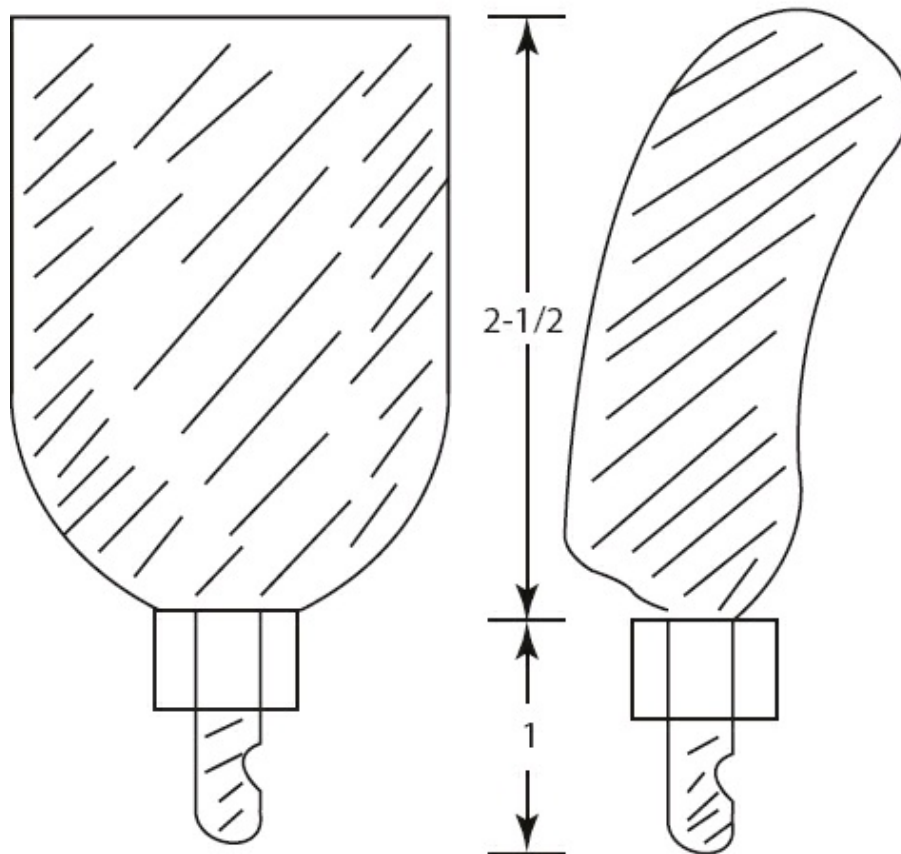
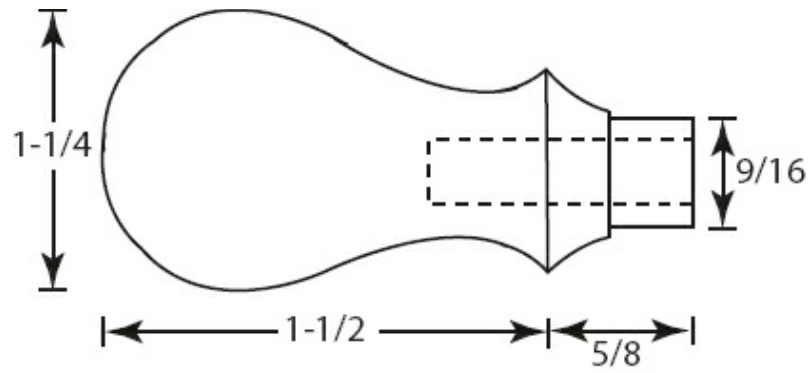
1. Make two blanks, each 1-½" × 1-½" × 3" long.
2. Drill 17/64." diameter holes, 1-¼" deep in one end.
3. Mount this piece on the lathe using an expansive chuck to hold it and a live cone center at the tail.
4. Turn to shape using [Fig. 12B-D4a](#) as the pattern.
5. Finish with a good wood sealer and paste wax.
6. Use CA glue to fasten the ferrule onto the handle and to hold the steel cutter into the hole.



12B-D2. Turn the Bowl. Use a faceplate to shape the bottom and to cut a dovetail recess (a). Reverse the turning and use the expansive jaw chuck to shape the top of the bowl (b).



12B-D3. The Finished Cheese Tray and Dome. The tile sets in a recess and the dome fits around it. Crackers plus the cheese spreader and cheese knife fit in the trough.



12B-D4. The Cutlery and Handles. Use the pattern to shape the handles.

C. Cake Tray with Glass Dome. Purchase the 11" cake dome before you start to make the tray; (Craft Supplies, Provo, Utah. #1043810001). [Photo 12C](#) shows the tray made of walnut. The base is an octagon made of $\frac{3}{4}$ " stock.



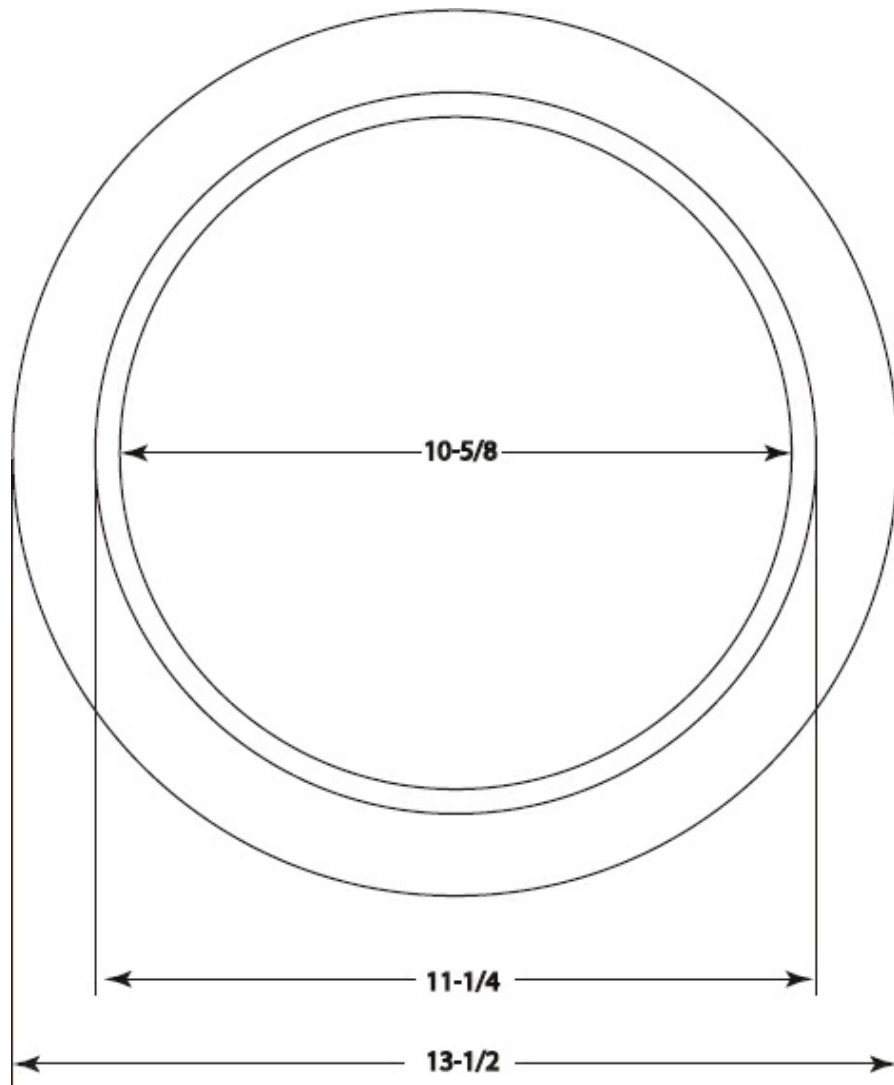
Photo 12C

Tools and Materials Needed: A 14" round of walnut or another nice wood, about $\frac{7}{8}$ " to 1" thick, band saw, faceplate and lathe, table saw, yellow glue, 4 flat-head screws and the cake dome.

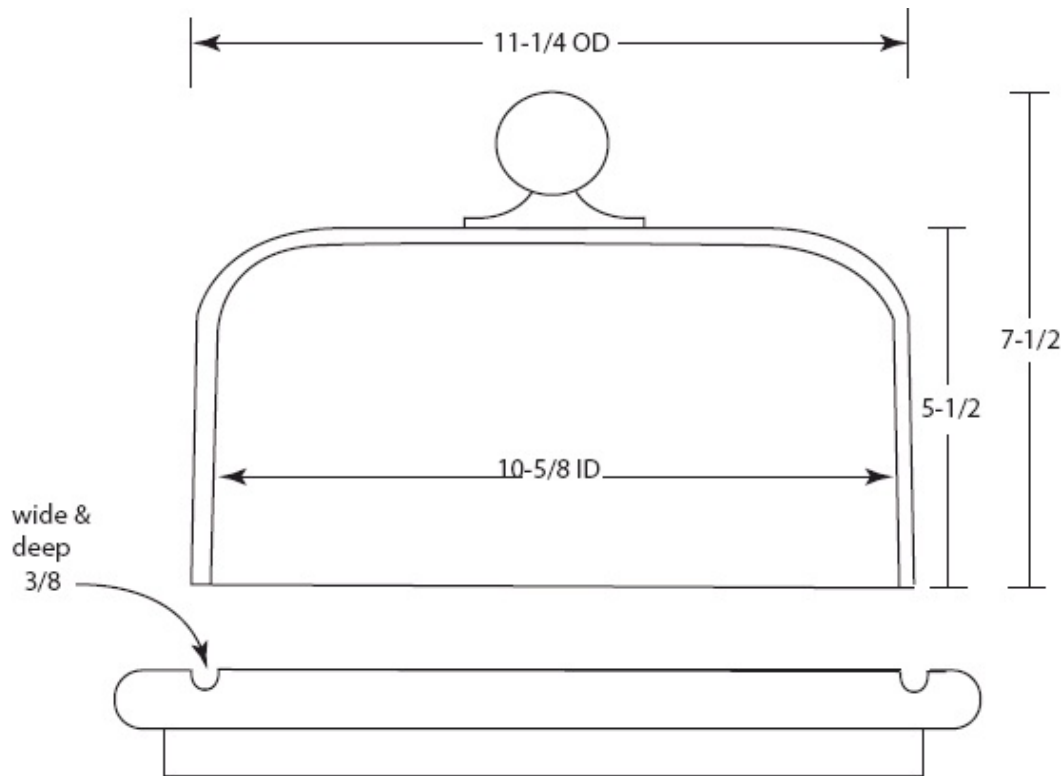
Make the Tray: Glue up pieces of $\frac{7}{8}$ " to 1" thick walnut to 15" wide \times 15" long.

1. Draw a 14" circle on the walnut piece and cut out on the band saw.
2. Mount the piece on a faceplate and attach to the lathe.
3. Cut the circle to 13- $\frac{1}{2}$ " and mark the groove. See [Fig. 12C-D1](#).
4. Cut the groove about $\frac{3}{8}$ " deep and $\frac{3}{8}$ " wide. See [Fig. 12C-D2](#).
5. Sand from 80 through 320 grit.
6. Put on a finish. I used two coats of Minwax Clear Satin Polyurethane.

Make the Segmented Base: The base is an octagon and requires eight pieces to be cut. Fit your table saw with a sliding miter table set at 22- $\frac{1}{2}$ °. To calculate the length of each segment, See [Appendix, Regular Polygons](#).

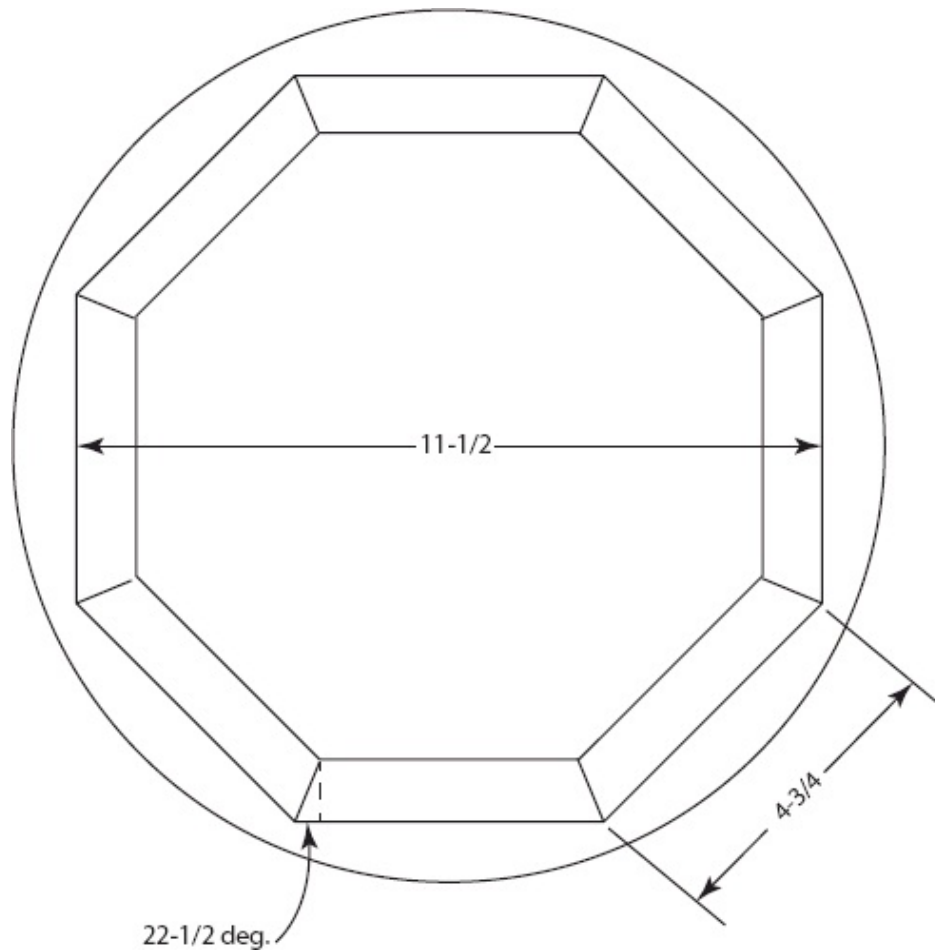


12C-D1. Top View of Tray. Cut the tray $13\frac{1}{2}$ " outside diameter and then cut a groove $\frac{3}{8}$ " wide and $\frac{3}{8}$ " deep as shown.



12C-D2. Side View of Tray. Measure the glass dome before you cut the grooves.

1. Start with $\frac{3}{4}$ " thick stock and cut to 1" wide. You'll need about 38" in length.
2. Set your sliding miter table to $22\frac{1}{2}^\circ$.
3. Cut eight segments each $4\frac{3}{4}$ " long (long point-to-long point). See [Fig. 12C-D3](#).
4. Assemble the eight pieces and make sure all the joints are tight. If not, tweak a few until you have a good fit.
5. Butter the ends of each segment and glue the octagon together, holding it flat to your table (protected by wax paper) and holding the pieces tight with a band clamp or large rubber strips.
6. Flatten both top and bottom of the segmented ring and drill holes in four pieces.
7. Use PVA glue and four flat head screws and fasten the base to the Tray.



12C-D3. The Segmented Base. Cut eight segments $4\frac{3}{4}$ " long at $22\frac{1}{2}^\circ$. The base is attached to the bottom of the tray with four flat-head screws.

D. Sushi Board and Cups. This sushi board with cups for the sauces looks Japanese. The one in [Photo 12D](#) is made of maple and walnut. The walnut outriggers at each end lift the tray and are decorative. The four cups are turned on a lathe and are made of ash.



Photo 12D

Tools and Materials Needed: $\frac{3}{4}$ " thick walnut and maple stock for the board, ash for the cups, lathe, clamps, yellow glue, $\frac{5}{16}$ " pegs and polyurethane finish.

Make the Tray: The tray is made of two pieces of maple with a walnut strip glued in between.

