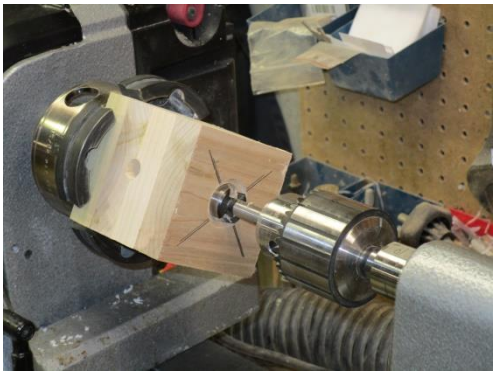
The Making of an Egg Chuck
Dave Ackmann, April 2019

As mentioned in my PowerPoint presentation on turning Easter Eggs, an “Egg Chuck” can make it easy to clean up the end of the egg where it was parted from the rest of the turning block. This document tells you how to make an egg chuck.

Our Egg Chuck is based on a shop-made block of wood which has been tapped to fit on the spindle of our lathe. I won’t go into the details of how to create this tapped block, because there are some excellent videos on YouTube that show how this is done. I particularly like Mike Peace’s video (youtube.com/watch?v=G0yD8J4HyhA) and the two from Beall, the makers of the tap (youtube.com/watch?v=SE-OtSzoneU and youtube.com/watch?v=Q3PoLaJUjow. The taps are available from Amazon and Woodcraft (among others), but check prices as they do vary, generally between $18 and $35, depending on size and supplier.

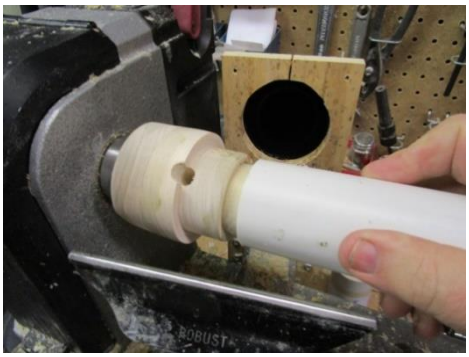
There are several places where I venture beyond the advice from Mike Peace and the Beall folks. After taping the block, I always flood the threads with thin CA to give them more strength. I let the CA dry overnight (no accelerator) and the next day I again use the tap to clean the threads from excess CA; it may take more torque to clean the threads after the CA than it took to tap the threads in the first place. Secondly, I always drill a 3/8” hole through the block, about 2 inches from the threaded end, so that if the chuck gets stuck on the spindle, I can insert my knockout bar into the hole for increased leverage to spin it off. I also drill a 3/8” hole straight though the chuck threads so that if an egg ever gets stuck in the chuck, a gentle tap of the knockout bar can dislodge the egg.

I'd like to start our Egg Chuck with a 3" by 3" by 3" cube of either maple or poplar (I prefer poplar). I rarely have wood that thick, so I laminate four pieces of one inch lumber to make the block (I use Titebond to glue the pieces together, alternating grain direction with each layer). As the photo shows, I use 3" jaws in my chuck to hold the workpiece (If you don't have big enough chuck jaws, you can screw a faceplate into the block, drill and tap the hole, then remove the faceplate). And of course, we will be drilling into the face of the block, not the laminated edges.



I do not drill all the way into the block, but I do measure the length of my spindle and drill the length accordingly, maybe even a 1/4" longer. For this project (except for the hole for the knockout bar), I use only Forstner bits, and start by drilling the initial recess or "rebate" (because I have a Delta midi-lathe with a 1" spindle, I drill the rebate 1/8" wider, 1 1/8", and 1/8" deep) and after that the main shaft for tapping, 1/8" smaller than the spindle (7/8" diameter); if you have a larger spindle increase the sizes accordingly. I use a crescent wrench to advance the tap, and as Mike Peace suggests, I do back out the tap frequently to break the chips. I advance the tailstock with each turn of the crescent wrench.

