Anvil

A basic tool, a block with a hard surface on which material is struck. The block is as massive as is practical, because the higher the inertia of the anvil, the more efficiently it causes the energy of the striking tool to be transferred to the work piece.

Parts of an anvil:

Face – flat main working surface with even edges that have a 3/8 radius from the horn decreasing to 1/64 radius at the heel. Should be thumb knuckle height. Should be of a height that allows for a flat hammer blow at the end of swing.

Horn or bick – Conical projection used to form various round shapes, is made of softer material. Conical projection used for bending of materials as well as a die for forging

Step – used to straighten bars or held hold material in place, some believe it is a cutting surface. Used to pin materials or as an unsupported area to bend while working

Heel – the end with the hardy and pritchel hole used for scrolling and other operations where the material can come under the face

Hardy hole – the square hole used to hold hardy tools and for punching and bending

Pritchel hole – the round hole used for punching or bending and sometimes holds a second tool or hold down

Basic Hammer Faces

Flat Face – Most common face used for forging, i.e. moving material, planishing

Rounding – Common blacksmith hammer with one flat, one round end. Allows you to draw out material faster. Round faces do the same functions as flat faces more aggressively and can also allow for sinking of material

Cross Peen – Peen that is perpendicular to the hammer handle, good general-purpose hammer. Peen is shaped to move material directionally.

Straight peen – same, different angle to the peen

Ball Peen – useful for spreading or “peening” rivet heads, striking steel tools and light forging

Sledge Hammer – larger hammer used for striking held with two hands

Tools

Tongs – used to hold hot metal when working on it, classified by the shape of the jaws and typically are made for a particular material shape

Hand tools:

Cold Chisel – used to cut cold steel, has a steeper more reinforced cutting angle

Hot chisel – used to cut hot steel, has a more gradual peak with a thinner, less reinforced cutting edge than a cold chisel

Center punch – used to mark steel, has a sharp point. A pointed tool used to create reference marks or to center a drill bit

Top Tool – a tool that can be held and struck for more precise movement of material, including punching, slitting, plan

Fuller – tools that create a depression or groove. Can be used in pairs with a bottom and top fuller

Swages –Tools intended to bolster material or impart specific shapes. Can be handled, a hardy tool, or stand-alone tooling

Jig or Form – An aid to improve efficiency allowing one to make multiples of specific forms and shapes

Fire

Reducing Fire – a fire that consumes all the oxygen supplied by the blast. Has a compact bed of live coals, banked with ample fuel to maintain a constant bed of coals.
Oxidizing fire –more oxygen is being supplied than is needed allowing the excess oxygen to contact with the iron or steel being heated. This causes scale and very rapid oxidation (burning) of the metal. It is better to heat the metal slowly in a reducing fire.

Coal Forge

Pan – 3-4 inches deep with a clinker breaker and ash dump at the bottom
Blower – blow air into the firepot via the Tuyere; can be hand crank or electric
Tuyere - French term for the pipe through which air can be forced into the fire. It is at the bottom of the fire-pot at the terminus of the blast pipe and forms a nozzle for the distribution of the air blast
Clinker breaker – at the bottom of the fire pot; a lever turns it to break up clinkers
Ash dump –to empty ash and clinker that collects in the Tuyer which will block air flow.
Bituminous coal – coal that is soft and crumbles easily in the hand, will coke readily and be relatively free from Sulphur and other impurities. Burns at 10.5 to 13,000 BTU/lb
Coke – charred, partially burned coal in which the Sulphur and other impurities have been burned out so becomes pure carbon.
Clinkers – Sand or silica in coal and slag from the oxidization of metal create a glassy, non-burnable substance that can clog up the fire and prevent air from flowing

Post Vise or Leg vise – This is a floor standing vise with forged steel jaws that are hinged so that they pivot on an arc. More durable than a table vise and the Leg provides stability as the force of pressure is applied to the floor. It is used to hold material for bending, twisting, or hitting
Slack tub – tub of water for quenching and cooling materials and tools as needed during work
Forging Temperature: The temperature of the metal is visible by noting the color of the metal. It is important to understand which maneuvers can be completed at what temperature as indicated below.

Working terms

Draw out – Stretching by hammering the heated piece over the anvil (Bright Orange to Yellow heat)
Bending - Creating a bend without changing the basic parent stock shape (cold to Bright Red)
Upsetting – Thickening the diameter of the stock in a particular section of the metal by heating then hammering the opposite end (Bright Yellow or near welding heat)
Cutting & Punching and Drifting – Create a hole that is then drifted to the desired size (Bright orange to Yellow heat; final punch at dull red)
Planishing – Method of smoothing the surface to remove hammer marks (Dull red)

Joinery

Mortise and Tenon – Process of creating a joint that will fit together by creating a tenon that fits into a hole in the corresponding piece and riveting the tenon to create joint.
Forge welding – Process of heating metal to bright yellow heat and hammering two pieces of metal together.