1. Start with two pieces of maple about 3" wide \times 10- $\frac{3}{4}$ " long.
2. Glue these two pieces together with a piece of 1" wide \times 10- $\frac{3}{4}$ " long walnut.
3. Drill $\frac{5}{16}$ " holes in the ends as in [Fig. 12D-D1](#).
4. Cut the shape of the board with a band saw.
5. Sand all edges smooth and round over the top and bottom edges.
6. Make the two end outriggers and drill two $\frac{5}{16}$ " holes in each.
7. Glue in the dowels and glue on the outriggers.

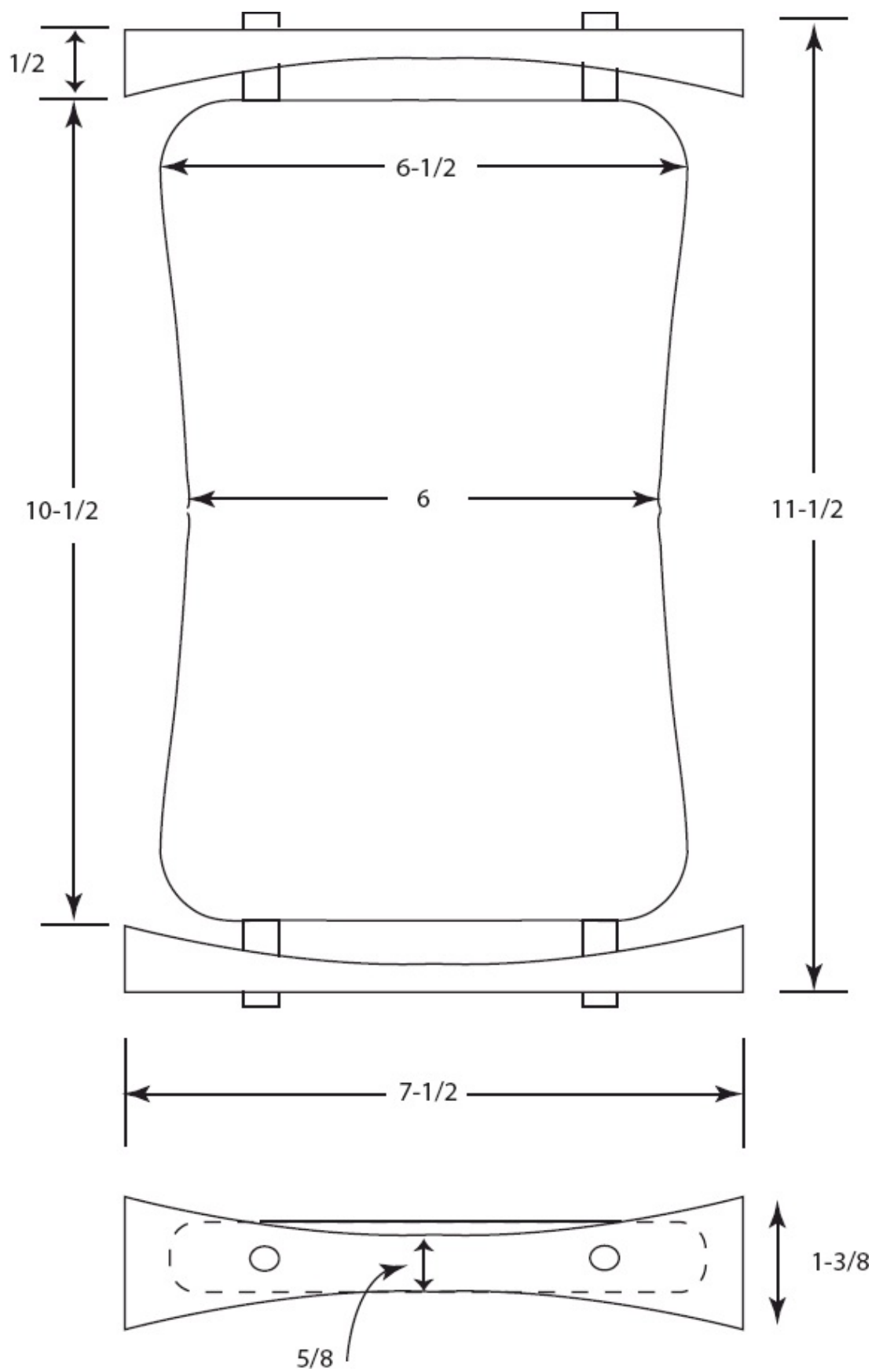
Turn the Bowls: These are made of a good 1" thick light-colored wood. I used

locally harvested ash.

1. Cut four blanks each 4" square.
2. Cut them near round on a band saw.
3. Glue each to a wooden faceplate with a piece of kraft paper in between.
4. On the lathe, turn the piece round and cut the inner cup shape.
5. Sand smooth and finish with wipe-on poly.
6. Pop off the bowl from the lathe.



A good finish for trays is polyurethane, either full-strength or wipe-on.



12D-D1. The Sushi Tray. Make the tray part from glued up $\frac{3}{4}$ " wide pieces. The outriggers are made of a contrasting wood.

E. Charger Plates. The colorful charger plate is set on the dining table and a clear-glass dinner plate is set on top of it. The charger may be seen through the clear glass plate. See [Photo 12E](#). Each charger is 13- $\frac{1}{4}$ " diameter. I used $\frac{3}{4}$ " English sycamore (similar to our maple wood) for the base of all the pieces. The starting boards were 5" to 6" wide and then glued together with colored strips between. Add a $\frac{1}{4}$ " piece to the bottom to give the 1- $\frac{1}{8}$ " depth needed.



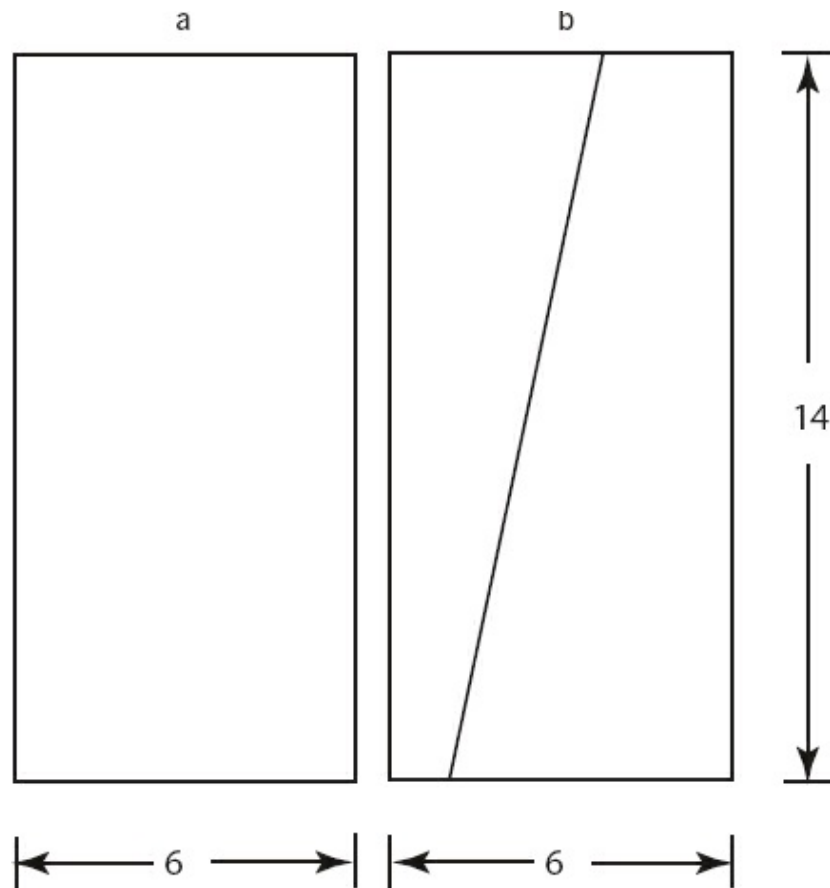
Photo 12E

Tools and Materials Needed: Table saw, hand plane, glue, band saw, lathe with expandable jaws, maple wood, different insert woods such as black walnut, cherry, ebony, red oak, holly and black dyed veneer.

Make the Chargers: Gather all the different woods.

1. Cut two $\frac{3}{4}$ " sycamore pieces into 6" wide \times 14" long pieces as in [Fig. 12E-D1](#). Some pieces were then cut on a bias.

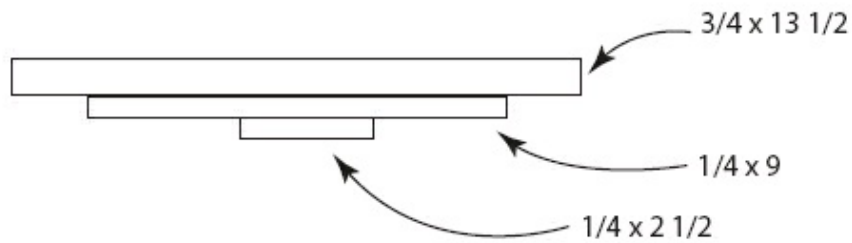
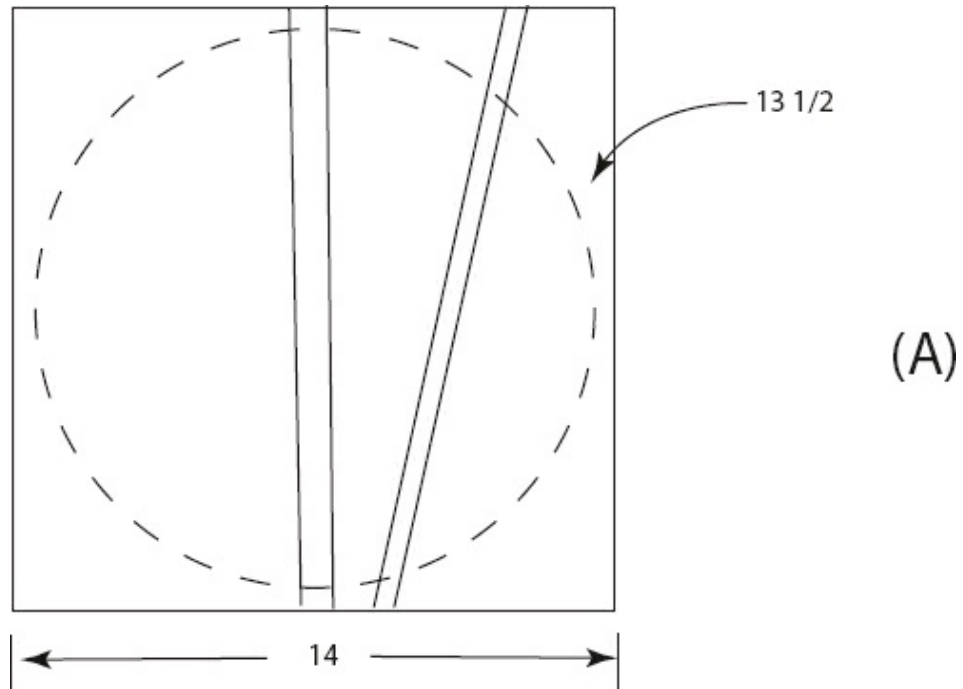
2. Glue the pieces together with different woods between the sycamore pieces; see [Photo 12E](#).
3. Flatten the glued-up piece with a hand plane on both top and bottom.
4. Cut the rough piece to a 13-½" circle on the band saw; see [Fig. 12E-D2a](#).
5. Make a 9" circle of sycamore ¼" thick and glue this to the bottom as in [Fig. 12E-D2b](#).
6. Next, glue a 2-½" circle to the bottom.
7. Use a faceplate and screws or put the piece in large Cole expandable lathe jaws and turn the small 2-½" piece to a 2" round.



12E-D2. Prepare the Stock. (a) A ¼" thick × 9" diameter circle is glued to the bottom to increase the depth to 1". The 2-½" circle on the bottom is to temporarily hold the charger in the lathe jaws as the top is shaped.

8. Reverse the piece and hold the 2" circle in a chuck and turn the face of the charger.
9. Use Minwax Satin Wipe-on poly finish on the top side.
10. Reverse the charger and hold with the expandable jaws and turn off the 2" piece and finish the bottom of the piece.
11. Sand the bottom.

12. Apply several coats of wipe-on poly.



(B)

12E-D1. Prepare the Stock. (a) Cut two pieces of $3/4$ " stock to size 6" wide \times 14" long. Cut one of the pieces on a bias. (b) Glue the two pieces together with colored wood strips in between.

CHAPTER 13

BOWLS

There are seven bowls here: **Small Individual Salad Bowls (A)** (See [Photo 13A](#)), a **Salad Bowl Made from Two Boards (B)** that will take some fancy band-sawing (See [Photo 13B](#)). A **Stack Laminated Bowl (C)** that is made from only four segments per row (See [Photo 13C](#)). The **Segmented Salad Bowl (D)** will introduce you to segmented turning (See [Photo 13D](#)). There also is a small **Peanut Bowl (E)** (See [Photo 13E](#)), a **Chip Plate (F)** (See [Photo 13F](#)) and a **Sugar Bowl with Spoon (G)**, (See [Photo 13G](#)).



Photo 13A

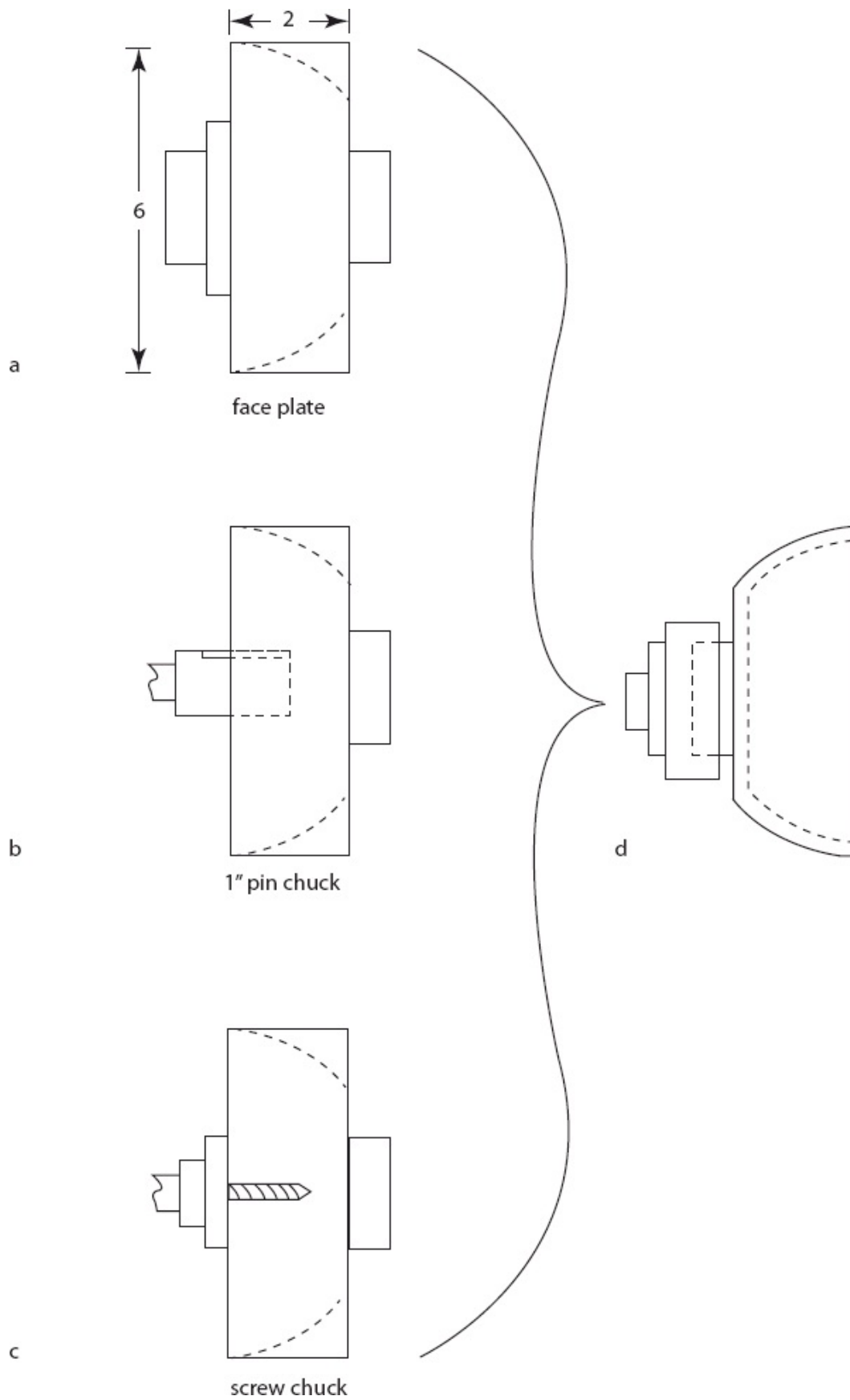
A. Individual Salad Bowls. Make six or eight of these so everyone at the table has one. For the bowl in [Photo 13A](#) start with 2" thick walnut stock about 6" × 6". Secure the blank to the lathe with screws and a face plate, with a pin chuck or with a screw chuck (See [Fig. 13A-D1](#)).

