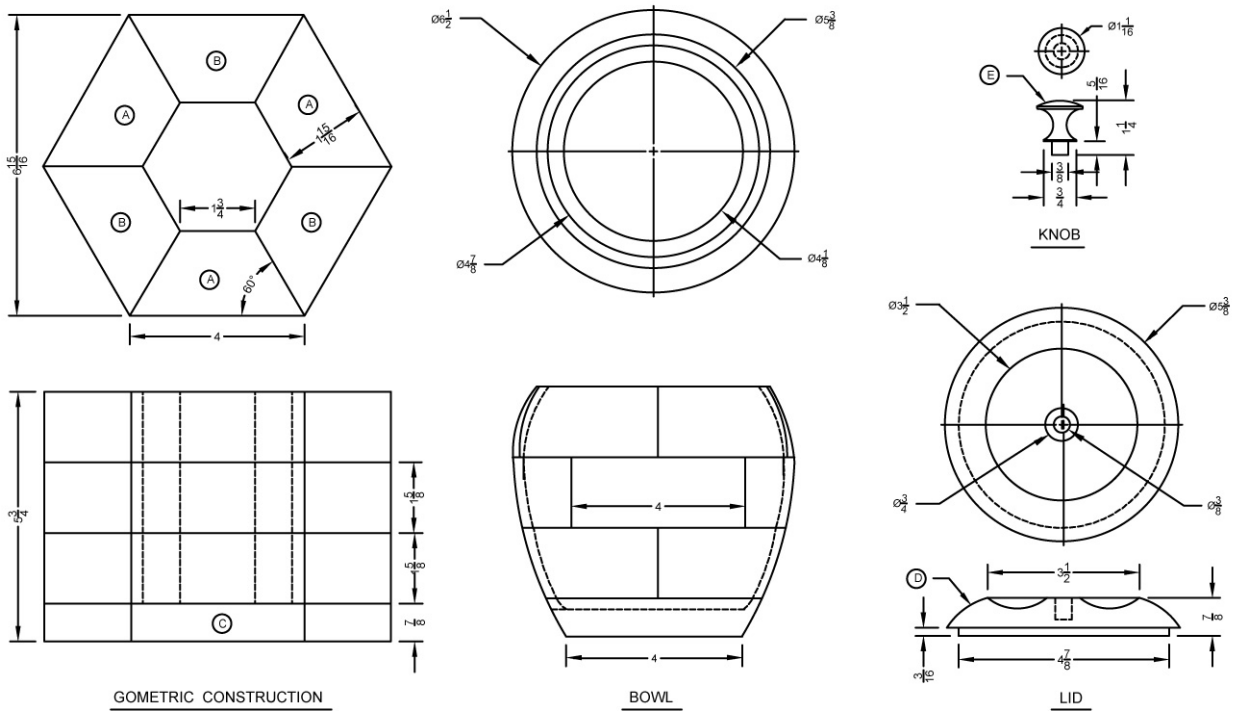
How to Build a Segmented Wood Bowl

This is an interesting project, and very beautiful when completed. The process is unique and can be a great conversation topic for family and friends. It is more challenging than the construction of traditional types of bowls.

Also, it takes a bit more time for the planning, the design and the gluing of the tiers required, but the finished product is more than worth the extra effort.

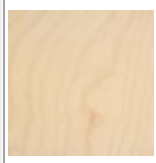
SEGMENTED BOWL WITH LID



Technical Information for Building a Segmented Wood Bowl

A. Materials List:

QUANTITY	LETTER	NAME	SIZE	MATERIAL
9	A	Bowl Segments	2" x 1 5/8" x 4"	Cocobolo
9	B	Bowl Segments	2" x 1 5/8" x 4"	Birch
1	C	Base	7/8" x 4" Dia	Cocobolo
1	D	Lid	7/8" x 5 5/8" Dia	Cocobolo
1	E	Knob	1 1/8" Dia x 1 1/16"	Cocobolo
WOOD SPECIES				

 Cocobolo	 Birch

B. Cutting Procedures:

1. Use a 2 1/8" x 1 5/8" x 36" Cocobolo board to mill the dark segments of the bowl and a 2 1/8" x 1 5/8" x 36" Birch board to mill the light segments of the bowl.
2. Joint one face of each board and plane them 2" thick.
3. Joint the edge of each board to 1 5/8" wide.
4. Use a miter saw to cut 9 segments (A & B) from each board. Both ends of each segment should be cut at a 60 degree angle to form a regular trapezoid. The outer face of each trapezoid should be 4" and the inner surface should be 1 ¾".
5. Use a 1" x 7 1/8" x 13" Cocobolo board for the base (C) and lid (D).
6. Joint one face of the board and plane it 7/8" thick.
7. Use a miter saw to cut 7" off the board for the base (C).
8. The remainder of the board should be cut 5 ½" square for the lid (D) using a table saw.
9. Cut a 1 ½" x 1 ½" x 1 ½" piece of Cocobolo to be used for the knob (E).
10. Cut two 1" thick hardwood scrap boards; one 6" diameter, and the other scrap board 4" diameter. These scrap boards should be cut perfectly round using a circle jig and a band saw.

C. Gluing Procedures:

1. Glue 3 segments of Cocobolo and 3 segments of Birch together to form one tier of the bowl.
2. Use acetone to clean the natural oils from the Cocobolo wood prior to gluing.
3. Use polyurethane resin type glue for best results.
4. The segments of each wood species should be glued alternately to form a light and dark pattern. Repeat this gluing process to form the other two tiers of the bowl.

