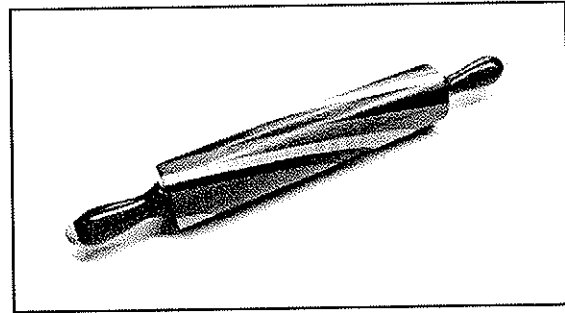


MULTI-COLORED LAMINATED ROLLING PIN

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Introduction

In this project you will use basic woodturning skills and some woodworking techniques to make a popular baking preparation tool with a striking multi-colored design. It consists of a rolling pin made up of a multi-layered roller and rotating handles. The laminations of the roller are made of a variety of woods of different thicknesses. They are angled at 10°, resulting in a unique, attractive pattern that shows off the beauty of the various woods to a high degree.

Materials Needed

- **Roller:** 3" x 12" blanks of at least three different woods. These should be of a variety of thicknesses. I prefer nominal thicknesses of 1/4", 1/2" and 3/4" (plus or minus), but this design aspect can be strongly determined by your personal preference and your local availability of woods and sizes, i.e., what is in your wood rack or scrap bin. Considering that the rolling pin will be used with food, closed-grain woods like cherry and maple are preferred. The quantity of blanks required depends upon the thicknesses you choose. Due to the 10° cut angle, you will need at least 5 inches of total thickness for one roller blank. For two or more roller blanks, plan on 3 to 3-1/4" inches each. Note that the selection of a 10° cut angle is a matter of artistic choice. Varying this angle will change the presentation of the sides and ends of the contrasting layers.
- **Handle:** 2 pieces 2" x 2" x 4" Choose a color that is compatible with the dominant colors of the roller.
- **Pin:** 2 pieces 1" x 1" x 6" For this part, I like tougher woods like ash or hickory to better resist breakage in case the rolling pin should get dropped.

Roller Blank Preparation

Tools Needed

- Table Saw
- Jointer
- Thickness planer or drum sander
- Band saw
- Gluing clamps
- Glue (I use Titebond III, but each woodworker has his or her favorite.)

Procedure

1. Using the table saw, cut the various pieces to the 3" x 12" dimensions.
2. Using the jointer, smooth one face of each piece.
3. Using the thickness planer or drum sander, smooth the opposite face of each piece, trimming it to the one of the thicknesses listed or the ones you prefer.

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4. Line the pieces up side by side (on their long edges) and arrange them to optimize the color and thickness pattern. I look for a nice variability in both color and thickness.
5. Mark the set of layers on the edges with angled lines so that you can keep track of the planned over-all sequence during the gluing process.
6. To simplify the glue-up process, separate the layers into sub-stacks of 5 or 6 pieces. Keep the sub-stacks in the proper sequence as marked.
7. Set up your clamps. I use three clamps across the length of the sub-stack. I suggest using parallel-faced clamps, e.g., Bessey K-Body clamps. Otherwise, use cauls to spread the clamp pressure across the face of the stack.
8. Spread glue evenly over the inside faces of each piece of a sub-stack and clamp the sub-stack together. Repeat for each sub-stack.
9. When the glue is set, remove the clamps. It will be helpful later to scrape the larger of the hardened glue drips so that the sub-stacks can be laid flat for the final glue-up.
10. I found that the faces of the sub-stacks distorted somewhat in the gluing. To prepare for the final glue-up, I ran each glue face once more across the jointer to re-flatten it.
11. Set up your clamps for gluing the sub-stacks into the final blank, sort of a stack of stacks. Glue them together as you did for the sub-stacks.
12. After the glue is set and the clamps are removed, draw a line on the side of the combined stack starting at one corner and going at an angle of 10 degrees to the end face. Mark additional lines parallel to the first line and 3 inches apart across the blank. See Figure 1, below. Using the band saw, cut along each of the 10 degree lines. Then square the ends of each of the separate roller blanks.
13. At this point you will have left two roughly triangular shaped end pieces that can be used to make an additional blank.
14. Plane the un-sawed faces of these end pieces to re-flatten them if necessary.
15. If the combined width of these two pieces is not enough for the required 3" of thickness for a new roller blank, add additional 3" x 12" pieces of compatible wood colors and thicknesses. Glue them all up as before. Because this stack is clamped at an angle to the glue lines, the layers tend to slide somewhat. To prevent slippage, add an end-to-end clamp to this last stack.
16. After this final glue-up is cured, use the band saw to trim it to a 3" width and square the ends.