Tools and Materials Needed: Enough walnut stock to make multiple bowls, $\frac{3}{4}$ "

thick pine, PVA glue, lathe, face plate, pin chuck or screw chuck, mineral oil to finish.

Make the Bowl: Gather all the 2" thick walnut stock and cut 6" × 6" blanks.

1. Use a band saw to cut the square walnut blank to a 6" circle, or trim off the corners with a hand saw
2. Draw a 2" circle on a 1" thick piece of scrap wood and cut this out on a saw.
3. Glue this waste block to the blank.
4. Mount the blank to the lathe using a face plate, pin chuck or screw chuck. [Fig. 13A-D1-a,b,c.](#)
5. Turn the outside of the bowl and sand smooth.
6. Also turn the waste piece round.
7. Reverse the piece and hold it with an expandable jaws chuck and turn the inside of the bowl. Sand smooth. [Fig. 13A-D1-d.](#)
8. Part off the bowl, cutting off all the waste block and cutting slightly into the walnut to make the bowl bottom slightly concave.
9. Finish with mineral oil.



13A-D1. Holding the Blank and Turning. Use a face plate (a) with flat-head screws, a 1" pin chuck (b) or use a screw chuck (c) to hold the walnut piece on the lathe to turn the outside of the bowl. Also glue on a 1" thick piece of wood (cut to a 2" circle) as a waste block. To turn the inside of the bowl, reverse the blank and hold it with an expandable jaws chuck (d).

B. Bowl from two Boards. By cutting rings from two boards and then stacking the bevel-cut rings, you can make bowls with curved sides. See [Photo 13B](#).



Photo 13B

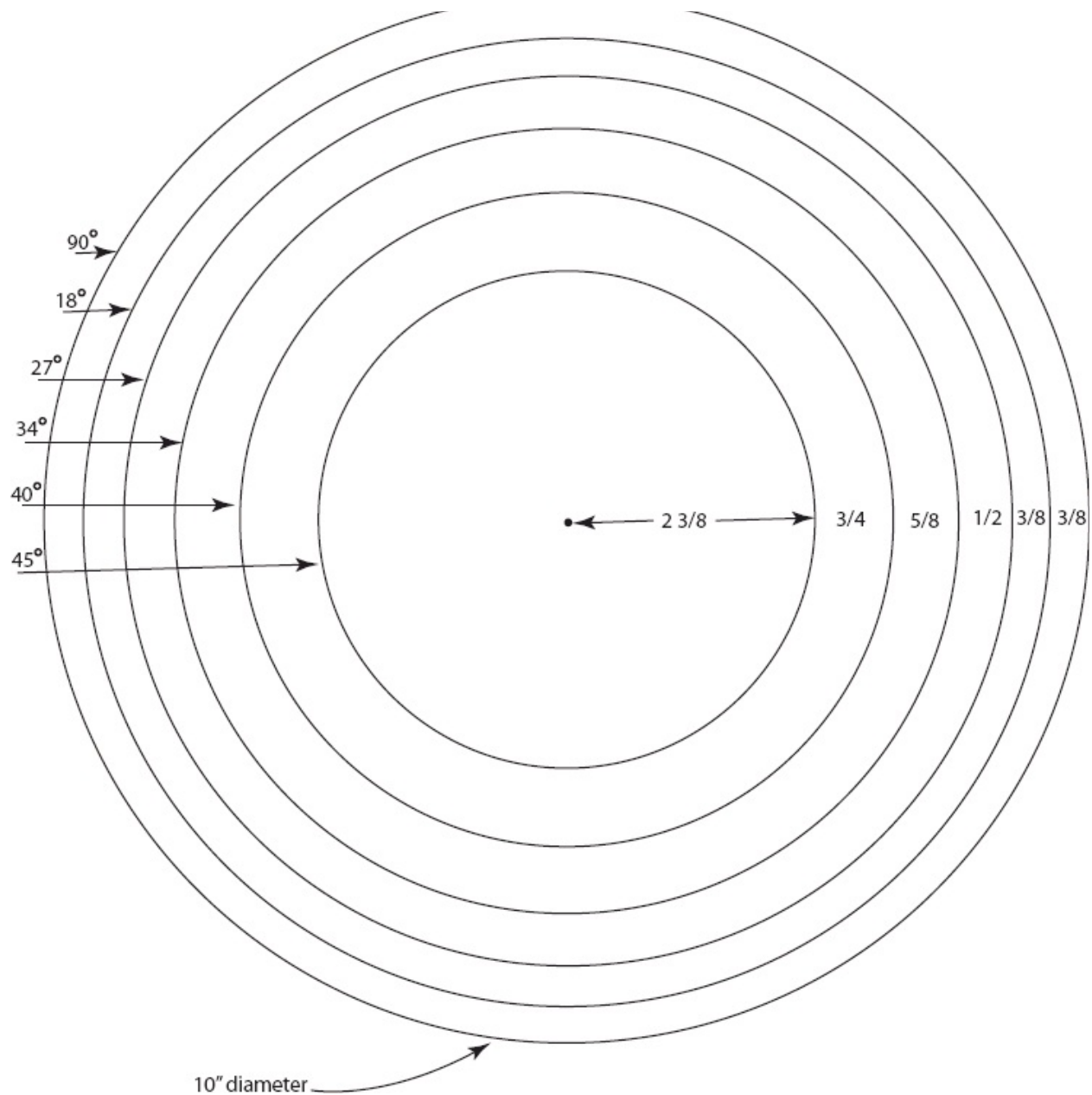
Tools and Materials Needed: Two $\frac{3}{4}$ " thick boards each 5- $\frac{1}{2}$ " wide \times 10- $\frac{1}{2}$ " long, hand plane or jointer, masking tape, band saw with tilting table, digital degree gauge, yellow PVA glue, clamping jig and lathe.

Make the Crude Bowl: Gather the walnut and maple stock. After the five rings are cut and glued together to make the basic bowl, it is turned to final shape on the lathe.

1. Prepare two $\frac{3}{4}$ " thick boards each 5- $\frac{1}{2}$ " wide \times 10- $\frac{1}{2}$ " long. In [Fig. 13B-D1](#) the two boards were walnut and maple to illustrate the joinery.
2. Use a hand plane or a jointer and make straight the two joining edges.
3. Butt the boards together and hold with a few pieces of masking tape.
4. Locate the center and draw an outer circle 10" diameter with a compass. This outer ring will be cut with the band saw table set at 90°.
5. Measure towards the center from this outer ring and make marks at $\frac{3}{8}$ ", $\frac{3}{8}$ ",

$\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ inch.

6. Draw circles at each of these marks on both boards.
7. Separate the boards and cut the semi-circles on the band saw. Cut the outer ring at 90° .
8. Cut each succeeding ring as shown in [Fig. 13B-D1](#): at 18° , 27° , 34° , 40° and 45° . Do this on each board.
9. Assemble each ring by placing PVA glue on the joints and holding the ends together until the glue is tacky. Use masking tape to hold the joints and let set for one hour.
10. Make a $\frac{3}{4}$ " board 2" wide \times 12" long covered with 60 grit sand paper. Use this to level the joints by rubbing across the glued ring.
11. Start with the center bottom piece and glue on the second-from-the-bottom ring. Rub the two pieces together until the glue is tacky and then place the piece in a shop-made bowl press. See **Appendix: Clamping, Screw Press**. Note that the bowl is stronger if the joints of each ring are staggered in the bowl.
12. Continue to build up the bowl by face-sanding each ring and then gluing it to the bowl.
13. Glue on a 2" waste block to the bottom and mount the crude bowl in an expansive-jaw chuck and turn to size and shape.
14. Sand smooth and finish with either mineral oil or polyurethane.



13B-D1. Use this Half-Pattern to draw the five rings. Butt two pieces of walnut or maple (each 5-½" wide × 10-½" long) together and draw a 10" diameter circle. Draw successive circles ¾", ¾", ½", ⅝" and ¾" wide. The outside ring is cut at 90°; successive rings at 18°, 27°, 34°, 40° and 45°.

C. Stack Laminated Bowl. Once this big salad bowl has been glued up, it is fairly easy to turn on a lathe because all the segments are side-grain, no cross-grain turning. [Photo 13C](#) shows a 12" diameter bowl made of eight layers; there are five maple rings and three walnut rings. See [Fig. 13C-D1](#).



Photo 13C

Tools and Materials Needed: Maple and walnut boards, clamps, lathe, PVA glue, expansive chuck, wipe-on poly finish.

Make the Bowl Bottom: The bottom is solid and is made of glued up 1" thick boards.

1. Start with a piece of 1" material 7" × 7".
2. Glue on two pieces of material each 2-½" wide × 7" long to opposite sides
3. Once the piece has set, add two pieces each 2-½" wide × 12" long pieces to make a solid 12" square piece.

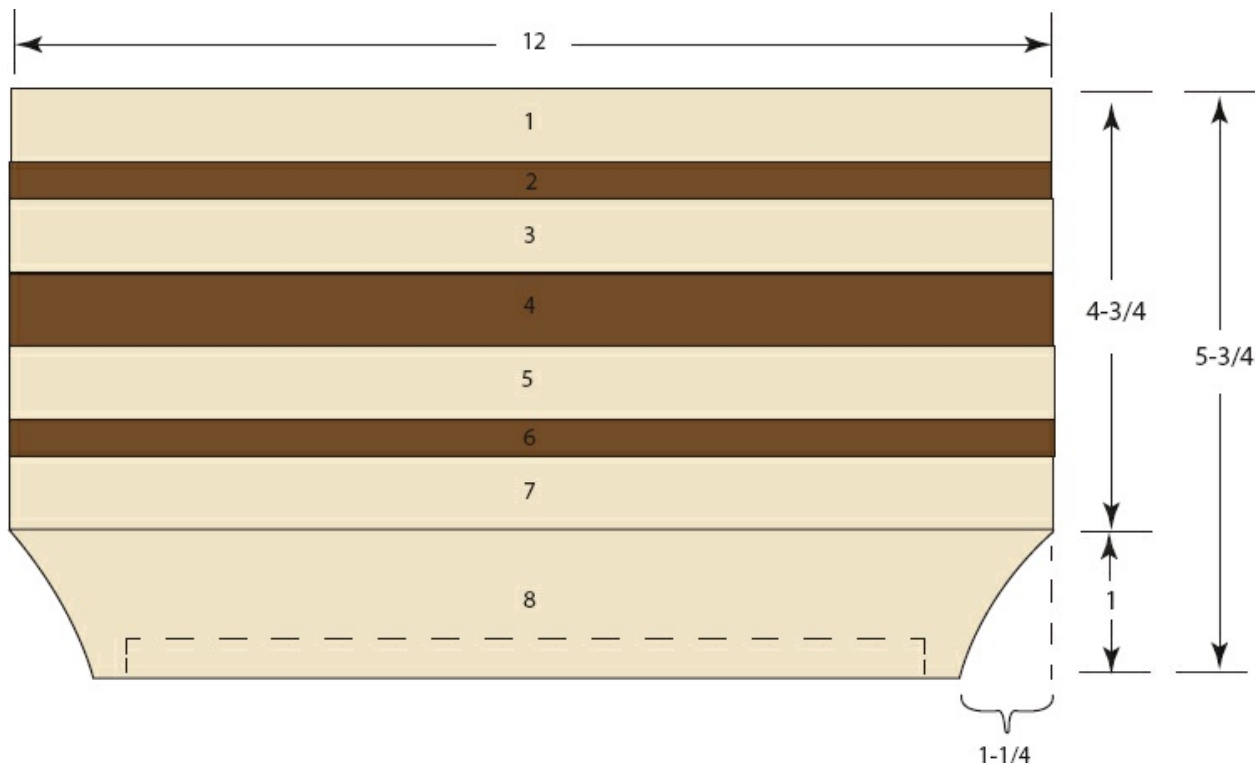
Make the Bowl Blank: You'll need about 10 feet of walnut strips and about 16 feet of maple strips, all 2-½" wide. In [Fig. 13C-D2](#) we have a top-down view of the construction of each ring. The side boards are each 2-½" wide × 12" long; end boards are 2-½" wide × 7" long.

1. For row seven cut four ¾" pieces all 2-½" wide. Two at 12" long and two at 7" long.
2. Temporarily fit these four boards together and mark the area to be removed (x) by a band saw as in [Fig. 13C-D2](#).

3. Saw away the areas 'x' and glue the four boards together using yellow PVA glue.
4. After 30 minutes, remove clamps, scrape off the semi-hardened glue and sand the surfaces flat.
5. Add layers one to six the same way to build the bowl. Note; remember to rotate each row 90° so the joints do not line up.
6. When all seven rows have been added, it is time to saw off the corners 'y'. When this is done the bowl is ready to mount on the lathe and turn.

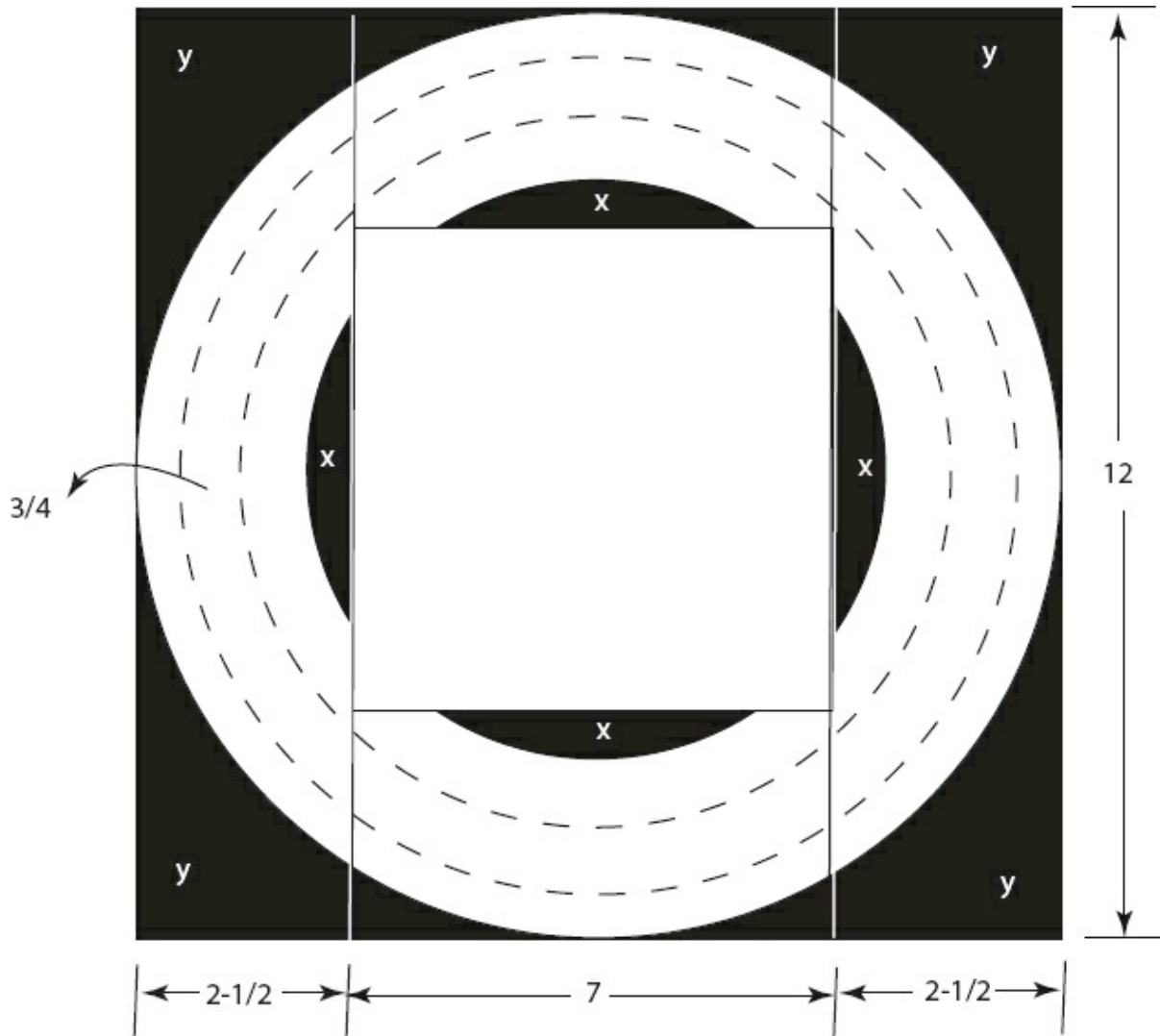
Turn the Bowl: We'll glue an auxiliary hardwood board to the bottom of the bowl blank first. Then fasten a metal face plate to this with screws.