5. Use band clamps to secure each tier and allow to 24 dry for hours. Be sure to clean up the excess glue with a damp rag.
6. When the glue has cured, remove the clamps and joint or sand the top and bottom of each tier so that the segmented pieces are flush.
7. Use a band saw to trim the corners of each segmented tier. Make them as round as possible to minimize the lathe work required.
8. Glue the base (C) and the three segmented tiers of the bowl by stacking them vertically and use bar clamps to secure them. Try to align them perfectly and allow 24 hours to dry.
9. Remove the clamps and glue the 6" scrap stock onto the base (C) of the bowl assembly with a piece of paper between them so they can be separated when the bowl is finished. Use polyvinyl acetate (PVA) type glue such as Titebond 11 for this procedure. Again, be sure to perfectly align the scrap block with the bowl base.
10. Use bar clamps to secure the assembly and allow 24 hours to dry.
11. Glue the 4" diameter scrap block onto the lid (D) with a piece of paper between.

***Congratulations, your custom decorative fireplace mantel is finished and ready to use**

D. Lathe Procedures

1. Remove the bar clamps from the bowl assembly and center a 6" faceplate on the 6" dia. scrap block with #10 x 1" flathead wood screws.
2. Screw the 6" faceplate with the attached bowl assembly onto the lathe.
3. Adjust the tool rest approximately 1/8" from the bowl assembly and turn the assembly by hand to make sure it clears the tool rest.
4. Since the outside diameter of the bowl will initially be 7", the lathe speed should not be greater than 850 RPM.
5. The formula for safe speed range is: RPM = 6000/dia. to 9000/dia. In this case the range is 6000/7" dia. = 857 RPM to 9000/7" dia. = 1285RPM.
6. When roughing out the project always start at the slowest speed. As the project nears completion the RPM can be increased.
7. A gouge should be used for rounding and shaping the exterior and interior of the bowl.
8. Hold the gouge handle down at approximately 20 degrees from horizontal. The handle should be supported by both hands and pressed against your

hip. When cutting, move your body slightly to maintain this position and slightly rotate the gouge into the wood with your hands.

9. As material is cut away, be sure to readjust the tool rest periodically to maintain a 1/8" to ¼' distance from the bowl.
10. The exterior diameters of the bowl should be 5 3/8" dia. at the top, 6 ½" dia. 1 ½" down from the top and 4" dia. at the bottom.
11. With the lathe turned off, use an outside caliper to check the diameters periodically as the material is removed.
12. The interior diameters of the bowl should be 4 7/8" dia. at the top, 5 1/2" dia. 1 ½" down from the top and 3 1/4" dia. at the bottom.
13. When shaping the inside of the bowl be sure to adjust the tool rest inside the bowl so that the space between the bowl and the tool rest is as close to the bowl as possible.
14. Always turn the bowl by hand after each adjustment to make sure the bowl clears the tool rest.
15. With the lathe turned off, use and inside caliper to check the diameters periodically as the material is removed.
16. When the bowl has been shaped inside and out, us a round nose tool to smooth out the interior and a skew to smooth out the exterior of the bowl.
17. To shape the lid (D), center a 4" faceplate on the 4" scrap block and secure it with #10 x1" flathead wood screws.
18. Adjust the tool rest and use a gouge to turn the diameter of the lid and shape the outer convex top portion. Us a skew to smooth the convex portion.
19. Use a round nose tool to shape the inner concave portion of the lid. Leave a ¾" dia. raised portion in the center of the lid to attach the knob (E).
20. The lid should be 7/8" thick and have an exterior diameter of 5 5/8".
21. Use a parting tool to turn the bottom of the lid 3/16" deep and 4 3/4" diameter. This portion of the lid should fit into the top of the bowl with a minimum of play.
22. Screw on a Nova JSPIN Pin Chuck onto the live center of the lathe and insert a 1 ¼" x 1 ¼" x 1 ½" piece of Cocobolo stock into the chuck and secure it for turning the Knob (F).
23. Use a gouge to turn the knob to 1 1/8" diameter.
24. Use a round nose tool to shape the side of the knob and a skew to slightly round the top.
25. Use a parting tool to round the bottom of the knob to 3/8: dia. x 3/8" long.

E. Sanding Procedure:

1. Remove the tool rest and reattach the bowl assembly to the lathe.
2. Adjust the lathe speed to 850 RPM.
3. Hand sand the exterior and interior of the bowl assembly (A/B) with 80 grit sand paper.
4. Intermediate sand the bowl assembly with 120 grit sandpaper.
5. Finish sand the bowl ssembly with 220 grit sandpaper.
6. Repeat the sanding procedures 2-5 for the lid (D) and the knob (E).
7. Slightly round all exposed edges with 220 grit sandpaper.

F: Assembly Procedures:

1. Secure the lid on the table of a drill press with handscrew clamps. Be sure to center the lid with the chuck portion of the drill press.
2. Tighten a 3/8" dia. Forstner drill bit in the chuck and drill a 3/8" deep hole in the center of the lid. Set the drill stop for an accurate depth.
3. Use a band saw to cut the bottom length of the knob to 5/16".
4. Place wood glue in the hole of the lid and press the knob into it.
5. Clean up the excess glue and allow it to dry for 24 hours.

***Congratulations, your salad bowl is finished and ready to use!**

G: Finish Procedures:

1. Place the bowl assembly back on the lathe and set the speed to 600 RPM.
2. Use a cotton rag to apply a sanding sealer by hand to the interior and exterior of the bowl.
3. Allow the sanding sealer to dry and then lightly sand with 220 grit sandpaper.
4. Remove the sanding dust with a tack rag and apply three coats of polyurethane finish.
5. Allow each finish coat to thoroughly dry and then lightly sand between coats.
6. Repeat steps 1-5 to finish the lid and knob assembly.

***Congratulations, your salad bowl is finished and ready to use!**