

----- *CRW Presents* -----
Fire Pistons



- ***Presenter --- Jack Fitzpatrick***

History of the fire piston:

- Fire piston was invented in 1745 by Abbe Augustin Ruffo. The Fire Piston was patented in 1807 simultaneously in both England and France. Fire pistons, or fire syringes as they were called then, were popular household tools throughout Europe during the early nineteenth century until the [safety match](#) was invented in 1844.

Operation of the piston:

- Piston is quickly rammed into the cylinder causes the interior temperature to rise sharply to **260°C (500°F)**. Cotton fibers for example combust at **235 °C (455 °F)** and will light in fire pistons.
- The piston has a handle on the end to allow a firm grip to be applied to it, or a large enough surface area to strike it sharply without causing pain while the cylinder is braced against a hard surface, and it can be completely withdrawn from the cylinder. The piston shaft generally has a notch or recess on or in its face, into which a piece of tinder is placed.
- Fire pistons have a [compression ratio](#) of about 25 to 1.

Things Needed for your project.

Body 2" x 2" x 12" - Wooden block

Piston Rod ½" x ½" x 6" - Wooden block

O Rings

Cork 1/16" sheet sticky back - Michaels or Hobby Lobby

Drill Bits :

23/64" Drill Bit Normal (for the cylinder hole)

25/64" Drill Bit Normal (for lanyard hole)

3/16" Drill Bit Normal (for tinder hole in piston shaft)

1" Forstner bit (for tinder cap top)

¾" Forstner bit (for tinder cap inside)

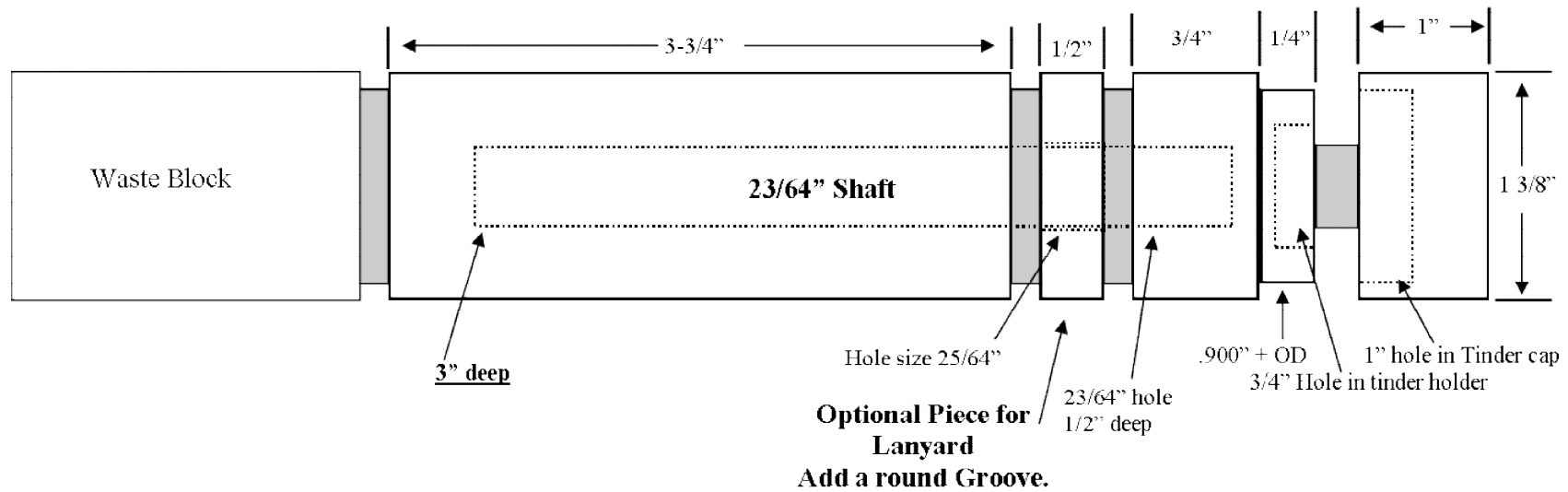
Vaseline Jelly

I use one piece of wood like this !

