

## Making a pen by Bill Beckman

Pen making on a lathe has been a subject of many books, DVD's and video's. It is a great product to make on a lathe and is appreciated as a gift. This paper is an attempt to bring the process I demonstrated up close through photos as I recognize that the pen is a small object to observe in detail.

There are many forms of pens that one can make on the lathe. Most people turn what is known as the 7mm pen. This is a pen with a smaller diameter, and comes in many kit permutations. Personally, I like what is known as the 'cigar' pen and have focused my attention on this form. Any comments in this paper will be related to this pen type. Kits for this pen are available from many sources. I have purchased from several and believe that the kits from different sources are all virtually identical.

The 'cigar' kit requires a slightly larger wood blank. The blanks in the photo measure approximately  $\frac{3}{4}$  inch square by about 5 inches long. The reason for the lines drawn on the blank is to make sure the pieces stay oriented when drilled and turned. This way the wood grain stays consistent in the finished product.



The second step after cutting the blanks is to drill the center of each blank. I recommend using a drill vise to hold the blank while drilling. I mark the drill vise so that each wood blank is oriented the same if I have to re-drill for any reason.



The use of the vise makes for repeatability in drilling blanks. Once the vise is centered under the drill, it will always drill the center of the next blank. Centering the vise is essential. I clamp a rod or drill bit into the chuck and then clamp this in the vise. I then lower the combination until the vise rests on the drill platform, and then I lock it in place with spring clamps. It is important to have the drill table set at 90 degrees with the drill bit. I found my table to be off enough that wood blanks were being drilled at a slight angle making the wood thickness at the bottom less than at the top. This was never a problem as it was off only slightly. Had I been making a smaller pen, it might have interfered with the turning.

Wood blanks are available from many places. I have used several sources as well as wood from my front yard. All seem to work OK, but I now prefer blanks that have been stabilized with resin. The reason being I have had some wood split when the pen was finished. On the finished pen, the wood portion is really a wood sleeve on the brass tube. This gets fairly thin, and imperfections sometimes cause problems. Splits can sometimes be repaired with super glue and refinishing. Some wood comes off the brass tube and these are difficult or impossible to fix.

After a wood blank is drilled, a brass tube is inserted and glued in place. The tube needs to be polished or sanded to create a surface to which the glue will adhere. I use the lathe to turn the tube while I hold either sandpaper or steel wool to the surface. This photo shows how I do this. There are of course many ways



to polish the brass. It can simply be done by hand as well. I generally make several pens at one time. If I am making ten pens, there are twenty brass tubes to polish. I find this the easiest way. The white rod in the chuck is a dowel that I have turned to a slight taper to accommodate the brass. By doing it this way, I do not have to turn the motor off, and I can polish the brass in short order.



After the brass is polished, it is glued into the wood blank. I use Gorilla (TM) glue in my pens. This glue has never failed and serves to fill any wood defects that might not be visible. I first wet the inside of the blank with a cotton swab. This water helps to activate the glue. If you do not do this, the glue will set much more slowly because it is taking water from the blank. One fault that many express with this glue is that it foams up. This it does as well with the blanks but it is generally on the end of the blank. It is easily trimmed off, or it can be left on during the squaring of the wood blank. Be sure to use a 'pair' of brass tubes for each set of wood blanks. The lengths of the tubes are different. You may have a reason for making a particular blank into the cap or barrel part of the pen.

After the glue is dried, the ends of the wood blank must be squared. This is accomplished by using a barrel trimmer. This is a tool that has a central guide shaft that is sized to fit into the brass you are using. In my case the brass is 10 mm. It is very important that the end of the wood blank be square. Some turners use a disc sander to square the end. I have never done this as I do not think I would have sufficient control. The end of the blank is squared until the trimmer reaches the end of the brass tube. It is important not to remove much of the brass, as the pen part will then be too short to function properly. This operation can be done without the drill press vise. I use a pliers holding the wood blank and pressing down against the drill press table. The resulting squared end blanks will look like those in the photo. The shaft of the barrel trimmer cleans out any glue that may have found its way into the tube.



After both ends of the wood blank have been squared, I measure the length of the pen part on a jig that I built for the purpose. Basically, I am confirming that I have not turned off too much brass and made the part short. A short pen part will result in a pen where the two parts will not meet at the center. The photo at left is of a jig used for measuring the length of the two pen parts. In this case the jig is specific to the pen style.

Once arriving at this point, the pen is ready to be turned. The parts are mounted on a mandrel with the appropriate bushings to guide the wood removal. I use a mandrel that fits into the headstock with a number 2 Morris taper. There are mandrels available



that you put into a chuck, and perhaps other options. I like this method as there are no turning parts to catch your hand or clothing. The tail stock is brought up to the end of the mandrel and lightly applied. It is used just for stabilization. If too much pressure is applied by the tail stock, there is a chance you might bow the mandrel and end up with an oval shaped pen in cross section.



The pen blanks are then turned to meet the bushing diameter. I generally leave the wood slightly larger than the bushing. I take this thickness off with three grades of sandpaper. Starting with 180, then 220 and finishing with 400 grit. On some woods I also use 0000 steel wool. You are of course free to make any shape pen between the bushings. I have made finger bulges and other shapes, but I prefer the smooth curve for my pens.

I apply the polish while the pen is on the mandrel and spinning. The turning speed I use is about 1800 rpm. Higher speeds are probably better than turning slower. I find this speed comfortable.



The kinds of polish used depends somewhat on the wood. I use all three of these products. The Hut (TM) is a friction polish that will produce a great shine. Multiple coats can be applied. If more than one is applied, I use the steel wool in between coats. The other two are generally used on woods that are less porous. I like the Renaissance (TM) because it dries quickly and will not leave a fingerprint.

I assemble the pens using my drill press to press the pen parts together. The pen integrity depends upon the parts being pressed into the brass tube glued in earlier. At one time I used a drop of super glue to insure the parts being secure. If ever you have to disassemble a pen, you will find that the glue is not necessary. It is **very** hard to take a pen apart. The tool I use to press the parts is simply a bolt epoxied into a block of wood and then turned to the shape you like. I use end grain for the pressing part as it lasts longer. The pen parts are metal and will cut into the wood. I always focus on pressing straight down with the wood block. I do this because part of the time you are pressing on the end of the



turned piece. I have not had the wood chip or crack off of the brass tube, but think this could happen if too great an angle were used.

The photo below is the finished product. I like making these pens, but equally enjoy the smiles and comments of the people that receive them. This pen uses a Parker (TM) refill, and I usually recommend the gel type. They really write well.

I hope you find this document useful. If you have any questions or suggestions I would be most happy to either discuss them or respond as the case may be. If it is helpful, I purchase my pen kits from Bear Tooth Woods of Colorado Springs, CO. [www.beartoothwoods.com](http://www.beartoothwoods.com), Mr Ernie McFarlane. My wood supplies come from River Ridge Products LLC, [www.rrpwhite.com](http://www.rrpwhite.com), Steve and Carol White of Ladysmith, Wisconsin.

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