1. Mount the bowl blank to your lathe and turn the outside to shape as in [Fig. 13C-D1](#).
2. Next put the tool rest in position and turn the inside shape.
3. Sand both inside and outside smooth and part-off the bowl with a parting tool.
4. Mount the bowl in expanding jaws and finish the bottom; note how the bottom rim is formed.
5. Finish with wipe-on polyurethane



13C-D1. The Eight Layer Bowl. The maple rows one, three, five and seven are 3/4" thick; the solid bottom

maple row is 1" thick. The walnut rows two and six are $\frac{1}{2}$ " thick; the walnut row four is $\frac{3}{4}$ " thick.



13C-D2. Layer Makeup. The two long boards are 2- $\frac{1}{2}$ " wide \times 12" long. The two short boards are 2- $\frac{1}{2}$ " wide \times 7" long. Areas 'x' are cut off each slat before glue-up; areas 'y' are removed with a band saw after glue-up is complete. On a lathe, turn the inside and outside until the wall thickness is $\frac{3}{4}$ ", as shown inside the dashed lines.

D. Lathe-Turned, Segmented Salad Bowl. This bowl conserves wood because part of the bottom is parted off and later this section is glued back on to the top. A 3" thick block of wood makes a 4- $\frac{1}{2}$ " high bowl. While making this bowl, you'll also learn about segmentation. See [Photo 13D](#).



Photo 13D

Tools and Materials Needed: A block of hard wood at least 10" × 10" × 3" thick, compass, band saw, lathe, table saw, band clamps and PVA glue.

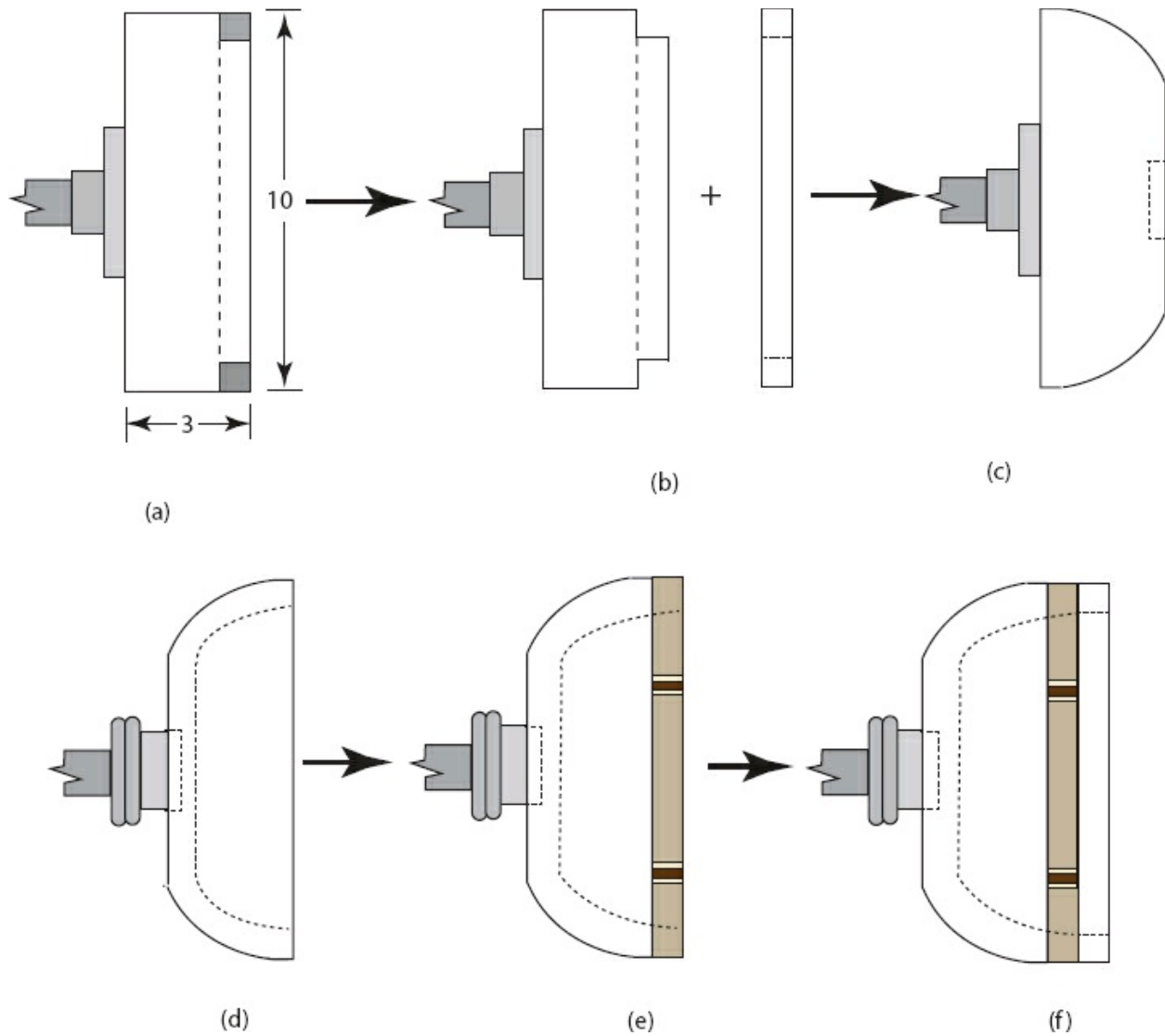
Make the Bowl: Prepare a block of walnut, cherry, maple whatever and cut to 3" thick and 10" square. See [Fig. 13D-D1 \(a\)](#) through [Fig. 13D-D1 \(f\)](#) for the sequence.

1. Use a band saw and cut the block to a 10" diameter circle.
2. Secure the block to the lathe with a faceplate as in [Fig. 13D-D1 \(a\)](#).
3. Use a parting tool and cut off an outer ring as in [Fig. 13D-D1-\(b\)](#). Make this ring $\frac{3}{4}$ " high and $\frac{3}{4}$ " wide.
4. Shape the bottom of the bowl as in [Fig. 13D-D1 \(c\)](#). Make the bottom about 5- $\frac{1}{2}$ " diam. flat.
5. Reverse the bowl on the lathe and secure it to a faceplate and block.
6. Cut out the inside of the piece, see [Fig. 13D-D1 \(d\)](#). Leave the bowl sides at least $\frac{3}{4}$ " thick.
7. Make the segmented ring as described below.

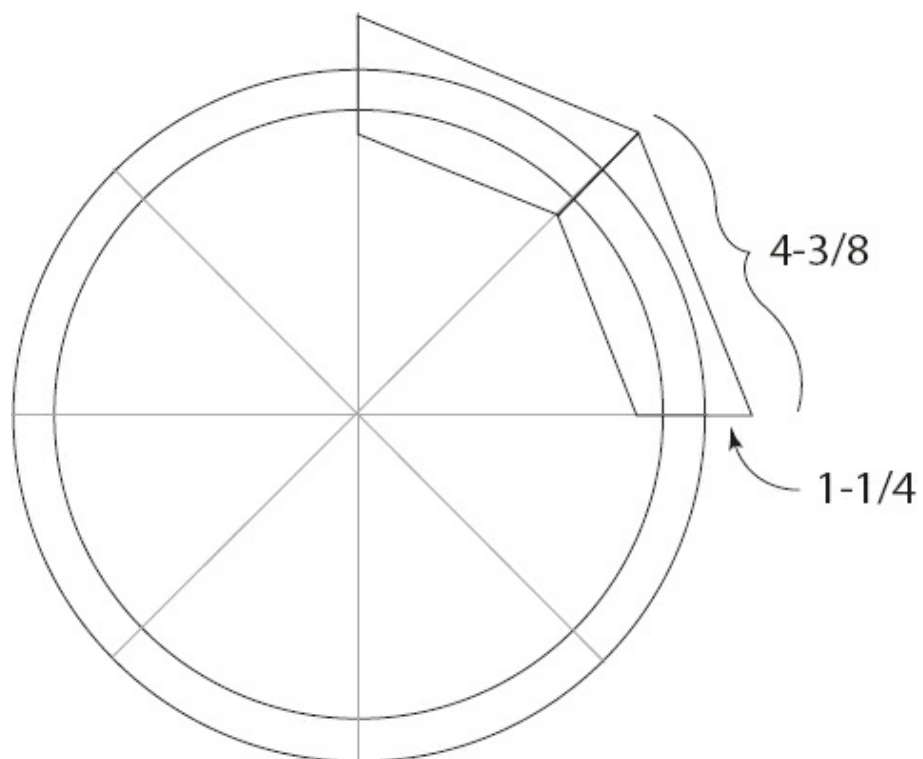
8. Glue the segmented ring onto the bowl as in [Fig. 13D-D1](#) (e).
9. Turn the bowl round again leaving the rim at least $\frac{3}{4}$ " thick.
10. Glue the outer ring that was removed in [Fig. 13D-D1](#) (b) to the bowl rim.
11. Turn the bowl round and shape it as in [Fig. 13D-D1](#) (f).
12. Cut off the glue block.

Make the Segmented Ring: For more on segmentation turning see *More Woodworkers' Essential – Facts, Formulas & Short-Cuts* by Ken Horner, Cambium & Fox Chapel, 2006, p. 258.

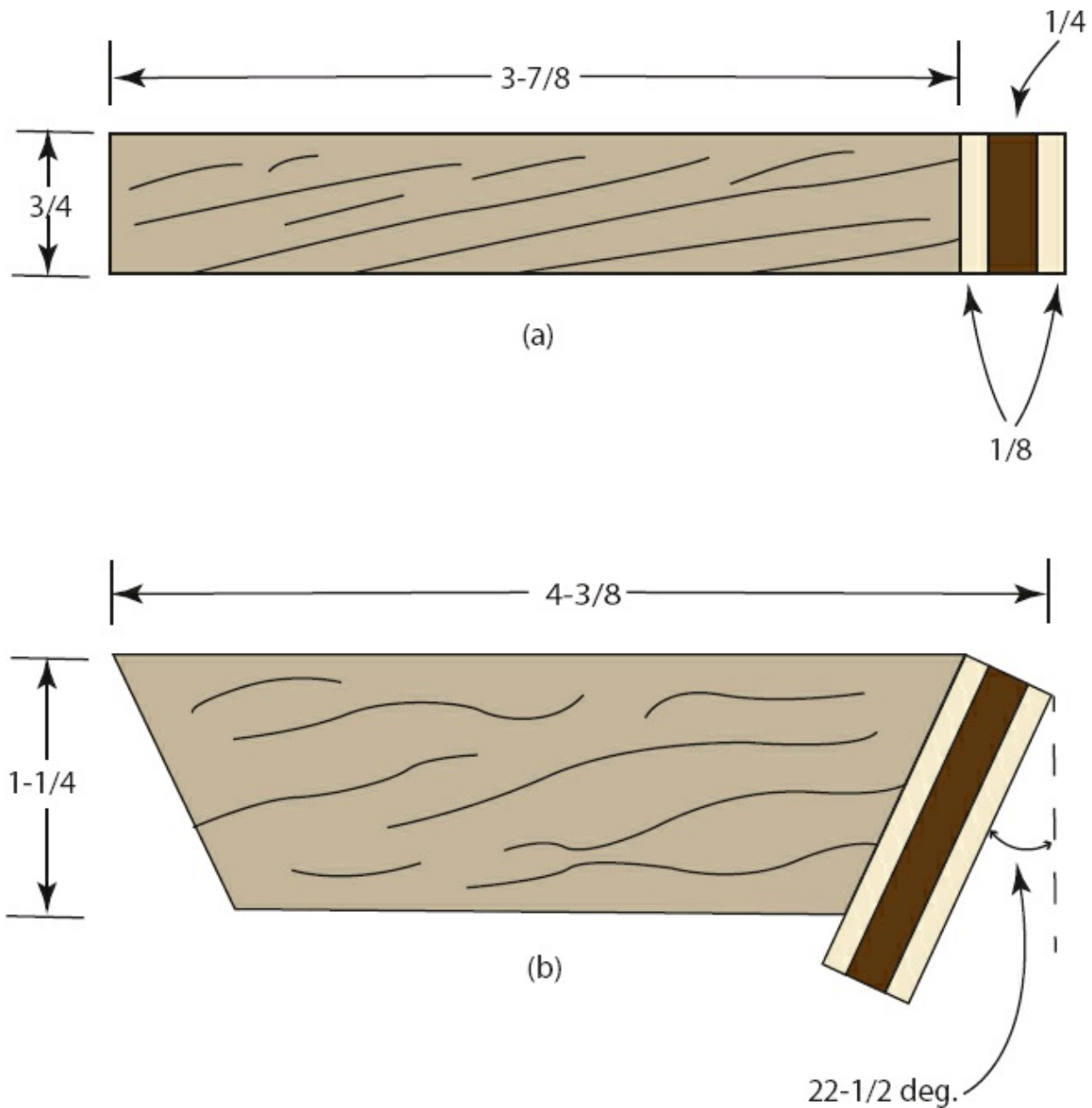
We will make a 10" diameter ring with eight segments. Each of the eight segments will be from $\frac{3}{4}$ " stock and will be $1\frac{1}{2}$ " wide \times $4\frac{3}{8}$ " long and cut at a 22.5° angle on each end. Each segment will be comprised of an ash piece $3\frac{7}{8}$ " long, two pieces of maple each $\frac{1}{8}$ " thick and one piece of bloodwood, $\frac{1}{4}$ " thick.



13D-D1. Steps to Make the Bowl. The block is mounted to the lathe (a), a $\frac{3}{4}'' \times \frac{3}{4}''$ section is cut off (b), a tenon is cut in the bottom (c), and the bowl is reversed on the lathe and the inside is cut out (d). The segmented ring is glued on (e) and then the off-cut from step (b) is glued on (f). The bowl is turned to final shape.



