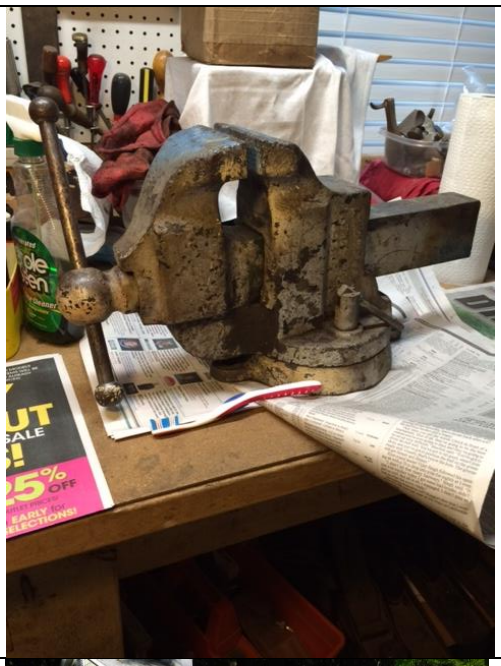
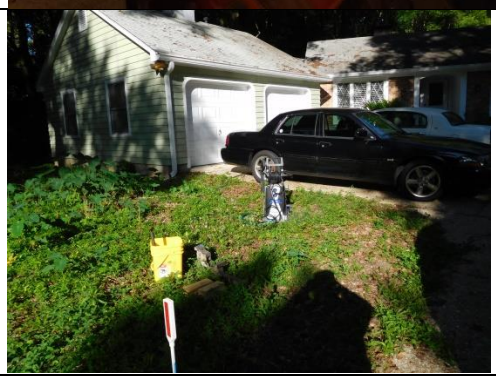
Restoration of an Athol 624 ½ Machinist Vise

August 2016

I found a large vise on eBay which was poorly listed. The three pictures were grainy and the seller wanted a local pickup. It looked like a vise that had not been overly abused and I doubted that anyone in Sarasota would make a drive over to his house to pick it up. On a whim, I sent him a note and told him I liked the vise but needed a way to get it to Tallahassee. Having no other serious buyers in the wings, he said he would try and find out what it would take to ship the vise. We had many enjoyable email conversations over a few days and settled on the terms. He agreed to pack carefully and ship.

So this is how I became the owner of an Athol 624 ½ machinists vise. That was made sometime in the 1920s. The jaws are 4" wide and the vise weighs about 64 pounds. I could see that the FedEx lady was having a struggle as she came up the driveway with her handtruck. I had her drop the heavy box in the garage. She said that she was unable to lift it and had to slide it on the floor. I followed her lead and kicked it gently across the floor to the workbench. The seller packed the vise on its side using old tee shirts and lots of newspaper. It arrived undamaged.

I unpacked the vise on the floor and somehow managed to get it up on the workbench. It was as greasy as a summertime ham and was covered in paint. At least all the junk and gunk kept the rust away. I disassembled the vise into its greasy subsections. It was a real mess and was hard to deal with pieces that were so large and heavy. I decided that the best way to get it clean was to pressure wash it.	
So I took the main pieces out into the yard for a nice washing.	

I used some pressure treated post cut offs to keep things off the dirt. Never throw away cutoffs. You never know when they will come in handy. Here is the greasy leadscrew ready for a spritz.	
Here is the static base getting clean. The silver paint came off to reveal a blue base.	
I left all of the wet parts on the corner of the driveway in the north Florida August sun. After about twenty minutes, they were almost too hot to touch.	
Then all the parts came inside to cool off on the kitchen table. You can see the Rio Olympics on the tv. Underneath the multiple coats of paint, I can see a black japan finish base. This black japan finish, which was common on Model T Fords, was also a common industrial finish of the early twentieth century. Japan finish (asphaltum, linseed oil and turpentine) made a durable finish. It was sprayed or brushed on and baked in an oven. This finish was popular for industrial goods because the paints of the day took weeks to dry, where japan finishes could be dried in ovens in only an hour or two.	
I mocked up the vise parts for some progress shots. I wiped them with Simple Green to remove more grease. I have been scraping the large surfaces with a pocket knife and have been using a Dremel tool with a brass brush to clean out the detail areas.	

