

A new twist in pen making – by Anthony Turchetta

While contemplating some new designs for my pens, I was interested in a twist or a rope design pen. Several companies have attempted such machines. There was the MillLathe sold by Woodcraft and the Lathe Wizard by Beall Tool Company, both no longer in the market place. I came across Legacy woodworking machinery when someone offered a used model 200 for sale.



The Legacy Model 200 mill

The Legacy Ornamental Mill, Model 200 is the machine I purchased. The model 200 is the smallest ornamental mill they make. Somewhat limited in what it can do, but a very sturdy and well-built machine. It can cut left hand spirals 1 ½ pitch, flats, straight & taper, reeding & fluting, contoured profiles, and has indexing. All this in a 24" x 9 ½ " footprint. 15" center and a maximum of 3" stock. The machine retails for \$359.00. Some accessories you may need are a pen mandrel, laminate trimmer and some cutters.

To start this project, I chose a Statesmen pen kit from Craft Supplies USA. Cut and glue up your pen blank like any normal pen you are going to make. I cut the blanks 1/16 oversize, drill the tube holes, sand the brass tubes, and use your favorite glue, I use thick CA, then trim your blanks square. This is a very handsome large pen kit. So you will want at least a 7/8" x 5" pen blank as the tube holes are drilled with a 15/32 & 37/64 bits.



Sanded tubes ready for glue up with CA

Legacy states you can round your blanks on the mill. I choose to set up my square pen barrels on my lathe and round them, this is quicker for me. I do this to avoid having to remove allot of wood by the laminate cutter to avoid splitting and cracking during the milling process.

Note that I left as much material on the blanks ,I just wanted to round them.



Rounding the pen barrels

I am going to cut the cap of the pen first. The bit I have chosen for this is from Magnate, it is part # 7597 $\frac{1}{2}$ cutting diameter for rope pens. Since the pitch of the rope design is a $1\frac{1}{2}$ " and I am using a $\frac{1}{2}$ cutter, I will need to make three passes on the mill to complete the rope design.



Pen blank mounted in the mandrel

Mount your blank on the pen mandrel with the same bushings you would use for making your pen. I put a couple of spacer bushings in to give myself some working room, then butt up the tail stock to the end of the mandrel and tighten in place. One real important tip is to make sure you overly tighten the nut on your pen mandrel. This is something we try not to do when pen

turning on the lathe as it is a sure cause of bowing the mandrel and getting barrels out of round. However, it needs to be very secure so that the blank does not spin while cutting the rope. If the blank spins while cutting, you just ruined a blank !

Since the cap is a straight cut with no taper, I adjust the trimmer depth so that the cutter is slightly above of bushings. I set this depth with a folded matchbook cover between the bushing and the cutter. Now lock the depth in place, then engage the X axis (horizontal). The indexing is done by a two plate system, I would have rather seen a more precise pin in hole system as they use on there bigger machines. There are 12 heart shape holes in the big gear wheel and the small wheel has a marker to align your index. Since I have to make three passes to complete the twist, you will note I have my index wheel marked accordingly.



Starting the cut



First pass



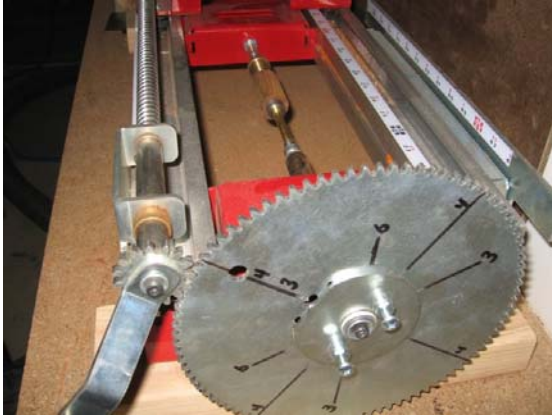
Second pass



third pass and done !

