International Association of Penturners

Studies in Segmenting VIII:
360 Degree Chevron Spiral Blank

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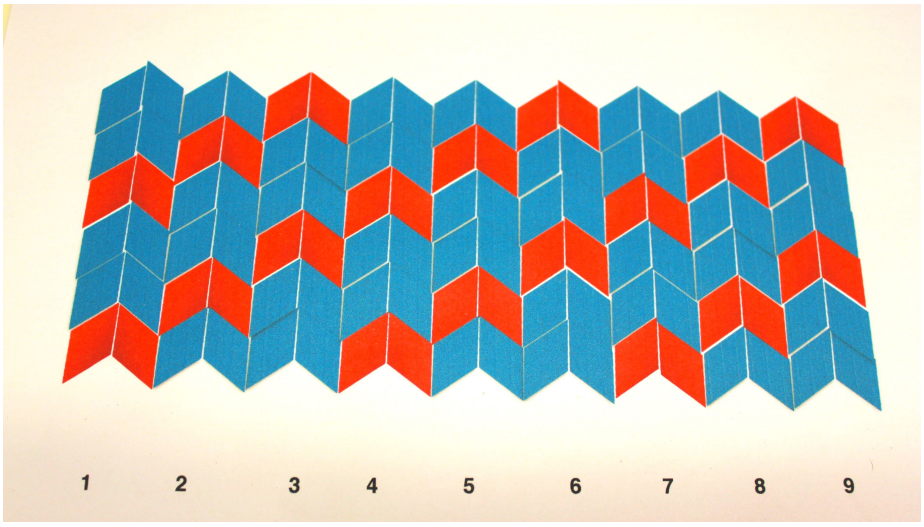
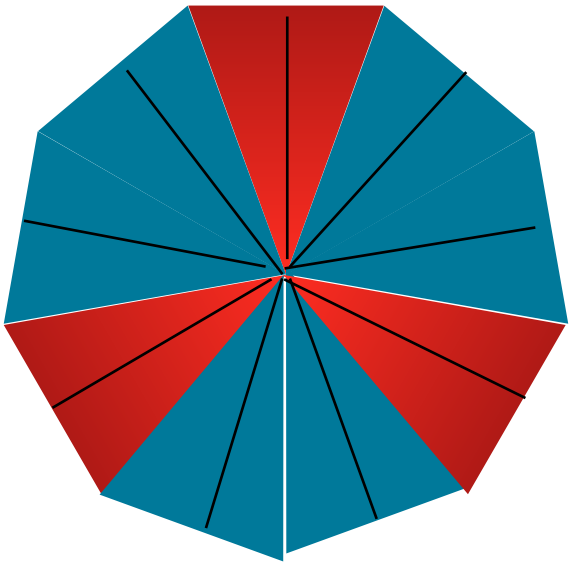
This tutorial builds on previous IAP Library Articles: **Studies in Segmenting.** Please review these first as some information/definitions are not repeated here.

Building on the previous Article: **Studies in Segmenting VII - 360 Degree Chevron Wave Blank**, another feature was added. This was for a spiral pattern to be visible by varying different colored woods.

After playing with several flawed patterns, what I liked was a 9 sided polygon blank - a Nanogram. Keep in mind that this pattern would be "wrapped" around the blank, so Chevron #1 would be next to Chevron #9. This would then allow the sequence of the red elements to spiral from each end. This was a draft of the pattern's side view.



This is what I envisioned from a top/bottom view. (I would add end caps later).