There were a few small casting defects and I ground them off with a grinding wheel in the Dremel.

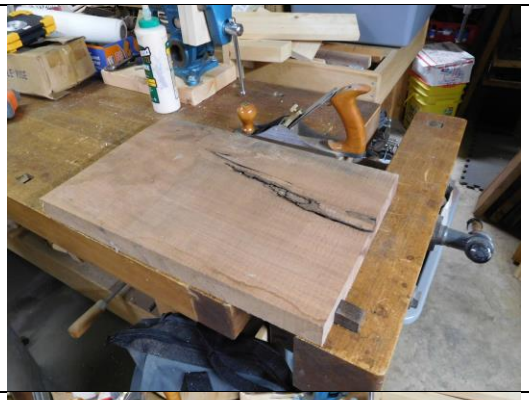
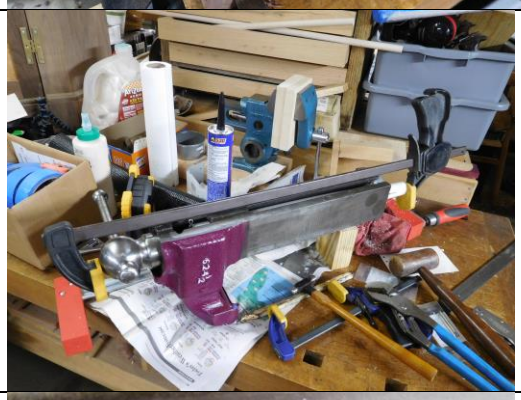
Once the base was clean, I brushed it with BLO and set it aside to dry. It will get a coat of Rustoleum primer next week.

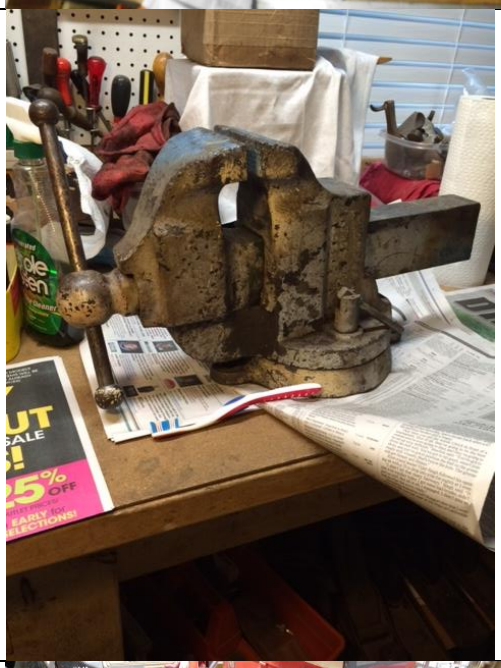
The leadscrew is dirty but in nice condition otherwise. It just needs a little cleaning and polishing.

I have a deburring wheel on a 6” grinder and used it to polish the leadscrew ball and handle. It looks spanking new.

Meanwhile, the vise body has been stripped and is ready for a coat of BLO (Boiled Linseed Oil and turpentine). I use a 75-25 mixture and apply it with a brush. After it soaks in for a few hours, I wipe off the residue. Blo seals the porous cast iron and keeps it from rusting.

It takes about a week to fully dry. After that time, the vise is ready for use or for painting.

Here is the walnut base being prepared for the vise. I find that mounting vises to wooden bases is easier and gives me more flexibility.	
This 6/4 walnut is rough and needs a little help from the handplanes.	
The Athol leadscrew is kept under tension with a spring to prevent backlash. This spring is held in place by some washers at each end with a cotter pin at the back end. Tensioning the spring and inserting the cotter pin is a real challenge. I forced the rear washer forward using a split piece of PVC pipe and a clamp.	
Here is a picture of the cotter pin in place. It cannot be driven home because the exit hole is covered by the washer.	

I removed the PVC pipe and used a piece of flat stock steel to coax the washer forward. It took awhile to clean out the PVC pipe chaff.	
Here is a picture of the underside of the cotter pin after it was bent into place.	
Remember this greasy mess from early summer? Well, it has undergone quite a transformation.	
The cleanup began with the pressure washer and finished with some bright purple paint. Meet Barney, my new shop mascot. He is ready to go to work.	

I touched up the raised lettering with white paint applied with a makeup sponge.