

Making an Accurate, Repeatable Celtic Knot Pen Blank Tutorial

A Tutorial by:
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This tutorial presents instructions for making an accurate, repeatable 4-ring or Celtic knot pen blank. There are many other fine tutorials describing how to make this style blank. This tutorial explains how I do it. I’ve included photographs showing how the first two rings are done while explaining the process for all four. The process to make a four ring knot is the same; it simply requires the steps defined here to be done more times.

The following picture shows my miter sled, the length contrasting wood for the slices, and the Bloodwood blank I’ll be using to demonstrate the process. The slices making up the rings of the knot must be the identical thickness of the kerf left by cutting through the blank. The blank has already been squared. I’ve set the blade height so it only cuts partway through the blank. The depth of the cut must be enough so the rings become visible when the blank is turned but not deep enough to separate the blank while preparing the blank. Not cutting all the way through the blank makes it simple to keep everything aligned. For my purposes, a 1” square blank with the blade cutting 7/8” works well for a Cigar that’ll have roughly a 5/8” diameter.



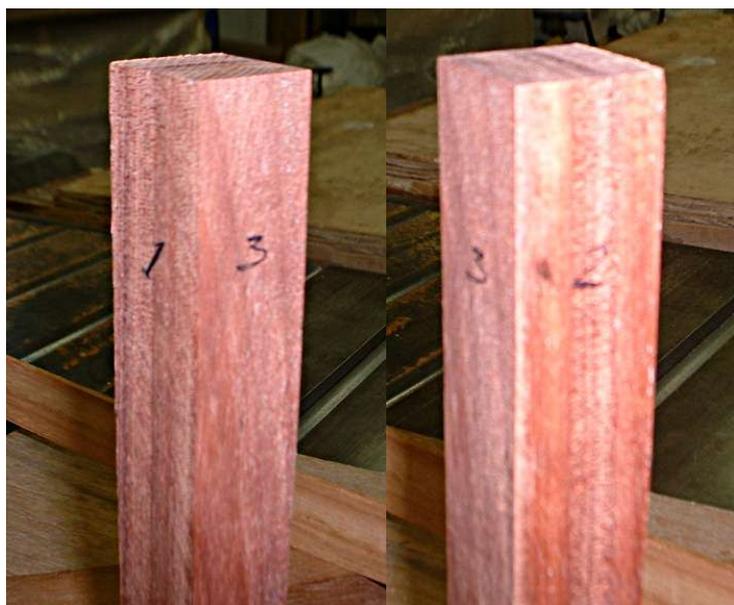
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Making an accurate sled is a crucial element in my method of making these blanks. You’ll notice the sled has two runners—one for each miter slot in the top of the table saw. These runners were cut slightly oversized and then hand planed to just fit the slots. They didn’t slide smoothly until I waxed them. It’s critical that your sled’s runners are snug so there’s no side-to-side slop otherwise you won’t get repeatable accuracy when making your cuts for the rings.

I’ve already squared the Bloodwood blank so that all four sides are the same size and the ends are square to the sides—**these are critical steps**. Don’t skip them. Randomly pick a side and mark it

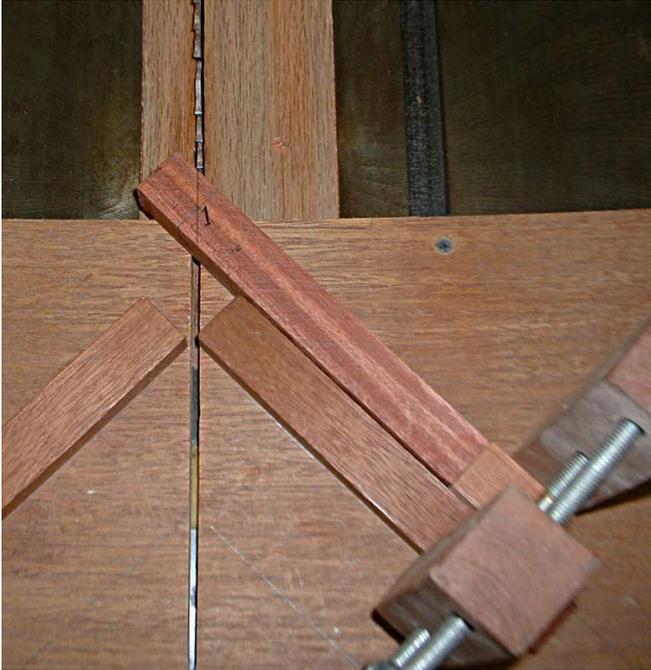
1. Side 2 is 180-degrees to (or, opposite of) side 1. Side 3 is one of the two remaining sides and side 4 is 180-degrees (opposite) side 3.

In the photo on the right, the unseen label to the left 1 is 4 and the unseen label to the right of 3 is 2, as seen in the photo on the right. These numbers represent the order in which each table saw cut is made and into which each contrasting slice is glued.



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The next photo shows I've marked the blank where the slices will go and clamped a stop block in place along the fence. Below the photo is the explanation of how the positions are determined.



