

Diamond Pattern Pepper Mill Lamination

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Introduction

This article is the first in a series of tutorials which focuses on various approaches to lamination techniques for pepper or salt mill projects. I have been inspired over the years by the many creative laminations that folks have used to create stunning effects for their turned work. I am always on the lookout for inspiration, few of these actual ideas are new; I have just adapted them to create some interesting mills over the years.



This article will not deal with the actual turning of the mill, as many other excellent tutorials and videos have been done in this area.

Design Considerations

Whenever I am looking for design inspiration I always start my quest with a web search of images of what I am noodling on at the time. Rarely if ever do I find exactly what I am looking for, more often than not it is something completely unrelated to the task at hand. This pepper mill design was actually inspired by a turned leg design that I liked. Being geometrically challenged it is sometimes difficult for me to imagine how a particular design is executed.

Design thoughts:

- By varying the outside diameter, more options for interesting laminations exist, although mills larger than 3" begin to get uncomfortable to use.
- Endless possibilities exist for laminations, using different woods and veneers to create wild effects.

Those multi-generational laminations are way too much for me to get my head around, so I prefer to work with simple designs and get creative with wood color. This article focuses on one of the simplest lamination designs that can create some interesting results when turned. To get the most from this effect the woods chosen need to be contrasting species, in this case its maple and jatoba, which I happen to have around the shop.

When designing a lamination one has to work backwards from the final design and do some design work and a bit of math. For a pepper mill, the inside hole will be an inch in diameter, so that becomes the starting point, my personal preference is to not turn the sides to less than 3/16", so this makes the minimum size for the core piece to be 1-3/8". From there, you calculate the amount of reveal,

keeping in mind the final outside diameter of your mill, I normally work to 2-1/2" rough, and finish to 2-3/8", giving you a little over 1" to work with, but this is divided by two, since we are turning a circle, so your effect has to be realized in about 7/16" to 9/16" of material.

The core section of wood has to be perfectly square before the second glue up, but should start out a little oversize on the width, giving room to trim after the first glue up. The core piece here is 1-3/8" high x 1-9/16" wide x the length you need for your mill. Since this is a bit of work, I usually use enough material to make at least a couple of mills, 26+" will yield two 12" mills easily.

Construction

Two of the outer pieces only need to be as wide as the core piece (1-9/16") and thick enough to yield your finished thickness; I use 5/8" to give me some design choices later on the lathe. These are glued to the wide face (1-9/16") of the core piece trying to keep the edges lined up, we are going to trim it later but taking the time to align the pieces now makes the next step easier. You will need at least one square reference edge to square up the blank later.



Helpful Tips:

- Your glue lines need to be perfect, surface prep will ensure you have smooth surfaces and lots of clamps will eliminate any voids - these will show up later so be meticulous in your prep.
- Use woods that have been stored together for a while in the shop to ensure uneven moisture content does not undo your work later.
- Allow complete glue-up to stabilize for a few days, even a week, there is lots of glue inside that may take days to completely dry and stabilize.

If this is a challenge for you, leave the core blank a little wider (1-3/4") and inset the two outside pieces from one edge leaving the core as your square reference and ripping the other edge parallel to it - remember to leave enough for you to cut the other face. Sometimes it is easier to glue one piece to the core at a time, you do not want to be trying to clamp a slippery wood sandwich while trying to glue up before it sets.

In the picture above this is the second step where the top piece is being glued on, the sideways clamp is there to keep it from "walking" sideways when I apply clamp pressure. The bottom board was glued and clamped separately, it just needs to be clamped long enough to set (20 mins.) so it will not move when you glue and clamp the other piece. Then let the whole assembly set in the clamps for a few hours before starting any milling work.



The critical next step is to cut the laminated core piece to exactly the same width as the thickness of the core block (1-3/8" in this case), this will ensure symmetry in the final product. A variation here is to vary this measurement which will cause asymmetrical patterns to emerge when turning. The hand plane is the ideal tool to smooth and square one face, the jointer works here also.



Trimmed close to 1-3/8" on the table saw and cleaned up on the thickness sander, this can also be jointed with the hand plane or jointer. The key here is two very smooth and parallel faces for the next glue-step.



Double check to be sure! The important thing here is this measurement is *exactly* the same as the width of the core pieces already glued up.



Now glue the other outside pieces to the freshly prepared faces and the blank is ready for turning. The actual thickness of the outside strips should be more or less the same, while you will turn off any discrepancies, if they start out the same thickness, the assembly will be much more balanced when you start the turning. Before going to the lathe I always knock the corners off on the table saw, keeping the maximum outside diameter inside the cutoffs: this reduces the chance of the cross-grain ripping off when trying to square up on the lathe – this is never a good thing!

Final preparation of the blank

When turning, I like to turn the entire blank round which is just easier for me to get the whole blank down to its rough width in one go, this also gives me an idea on grain during layout of how to cut up the blank for the mills. When first mounting the blank it is critical to centre the blank or your turning will be asymmetrical, since the centre block is a perfect square this is easy. The round blank can then be cut into the various pieces you need to make the mills you are making. I turn the bottom and top separately, but make sure you mark the blank to keep your grain orientation for later.



Turning the Mills

I start my pepper mill turnings by drilling my through holes first in a steady-rest and use the through hole as my centre reference for the rest. Others use different approaches, because I often do complex designs, it's a lot easier to mount a cylinder in the steady-rest than a piece with lots of humps and bumps and no flattish surfaces.

A little experimentation and variation on the measurements, the species you choose, and of course the turning design will ensure a unique mill you will be pleased to sign your name to.

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