

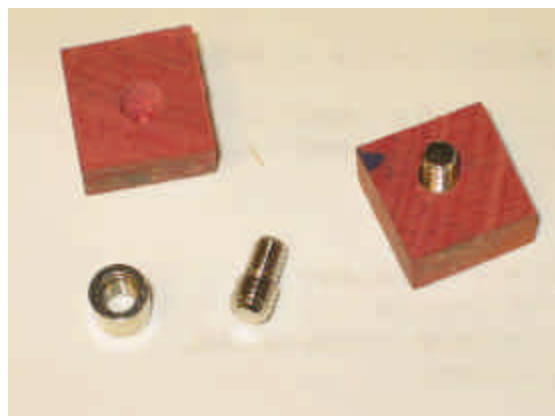
## ***Wooden Finials – My way***

I have been making wooden finials for a while, using a little mandrel available from Crafts Supplies USA (CSU). Unfortunately, my success rate using their instructions was fairly low. What I describe here is the technique I have arrived at after many trials. It works very well for me.

Why make wooden finials? They give your pens a custom touch, and they afford you some design options not available with the stock parts. In particular, I was making Euro-shape pens using Slimline kits, and was very unhappy with the look when I used a Slimline finial. On a Euro-shape pen, the cap has a curve, and the transition to the square-sided finial always looked odd to me, it really killed the smooth line of a Euro-style pen, I thought.

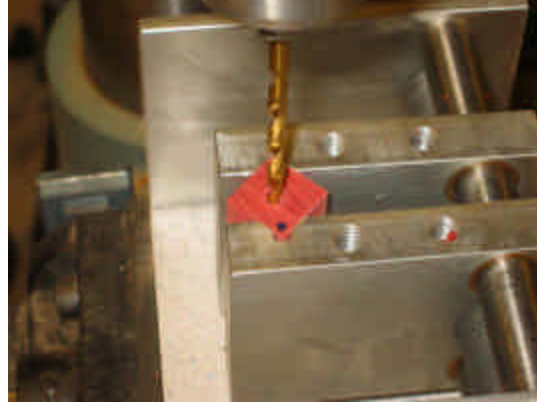
The CSU system is meant for 7 mm Euro style pens. To use it with a Slimline clip presents an additional challenge, and you have to get an additional part. That part is the finial adapter from a 7mm Euro kit. While not a catalog item, I have not had any problem buying small quantities of (20-50) of these from CSU. Berea also sells parts for all their pens, and their finial adapters are compatible with this system. The challenge is integrating the Slimline clip, more on that later.

The key part of the system is a little stud with 2 threads. One thread (the coarser, larger one) bites in to the wooden finial. The other thread matches the finial adapter. A special mandrel makes it easy to turn these. The mandrel can be held in a drill chuck, I prefer to use my Beall collet chuck.



The instructions tell you to drill a 1/8" hole 3/16" deep and screw in the stud. These dimensions simply don't work in hardwood. I start by making little squares

from scrap, like the end of pen blanks. Thickness is maybe 3/8". I mark one corner so I can place them repeatedly into my drilling jig in the same position. I align the top of the square with the top of the jig, and use the drill press's depth control to drill 3/16" deep, using a 9/64" bit. I do this for a series of squares. Because I align the top even with the jig, I get the same drill depth on each square.



I have tried various drill sizes in the past, and attempted to screw the stud directly into the wood. Sometimes it worked, but different woods required different hole sizes. It is nearly impossible to screw the stud directly into a hard wood like ebony, or a plastic, at any hole size. I started getting consistent success when started cutting the threads using a tap.

The thread is metric, M5x0.8. Because the hole is blind, you need a bottom tap. Such taps can be obtained from industrial supply companies, like MSC (part # 74955642) or Enco (part # 325-5171). To cut the thread I put the tap in a tap holder, put a square back into my drill vise in the same orientation (this is why I marked one corner) dropping it down to the bottom this time. My tap wrench has a centered hole drilled in the top, and it happens to be 9/64" so I just leave the same drill bit mounted and lower it into the tap wrench. This keeps the tap straight. (Of course, a hole could be drilled into a tap wrench that doesn't have one, or a different size locating pin could be used.) Keeping slight downward pressure on the quill, I rotate the tap wrench exactly 4 turns. Depending on your hole depth and the exact bottom tap you may find a different number of rotations work for you. Then I back out the tap and am ready for the next square.



Now I simply screw the stud into the hole. You can use a drop of glue, it seems to work just fine without that also, but it may be a good idea if the pen undergoes climatic changes to assure that the finial does not come off. It is not necessary for the fabrication. I often use a finial adapter to give me a better handle on the stud while screwing it in.

To make the finial, the square blank on the stud is simply screwed onto the mandrel. You can put the same bushing used to turn the cap end onto the mandrel to help with turning to the correct size.



10 seconds with the spindle gouge transform the square into something that resembles the finial. I am just turning to a cylinder basically, rounding it over slightly, just hogging of material staying outside the desired shape.



Now I turn the final shape. I like using a pyramid tool from Crafts Supplies for that, because it lets me swing the whole arc without having to reposition the tool rest.



The nice thing is I can unscrew the finial any time and try it on the pen, coming back to the exact same position on the mandrel. This way I can make sure that not only the diameter matches exactly, but also that there is a nice smooth transition from the cap barrel to the finial without a break in curvature. Here it is, ready for finishing!



Using this finial on a Euro turned from a Slimline pen poses another challenge. The Slimline clip must be recessed into the body of the cap or there will be an unsightly gap between cap and finial. I modified a pen mill to cut a .333" diameter recess. (I shape the cutter on





a metal lathe, using a Dremel flex shaft held in the tool holder as a cheap tool-post grinder.) After I cut a recess pocket into the upper end of the cap, I use a small grinding stone held in a Dremel tool to cut a slot for the clip to exit.

This method has worked very well for me. I can quickly make one finial at a time, or prepare a batch up through rough turning. The last picture shows a finished product.