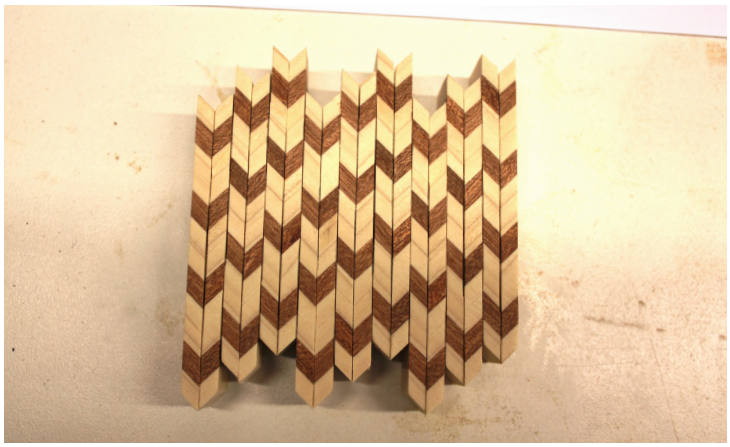


As with the previous article, I'll wait until the end of the article to explain my math calculations for those interested. But for the time being, I had decided that the slices I would need from the Variable Brick were to be about .086" thick from my table saw. (Previous articles explain these terms/procedures).

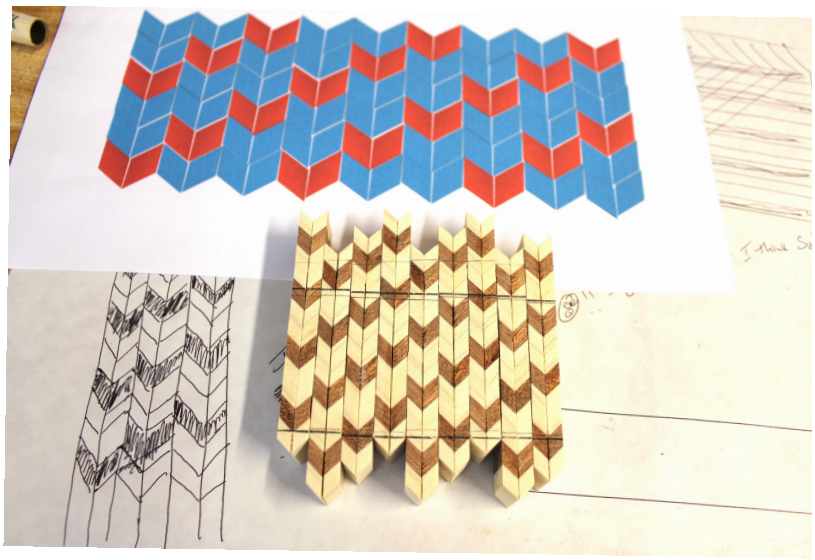
This is the leftover piece of the Variable Brick.

(I neglected to take a picture of the initial brick as I was not sure this project would actually be successful).

These are the eventual slices paired up and checked for alignment. Each 1/2 Chevron was about .086", so the full Chevrons were about .172" wide.



Comparing the matched Chevrons to the initial diagram. I have also determined the final length for where each slices needs to be trimmed.

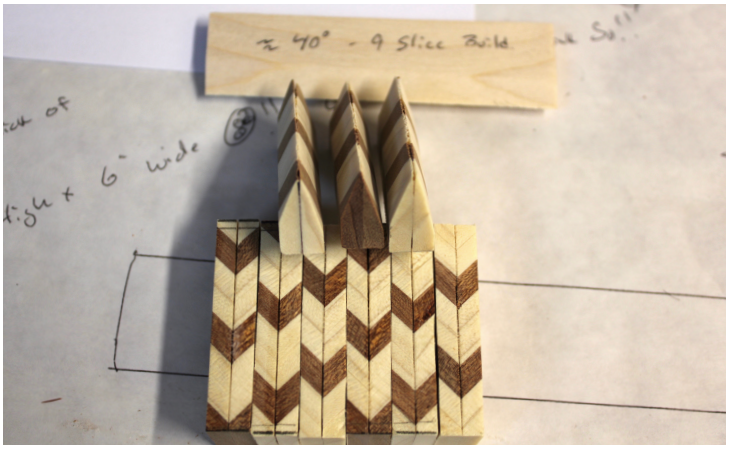


All trimmed up and ready for the next step.

