

DESIGN AND FABRICATION OF CAM OPERATED RECIPROCATING VICE

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Abstract - This project deals with the design and fabrication of “CAM OPERATED RECIPROCATING VICE” which works in the principle of eccentric cam mechanism. The main features of the cam vice are promotes mass production, can hold irregular jobs, more rigidity, reduces fatigue. Cam was designed to hold the job at high pressure. The other parts were designed to hold the job in rigid condition. Cam vice is suitable for mass production. It is possible to hold irregular components also, and similar components can be very quickly.

Key Words: cam vice, eccentric cam mechanism, ect.,

1.INTRODUCTION

The project work subject is one, in which actually we are leaning the theoretical concepts in practical way. Also the practical Experience is one of the aims of this subject. For a developing industry these operating performed and the tool produced should have its minimum possible production cost, then only the industry runs profitably. There are a number of units having used in industries for various purposes.

A vise or vice (see American and British English spelling differences) is a mechanical screw apparatus used for holding or clamping a work piece to allow work to be performed on it with tools such as saws, planes, drills, mills, screwdrivers, sandpaper, etc.

Vises usually have one fixed jaw and another, parallel, jaw which is moved towards or away from the fixed jaw by the screw.

Sprocket chain system was used in leg steering system. A 98cc Kinetic Honda Engine was used as the power source and the engine was placed towards the rear end of the vehicle. Single Rated and double rated suspension spring was used in the front and rear drive shaft respectively

Cam vise is one of the clamping devices used to hold the job in rigid condition. Cam vice is operated by eccentric cam mechanism. There is a cam lever. The job can be held tightly in between the jaw. In this , first the job is place in between jaws, and movable jaw is adjusting the screw rod to maintain according to the eccentricity of the cam with cam profile.

2. LITERATURE SURVEY

Without qualification, "vise" usually refers to a bench vise with flat, parallel jaws, attached to a workbench.

- A woodworker's bench vise is a more or less integral part of the bench.
- An engineer's bench vise is bolted onto the top of the bench.

Other kinds of vise include:

- hand vises (hand-held),
- Machine vises - drill vises (lie flat on a drill press bed). Vises of the same general form are used also on milling machines and grinding machines.

- Compound slide vises are more complex machine vises. They allow speed and precision in the placement of the work.

- Cross vises, which can be adjusted using lead screws in the X and Y axes; these are useful if many holes need to be drilled in the same workpiece using a drill press. Compare router table.

- off-center vises,
- angle vises,
- sine vises, which use solving triangles and gauge blocks to set up a highly accurate angle,
- rotary vises,
- die makers' vises,
- table vises,
- pin vises (for holding thin, long cylindrical objects by one end),
- jewelers' vises and by contrast,

- 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.

3. DESCRIPTION OF EQUIPMENTS

- i. Vice
- ii. Swivel

i. VICE:

- A vise is a mechanical screw apparatus used for holding or clamping a work piece to allow work to be performed on it with tools such as saws, planes, drills, mills, screwdrivers, sandpaper, etc. Vises usually have one fixed jaw and another, parallel, jaw which is moved towards or away from the fixed jaw by the screw.

- For metalworking, the jaws are made of metal which may be hardened steel with a coarse gripping finish. Quick change removable soft jaws are being used more frequently to accommodate fast change-over on set-ups. They are also kept for use where appropriate, to protect the work from damage.

- Metalworking bench vises, known as engineers' or fitters' vises, are bolted onto the top surface of the bench with the face of the fixed jaws just forward of the front edge of the bench. The bench height should be such that the top of the vise jaws is at or just below the elbow height of the user when standing upright. Where several people use the one vise, this is a good guide.

- The nut in which the screw turns may be split so that, by means of a lever, it can be removed from the screw and the screw and moveable jaw quickly slid into a suitable position at which point the nut is again closed onto the screw. Many fitters prefer to use the greater precision available from a plain screw vise. The vise may include other features such as a small anvil on the back of its body.

- Vise screws are usually either of an Acme thread form or a buttress thread. Those with a quick-release nut use a buttress thread.

ii. SWIVEL:

- A swivel is a connection that allows the connected object, such as a gun or chair to rotate clockwise and/or anti clockwise. A common design for a swivel is a cylindrical rod that can turn freely within a support structure. The rod is usually prevented from slipping out by a nut, washer or thickening of the rod. The device can be attached to the ends of the rod or the center. Another common design is cam that is able to rotate within a support structure. The device is attached to the cam. A third design is a cylindrical rod that has a rod that is slightly smaller than its inside diameter inside of it. They are prevented from coming apart by movable jaws. The device may be attached to movable jaws.

4. DRAWING FOR CAM OPERATED RECIPROCATING VICE

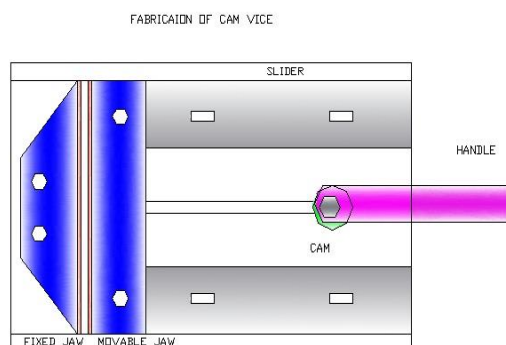


Fig -1: Fabrication of cam vice

WORKING PRINCIPLE

- The cam vice is useful for mass production. It reduces labour fatigue and setting time.
- To hold the job, in the fixture, first the job to be hold is placed in between jaws. The screw rod is adjusted, to maintain a gap equal to the eccentricity in between job and the movable jaw. When the cam lever at the top of the cam assembly is operated, movable jaw moves forward and holds the hob against
- A swivel joint for a shaft is often a bearing support in between which at least one of the pipes is curved, often at an angle of 45 or 90 degrees.

5. CONCLUSION

- The project carried out by us made an impressing task in the field of small and large scale industries. It is very usefully for workers to work this machine.
- This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task which has also been provided.

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