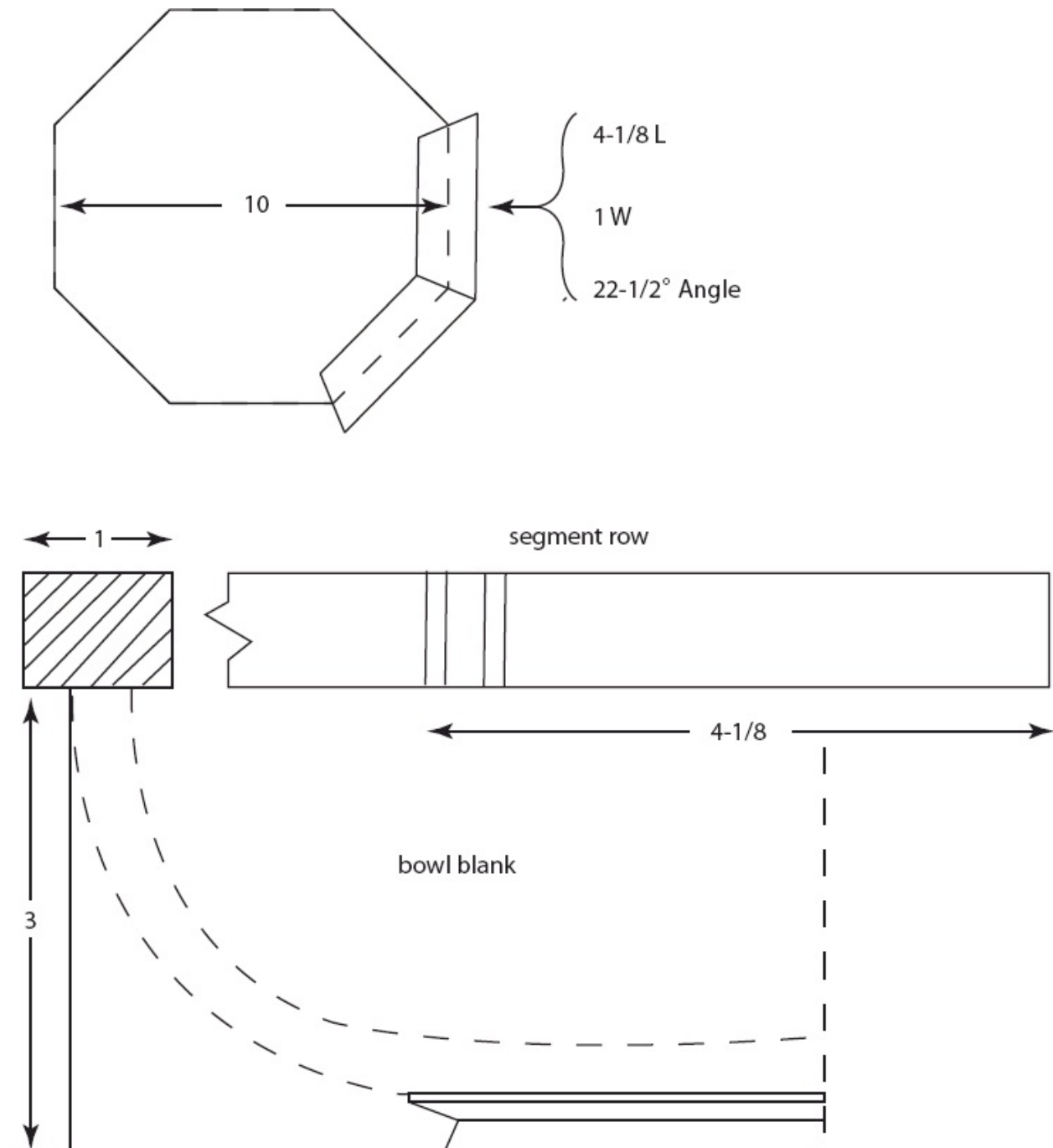
13D-D2. The Segments. Each segment is $4\frac{3}{8}$ " long and $1\frac{1}{4}$ " wide. Use $\frac{3}{4}$ " thick stock.



13D-D3. Make the Segmented Ring. The side view (a) shows the ash, maple and bloodwood pieces as they appear on the side of the bowl. The top view (b) shows how they appear as a segment.

1. With paper and pencil, draw a $10\frac{3}{8}$ " diameter circle and inside this circle, draw another circle $8\frac{5}{8}$ " diameter. These are the outside and inside diameters of our final bowl. The walls of the bowl will be $\frac{3}{8}$ " thick after turning.
2. The eight segments that will make up the feature strip of the bowl should be drawn full size. See [Fig. 13D-D2](#).
3. Gather enough material for the eight pieces; ash, maple and bloodwood.

4. Cut the main wood (ash) to $1\frac{1}{4}$ " wide \times $1\frac{3}{4}$ " long.



13D-D4. Makeup of the Bowl. The bowl blank is 3" high, the segmented ring is $\frac{3}{4}$ " thick and the original cut-off piece is $\frac{3}{4}$ " thick. This makes a final height of $4\frac{1}{2}$ ".

E. Lathe-Turned, Small Peanut Bowl. This bowl can be made in an afternoon and uses scrap wood. See [Photo 13E](#).

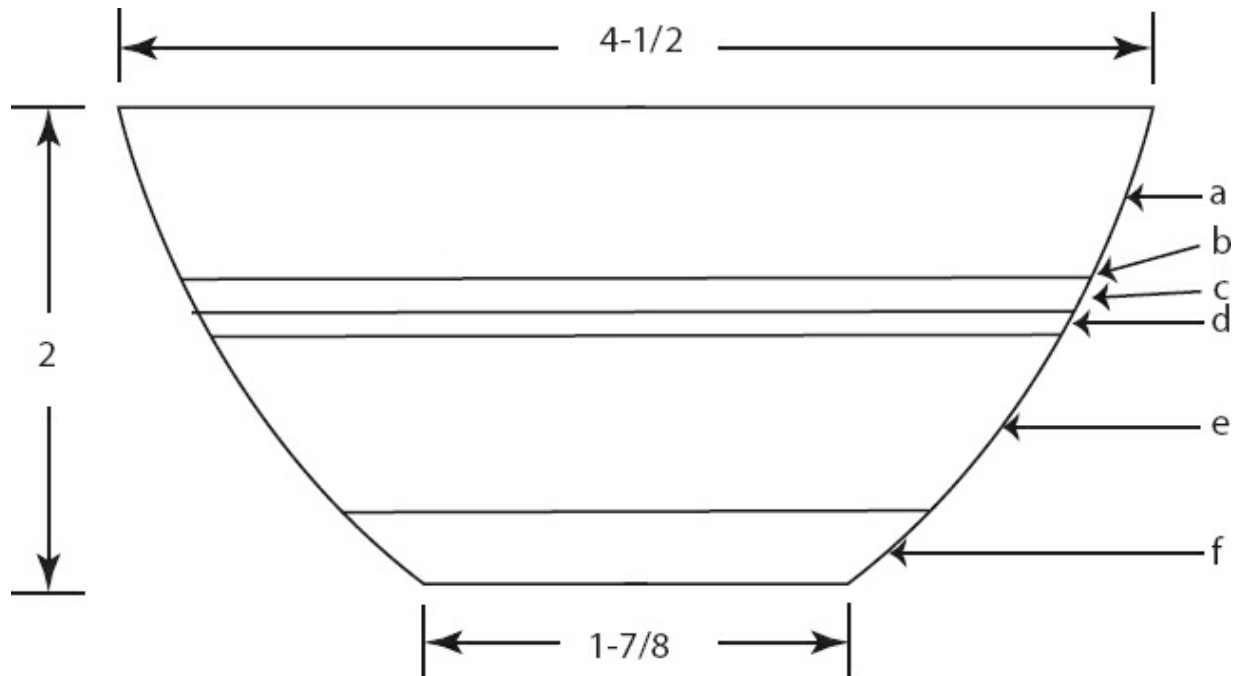


Photo 13E

Tools and Materials Needed: Wood scraps (about $5\frac{1}{2}'' \times 5\frac{1}{2}'' \times \frac{3}{4}''$ thick), table saw, PVA glue, band saw and lathe.

Make the Bowl: Prepare blocks of wood and veneer using the dimensions in [Fig. 13E-D1](#).

1. Cut $5\frac{1}{2}'' \times 5\frac{1}{2}''$ pieces of wood and veneer.
2. Glue these together to make a block about $2\frac{1}{2}''$ to $3''$ thick.
3. Use a band saw and cut the block to about a $5''$ diameter circle.
4. Secure the block to the lathe with a faceplate on the top and shape the bottom and sides.
5. Glue a waste block on the bottom, reverse the piece and hold with a faceplate.
6. Shape the inside of the bowl.



13E-D1. The Peanut Bowl. a = 3/4" oak, b = thin white veneer, c = 1/8" cherry, d = 1/8" walnut, e = 3/4" silver maple, f = 1/2" white maple.

F. Lathe-Turned, Large Chip Bowl. This bowl is made by cutting-in two multi-colored wedges, see [Fig. 13F-D1](#) for the pattern. The two light-colored maple pieces make a great background for the colored stripes added later. See [Photo 13F](#).

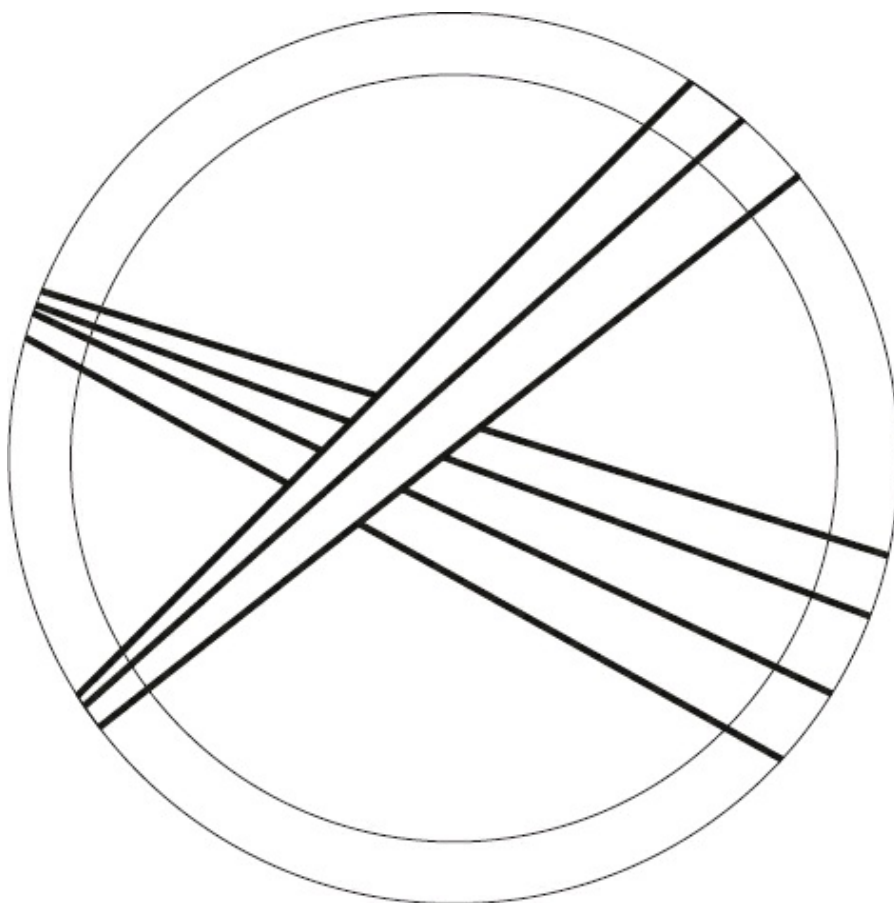


Photo 13F

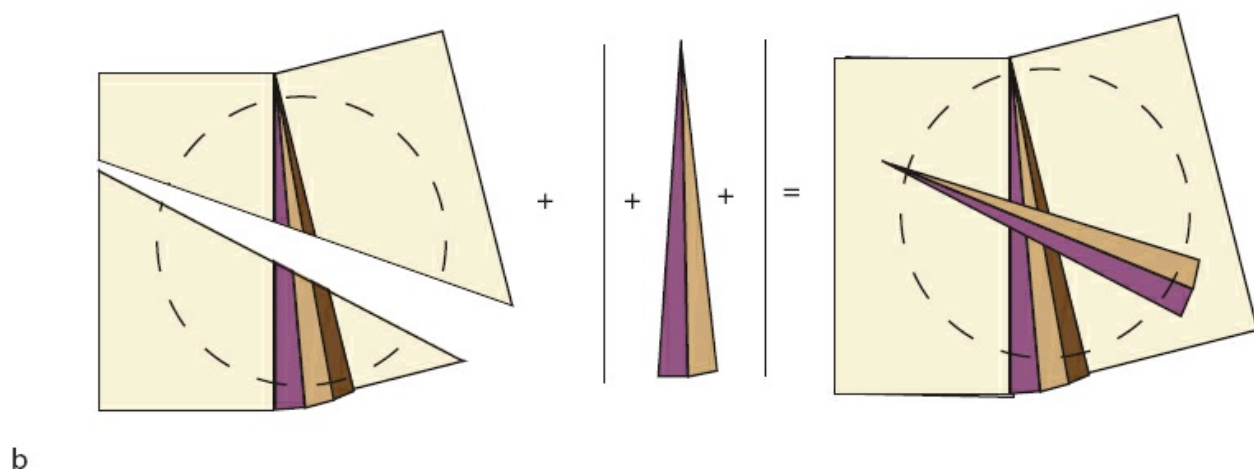
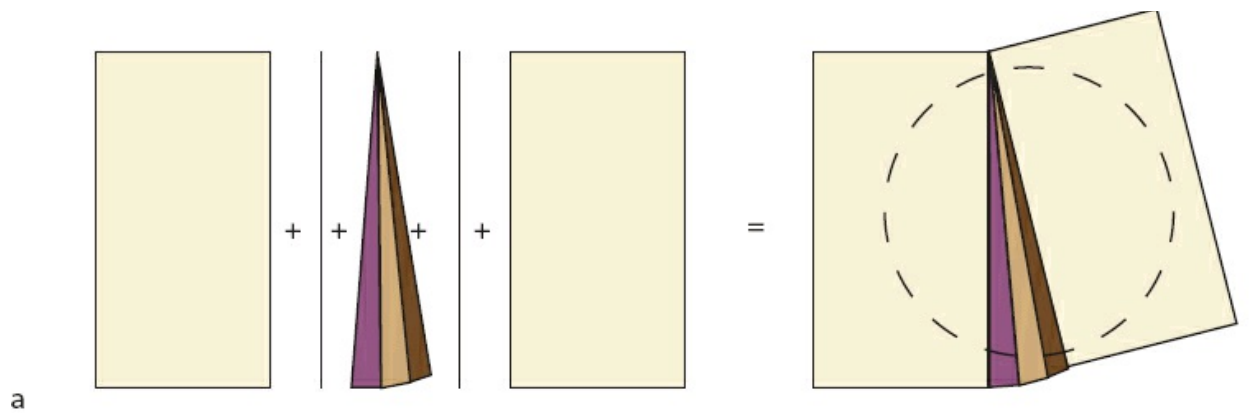
Tools and Materials Needed: Two pieces of 1" thick maple (5" wide × 10" long), colored wood pieces, black dyed veneer, table saw, smoothing planes, compass, band saw, PVA glue, clamps, lathe and polyurethane finish.

Make the Bowl: Joint the edges of the maple pieces so they will make tight joints with the first wedge. See [Fig. 13F-D2](#). Note, the first wedge has three pieces while the second wedge has only two.

1. Cut some 10" long wedges of bloodwood, oak and walnut. Use a sliding table on the table saw for this.
2. Also, cut some black-dyed veneer to 1" wide × 10" long.
3. Glue three wedges and two veneer pieces together.
4. Glue this wedge piece between the two maple halves.
5. After one hour, use a hand plane and smooth the top and bottom surfaces of the block.