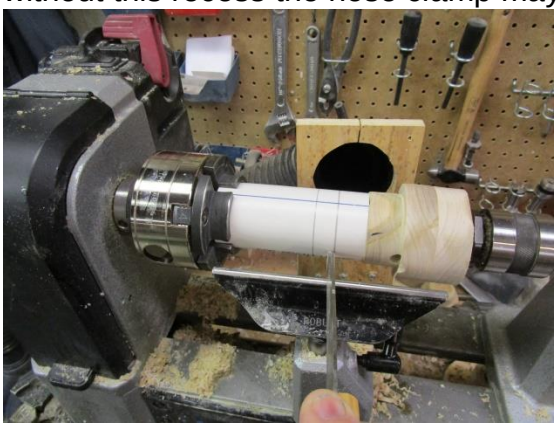
When you reach the end, move the tailstock to the right, remove the cone center and back out the tap. Remove the block, and make sure the threads are clean; you may have to blow out some debris, then run the tap through off the lathe. Afterwards, if it is clean, do a test fit. If the fit is good, remove the block and run some thin CA glue over the threads and set it aside overnight. The next day run the tap through the chuck again, just to clean the threads after the CA. At this point, rather than turning the block to round, I like to take it to a band saw and knock off the corners before returning to the lathe for final rounding; trying to turn it to round on the lathe directly from a laminated cube, especially if the block is maple with alternating grain, can tend to beat one up unnecessarily. After you round the corners and turn the chuck to round, it might be a good time to drill that 3/8" hole straight through the chuck to allow your knockout bar to dislodge any stubborn eggs.



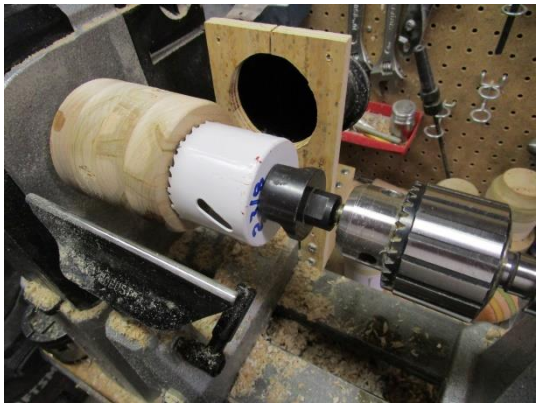
We are going to need several of these threaded blocks, so you might as well thread at least three of them right now. They are so useful that you might want half a dozen. But for now, place one on your lathe and we are going to make a jamb chuck, like the fellow from Beall did in his second video. He made a "stepped" version, and we will too, with one step sized at 1 1/2" diameter and the second step at

2”. Start by cutting a 4” length of PVC pipe, both the 1 1/2" diameter variety for smaller eggs, and 2” for larger eggs. Use the PVC pipe to gauge the accuracy of the jamb chuck steps. I like to make the steps about 1/2” to 3/4" deep, working toward a snug but not overly tight fit.

The next step is to cut a shallow recess in the PVC to accommodate the hose clamp; without this recess the hose clamp may tend to wander along the pipe, creating a safety hazard. Hose clamps are 1/2" wide, so I like to cut that shallow recess about 3/4” to 1 1/4" from the right end of the pipe, maybe just a couple of hundredths wider, using a parting tool (from now on I will refer to the end of the pipe that gets placed in the wood block as the “left end” and the open end of the pipe as the “right end”). The slot does not need to be deep, just a couple of hundredths and just wide enough to hold the hose clamp in place. To make this recess, place the left end of the PVC pipe in your chuck, and then take the stepped jamb chuck you just made, place it on a Live Tailstock Chuck Adapter (available from Amazon or Penn State Industries $40), and snug it into the right end of the pipe and cut away. If you are making several egg chucks, now is the time to cut the clamp recess on each piece of pipe. Failure to use the jamb chuck will probably result in the PVC pipe flying from your scroll chuck while attempting to cut the recess; never a good thing.