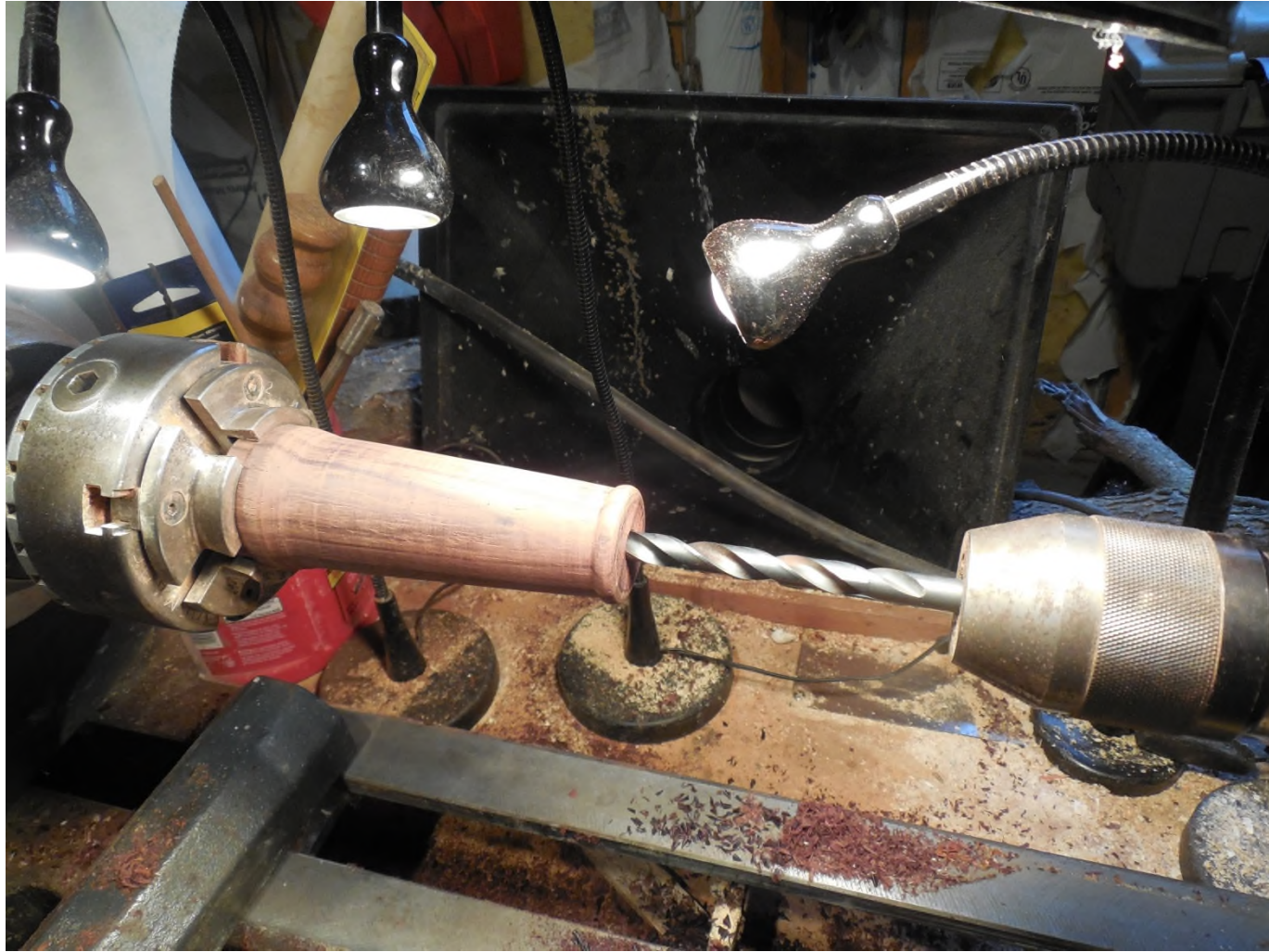


Blue Print

Fire Piston
Jack Fitzpatrick



Drilling the Piston Hole (23/64" drill bit)



Final Shaping and Cutting Off



Fitting the Shaft ($\frac{1}{2}$ " X $\frac{1}{2}$ " X 6 Pen Blank)