Now we have the blank mounted securely, depth of cut measured, and the indexing plate aligned and the X axis engaged. We are ready to start cutting. Turn on the laminate trimmer and start moving the cutting head toward the stock. This is done by just turning the large handle that rotates the stock and

moves the cutter head down the X axis of the blank. After the first pass, turn off the trimmer, raise the cutter head, and reverse your cranking back to the front of the blanks. Now you loosen the index wheel and rotate the index wheel to your next position and relock the indexing plate. This will rotate your stock 1/3 for your next pass. Now turn the trimmer back on and repeat the cutting process for pass two. Again, once the cut is made, turn the trimmer off, back it up to the front of the blank, advance your index a third to your next mark and make your final pass.



threaded rod X axis, indexing wheel



caps all cut

Well now, as you can see, the cap is finished being cut. I will repeat the same process for cutting the bottom pen barrel with one exception. The pen barrel has a slight taper to the pen. So when I set up for my depth of cut, I can adjust for this taper by adjusting the back guide template for the Z axis (up & down). I have a straight template mounted and I slightly angle the template to match the angle of the cut I want to make. The follower on the Z-axis will ride the template and make the exact taper cut I want. This template can be removed and new templates put in for cutting patterns or different profiles. You can also make your own templates out of MDF or plexi glass.



Templates for the Z axis

I then take the rope blanks back to the lathe and remount them on a pen mandrel with the bushings and trim the ends to match the bushings so the pen parts make a nice smooth transition to the wood. I use a digital caliper to measure the exact diameter of the ends.



Back to the lathe to blend in the end

cuts.

So the blanks are finished being cut, now comes the hard part. Sanding is not the easiest thing to do on these small ropes. I start with 320-400 then go to Micro mesh 1800, 2400 & then 3600 this is all done by hand. On my rope pens, I do not usually apply a high gloss finish. I usually use an oil finish to keep the wood looking as natural as possible.

My finish on these pens is four coats of Waterlox. I apply a coat and then it dry overnight and do this for 4 nights in a row. The final coat I let sit for a couple of days, then I take them and do a very light buff to smooth them out. I do not sand in between coats.



Sanded pen barrels



First coat of Waterlox



Finished pen barrels, just a light buff.

The pen barrels are now finished and ready for the pen assemble. Assemble just as any other pen. I pay particular attention to how I want the pen to look when I set the nib in place for a fountain pen. I screw the nib in the coupler and then place the coupler in the pen paying attention what part of the wood grain I want to look at while writing with a fountain pen. When I find this, then I gently start the nib coupler in by hand, unscrew the nib and then press in the coupler. I pay just as much attention to placing the clip in the correct place and aligning the grain with the cap.



Rope twist Statesmen in Cocobolo with 14K gold nib fountain pen.
14K nib from Penchetta



Rope twist Statesmen cocobolo roller ball

So if you want a little twist in your pen making and happen to have about 400 to 500 dollars lying around the shop floor for a new tool, I highly recommend the Legacy mill. It can also be very useful for putting a twist in your kaleidoscopes, salt & pepper mills, candlesticks, game calls or whatever you think of !

Supplies

Tools- Lathe & cutting chisels, Legacy Ornamental Mill 200, rope bit cutter, drill press, band saw, pen drill vise, drill bits 37/64 & 15/32, assorted grit sand paper, micro mesh sanding pads, CA or superglue, pen press.

Parts Rhodium/Black Statesmen pen kit #050-0324 , Waterlox finishing oil
From Craft Supplies USA www.woodturnerscatolog.com

7/8 x 5 cocobolo pen blank – from Ilikewood

Legacy Mill Model 200 - Legacy Woodworking Machinery
www.legacywoodworking.com

- The Legacy Model 200 has been discontinued since I wrote this They now offer a Revo model as an entry level machine for \$795.00 Some model 200's are still floating around.

Magnate - Rope pen cutter, part # 7597 ½” www.magnate.net

14K gold nib – www.thegoldennib.com