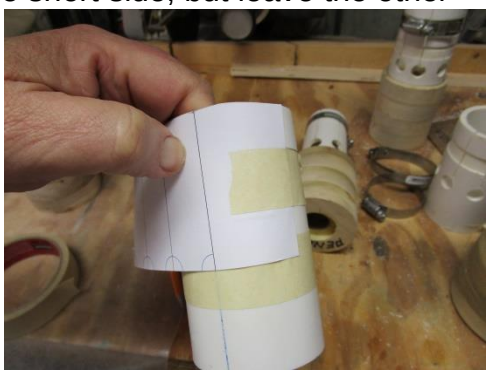


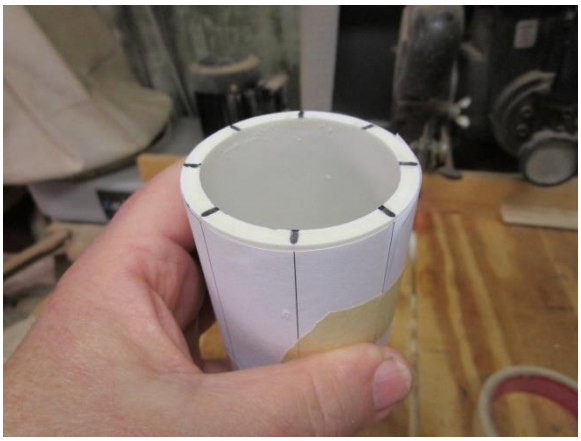
Place this stepped chuck aside, and we will get on with the actual Egg Chuck blocks. Mount a tapped block on your lathe and place a Jacobs Chuck (aka: drill chuck) in your tailstock. Now depending on whether you are making a 1 1/2" chuck or a 2” chuck, take a 2 3/8” or 1 7/8” hole saw and mount it in the Jacobs chuck; we are going to cut a hole in the chuck to mount the PVC. Make sure to have a good grip on the Jacobs chuck while drilling. Rotate the tailstock wheel and drill a hole in the chuck, about 3/4" deep, retracting the hole saw occasionally to eject the saw dust. When you reach the proper depth, back out the hole saw and remove the Jacobs chuck. Dry fit the PVC into the hole; it won’t fit, because the PVC is thicker than the metal in the hole saw; you will need to widen the inside of the hole just a bit (My PVC pipe has 3/16” walls, so the outer diameter of the pipe is 2” + 3/16” + 3/16”, or 2 3/8”, which is why I use a 2 3/8” hole saw for the larger eggs, but measure your PVC just to make sure). Use a parting tool to widen the hole, and check your work



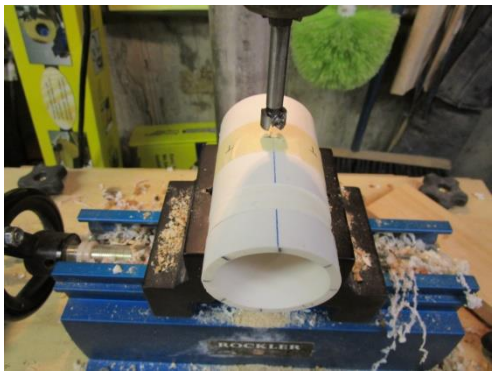
frequently to avoid making the slot too wide. Yes, you could do all this without a hole saw, using just a parting tool, but I have hole saws and they do make the job easier.

Now it is time to cut the holes and fingers into the PVC pipe. At the end of this document is a template to help you do so. For larger eggs (2” PVC pipe), cut out the eight segment template, and for smaller eggs (1 1/2" PVC pipe) cut out the six segment template. When cutting, cut both long sides and one short side, but leave the other short side intact to the edge of the page. Wrap a piece of masking tape around the pipe, centered about 2 1/2” from the right end of the pipe (this dimension is not critical). Now tape the intact end of the template to the pipe, such that the end of the template without the semi-circles is at the right edge of the pipe, wrap the template around the pipe, and tape the other end. What you now have is a template for marking the holes and cuts needed to make the PVC part of the chuck.