Two Sources of “O” Rings



Menards #36
5/16 x 3/16 x 1/16

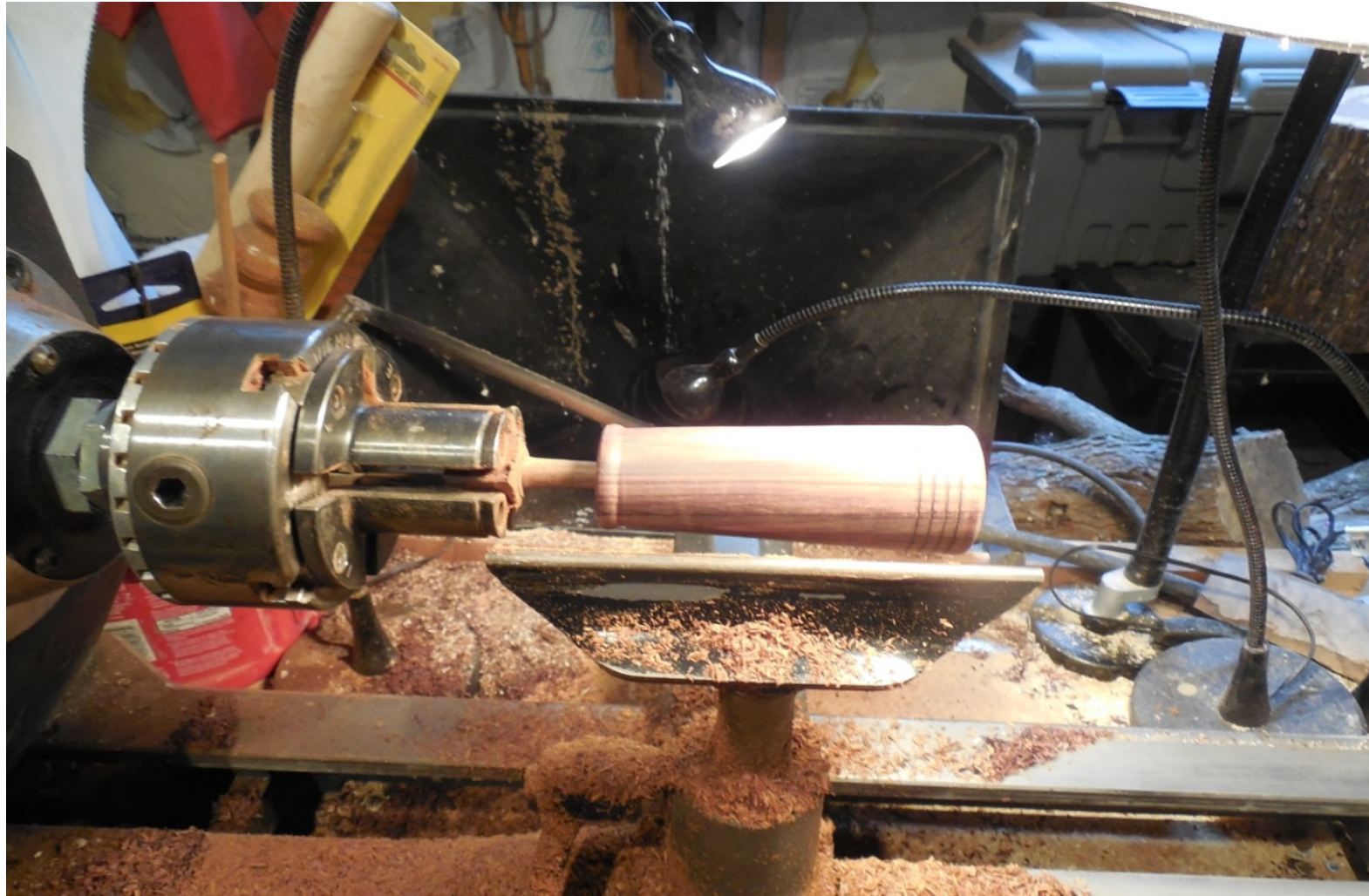
Hardware Hank #7880005
5/16 x 3/16 x 1/16

Cut O Ring Groove And Fit It



Use repeated shallow cuts and creep up the on fit !!
This is where the small hole in end keeps you on center for even depth in the groove.

Fitting the “O” Ring



Drilling the Tinder Pocket

3/16" Drill bit x 1/8" deep.



