

# Blacksmithing Paper Towel Holder Workshop



# Outcomes

1. Heat metal
2. Draw out metal
3. Bend metal

# We will cover

- **Safety Equipment**
- **Tongs**
- **Hammers**
- **Drawing out**
- **Bending**

# Notice

Protect your own safety.

You are responsible for verifying all information related to safety and protection measures.

You are responsible for damage to equipment and facilities.

(I believe that I am giving you accurate information but, *don't take my word for it. Independently verify for yourself.*)

# Blacksmithing

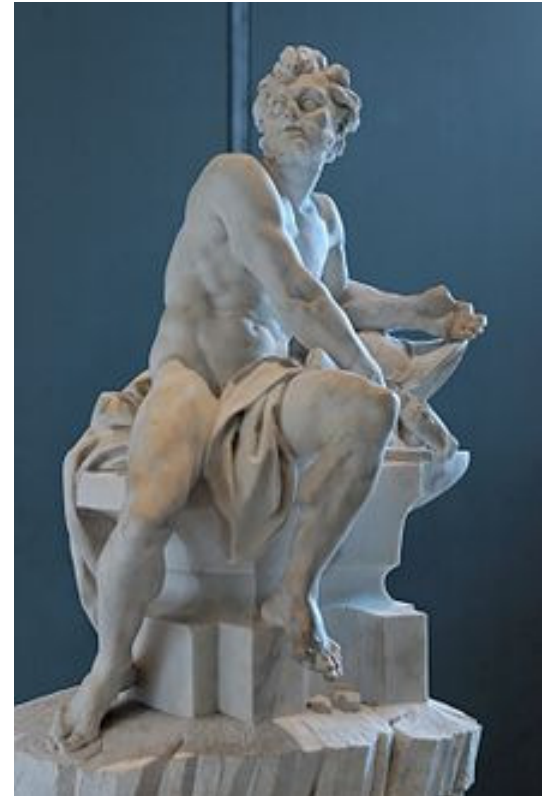
Forging objects from iron by hammering

# Blacksmithing

Is a very old art form.  
From Hephaestus the Greek god of  
blacksmiths and metalworkers  
to the Roman god Vulcan.

You will recognize same tools used  
thousands of years ago.  
Hammer, Anvil, and Tongs.

Oldest evidence dates to more  
than 5,000 BC (7,000 years  
ago)



# Forge

A furnace, usually gas or coal, for heating metal making it easier to work. Typical temperatures inside the forge are 1,500° F to 2,000° F.

# Safety gear

Protection from heat

Safety Goggles or Face Shield – Eye Protection

Flying sparks, scale, flying tool shards

Gloves – protects hands (wrists, forearms) from heat, sparks, etc.

Apron – protects clothes from flying sparks and scale

And, Keep a Fire Extinguisher handy and know where additional extinguishers are located.



# Blacksmith Space

Flamable objects (wood shavings, rags, fluids, leaves) in the Blacksmith Shop area are subject to having hot sparks/scale/metal set them on fire.

# Galvanize/Platings

Don't Heat Galvanized or Zinc plated metal. The fumes are very dangerous (Zinc Flu).

Cadmium and other platings are dangerous as well

Pot Metal (is a Zinc alloy). Avoid.

# Protecting Others

Forging metal (pounding on it on an anvil) produces very hot flying sparks and scale.

Let people around you know what is going on.  
i.e. "Hot metal – coming through !"

# Temperatures

## Steel Heat/Colour Chart

Colour	C	F
Faint Red	600	1112
Dark Red	700	1292
Cherry Red	800	1472
Dull Orange	900	1652
Orange	950	1742
Lemon Yellow	1000	1832
Yellow	1050	1922
Bright Yellow	1100	2012
White	1200	2192
Glowing White	1300	2372