To determine where the saw cuts belong, mark the tube length plus an 1/8" on the blank from the end. Measure and mark the middle of this distance. Now, draw a line marking the center of the blank extended to intersect the midline just made. The dark line just above the 1 is where the center of the tube will go allowing 1/16" on each end. If you want or need more working wood, just change the figures used—the idea is the same. At the 90-degree intersection of the tube's ultimate center, place a sliding T-bevel set to match the angle being cut and mark a line. This line, seen parallel to the blade, is set on the sled in the center of the kerf so the position for the stop block can be determined and clamped in place. Once the stop block is clamped in place, any blank equal to the length of the blank marked for a pen using the same length tube can be cut without measuring and marking. At this point, making a batch of blanks is almost as fast as making them one at a time.

Now, clamp the blank tightly against both the fence and the stop block with 1 facing up.

Notice side 4 is visible to the left of the 1 facing up as described earlier. Now, make the first cut.



Here we've cut through the blank the first time. The blurry object in the lower right of the photo is not part of my hand—it is the hand screw clamp. My hands are safely distant from all spinning metal at all times while making these blanks and yours should be as well.

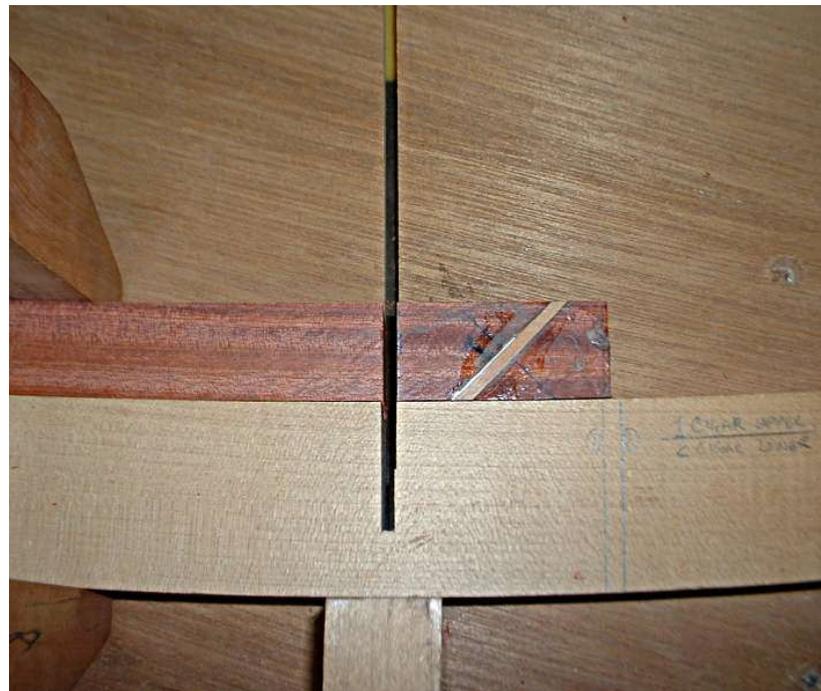
After gluing in my slice of contrasting wood which matches the thickness of the saw kerf (Goncalo alves and aluminum, in this case) using medium viscosity CA, I clean up the blank. Any mess from exuding CA and any extending slice must be taken off so that blank is square to its original size again. Once this is done, I place the blank back on the sled clamped tight to the fence and stop block again. This time, side 2 is up and I'm going to cut thru the first slice that was just glued in. The photo above shows the blank clamped in position ready to be cut.



As stated earlier, this pictorial only shows the steps to make a 2-ring knot. Making the 4-ring knot is simply a matter of repeating the steps followed so far for sides 3 and 4. From here out, it's just more of the same until we're ready to cut the blank to length. Since we've marked the blank 1, 2, 3, 4 and the stop block makes repeated positioning a no-brainer, all we have to do is follow the numbers and glue in the contrasting material for each cut in turn. Be sure to clean up the blank after each slice is glued in. When all the cuts are made for the rings, I switch to a cut-off sled that's 90-degrees to the blade and clamp the blank on the mark.

The zero-throat on the sled keeps everything in place and accurate.

If you look carefully, you'll notice cut-off marks for a Cigar pen upper and lower barrel; these include the slight overage I allow myself for final squaring and good measure. Once the pieces are glued in and you've drilled thru the center of the blank, it's just a matter of turning it to the desired shape. That's the basic method I use to make the ringed blanks for knotted pens. There are numerous variations one can add to this. For instance, if you move the initial cut up toward the cap, you could make a secondary short stop block and "step" two parallel sets of knots for any blank. You can make a six or eight sided blank and make that many rings. You can alter the angle of the cuts so that it runs steeper or shallower and change the look of the knot. And, you can emulate this technique for the band saw or even a hand saw and make very thin kerfs for the rings, which many find more appealing. Don't be limited by what's presented here. Be safe but be adventurous and experiment.



You may come up with a new method you can share with others.
Oh, yeah. Here's the upper barrel after it's been turned and given a CA finish:



I hope y'all find this useful and make many beautiful pens. As I've learned from many here, share and enjoy.
Gary Greenberg, aka Gary G