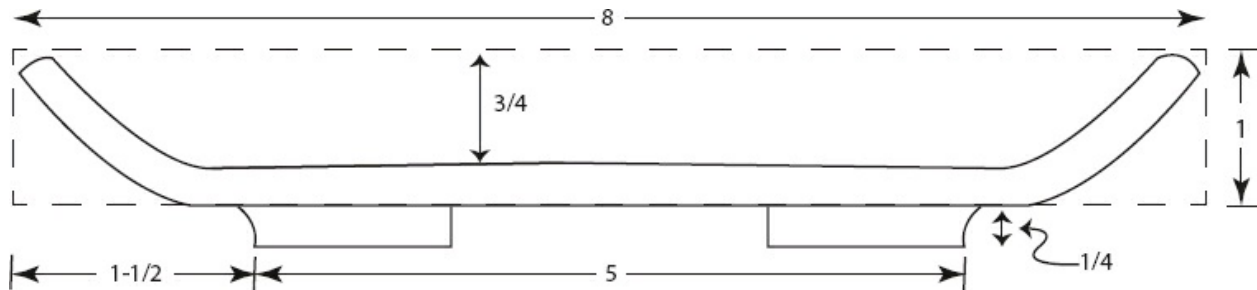
13F-D1. Pattern. The bowl is 9" diameter. The wedges are made before-hand, then glued into the maple board.



13F-D2. Glue Up the blank. Wedge one (a) is glued in plus two pieces of black-dyed veneer. The blank is cut apart, a wedge is discarded and the second wedge (b) is glued in, plus two pieces of black veneer. Draw a 9" diameter circle and cut out the final blank on a band saw.

6. Build another wedge of bloodwood and oak plus one piece of black veneer.
7. Cut a 9" diameter cardboard circle. Cut this in half and use it in a peek-a-boo manner to find the best position for the new wedge.
8. Again, use the sliding table on the table saw and cut out a wedge shaped piece from the big block. See [Fig. 13F-D2b](#). Note this piece is discarded.
9. Glue the three pieces together along with two thin veneer pieces.
10. After one hour, plane the top and bottom surfaces.
11. Use a compass and draw an 8-½" to 9" circle.
12. Use a band saw and cut the block to a circle.
13. Glue a 6" diameter piece of ¾" maple to the block bottom, see [Fig. 13F-D3](#).
14. Screw a faceplate onto the top and mount the block onto a lathe.

15. Shape the outside edge of the bowl and the bottom; cut a recess for the expansive chuck.
16. Sand all smooth and finish with multiple coats of polyurethane.
17. Reverse the bowl and hold with expansive jaws and shape the top and inside.



13F-D3. Lathe Work. Turn the bottom first using a faceplate screwed to the top. Next, reverse, hold with expansive jaws and shape the top.

G. Lathe-Turned, Sugar Bowl with a Spoon. This bowl, lid and spoon were made by my friend, Marcus Moody of San Jose, Calif. The finished bowl, including the lid, is 3-1/2" in diameter × 3-1/2" high. The initial block is 5" high × 3-3/4" square. See [Fig. 13G-D1](#) for pattern. For visual interest, the bowl was made of two glued-up pieces; mango with a stripe of mahogany. The top of the block is cut off later and becomes the lid. The spoon is cut from a separate piece of wood. See [Photo 13G](#).



Photo 13G

Tools and Materials Needed: The initial wooden blocks, drill press, Forstner bits, band saw, lathe, 4-jaw chuck, carving tools and polyurethane finish.

Make the Bowl: Glue the mango and mahogany pieces to make the wood block. Both the bowl and the lid will come from this piece.

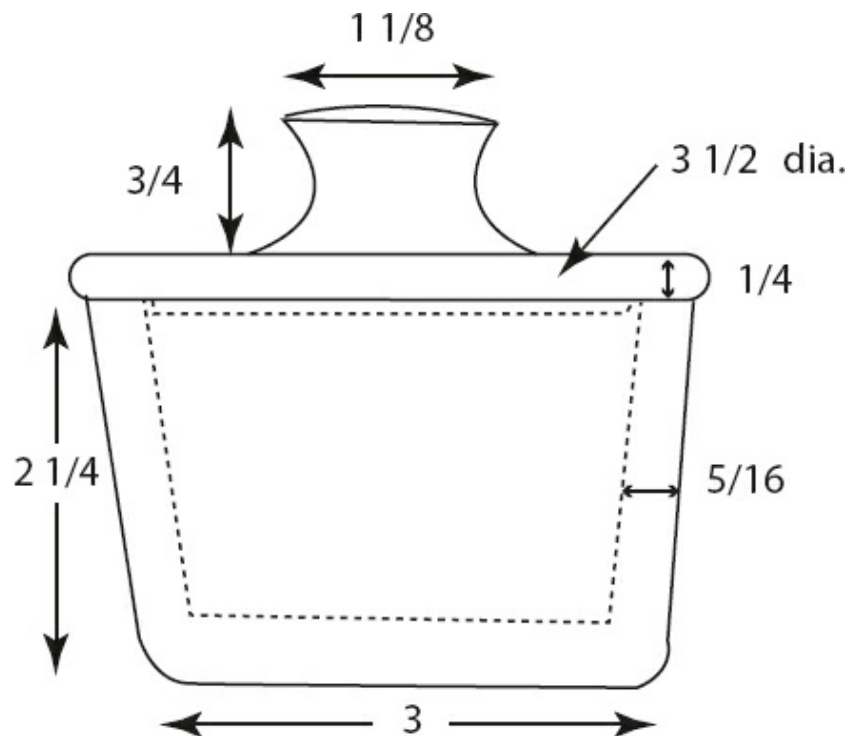
1. Glue wood pieces to make the block 3- $\frac{3}{4}$ " square \times 5" high.
2. Use the band saw and cut the square wood block nearly circular.
3. Again, using a band saw, cut off the top 1- $\frac{1}{2}$ " for the lid.
4. Use a 2" Forstner bit and drill a hole $\frac{1}{4}$ " deep. This is the start of the inside of the bowl.
5. Mount on the lathe using a 4-jaw chuck and turn the outside of the bowl including a bottom tenon.
6. Sand to 300 grit and finish with wipe-on polyurethane.
7. Reverse the piece, mount on the lathe using the tenon and turn the inside shape. Make the sides about $\frac{5}{16}$ " thick and leave about $\frac{3}{8}$ " to $\frac{1}{2}$ " bottom thickness.
8. Sand and finish with wipe-on polyurethane
9. Turn once more on the lathe and carve off the tenon.

10. Sand and finish with wipe-on polyurethane.

Make the Lid: Position the cut-off so the grains of the Lid and the Bowl match.

1. Use the 2" diameter Forstner bit and drill a ½" deep mortise.
2. Mount on the lathe and turn the top of the lid including a tenon.
3. Reverse on lathe and use the tenon to turn underside of the lid.
4. Turn the lip to fit the bowl; sand and finish with wipe-on polyurethane.
5. Reverse the piece and mount on the lathe once more.
6. Turn to final thickness and shape the knob. Sand and finish.
8. Drill a ⅜" diameter hole in the edge of the Lid and use a band saw or coping saw to cut the slot for the spoon.

Make the Spoon: The spoon can be made of mango wood to match the bowl and lid or of a contrasting wood. This block needs to be about 6-½" long × 1-½" wide × 1" high.

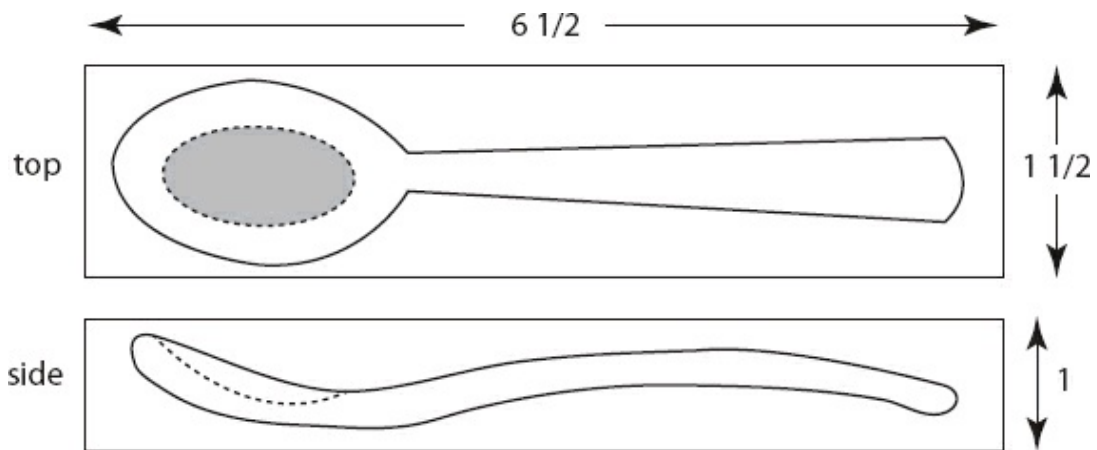


13G-D1. Bowl and Lid Pattern. The sugar bowl and lid come from the same block.

1. Trace the teaspoon shape from [Fig. 13G-D2](#) onto the wood piece and cut both sides of the top profile on a band saw.
2. Reattach the cut-offs with double-sided tape and cut the two side profiles.
3. Use carving tools, rasps, files, a Dremel burr-cutter or other tools to shape

and finish the spoon.

4. Sand and finish with wipe-on polyurethane.



13G-D2. Spoon Pattern. The rough outline of the spoon is cut with a band saw and then shaped to final form with knives and burrs.

APPENDIX

ARCS & ARCHES. Chap. 8: Rolling Pins. Find the radius of an Arc.

Woodworkers' Essential – Facts, Formulas & Short-Cuts. By Ken Horner, Cambium Press, 2003, p. 110, *Arcs & Arches*. This method uses dividers and a trammel to find the radius. Let's assume we have an arc with chord A-C of 12" and a height B-D of 1- $\frac{1}{8}$ ".

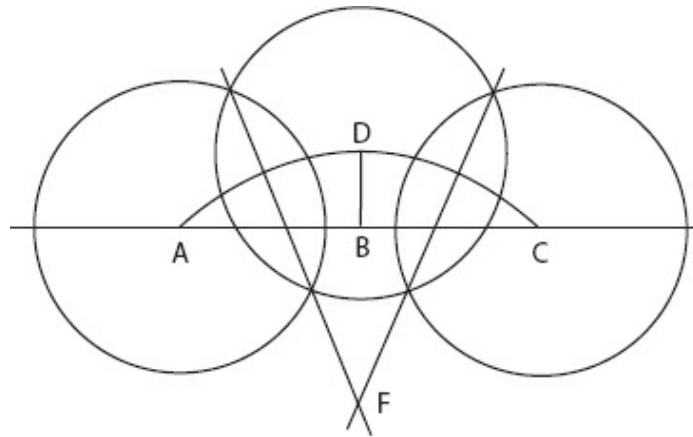


Fig. Arcs.

1. Draw a 12" long line, the width of the chord A-C. See [Fig. Arcs](#).
2. At the center of this line, mark a 1- $\frac{1}{8}$ " rise D.
3. With a trammel or dividers, draw a circle around the rise D.
4. Without changing the trammel setting, draw similar circles around A and C.
5. Draw lines through the points where the circles intersect to give F.
6. Set the trammel to distance DF (the radius of the arc) and starting from center F, draw the arc
7. ADC. Note: measuring the distance DF gives 16- $\frac{1}{8}$ ".

You can also use your calculator to find the radius of the arc. The formula is:
 $[(A-C/2)^2 \div B-D] \div 2 = \text{radius}.$

1. Divide length A-C by two. ($12 \div 2 = 6$)
2. Square the result. ($6 \times 6 = 36$)
3. Divide by the arc rise. ($36 \div 1.125 = 32$)

4. Divide by two. ($32 \div 2 = 16$).

Note that the math calculated radius of 16" differs only slightly from the measured radius of 16- $\frac{1}{8}$ ".

BLADES, SCROLL-SAW. Chap. 10: Coasters. The blades used in marquetry are the $\frac{2}{3}$ " and $\frac{3}{4}$ ". The smaller diameter blade ($\frac{3}{4}$ ") is used for double bevel marquetry where only two veneers are cut. The larger blade ($\frac{2}{3}$ ") is used for pad marquetry where multiple veneers are cut. Check online for Otto Frei of Oakland, Ca. These jeweler's blades are sharp and strong.

CABOCHON. Chap. 6: Bottle Stoppers with Cabochon Inset. You can buy minerals online or in rock and mineral stores. Finished Natural Stone Inserts are available from Craft Supply, Provo, Utah in sizes $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" and 1- $\frac{3}{16}$ " diameters.

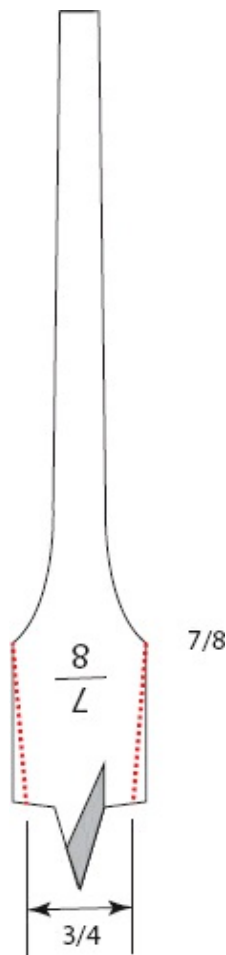


Fig. Candle Bit.

CANDLE BIT. Chap. 7: Candles; Formal Tall, Baroque Rustic and Short Tulip.

These bits drill tapered holes that are 1" deep, $\frac{7}{8}$ " diameter at the top and $\frac{3}{4}$ " diameter at the bottom, the exact size of most candle bases. Woodtek, a Taiwanese Company makes them, but they are hard to find. Another option is to grind an old $\frac{2}{3}$ " spade bit to this size. See [Fig. Candle Bit](#). In use, drill a $\frac{3}{4}$ " diameter hole 1" deep first. Then change to the tapered spade bit and drill the tapered hole.

CHOP-IT CUTTER. Chap. 6: Bottle Stoppers with Parquetry Inset. This tool ‘chops’ thin material up to $\frac{3}{32}$ " thick using a lever with a razor blade attached.

Note: Commercial veneer is $\frac{1}{32}$ " to $\frac{1}{40}$ " thick. Order this from Micro-Mark (#84046) about \$33.00 (Jan. 2019).

CLAMPING. Chap. 1: Cutting Boards. To keep the sections flat during clamping, use bar clamps, wax paper, C-clamps and spring clamps as shown. See [Fig. Clamp-1](#).

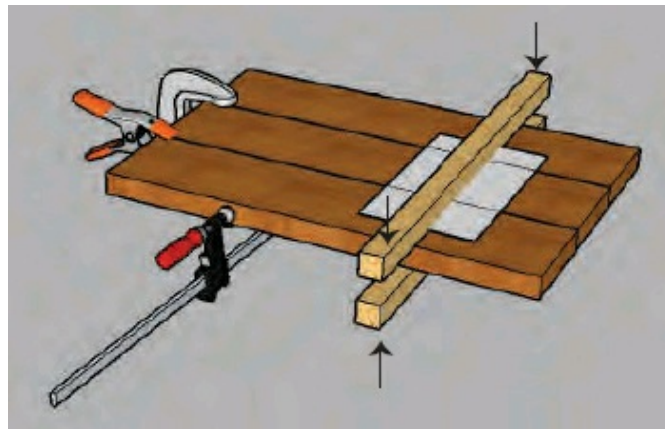


Fig. Clamp-1

CLAMPING, SCREW PRESS. A simple but effective press can be made using four 2 × 4's and a long 9" or 12" screw. Make two of these units and stretch a sturdy board between the two to press larger units. See [Fig. Clamping, Screw Press](#).