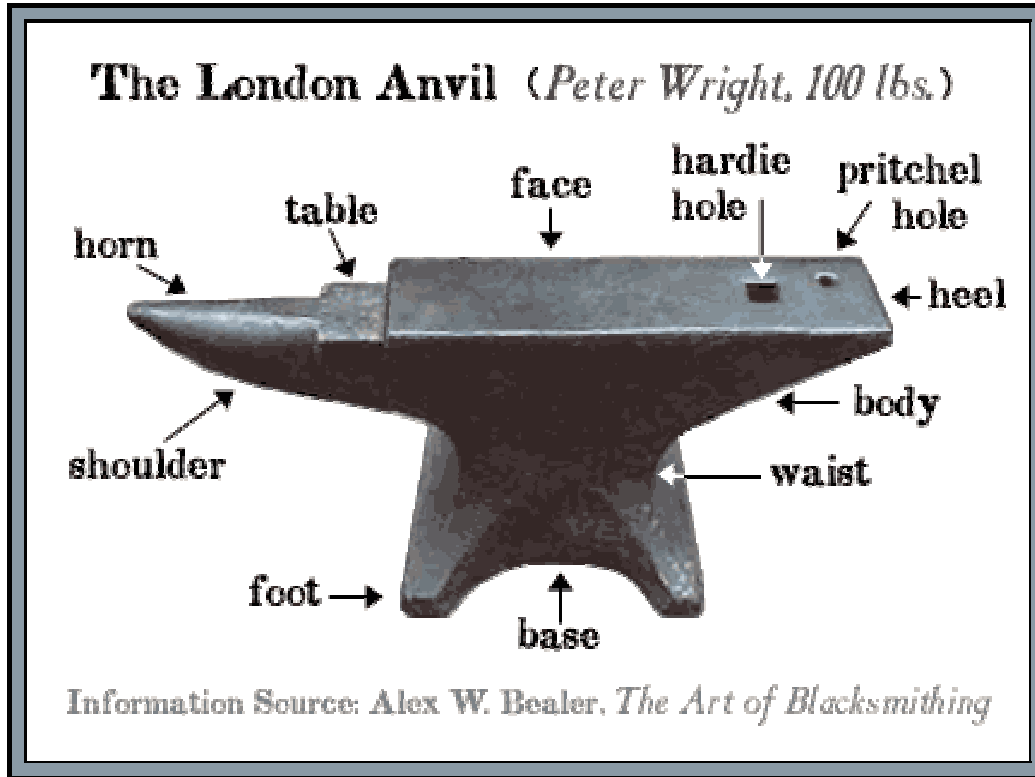
# Anvil

An anvil is a metalworking tool consisting of a large block of metal (usually forged or cast steel), with a flattened top surface, upon which another object is struck (or "worked").

Anvils are as massive as is practical, because the higher their inertia, the more efficiently they cause the energy of striking tools to be transferred to the work piece. In most cases the anvil is used as a forging tool. Before the advent of modern welding technology, it was a primary tool of metal workers.

(Wikipedia)

# Anvil



# Leg Vise

Leg vises, which are attached to a bench but also supported from the ground so as to be stable under the very heavy use imposed by a blacksmith's work.



# Hammers

Weight

Usually between 1 and 3 pounds (close to 2 most common)

Types (most common usage)

Ball Peen



Cross Peen



Straight Peen



Rounding





# Hammers

Swinging a hammer

Stance

Chest Open (burning lots of energy, need oxygen)

Full arm movement

Hit it like you mean it,

but, let the hammer do the work – just get it going.

(gravity is your friend)

Aim – look at where you want the hammer to hit

Practice

# Tongs

Used to hold hot metal

Flat Jaw



Wolf Jaw



Duck Bill



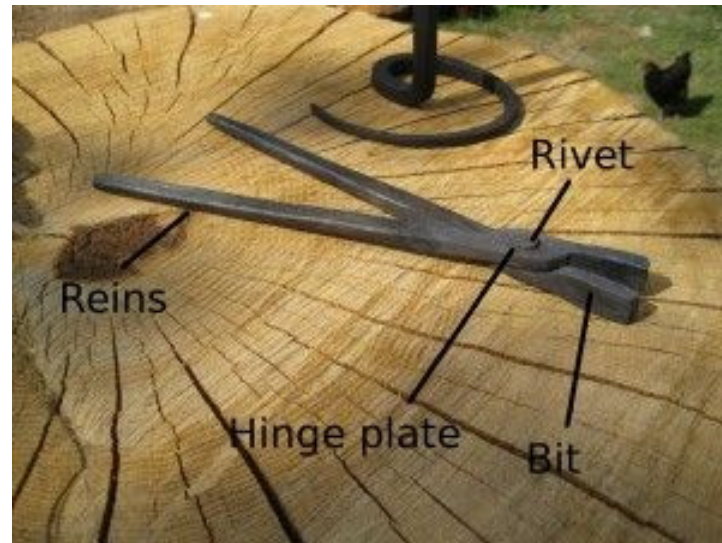
Bolt



Box



Many, many others



# Twisting Wrench



Used to Twist Metal.

Center section adjustable

2 handles make it easier to twist a straight section of metal and keep it straight.

# Stuff

Slack Bucket/Tub – a bucket/tub of water for quenching (cooling) metal or tools

Annealing Bucket – a bucket of vermiculite or ash into which hot metal is placed so that it cools very slowly.

Oil Quench – container of special quenching oil used to harden high carbon steel. (May also use air, water, or brine – depending on the type of steel.)

Don't strike the Anvil directly with the hammer. Striking two hardened surfaces together may cause one to fracture.

# Drawing out

Lengthening a section of metal

Hammer on the flat, one side then the other (rotate 90° )

Metal will elongate but remain square in cross section.

Can be done on the face of the Anvil

Can use flat or rounding hammer

Can use cross peen to draw out faster

Can also be done on the horn of the anvil

# Paper Towel Holder



# Paper Towel Holder

Start with a length of 3/8 round bar

Heat and flatten one end

Heat and flatten attachment screw locations

Draw out and curl other end

Heat and bend to shape

Adjust and refine shape

Don't forget to drill the screw holes

# Paper Towel Holder

Video/Demo



# Please ask Questions

If you are not sure – Ask

Stewards are here to help you  
(but not to do the work for you)

There are special techniques and materials for  
special circumstances.

# Biggest problems

Metal not hot enough

Metal too hot

Not hitting where you aim

Not hitting hard enough

Not working the full heat of the metal

Picking up *hot* parts

Be Safe

Be Safe.

Be Careful.