Basic Piston or Piston with options

Like a Tinder cap and/or Lanyard

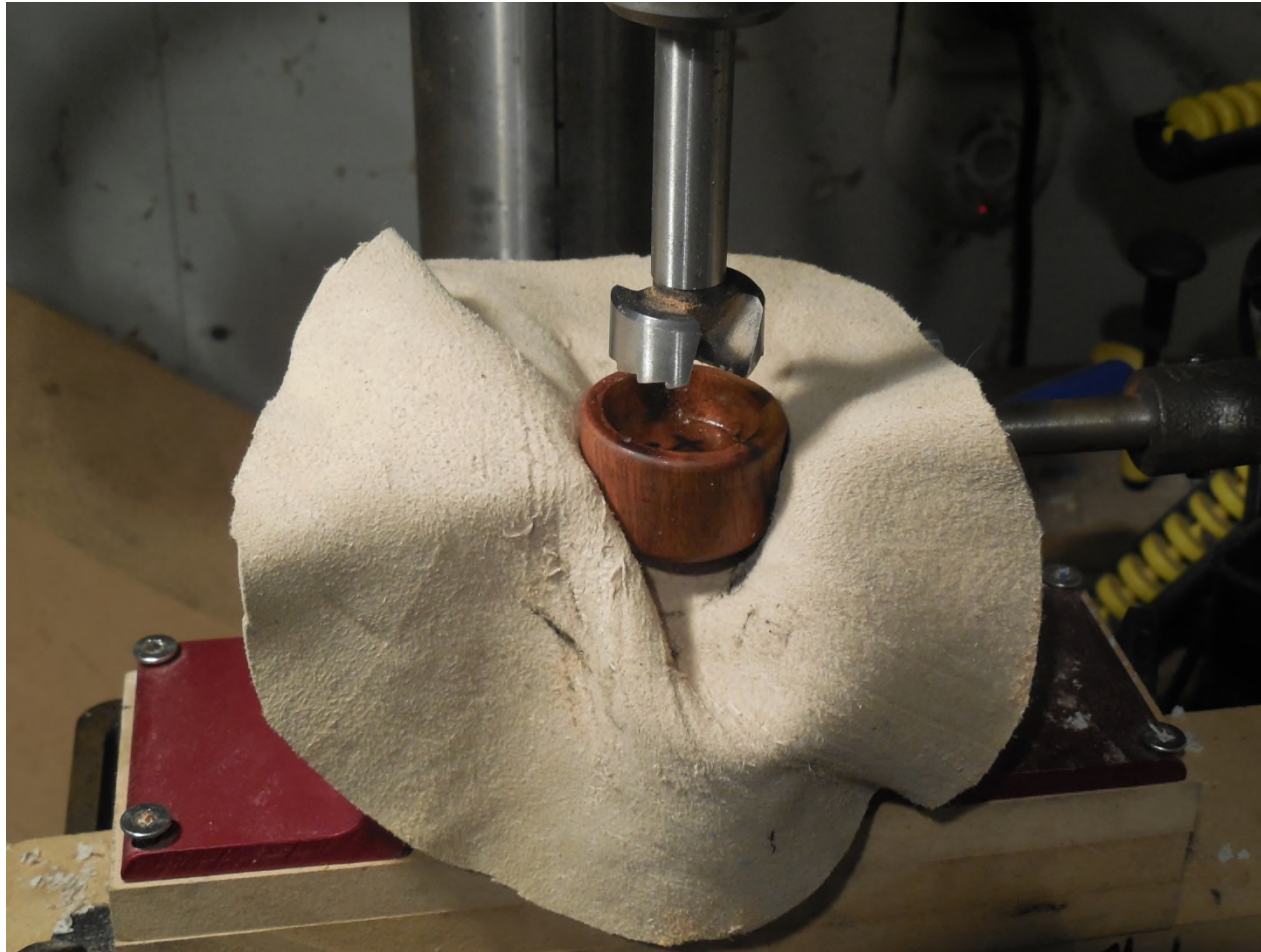


Tinder Cap Holder $\frac{3}{4}$ " hole (Cork will be added for sealing)



This could be done on the Lath. I like my drill press.

**Tinder Holder Cap 1"hole
(I will hand sand to fit on cork)**



Setting the Shaft Length



Correct Length for Piston and Cap



Gluing the Piston into the Cap



Clean surface with alcohol and use CA Glue.

Add a finish to completed Fire Piston



Different Options



A Different Type of Wood



Mahogany



Tinder Storage in Cap



Commercial Aluminum Fire piston



The kid's love these around the Campfire !



Char Cloth Construction



Monks Cloth (100% Cotton)



Shred the Monks Cloth



**Fill a Lidded can $\frac{3}{4}$ full and
put $\frac{1}{16}$ " hole in the top**



**Put the top on the can and
you are ready for the firing.**



After firing ***do not open*** until
completely cold !!!!!

This will be your finished Char Cloth.



Store your tinder in air tight container.



Test your Fire Piston



If you do not get a “Glowing Ember”

A small amount of Vaseline Jelly on the O-ring will usually fix your problem.

If this does not work you will need to add a second O-ring for a tighter seal. This may mean reworking the o-ring grove slightly.

This completes the Fire Piston Demonstration.
If there are no additional questions, Thanks for your time.



Brought to your by Jack Fitzpatrick Coulee region Wood turners Lacrosse. WI