PenTurner's Corner

Freedom Pens: The *Freedom Pens* project is an endeavor to make and furnish pens to US servicemen and women. On July 26 I attended a *Freedom Pens turn-a-thon* at Wood World Texas in North Dallas (http://www.woodworldtx.com).There were 80+ penturners attending for all or part of the day. Those who attended used an array of 18 Jet mini lathes. I think the final count was 275 pens turned and completed. Thanks Woodworld for sponsoring the *turn-a-thon* and furnishing the materials we used.

The *Freedom Pens* project is spear-headed by the folks at Saw Mill Creek. There have been 70,000 pens shipped to the Middle East since the beginning of the *Freedom Pens* project. *Turn-a-thons* have been sponsored in part by Woodcraft and Rockler, who have furnished kits and blanks. Other retailers of turning and pen making supplies have been involved as well as numerous woodturning clubs. Check out the *Freedom Pens* project at http://www.freedompens.org. Though the website is not up to date, information about the project is available. More up to date information can be found at http://sawmillcreek.org/forumdisplay.php?f=17. DuPont, the maker of corian®, has even started making red, white, and blue corian and donate it for use in the *Freedom Pen project*. Check the schedule…find a *turn-a-thon* close by and attend. What a great way to spend a Saturday! Or, consider hosting a turn-a-thon as a project of your local woodturning club. I've thoroughly enjoyed the 3 or 4 I've attended. I met two turners who read this column and it was great to visit and answer their questions.

Penturning hints, tips and tricks: In Arlington, Texas I attended one of the traveling woodworking shows that make the rounds to larger cities in the fall. I purchased sanding sticks. **See figure 1.**

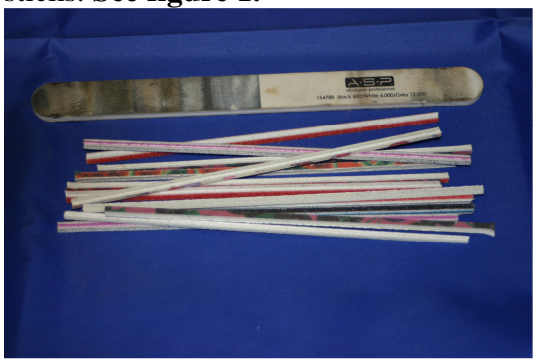

Figure 1

These sanding sticks are foam backed and are various grits. I find them quite useful for sanding in hard to reach places around beads and coves, or transitions between different diameters. I've also used sanding chords for sanding in these tight places. An online search for sanding sticks will lead you to several sources. Also shown in figure 1 is a buffing stick used for buffing acrylic fingernails. Guess what this material is? MicroMesh®! One side is half 4000 and half 6000 and the other side is 12000. I carry these when I do pen demos instead of my regular micromesh sheets. I really like using them. I sand penblanks to 1000 then use these buffers on the wood prior to applying my finish. They work great….give'em a try. I buy them from a beauty supply store: Sally

Beauty Supply. They are also available from other sources or other supplier of beauty products.

Let's make a pen: From the first time I first saw a pen that used rifle and pistol cartridge casings incorporated into it, I've been a big fan. And in the last two or three years these have become quite popular. Several styles can be made. **See figure 2.**

Figure 2

Some styles use the entire brass cartridge with or without the lead bullet, some use the rifle bullet split in half, others use just the base end on the ends of both blanks and others still….well the possibilities are somewhat endless. Let your imagination run wild. After making a few of these unique pens and learning some of the basic techniques needed, you may even develop some new styles for yourself. Pictures of cartridge pens are posted almost daily on the three pen forums.

This month I will detail how to make a simple pen using slimline parts and the empty brass cartridge from a 30-06 bullet. The pen will be much like the top pen in figure 2 and in the months to follow I will show how to make some of the more complicated modifications.

Here is some terminology I use for the cartridge parts. Mouth: the small end where the lead bullet was once seated. The base is the end where the head stamp is and houses the primer. Caliber is the size of the cartridge.

The first question I'm always asked is, "What caliber should I use?" Several calibers are useable, depending on what you want to accomplish. First, the end that housed the lead bullet needs to match the slimline nib as closely as possible for making a smooth transition. I like to use 30-30, 30-06, 25-06 and 308 calibers. The 308 is a little short for my liking, but it is a popular caliber with those who make these pens. I like the length of 30-06, 30-30, and 25-06.

As you try to fit the nib into the mouthof the cartridge you will quickly find the diameter of the cartridge's mouth is larger that the shoulder on the slimline nib. This is the first hurdle which we must clear. Also, the base end of the cartridge must be drilled for the

brass tube to pass through. If using a cartridge that has been fired, remove the primer before drilling. If unfired new brass is used, there will not be a primer installed. I would not recommend using live ammunition unless you are familiar with rifle shells and how they work and how to remove the lead bullet, powder and primer. Empty rifle cartridges are now hard to find from either a friend who shoots or from a sporting goods store that sells reloading supplies.

