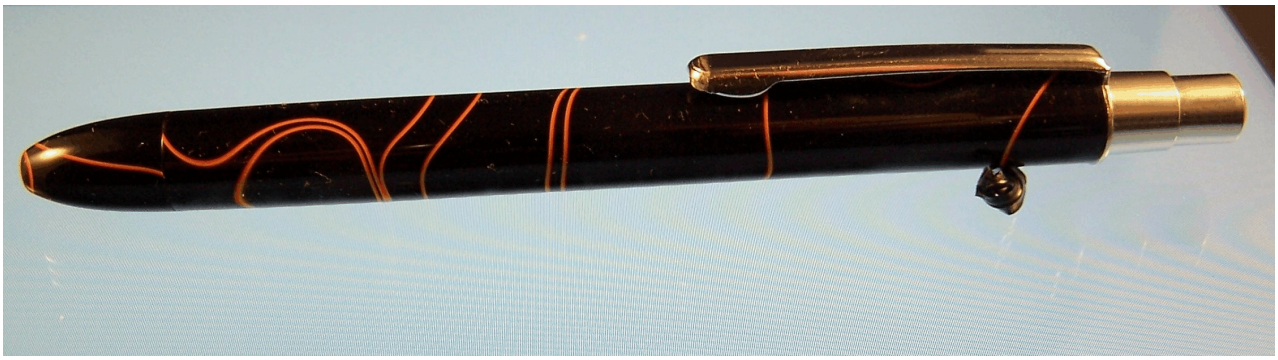
Kitless Click Pen

by:

Hans Wunch

A.K.A "hewunch"



In this tutorial, I will explain how I made this pen. And hopefully, in the process, you can gain the necessary skills to do the same. I will break up this tutorial into three sections. Parts, Procedures and Tips.

Parts

This pen is quite simple in that it has only 5 parts. As seen below.

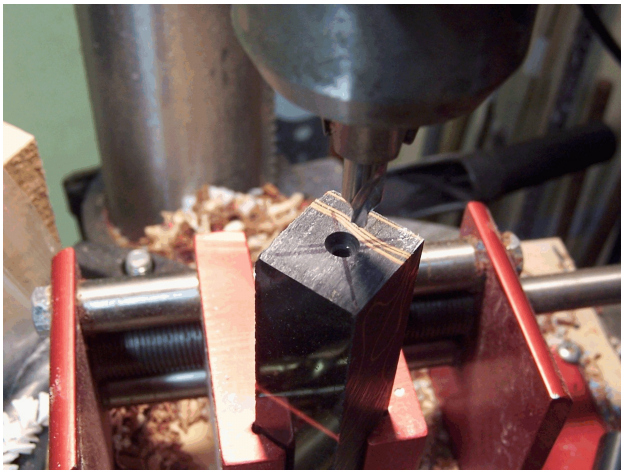
1. Acrylic. Any acrylic can work, but I would recommend either acrylic acetate or alumilite, metals and ebonite would work too. Not saying you can't make this pen out of PR. But I have found the above materials much easier to thread.
2. Refill. The refill in this pen is a Parker style refill and the dimensions will reflect it. If you want to use a different refill, that is fine, you will just have adust your lengths.
3. Spring. Hey, all pens need springs right? You can get these from all sorts of places. But my favorite place is pens from vendors.
4. Clip. I got this clip from Elliot Landes http://penmakers.com/?page_id=5. You can use any kind of clip you would like for this pen. But, you need to measure the ring diameter. This will effect the diameter of your pen.
5. Click Mechanism. I purchased this mechanism from Richard Greenwald. It is the smoothest mech I have ever used. http://richardlgreenwald.com/push-button-mechanisms-p-29.html

Procedure

Tools. You will need several tools to make this pen. I will tell you what I used, but it is not the only way to make this kind of pen.

1. Collet Chuck. Probably one of the most useful things a pen maker can have.
2. Dead and Live Centers.
3. Drill Bits I used a “J”, “D” 7/32 and a .09 bit. I also used a center bit.
4. Taps and die. The tap for the click mech is a 7mm x .75. The tap and die for the nose cone are 8mm x .75.
5. Calipers.
6. Drill chuck for your tail stock.