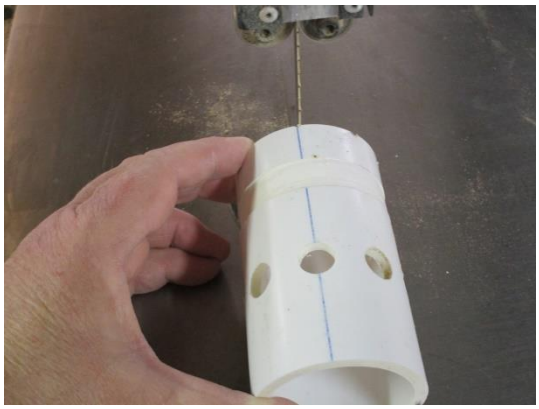


Looking at the right end of the chuck, you will see lines running down the template. On the right end of the PVC, mark where these lines go, so that we know where to cut the equally spaced fingers. Now at the left end of the template you will see six or eight semi-circles, so mark the centers onto the masking tape so you know where to drill the holes for the fingers. You can now discard the paper template.



Take the pipe to your drill press, and using a 1/2" Forstner bit, drill the holes into the pipe, do not try this with a standard twist bit, as it may wander. You probably want to use a V-block, a vice, or other technique to keep the pipe from rolling while drilling (my pen vice works well for me). Remove the masking tape.

Now to your band saw, cut slots in the pipe to complete the fingers. Since the slots are lined up opposite each other, you need make only 3 or 4 cuts, since each pass cuts two slots. It can be tricky to cut these slots in the right places, but that is why we made the marks on the right edge of the pipe. I have found it difficult to line up the markings at the end of the pipe to my band saw blade. What helped was to place the pipe in a vice and file small notches where I made the marks. In this way, with the saw turned off, I can find the upper and lower mark by moving the pipe until the blade falls into the notches. Then I back off the pipe slightly, turn on the saw, and cut the fingers lines into the pipe. If I had to make a lot of these, I'd probably build a sled for the band saw for this application.



For the final step, mount the wooden block on the spindle and dry fit the left end of the PVC pipe in the round hole. If all is well, remove the block and run epoxy around the left end of the pipe, and about 1/2" up around the outside and inside of the pipe. Place the pipe in the slot, and again use the stepped chuck you made earlier to snug the pipe in the block, and make sure it is reasonable centered. Let the epoxy dry for at least an hour (I let it dry overnight). When dry, place a hose clamp in the slot, insert an egg, tighten and finish the end.

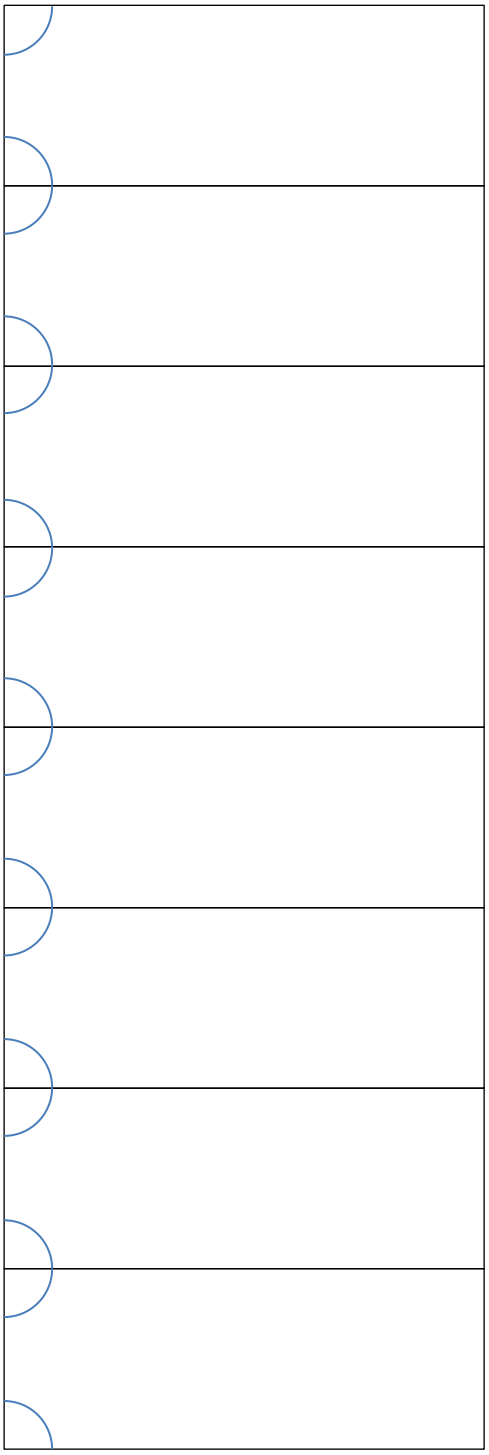
When you place an egg in the chuck, tighten the clamp snugly, but not overly tight. The egg probably will not be exactly centered in the chuck. If your lathe has variable speed, turn it to the lowest value and note where the egg needs to be moved, then shift the position and try again until it is centered. Then tighten the clamp, cut, sand and finish accordingly.

