# FORGING EQUIPMENT

They are classified based on the principle of operation.

1. **Forging Hammer**



- The force is supplied by a falling weight of ram.
- Deformation of work piece is due to the application of the kinetic energy of the ram.

**Types of Forging Press**

**i) Mechanical board hammer:**

- It is a stroke restricted machine.
- Repeatedly the board (weight) is raised by rolls and is dropped on the die.
- Rating is in terms of weight of the ram and energy delivered.

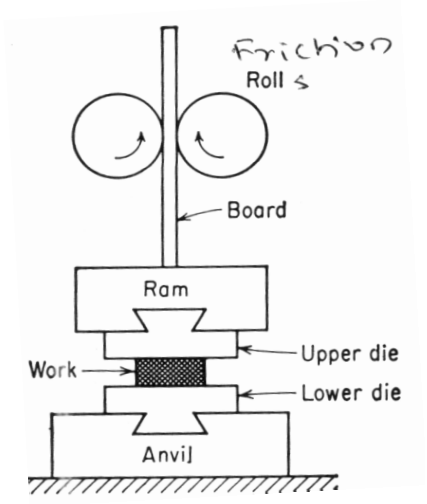


Fig. Mechanical Board Hammer

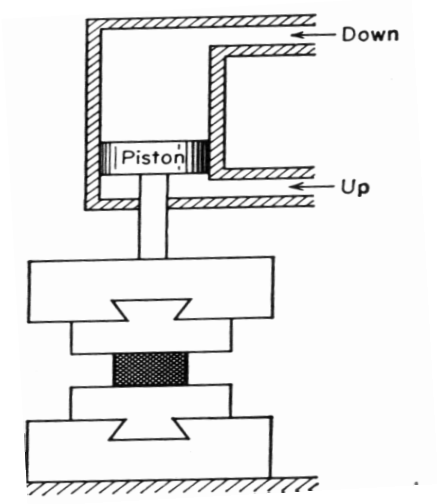


Fig. Steam Hammer

**ii) Steam Hammer (Power Hammer)** Range: 5 kN to 200 kN

- It uses steam in a piston and cylinder arrangement.
- It has greater forging capacity.
- It can produce forgings ranging from a few kgs to several tonnes.
- Preferred in closed die forging

**The total energy supplied in a blow:**

It is given by : $W=1/2mv^2 + pAH = (mg + pA)$

Where m= mass of ram

v= velocity of ram at the start of deformation

g= acceleration due to gravity

p= air/ steam pressure on ram on down stroke

A= area of ram cylinder

H= height of ram drop

**iii) Hydraulic Press:**

- It is a load restricted machine.
- It has more of squeezing action than hammering action.
- Hence dies can be smaller and have longer life than with a hammer.

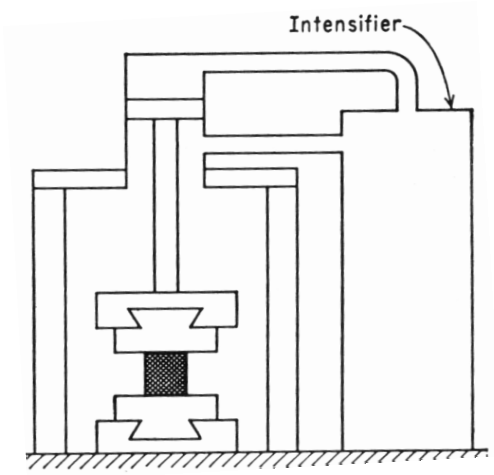


Fig. Hydraulic Press

**Features of Hydraulic Press**

- Full press load is available during the full stroke of the ram.
- Ram velocity can be controlled and varied during the stroke.
- It is a slow speed machine and hence has longer contact time and hence higher die temperatures.
- The slow squeezing action gives close tolerance on forgings.
- Initial cost is higher compared to hammers.

Source: http://elearningatria.files.wordpress.com/2013/10/mp3_unit3_forging_final.pdf