Ok, here is where we start. A square piece of stock, marked for the center and then drilled with a center drill bit on both ends.



Then I put the blank between centers and turn it round. Once I turn it round, I switch out my dead center for a collet chuck and put the blank in it. Now I can cut the blank to size. The main part of the body is 3.811" So I make a mark and part off the remainder.

Next, I drill for the click mechanism. This is a “D” bit. Note, I already have a starter hole for the drill bit from the center drill. This will help your drill bit stay straight. (See tips for more help with staying straight). Drill as far as you can. All the way through if possible.

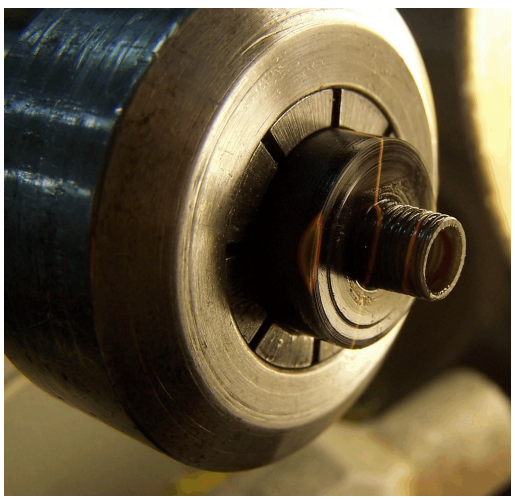
Next, go ahead and tap the blank for the click mechanism. There are several other tutorials that explain threading in depth so I will not rehash them. I will say, I mount my tap in my drill chuck and use PAM for lubrication. I make sure I put enough threads in so that the mech will be able to screw all the way in. (See Tips)

Now, if you drill all the way through with the smaller hole, you can drill from the other side for the larger hole. This is helpful especially if you are using a very translucent blank. I HIGHLY recommend using water or some other fluid to help keep your bit cool as it will help keep the inside of the pen from looking like it has Sprite in it. To aid in this process, I use an eyedropper from Monty and some soapy water.

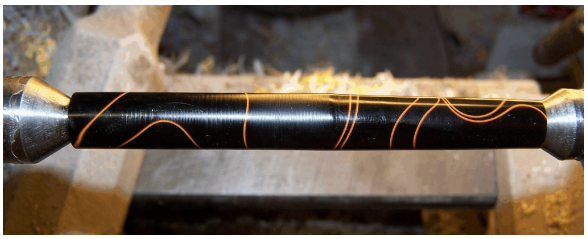
Because the bit is just taking away a little material it will stay cooler, and hopefully; will not tear out the inside of the blank so bad. Drill with the “J” bit to a depth of 3.329". This will likely take off the innermost of your threads for the click mech.

Now using the same procedure as before, tap the nose side of the blank with the 8mm x .75.

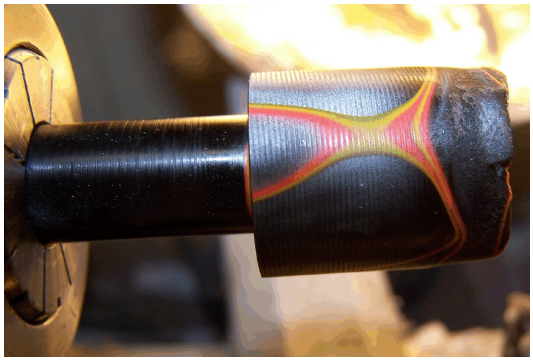
Now you should have a chunk left over from the blank that you parted off before. Mount it in your collet chuck with the edge which you cut off from the blank facing out. The picture below shows the final process. First, I drilled the nose piece with a 7/32 bit to a depth of .23". *This is to accommodate the refill as it slides forward. If in the end your mech doesn’t seem to engage correctly, try drilling this a little deeper and see if that helps*. Then I drilled the rest of the way with a .09 wire bit. The tip of Parker refill is actually about .093" But when I make these small holes, I am prone to run out. I figure it would be easier to make a small hole bigger than a big hole smaller. Once that is finished, I make a tenon of just smaller than 8mm. Then I run the die over the tenon to make the male threads. (See tip) The picture below is of the nose cone which is now ready to be turned.