Turning Steps

Tools Needed

- Lathe that can handle at least 18" in length
- 4-Jaw scroll chuck with jaws for clamping from 5/8" to 2-3/4" in diameter
- Drive center
- Cone-shaped live center
- Spindle roughing gouge
- Skew chisel
- Detail gouge
- Cut-off tool
- Sizing tool

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- Drill chuck
- 5/8" drill bit, at least 3" long
- 11/16" drill bit, at least 4" long. A Forstner drill bit with an extension is useful here. A twist drill with a taper to fit your tailstock is even better.
- Straight edge
- Digital or dial caliper

Roller (See Figure 2, below)

1. Cut a blank to 3" x 3" x 12".
2. Rough turn it to a cylinder.
3. Choose which end you will want to trim to length. Cut a 2-1/2" diameter tenon on that end to match your chuck.
4. Mount the tenon end in your chuck.
5. Turn the tailstock end flat and smooth. Sand as needed.
6. In the tailstock end, drill a 5/8" diameter hole about 2-1/2" deep.
7. Loosen the chuck slightly
8. Bring the tail stock with a cone center to press on the edges of the drilled hole. This will re-center the drilled end to correct for any eccentricity in the drilling.
9. Cut a 2-1/2" diameter tenon on the drilled end.
10. Mount the drilled end in the chuck.
11. Mark a line 10-1/2" from the drilled end.
12. Cut a 1-1/8" diameter tenon 3/8" wide adjacent to the 10-1/2" line on the tailstock-side.
13. Cut off the remainder of the cylinder.
14. Clean up and sand the part of the end outside the tenon.
15. Drill a 5/8" diameter hole to a depth of 2-1/2" plus the width of the tenon. This should result in a hole 2-1/2" past the 10-1/2" line.
16. As before, loosen the chuck and bring the tail stock with a cone center to press on the edges of the drilled hole. Retighten the chuck.
17. Re-true the tenon.
18. Flip the roller, chucking it on the 1-1/8" tenon.
19. Turn the roller to slightly over 2-1/4" in diameter, saving some material for sanding and evening the diameter.
20. Round the corners to about a 1/8" radius.
21. Sand to the final dimension of 2-1/4" in diameter, keeping the diameter constant along the length of the roller.
22. Use the straight edge to check for low spots or unseen ridges in the surface. A digital or dial caliper is useful to measure the diameter at various places to check for evenness and avoid creating a smooth but tapered roller.
23. At the headstock end, complete the cut-off the cylinder to the 10-1/2" length.
24. Sand the remaining cut-off area as needed.

Pin (See Figure 3, below)

1. Cut a blank to 1" x 1" x 6".
2. Rough turn it to a cylinder.
3. Turn a tenon on one end.
4. Mount the tenon end in a chuck.

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5. Cut a 5" long straight part of the pin at the tailstock end to slightly over 5/8" in diameter. Be sure to leave enough material for final sanding to fit the roller end holes.
6. Sand the entire straight part of the pin to the final 5/8" diameter and sand to final finish. Check carefully for a good, slightly loose fit in the roller end hole. As a test gage, you could use your roller or a sample piece of scrap wood with a hole drilled with the same 5/8" drill bit as used for the roller.
7. Mount the cylindrical end in the chuck.
8. Shape the knob end of the pin to its desired contour, sand to final finish.

Handle (See Figure 4, below)

1. Cut blank to 2" x 2" x 4".
2. Rough turn it to a cylinder.
3. Turn a tenon on one end.
4. Mount the tenon end in a chuck.
5. Bore an 11/16" diameter hole in the tailstock end to a depth of 3-3/4".
 - a. Be careful of overheating the wood and bit. If the wood gets too hot, it may crack.
 - b. You may need to back the drill bit out at every 1/4" or so of depth to clear debris and prevent overheating.
6. Loosen the chuck slightly
7. Bring the tail stock with a cone center to press on the edges of the drilled hole. This will re-center the drilled end to correct for any eccentricity in the drilling.
8. Cut a tenon on the drilled end.
9. Mount the drilled end in the chuck.
6. Trim to 3-1/2" overall length, including the tenon. This will expose the covered end of the 11/16" hole.
10. Loosen the chuck slightly again.
11. As before, bring the tail stock with a cone center to press on the edges of the drilled hole, re-centering the blank.
12. Retighten the chuck. Now the turning axis of the handle should be concentric to the 11/16" drilled hole. I found that sometimes there was considerable wandering of my extended Forstner bit over the length of this drill distance.
13. Turn to the final contour, sand to final finish. See Figure 4. The shape and dimensions shown in this figure are suggestions only. Your artistic inspiration may differ. I avoid adding texturing, beading, etc., here that might trap flour and dough, making cleaning more difficult.
14. Cut off to 3".
15. When cutting the second handle, use the first handle as a model. They look better when they are reasonably closely matched.