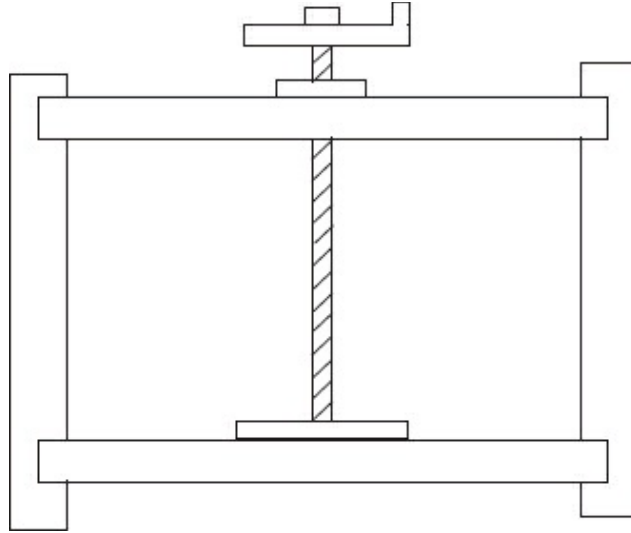


Fig. Clamping, Screw Press

COVES ON THE TABLE SAW. Chap. 8: Rolling Pins. See my book *More Woodworkers' Essential - Facts, Formulas & Shortcuts*. By Ken Horner, 2006, Fox Chapel, Chap. 21, p. 294, *Coves on the Table Saw*. Note: There is a table there listing approach angles.

Problem: Using a table saw with a 10" blade, find the approach angle where the cove will be 0.5" deep and 2.5" wide.

Approach angle = Arcsin of cove width ÷ depth factor.

Angle = Arcsin of $(2.5 / 4.36) = \text{Arcsin of } 0.5734 = 35^\circ$

EQUIDISTANCE MARKER. Chap. 1: Cutting Boards, Inset. The dowel is glued in but the pencil can be moved. Cut two pieces of $\frac{1}{4}$ " plywood to $2" \times 2"$ and drill a $\frac{1}{4}$ " diameter hole through the center of one end for a threaded screw with a flat washer and wing nut. Drill a $\frac{5}{16}$ " diameter hole between the two pieces and glue in a $\frac{5}{16}$ " dowel. Push a pencil stub between the screw and the dowel and tighten the wing nut. See [Fig. Eq Marker](#)

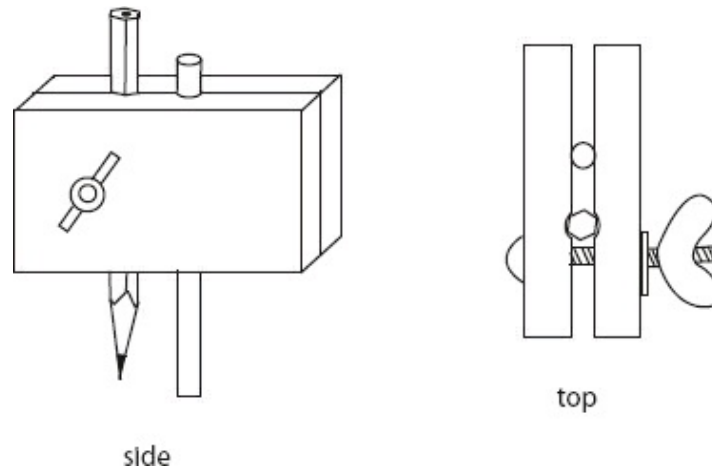


Fig. Eq. Marker

FINISHES. Wood projects need a finish for protection from moisture, dust, dirty and oily hands, spilled water and from UV light. Many finishes do one or two of the above however none do them all. The most injurious to wood is UV rays and there is no finish that completely protects a piece from the ravages of the sun. The best you can do is to keep the piece away from direct sunlight.

- **Shellac** – Shellac will not stand up to water or alcohol but is great as a first-coat sealer. In marquetry, when a piece comes out of the clamps, use a cabinet scraper to remove high spots and glue build up. Then wipe on a saturated solution of shellac, let it dry for 10 minutes and wipe on a second coat. As you sand, the dark sawdust will not contaminate the light-colored woods. Always use a vacuum with the sander.
- **Polyurethane** – This man-made polymer is easy to use, dries quickly, does not darken the wood and is waterproof. It is readily available, fairly inexpensive, has no bad odors and also comes in a thinned, wipe-on form. This is the best over-all finish (IMHO).
- **Oil** - Any finish that contains oil (tung, linseed or mineral oil) darkens the wood. If the wood is walnut or mahogany, then an oil finish might be appropriate. In most projects where a lot of time is spent in choosing the woods, the last thing we want is for a finish to indiscriminately darken ALL the wood.
- **Lacquer** – This is the finish of choice for a lot of people. It comes as a spray (Deft) or in a can as a liquid. It goes on easy, multiple coats can be applied fifteen minutes apart and it comes in glossy or satin finishes. Use it on pictures

or any wall hangings but beware; lacquer has one bad trait. It does not stand up to moisture and it shows water spots.

GLUES. Before you build that box, tray or segmented bowl, you need to understand how glue works and which glue is appropriate. For more about adhesives and glues, see *Woodworkers' Essential – Facts, Formulas & Short-Cuts*. By Ken Horner, Cambium Press, 2003, p. 261. *All about Glues*.

- **Carpenter's Glue – Yellow or White.** Wood-to-wood. Make sure all surfaces are straight, sound and square; they should also be free of saw and jointer marks. Rework any glazed or burnished edges. Spread glue on both pieces and if any board looks dry, add more glue. Clamp the boards together and lightly squeeze out the excess glue.
- **Contact Cement.** Use mainly for joinery where clamping is not feasible. Brush the solvent-based cement on both surfaces and let dry. If the surfaces are not glossy, brush on a second coat. In marquetry, lay one of the pieces on the bench, face up and put a piece of wax paper on top. Position the other piece on top and slide the wax paper from between the two pieces until about one-half inch of glued surface shows. Press these two glued surfaces together. If the positioning is correct, pull the paper out and push the surfaces together. The water-based contact cement is definitely inferior.
- **Tile Mastic. Chap. 2: Trivets.** This is a special silicone product that holds the tile securely to the wood base but remains flexible; it does not shrink, crack or harden. I use the GE brand '100% Silicone' that is mold-free, waterproof and sets clear.
- **Paper Glue.** Use as a spray to attach patterns to wood surfaces instead of marking with a pencil.
- **Hot-Melt Glue. Chap. 2: Trivets.** Use this adhesive to attach cork or leather to trivet bottoms.
- **Gorilla Glue, Epoxy and Cyano Acrylate.** These are used mainly to fasten metals and plastics to wood. Follow instructions on the container.

JIG, FORTY-FIVE DEGREE. Chap. 11: Carving Set Box. Make a jig to cut 45° box joints. No need to tilt the table saw blade, the box sides and ends are held in place on the fence with a clamp and the pieces can be cut to equal length by using measured stops on the fence.

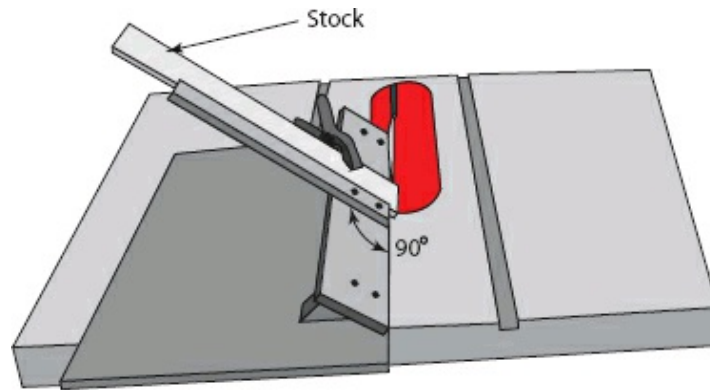


Fig. Jig, 45.

The jig consists of three parts: A base with a guide underneath so it slides back and forth in the table saw miter slot; a platform attached to the base to hold the box parts at 45° to the blade and a fence attached to the platform to keep the pieces square to the blade.

Use a piece of ½" MDF 16" wide × 20" long. Put a slat underneath and two 45° blocks on top. See [Fig. Jig, 45](#). Attach a platform piece with a fence. If the joints have gaps on the outside, put a washer under each of the top screws. For gaps on the inside, put spacers at the bottom.

JOINTS, COMPOUND BUTT. Chap. 12: Large Tray with Navaho Design. A compound butt joint can be more complicated than a compound mitered joint. Unlike the mitered joint, a butt joint can have the ends tilted at 15° while the sides are at 20°; this fact makes for complications. See [Fig. Joint, Compd. Butt](#).

For a tray with a 20° slope for both sides and both ends, tilt the table saw Blade to 6.8° and set the miter gauge to 71.2°. Put the miter gauge in the left slot of the table saw and cut four corners. Switch the miter gauge to the right-hand slot and cut the other four corners. Note: 7° and 71° will work fine.

For more on these butt joints, see my book ***More Woodworkers' Essential - Facts, Formulas & Shortcuts***, by Ken Horner, 2006, Fox Chapel, Chap. 22, p. 310, *Compound Butt Joints*.

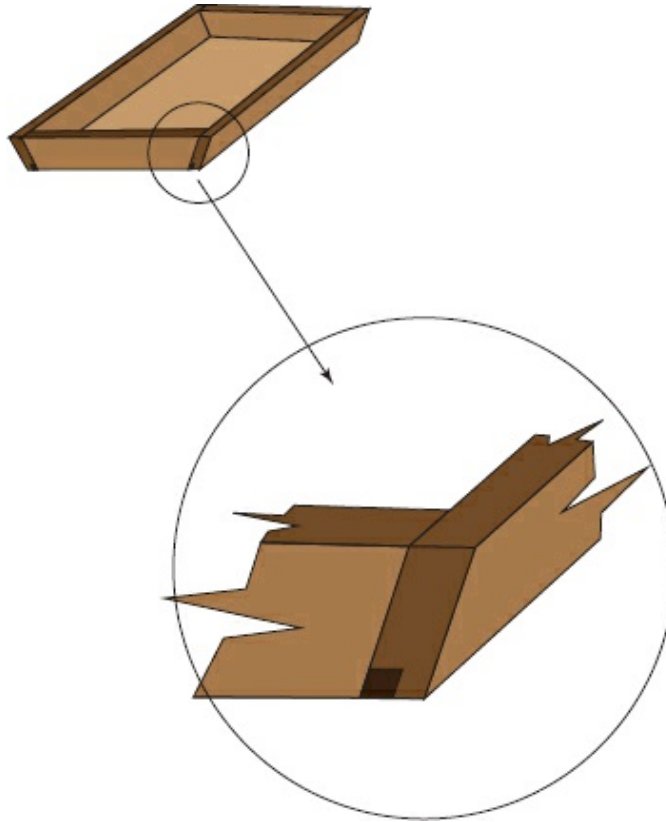


Fig. Joint, Compd. Butt

KNIFE BLANKS. Chap. 11: Knives and Racks. The blades come from Jantz. Approx. prices 2010: SS110 Santoku \$15.00, SS107 Chef \$15.00, SS106 Cook \$12.00, SS108 Steak \$8.00, SS600 Paring \$5.00, SS602 Sandwich \$8.00, SS820 Cook \$7.00, SS824 Steak \$5.00, RH628 Bread Slicer \$13.00 and a Sharpening Steel.

MINERAL OIL. Chap. 1: Cutting Boards and Chap. 3: Spoons. Mineral oil can be purchased at your local pharmacy. It is quite safe for use on cutting boards, spoons, ladles, stirrers and other wooden items used around food. Once the item has been made and sanded smooth, rub mineral oil on liberally. Different woods will absorb the oil differently. If the spoon or stirrer seems to have absorbed the oil, wait a day and reapply. Do not put the wooden item in the dish washer. If the tool starts to get rough after use, sand lightly and rub on more oil.

POST-AND-RUNG JOINERY. Chap. 9: Stools. This joint is best made of air-dried wood for the leg (moisture content = 8-10%) and kiln-dried wood (moisture content = 5%) for the rung. This way when the two pieces are joined, the rung absorbs moisture from the water-based glue and swells, while the leg dries and

shrinks. The joints actually get tighter after assembly. See [Fig. Post-Rung](#)

Orientation (a) will result in splits in the leg/post joint because dimensional movement tangent to the rays is twice the movement tangent to the growth rings. In orientation (b) the swelling of the tenon/rung is parallel to the grain and therefore no splitting occurs.

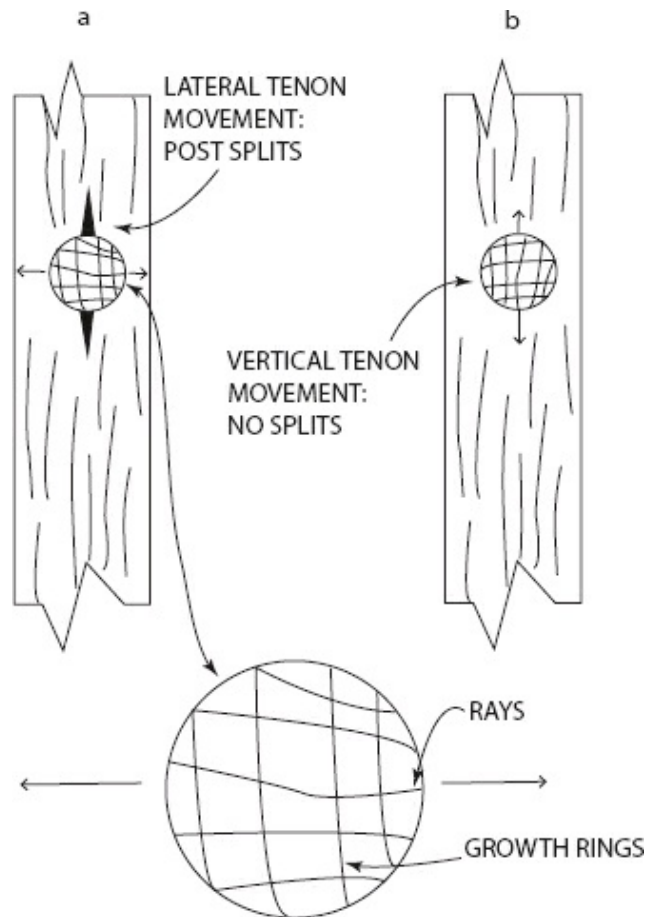


Fig. Post-Rung

PRISMA PENS. Chap. 2: Trivets. Note: Prisma pens can be purchased from most art or craft stores. They cost about \$2.00 each and have a fine point end and a broad point end.

REGULAR POLYGONS. Chap. 13: Bowls. Multiply the radius of any polygon by the radius constant 'K' to find the length of a segment.

$$\text{Segment Length} = K \times \text{Radius}$$

$$K \text{ for an octagon} = 0.83$$

$$\text{Diameter} = 11.5''$$

Bowl Radius is $\frac{1}{2} \times 11.5 = 5.75$.

Segment Length = $0.83 \times 5.75 = 4.77$ or $4\text{--}\frac{3}{4}"$.

Read more on *Side Length of Regular Polygons* and see the Table of 'K' values on p. 262 in my book, ***More Woodworkers' Essential - Facts, Formulas & Shortcuts***, Cambium Press, 2006. Chap. 18, *Segmented Turning*.

SPRING-BACK. Chap. 7: Candles, Votive. The formula to calculate the amount of spring-back is:

Percent Spring-back = 1 divided by the number of plies, squared, minus one.

$$Sb = 1 \div [(\text{plies})^2 - 1]$$

With Five Plies: In our example of Votive Candles:

Plies = 5

Bend = $2\text{--}\frac{1}{2}"$

Percent Spring-back = $1 \div [(5 \times 5) - 1] = 1 \div (25 - 1) = 0.0416 = 4.2$ per cent.

Actual Spring-back = $2.50" \text{ bend} \times 0.0416 = 0.104" = \frac{3}{32}"$.

With Three Plies: This would be without using the veneer strips.

Plies = 3

Bend = $2\text{--}\frac{1}{2}"$

Percent Spring-back = $1 \div [(3 \times 3) - 1] = 1 \div (9 - 1) = 1 \div 8 = 0.125 = 12.5$ per cent.

Actual Spring-back = $2.50" \text{ bend} \times 0.125 = 0.309" = 1\frac{1}{32}"$.

The spring-back is about three times as much between three plies and five plies. For more on this see Chap. 19: *Bending Wood without Heat*, p. 189, ***Woodworkers' Essential Facts - Formulas & Shortcuts***, by Ken Horner, Cambium Press, 2003.