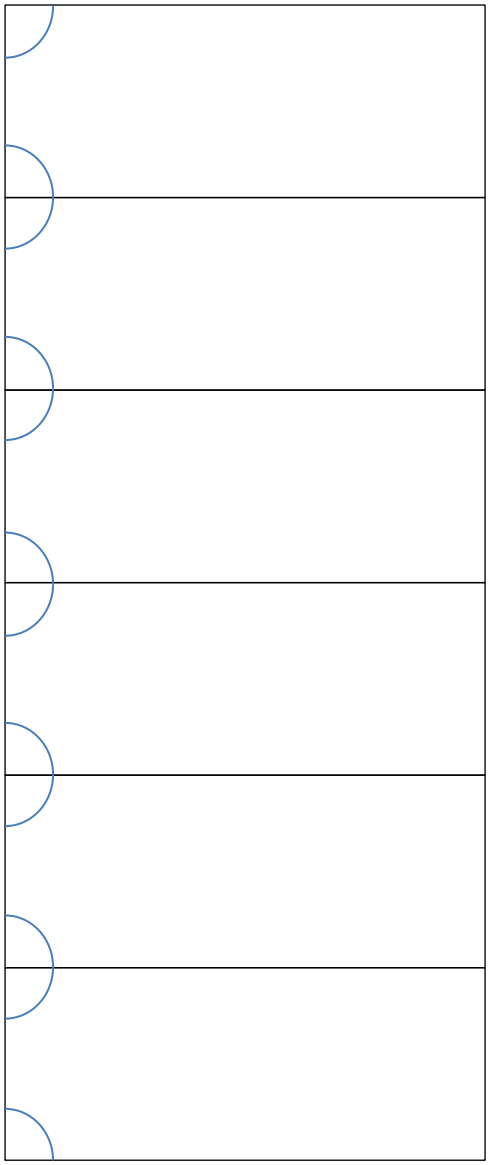
This chuck works well for me, but having that hose clamp spinning at 2000 RPM just inches from my fingers can be intimidating. If you feel uncomfortable with the operation, then don't do it. However, you may get some comfort by covering the clamp with a wrapping of duct tape.

I have found that one chuck for each egg size is not enough. The fingers have limited travel, based on the thickness of the cuts. I eventually made secondary chucks, where the second chuck had the space between fingers enlarged with a second cut on the band saw, ever so slightly offset from the first. This gave the fingers more travel for slightly smaller eggs. Aren't you glad you made a half dozen blocks at the start of this

exercise? Alternately, you could wrap the widest part of the egg with some tape to improve the fit.

I hope this document has helped you in making an egg chuck. If you have any comments, drop me line via email, or bend my ear at a club meeting. Have fun, and be safe out there.





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