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Finishing

For the roller, I use Mahoney's Utility Finish, a heat-treated walnut oil. Here, I want something that is food safe and easily renewable for the working surface of the rolling pin. Wait until after assembly to apply the oil finish. This will keep oil out of the glue joint.

For the end of the pin and the outside of the handle, I use a wipe-on polyurethane. Here I want durability and water resistance.

After finishing the pins and handles, you may want to apply a paste wax to the inside of the handles and the 3" section of the pins that will be under the handles. Be sure to avoid getting wax onto the part of the pin that will be glued into the roller. I suggest you apply masking tape to the 2" glue portion of the pin prior to waxing. Keep the tape in place until just prior to gluing. If wax gets onto the area of the pin inserted into the roller, the strength of the glue joint will be significantly decreased.

Assembly

1. Locate or prepare a small piece of wood 1/16" thick to be used as a spacer.
2. Apply glue to the inside of the holes in the roller.
3. Mount a handle on the pin and insert the end of the pin. Remove any masking tape from the pin.
4. Position the spacer between the roller and the handle.
5. Push the pin into the roller until the handle bottoms against the spacer, providing a 1/16" clearance between the handle and the roller.
6. Do the same for the other handle and pin at the other end of the roller.

Instructions for Care

I suggest the following care instructions to accompany the rolling pin to a gift recipient or customer:

After use, simply wash it by hand with a damp cloth and a small amount of mild soap. Then let it air dry. It is important that the rolling pin not be soaked in water or put into a dishwasher or microwave. Occasionally, it can be reconditioned with walnut or mineral oil. With proper care, this rolling pin will last for generations.

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Figures

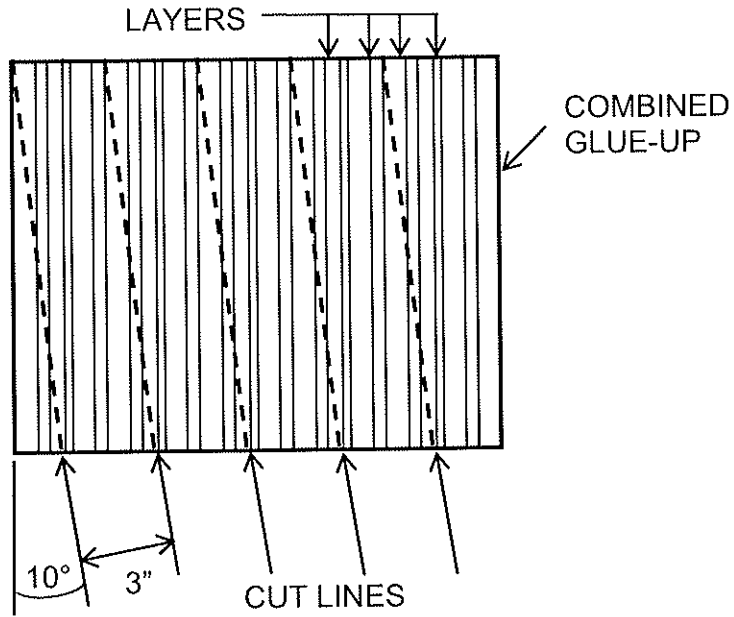


Figure 1. Roller Blank Cut Lines

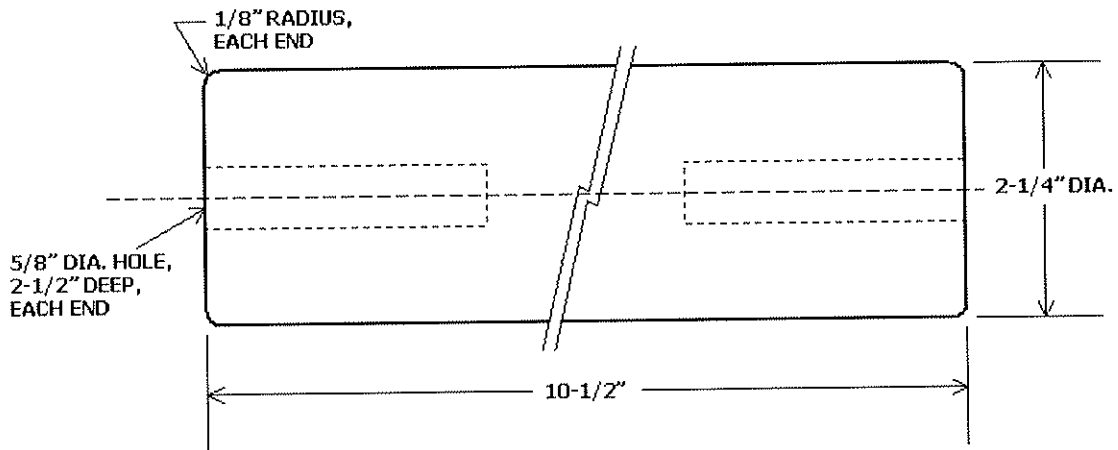


Figure 2. Roller