OK, some numbers are actually needed…

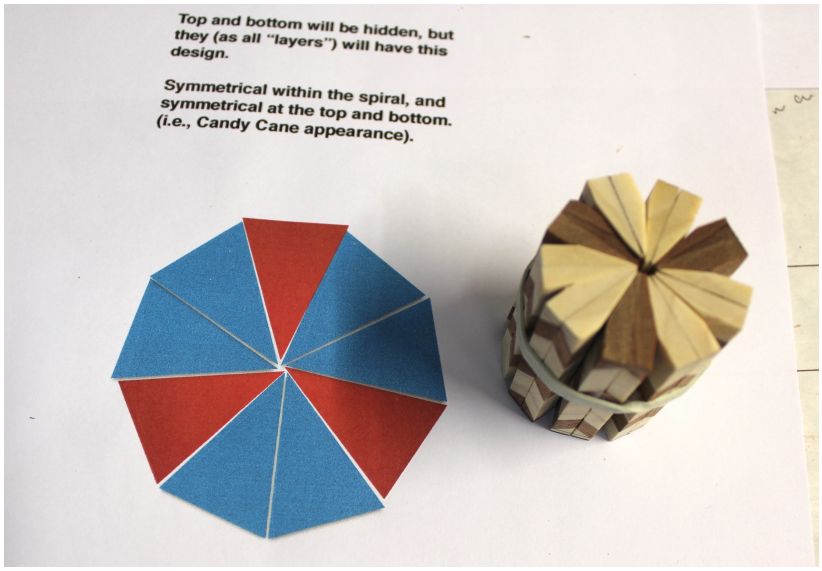
A 9 sided polygon would need 40 degree interior angles, so I needed a 70 degree angle sanding block (each side would then have 20 degrees sanded off).

Beginning the process of sanding the 9 Chevron slices.



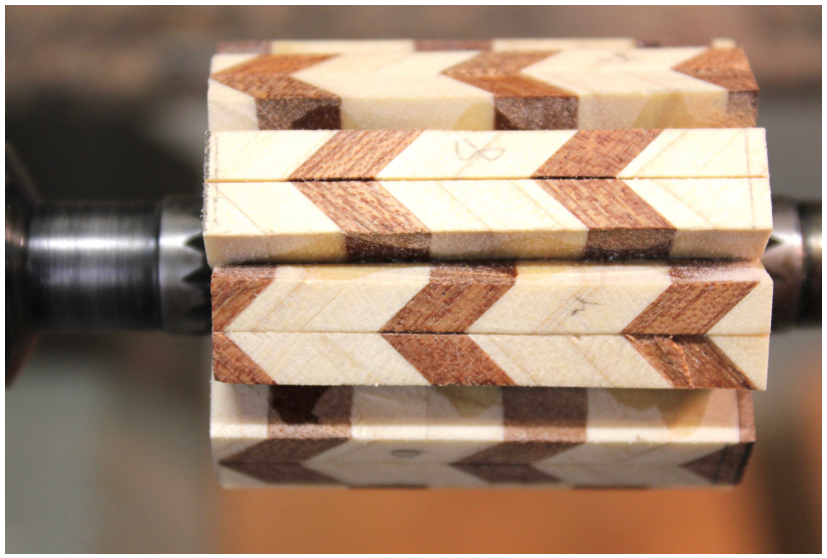
Testing the fit.

Pre glue-up test.



Two views prior to turning round to fit into a collet chuck to drill the tube hole.

Turning with Steb Centers. Sharp gouges are very helpful (DAMHIK).



Turned, tube hole drilled and end caps added. This is now having a Wipe On Polyurethane finish applied over several days.

All done, a 360 degree Chevron Spiral Wave Nanogram Blank (say that 5 times).

