

Redressing Pentel pencils.

The design of the Pentel pencil is especially conducive to redressing it in a wood. The covering is simply a tube with a non-uniform ID. Easy to say, but execution is an exercise in detailed machining. The ID of the main body of the tube needs to be a minimum of $\frac{1}{4}$ ". One end must be slightly larger (to a depth of about 0.9 inches) to allow room for the chrome cap on the mechanism plunger, while the other end has a very small hole to receive the threaded nipple on the end of the Pentel mechanism. The measured diameter of the nipple is $\frac{5}{32}$ ", and the hole must be 0.2" deep. Since the cover is held onto the mechanism by screwing the nib cone onto the nipple, creating a suitable $\frac{5}{32}$ " hole is the most critical aspect of the project.

I chose to use a 7mm brass pen tube to reinforce the blank. It was necessary to make a few tools/fixtures along the way.

1. Start with a blank exactly $4\frac{1}{2}$ " with square end.
2. With the blank held in a scroll chuck on the lathe, drill a hole using a 7mm brad point pen bit exactly 4.3" deep. That should leave 0.2" of solid wood at the end of the blank.
3. I made a tapered bit to drill a $\frac{5}{32}$ " hole through the nib end of the blank. The bit was made by epoxying the end of a $\frac{5}{32}$ " drill bit in a hole drilled in the end of a $\frac{1}{4}$ " mild steel rod, allowing the bit to extend about $\frac{1}{2}$ " beyond the end of the rod.. Using emery paper and light machine oil, polish the steel rod until it fits inside a standard 7mm pen tube.
4. Cut a 3.6" length of 7mm pen tube, and dress the ends. Slip the pen tube into the hole. Then, insert the tapered drill into the pen tube, and drill a $\frac{5}{32}$ " hole through the end of the blank. Don't glue the tube in yet – it may be necessary to remove it if you find that the 7mm hole isn't deep enough.
5. Now, mount the blank between centers. I used a mandrel in the headstock that consisted of a scrap of maple turned to make a No. 2 Morse taper with the cut-off shank of the $\frac{5}{32}$ " drill bit epoxied in the end. At the tailstock, I had a live center with a wooden 'nose' that tapered to a $\frac{1}{4}$ " dowel. Turn the blank to a uniform $\frac{25}{64}$ " diameter, and then add a very subtle roll over at both ends. Sand and finish.
6. The 'innards' of a Pentel pencil should fit inside this wooden barrel. However, I found that I needed to fine-tune the barrel in two ways. First, while the end of the Pentel mechanism measures $\frac{5}{32}$ ", I found that a $\frac{5}{32}$ " hole was a tad too small. A #21 bit is nominally 0.002" larger and enlarged the hole enough for the mechanism nipple to slip through. Second, I thought I had drilled the 7mm hole exactly 4.3 inches deep, but the threaded nipple didn't extend far enough through the $\frac{5}{32}$ " hole, so I had to drill the 7mm hole a bit deeper.

7. After all of the parts fit together, glue the brass tube in the hole. I used thick CA glue, and only applied it around the middle of the tube. The tube is about 0.9" shorter than the hole in the wooden barrel, so I used a toothpick to press it all the way to the bottom of the tube to that the gap left room for the chrome cap on the plunger on the Pentel mechanism. Let the glue cure before taking the remaining steps.

8. Press the clip onto a 3/8" transfer punch. Then, holding the wooden barrel against the end of the transfer punch, slide the clip off the punch and onto the pencil barrel. Some people machine a recess in the surface of the barrel to accommodate the clip; I chose to not do that.

9. Finally, insert the Pentel mechanism and secure it in place by screwing the nib onto the nipple extending through the end of the wooden barrel.