TAPES AND THEIR USES. During these projects a lot of tape is used. Each of the types below has its good points and drawbacks.

- **Application Tape** – Auto painters use this tape extensively in detailing. In these projects, we use it extensively to protect the wood when we draw a

pattern. In marquetry, it is put on the back and front of a piece of veneer before cutting. It is strong enough to keep small pieces from breaking off and can be removed quite easily. Because of the qualities of app tape, many marquetarians no longer use cardboard backers when cutting. This tape is available online from Sign Warehouse in Texas. Order Endura-Mask, High Tack. The 2-¼" wide × 300 ft. long roll (AP-ES-407625) costs about \$5.00 (June 2016).

- **Blue Tape** – This tape comes in widths of ¾" to 2" or wide. It should be used sparingly on wood as it holds too tightly and will pull off splinters when removed.
- **Clear Cellophane Tape** – This tape is tenacious, transparent and comes in ¾" width. Use it when you need to hold two pieces together and see underneath. Rub the wood surface with alcohol to expose and loosen this tape.
- **Double-sided Tape. Chap. 13: Bowls.** Very useful to hold a work-piece to a face plate while working on a lathe or as in the sugar bowl spoon cutting, to temporarily hold two pieces of wood together for band sawing.
- **Masking Tape** – This tape comes in a variety of widths; the most useful is the ¾" width. It has the same good and bad qualities as blue tape. Masking tape stretches and can be used to pull joints together when edge-gluing wooden pieces. Both blue tape and masking tape leave a sticky residue when left on for any length of time, especially if left in the sun or in a warm room.

THIN STRIP CUTTING JIG. Chap. 4: Salt and Pepper Shakers with Marquetry Tops. Chap. 6. Bottle Stoppers with Parquetry Insert. Chap. 12. Large Tray with Navaho Design.

The base is ¾" plywood cut 24" × 24" with a fence attached at one end. Glue a cutting mat to the plywood. The heavy metal straightedge has 220-grit sandpaper attached to the back so it does not move. The spacer blocks position the straightedge equidistant at each side of the veneer. Use different sized spacer blocks for other projects.

In use, place the veneer piece against the fence. Put spacer blocks at each end of the veneer and put the cutting straight edge against the blocks. Use a knife or veneer saw to cut the thin strips. See [Fig. Thin Strip](#).

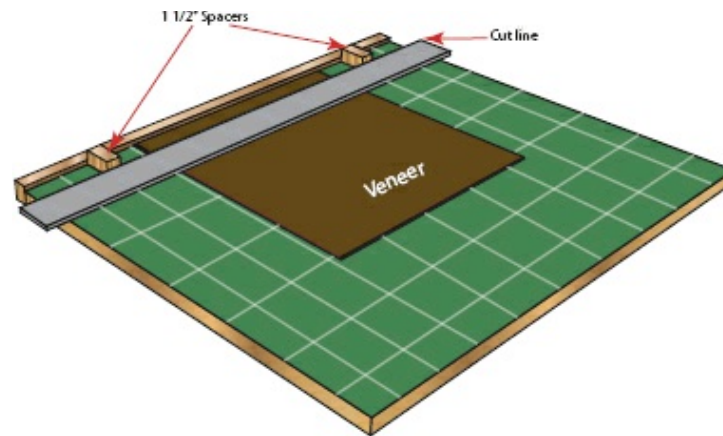


Fig. Thin Strip

***This reference is the Chapter and the Project where this technique or item is used.**

ABOUT THE AUTHOR

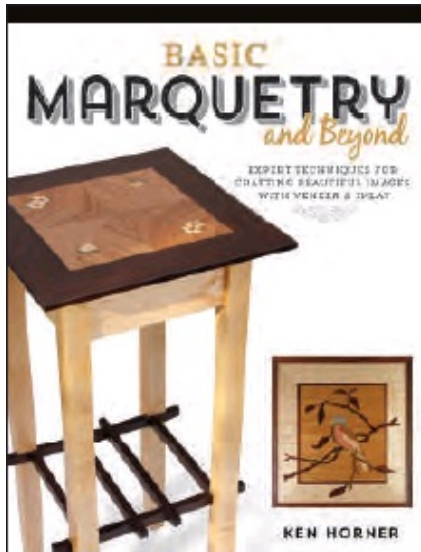


Ken Horner is a retired Organic Chemist (MS, Arizona State Univ, 1959) living now in Morgan Hill, CA. He is the author of four quite successful woodworking books: *Woodworkers' Essentials – Facts, Formulas & Short-Cuts* (2004), *More Woodworkers' Essentials – Facts, Formulas & Short-Cuts* (2006), *The Essential Guide to the Steel Square* (2009) and *Basic Marquetry and Beyond* (2015). Ken learned wood working at an early age from his grandfather John Horner (1868-1943), a carpenter working for the Santa Fe Railroad and from his father Rex (1915-1991), a machinist also at the Santa Fe. This early instruction was exclusively with hand tools where smoothing planes, brace-and-bit drills, cross-cut saws and wood chisels were the only tools of choice. There were no electric hand tools.

Ken is still active, teaching marquetry to beginners in his shop and conducting workshops for advanced students. He is the president of the American Marquetry Society and president of the Northern California Chapter of the AMS. He also is president of the South Valley Woodworkers.

Linda Salter Horner is an accomplished wood carver (life-sized carousel animals), wood turner (segmented bowls) and marquetarian. She is past president of the Bay Area Woodworkers Association, past president of the West Bay Wood Turners and past president of the South Bay Woodworkers. Linda has lectured on segmented bowl turning throughout the U.S.A.

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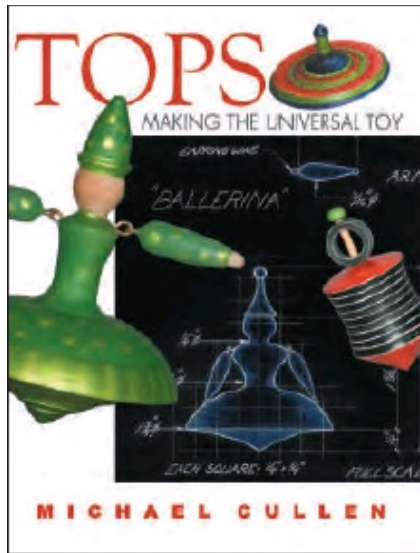
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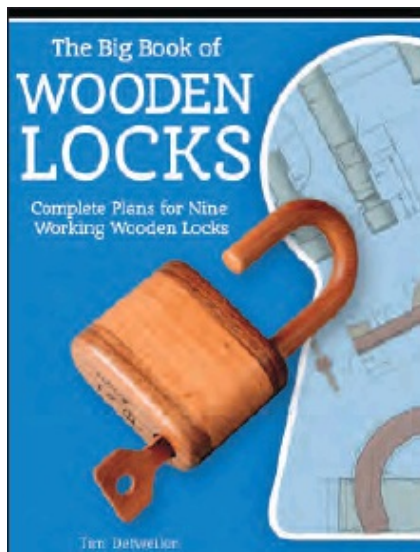
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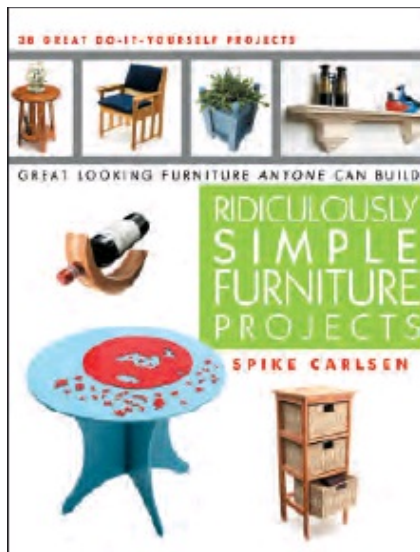
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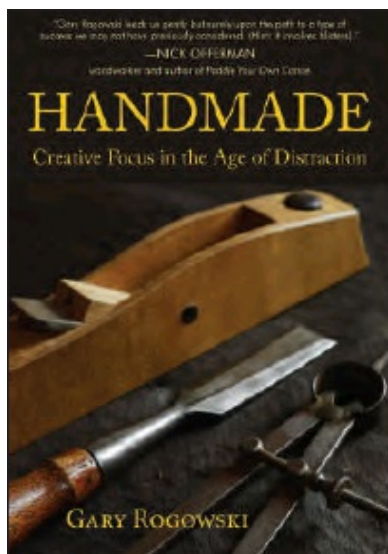
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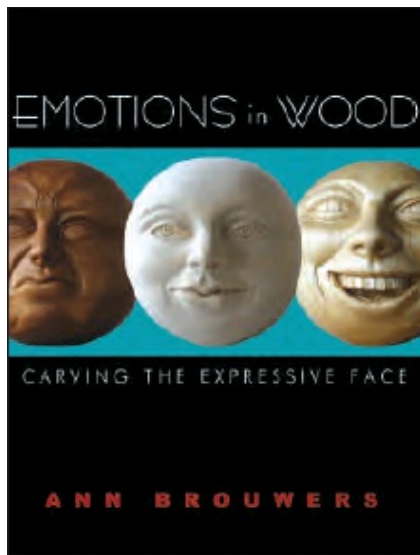
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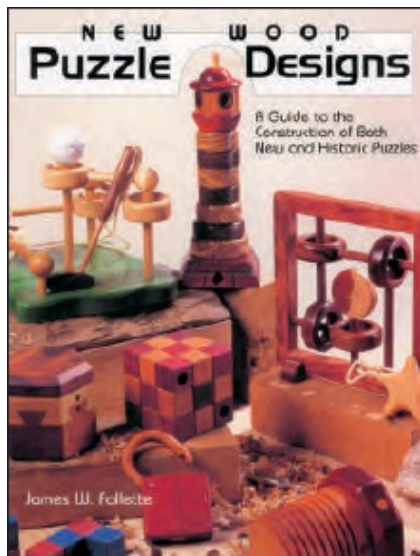
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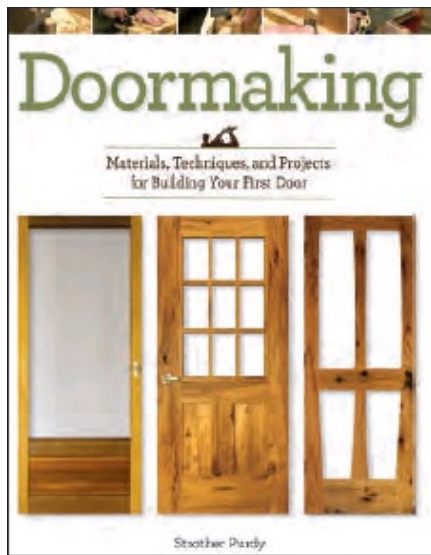
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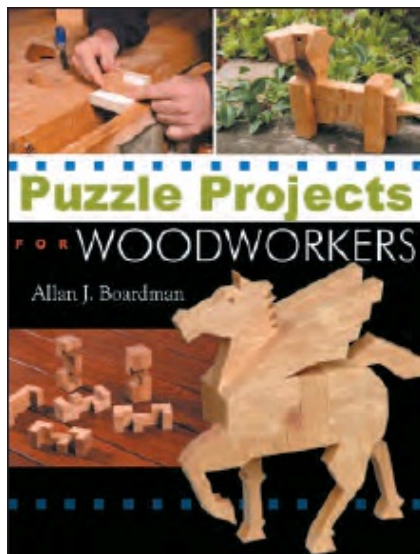
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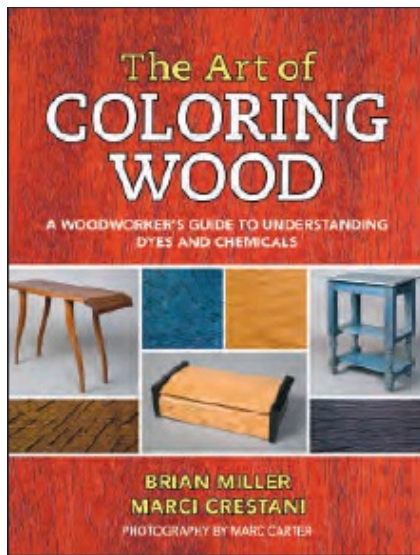
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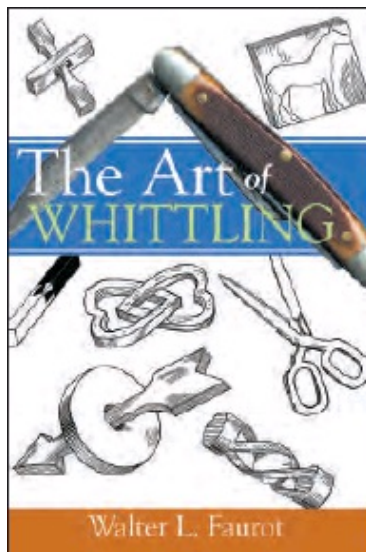
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IMPERIAL TO METRIC CONVERSION

Inches	mm*	inches	mm*	inches	mm
$\frac{1}{64}$	0.40	$\frac{33}{64}$	13.10	1	25.4
$\frac{1}{32}$	0.79	$\frac{17}{32}$	13.49	2	50.8
$\frac{3}{64}$	1.19	$\frac{35}{64}$	13.89	3	76.2
$\frac{1}{16}$	1.59	$\frac{9}{16}$	14.29	4	101.6
$\frac{5}{64}$	1.98	$\frac{37}{64}$	14.68	5	127.0
$\frac{3}{32}$	2.38	$\frac{19}{32}$	15.08	6	152.4
$\frac{7}{64}$	2.78	$\frac{39}{64}$	15.48	7	177.8
$\frac{1}{8}$	3.18	$\frac{5}{8}$	15.88	8	203.2
$\frac{9}{64}$	3.57	$\frac{41}{64}$	16.27	9	228.6
$\frac{5}{32}$	3.97	$\frac{21}{32}$	16.67	10	254.0
$\frac{11}{64}$	4.37	$\frac{43}{64}$	17.07	11	279.4
$\frac{3}{16}$	4.76	$\frac{11}{16}$	17.46	12	304.8
$\frac{13}{64}$	5.16	$\frac{45}{64}$	17.86	13	330.2
$\frac{7}{32}$	5.56	$\frac{23}{32}$	18.26	14	355.6
$\frac{15}{64}$	5.95	$\frac{47}{64}$	18.65	15	381.0
$\frac{1}{4}$	6.35	$\frac{3}{4}$	19.05	16	406.4
$\frac{17}{64}$	6.75	$\frac{49}{64}$	19.45	17	431.8
$\frac{9}{32}$	7.14	$\frac{25}{32}$	19.84	18	457.2
$\frac{19}{64}$	7.54	$\frac{51}{64}$	20.24	19	482.6
$\frac{5}{16}$	7.94	$\frac{13}{16}$	20.64	20	508.0
$\frac{21}{64}$	8.33	$\frac{53}{64}$	21.03	21	533.4
$\frac{11}{32}$	8.73	$\frac{27}{32}$	21.43	22	558.8
$\frac{23}{64}$	9.13	$\frac{55}{64}$	21.83	23	584.2
$\frac{3}{8}$	9.53	$\frac{7}{8}$	22.23	24	609.6
$\frac{25}{64}$	9.92	$\frac{57}{64}$	22.62	25	635.0
$\frac{13}{32}$	10.32	$\frac{29}{32}$	23.02	26	660.4
$\frac{27}{64}$	10.72	$\frac{59}{64}$	23.42	27	685.8
$\frac{7}{16}$	11.11	$\frac{15}{16}$	23.81	28	711.2
$\frac{29}{64}$	11.51	$\frac{61}{64}$	24.21	29	736.6
$\frac{15}{32}$	11.91	$\frac{31}{32}$	24.61	30	762.0
$\frac{31}{64}$	12.30	$\frac{63}{64}$	25.00	31	787.4
$\frac{1}{2}$	12.70	1 inch	25.40	32	812.8

*Rounded to the nearest 0.01 mm