Now, I turn the barrel of the pen down to almost the finished diameter. The clip ring is .4" so that will be my pen diameter. For this step, I will turn down the barrel to .45" roughly. I will do this part between centers.



The next part is probably the trickiest and most important. First, I make sure the nose blank fits on the barrel snugly. Then, I install most of the barrel with the nose blank sticking out into a collet. Next, I lightly bring the tail stock up. This is for centering and keeping things center to start with.

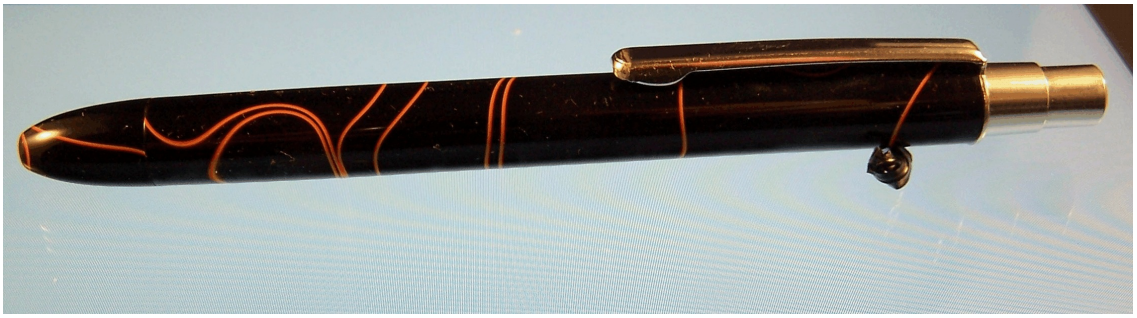


Next, I turn down the nose installed in the blank so I can get a seamless transition between the two.

The only way you can see the seam is by the break in the design.

Now is the time for some testing. My nose cone is .605 **NOT** including the threads. Yours may need to be longer or shorter. That gives my pen (barrel plus nose cone, but not the click mech) an overall length of 4.416". The great thing is, now you can install the click mech, refill and spring to test it out. Start a little long say .64 or so and work your way back. Again, it is easier to make the nose shorter than longer. Once you get it right, do your final shaping of the nose and go ahead and polish it on the blank. Once it is polished, remove the nose cone from the blank and reinstall the blank between centers so you can turn it the rest of the way down. Once you get your finished diameter, sand the blank through polish.

Now you can install the click mech, clip, refill, spring and nose cone for the last time.



Tips:
1. If you will use your tail stock as you are tightening your collet chuck, it will help your blank stay straight. This is especially helpful before you drill anything on the lathe.
2. If you will mount a center in the headstock and then your die holder in the tail stock, bring the die holder up to the center before you tighten it down. There is typically some wiggle room in the holder and this will help center the die, which will help you get nice threads.
3. When drilling with water, put something down over your lathe ways (bed) to keep the liquid off of it and the rust at bay.
4. At some point in the process of tapping (some do it first, some do it last), I make a small relief cut on the inside of blank. This helps give more contact surface when you turn between centers and helps the nose cone seat as snugly as possible. Do your best to make it around 60 degrees.
5. Once you are finished with the blank, before you put it together, run the acrylic pieces through an ultrasonic cleaning cycle. It will clean up your threads and make everything look really nice.

OOPS. So obviously the length of your barrel is HIGHLY dependant on the size of your refill. So what if you mess up and your refill sticks out even when in the “closed” position? Well, I can see three ways of solving this problem.
1. Make a new nose cone
2. Shorten your refill by sanding off the button at the top of the refill
3. And this is the best solution, in my opinion. Shorten the click mech. The part that sticks out is over a ¼". You could easily take this down up to that far and be fine.

Lastly, I want to give a shout out to my friend Jonathon Brooks. He was the first person that I had come across that had used this click and his was the inspiration for mine. Thanks buddy!