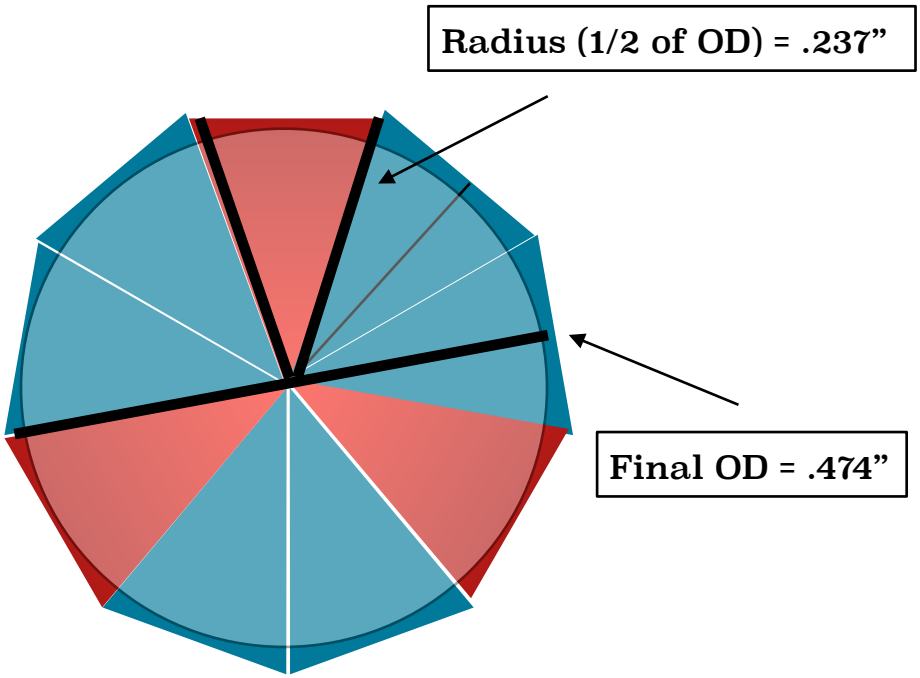
(All told, took 4 months of on-and-off head scratching).

Yes, I did promise some additional information.

The previous Article: **Studies in Segmenting VII - 360 Degree Chevron Wave Blank** used a 6 sided pattern, that was very convenient for calculations. Since I had decided on a six sided pattern, this resulted in using an "Equilateral Isosceles Triangle" (all sides/angles are the same). This made it easier to calculate the outer edge of the Chevron patterns.

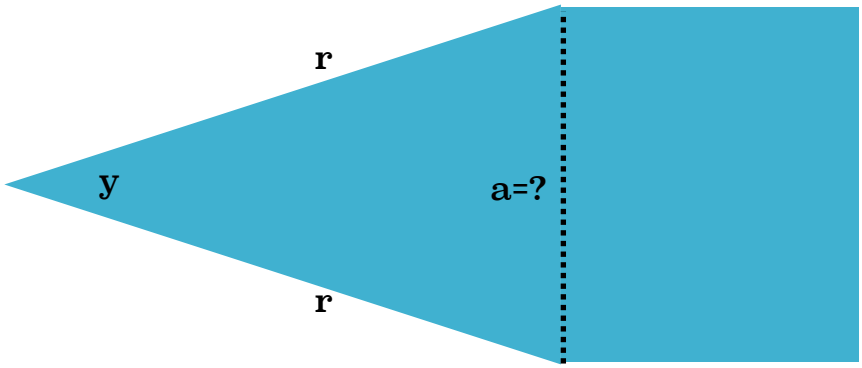
For this blank - 360 Degree Chevron Spiral Blank, a few things were different.

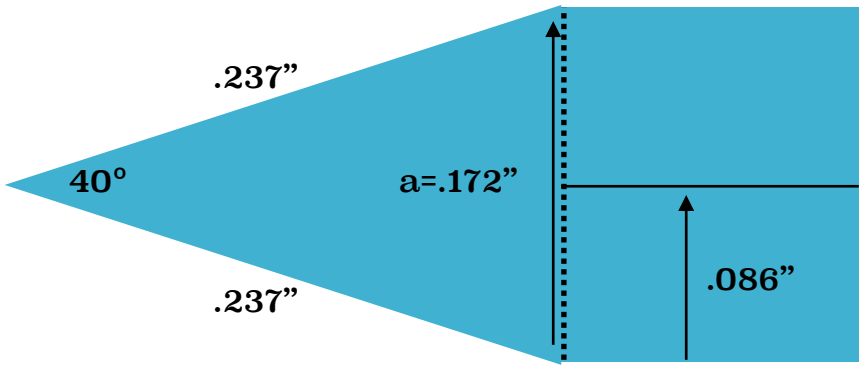
Lets assume (which actually was the case) that both pens had a final OD (outer diameter) of .474". That means the sides of the polygons would be 1/2 of that, or .237". Now we had the crucial measurements to plug into an internet Polygon Calculator to determine the final table saw cuts for the slices.



