

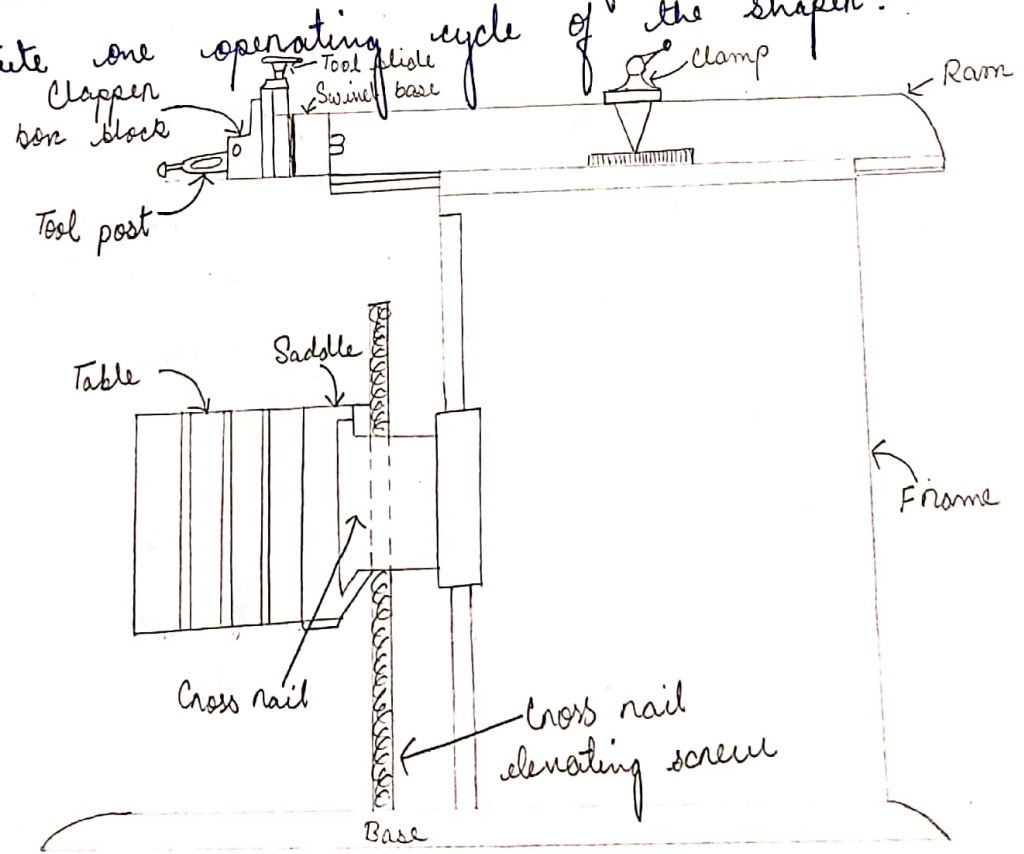
SHAPER MACHINE

Introduction

The shaper is a machine tool used primarily for —

1. Producing a flat or plane surface which may be in a horizontal, a vertical or an angular plane.
2. Making slots, grooves and key ways.
3. Producing contour of concave/convex or a combinations of these.

Working Principle :- The job is rigidly fixed on the machine table. The single point cutting tool held properly in the tool post is mounted on a reciprocating ram. The reciprocating ram moves during its forward stroke. During return, there is no cutting action and this stroke is called the idle stroke. The forward and return strokes constitute one operating cycle of the shaper.



(2)

Construction :- The main parts of the Shaper machine is Base, Body (Pillar, Frame, Column), Cross rail, Ram and tool head (Tool Post, Tool Slide, Clamper Box Block).

Base :- It is the main body of the machine. It consist all element of machine. It works as pillar for other parts. Base is made by cast iron which can take all compressive loads.

Ram :- It is the main part of the shaper machine. It holds the tools and provides the reciprocating motion to it. It is made by cast iron and move over ways on column. It is attached by the rocked arm which provide it motion in crank driven machine and if the machine is hydraulic driven it is attached by hydraulic housing.

Tool head :- It is situated at the front of the ram. Its main function is to hold the cutting tool. The tool can be adjusted on it by some of clamps.

Table :- It is the metal body attached over the frame. Its main function is to hold the work piece and vice over it. It has two T slots which used to clamp vice and work piece over it.

Clapper box :- It carries the tool holder. The main function of clapper box is to provide clearance for tool in return stroke. It prevents the cutting edge dragging the work piece while return stroke and prevent tool wear.

Column :- Column is attached to the base. It provides the housing for the crank slider mechanism. The slide ways are attached upper section of column which provide path for ram motion. ^③

Cross wave :- It consist vertical and horizontal table sideways which allow the motion of table. It is attach with some cross movement mechanism.

Stroke adjuster :- It is attached below the table. It is used to control the stroke length which further controls the ram movement.

Table supports :- These are attached front side of the table and used to support the weight of table during working.

Types of Shaper :- Shapers can classified into many types based on several criteria :-

1) Based on the types of driving mechanism used

a) Crank and slotted lever driving mechanism types.

b) Whitworth quick return driving mechanism types.

c) Hydraulic driving mechanism types.

2) Based on the table design

a) Plain Shaper

b) Universal Shaper

3) Based on the position of the reciprocating ram used.

a) Horizontal shaping machine (Most common type of shaper used).