Making the pen:

First, choose an empty brass cartridge. I used a 30-06 for the pen in this article. Drill out the base end using a 5/16 drill bit. Two tasks must be completed. One is to remove the primer. Tools for removing the primer are available, but a small punch works well. Punch out the primer from the inside or use a punch with a sharpened point to pry out the primer from the outside. BE CAREFUL working with a live primer.

The next challenge is holding the brass cartridge without making marks in the brass. One solution is to make a wooden collet to hold the brass. Take a piece of dowel and drill a hole into which the cartridge can be inserted and hold the sleeve and cartridge with a jacob's chuck and drill on the lathe. The wooden collet and cartridge can be held in a pen blank drilling vice and drilled on the drill press. I use a Beall collet chuck and collet to hold the brass. **See figure 3.**

Figure 3

I have the Beall collet chuck and complete set of collets. I use them often to hold all types of pen parts and materials for drilling and modifying. I love this tool. I hold my pen mandrel in a Beall Collet chuck. Some cleverness will surely yield other methods of holding the brass. I use a parting tool to lightly clean the base of the cartridge and clean off any burrs.

The next step is to glue a brass (slimline) pen tube into a piece of wood and turn an insert which will slide inside the brass. A tube longer than a standard slimline tube will be needed. The 30-06 cartridge is 2.494 inches long. I start with a 2.5 inch tube and adjust the length at the end. All pen kit suppliers sell 7mm tubes in long lengths. Next time you place an order get a package. They are very useful. Two tubes can be glued in the blank from the opposite ends. Let them meet in the middle and cut off the excess. Place this blank on the mandrel and turn one end small enough to fit inside the mouth of the

cartridge (where the bullet once was). This diameter is .340 inches. Use a micrometer then test and fit. The length of the .340 section needs to be .5 inches in length. The rest of the wooden shim needs to be small enough to just slide into the 5/16 hole (.31250) drilled in the base. Again, use a caliper and then test and fit as you get close. **See figure 4** for the cartridge and shim made to slide inside it.

Figure 4

The pencil ring is located at the transition of the two diameters. The shim should slide into the cartridge through the hole in the base. Insert the small end first. Use two part epoxy to glue the wood shim at the mouth and at the base. Flush the shim on the base end and use a trimmer to trim the shim at the mouth end. Some trimming can be done prior to installing the shim and glue the shim into place. **See figure 5** which shows the two ends of the cartridge with the shim installed.

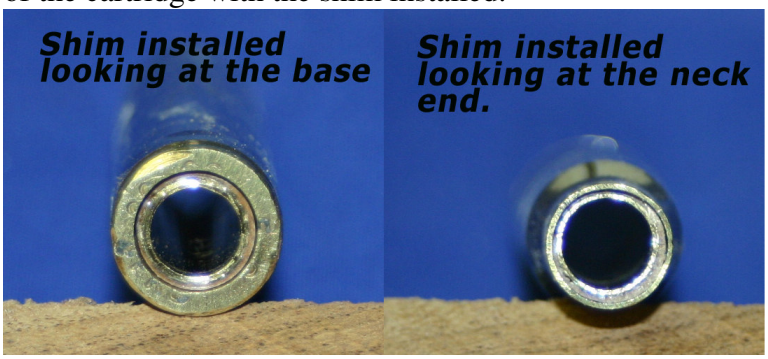

Figure 5

After the glue is cured and the shim is trimmed, the nib and transmission are now ready to press into place. Press in the nib first as usual. Press in the transmission next. It must be pressed in further that usual. Test fit the refill for proper placement of the transmission. Press the transmission a little at a time until the refill propels to the proper place upon twisting.

The top of the pen is the easiest part. The top is a standard slimline top with one exception. The end that meets the top of the rifle casing will be larger than normal The base of the cartridge has a diameter of .473 inches. I like the meeting of the two parts to be as close as possible. Once again, use a caliper to get close then sneak upon the final diameter by test fitting and adjusting. I find a round nose scraper to be the best tool to use to take off the last material to reach the .473 diameter. Turn the remainder of the top a pleasing shape slowly tapering the clip end to the diameter of the slimline bushing. Sand and polish the blank. I use a piece of antler for the pen I made for this article.

See figure 6 for the finished antler top.

I tried and succeeded to save a section of the outside of the antler allowing the "bark" to remain. Some judicious drilling can accomplish this unique feature. Antler and brass rifle cartridges seem to go well together. I make several of these pens using the cartridge and a piece of antler from a hunter's first deer. Install the clip and press in the clip finial. Slide the top onto the transmission as usual and the pen is finished. **See figure 7** for the finished pen.

Figure 7

This pen is relatively easy to make and is quite a unique addition to your pen collection or inventory. Several other variations are possible. In the next article I will describe how to do a couple of other neat features that can be done with cartridge pens. Look up at figure 2 and you will see a couple of things we will do in future articles. Once a few of these techniques are learned, many unique cartridge pens can be made.

Several members of the pen forums make and sell the cartridges with the shim installed and ready to use in making these pens. Check the classifieds of the pen forums if purchasing this part of the pen is of interest.

As always, comments from readers are welcome. Send your comments to don@RedRiverPens.com or to the editor of More Woodturning. I am also available to answer your pen turning questions. Just email them to me and I will answer as quickly as possible.

Do a good turn daily!
Don