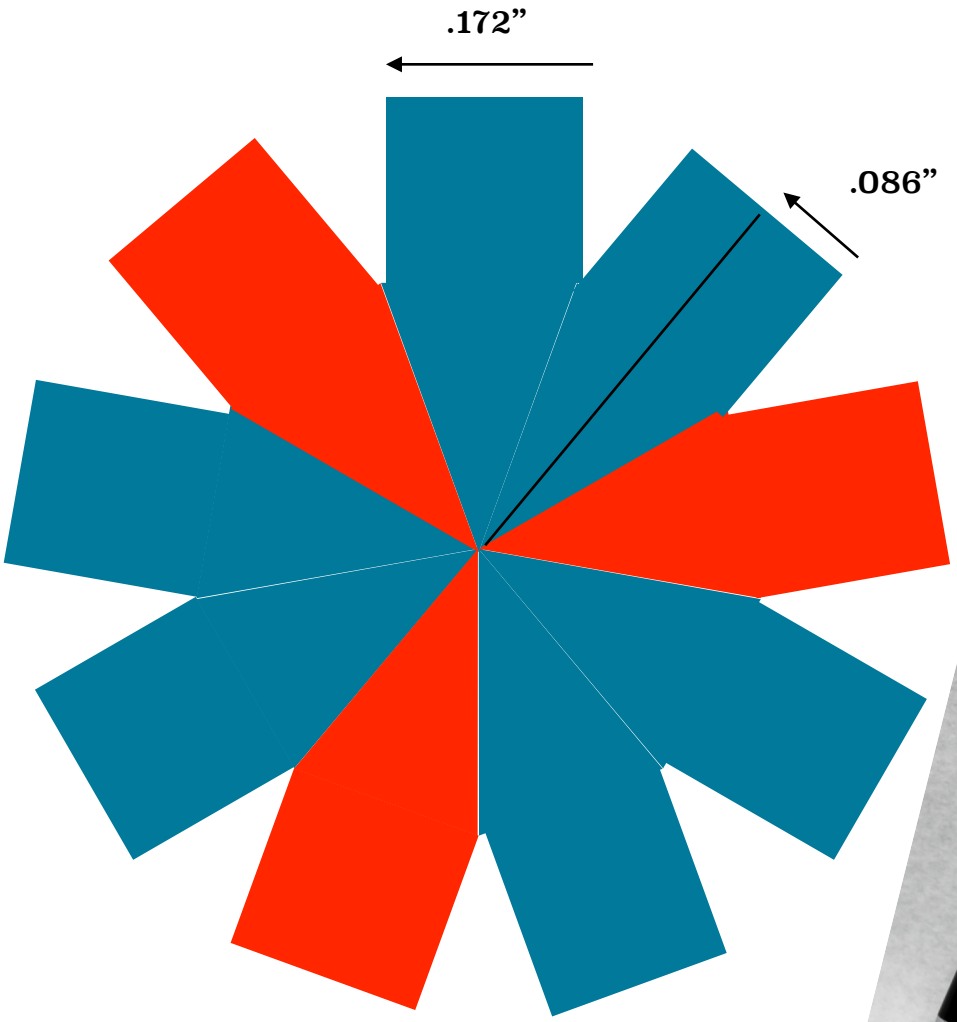
Knowing angle "y" and the sides "r", we can determine "a."

1/2 of "a" will then be the thickness of the chevron slices from the table saw.





So with a 40° angle, sides of .237”, a = .172” for the completed Chevron, indicating each Chevron slice needed to be .086” off the table saw.



Well, that was FUN!