

Research Paper on 4-Way Hacksaw Machine

Shubham Ghule¹ Tushar Hivare² Abhijit Jagatap³ Hrishikesh Kharade⁴ Prof. Narale P. D.⁵

^{1,2,3,4}Student ⁵Professor
^{1,2,3,4,5}SBPCOE, Indapur, India

Abstract— There are many industrial applications where round bar or square bars are required to be operated on different machines to make machine components such as Shafts, Bolts, Screws etc. This needs more and more number of pieces to be cut for mass production of those components. To achieve this goal the Multi-way power hacksaw machine is developed. This paper proposes the model of multi-way hacksaw machine which is able to cut four pieces simultaneously without any jerk and minimum vibrations. The model implies conversion of rotary motion into the reciprocating motion for proper working of hacksaw. This model overcomes the limitations of conventional hacksaw machines which can cut single piece at a time. It is able to cut metal bars of different materials at same time and will be helpful in many industries due its compatibility, reliability and efficiency.

Key words: 4-Way Hacksaw Machine

I. INTRODUCTION

The saw was one of the first great innovations of the Metal Age. It was developed with smelted copper, from which a blade could be cast. Many of the early copper saws have the general appearance of large meat-carving knives. Egyptian illustrations from about 1500 BC onward show the saw being used to rip boards, the timber being lashed to a vertical post set into the ground.

Though there is no evidence of the type of saw used, Egyptians were able to saw hard stone. The blade, was probably toothless, and rode on an abrasive material such as moistened quartz sand. The 7 1/2-foot granite coffer still in the Great Pyramid carries saw marks.

During the Bronze Age, saws became much more widespread in woodworking. It was in this time that the modern form of the saw began to come into play. Some of the saws used resembled hacksaw blades of today.

Iron saws started to be produced in the mid-7th century BC. The Romans, added many improvements to simple saws which made them easier to work with. For example, they added a rib to the back of saws to reduce the buckling of the thin blade. Today use similar ribs to those on the ancient Roman saws.

While saws for cutting metal had been in use for many years, significant improvements in longevity and efficiency were made in the 1880s by George N. Clemson, a founder of Clemson Bros., Inc of Middletown, New York, USA, Clemson conducted tests which involved changing the dimensions, shapes of teeth, styles of set, and variable heat treatments of blades. Clemson claimed enormous improvements to the cutting ability of blades and built a major industrial operation manufacturing hacksaw blades sold under the trade name Star Hack Saw. In 1898, Clemson was granted US Patent 601947, which details various improvements in the hacksaw.

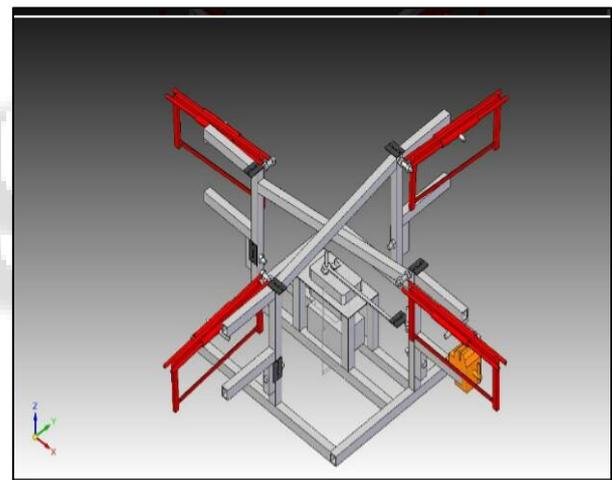
II. WORKING

FOUR WAY HACKSAW MACHINE is work on principle of GNOM ENGINE OR ROTORY IC ENGINE the rotary motion of shaft is to be convert into the reciprocating motion of hacksaw frame.

Working principle of hacksaw machine is very simple. first of all the hacksaw machine is put on ground and after that the whatever metal , wood, pvc, is cut is fixed on vice at required length, after that the electric motor is connect with electricity.

Now start the electric motor so due to that the shaft of motor and hollow disc will be rotate and also rotate the eccentric centre and link connect to it. Due to rotation of links the hacksaw frame will be reciprocate on the metal and cutting of metal is done.

III. DIAGRAM



A. Advantages

- 1) Weight of machine is less.
- 2) It reduce the work of labor.
- 3) Easy to make because of simple construction.
- 4) High production rate.
- 5) Cost is less.
- 6) Easy maintenance and maintenance cost is less.
- 7) It resist all atmospheric effects.

B. Disadvantage

- 1) Time consume more.
- 2) Speed variation is required for cutting the different metal.

IV. CONCLUSION

After studying this report we have know that how the FOUR WAY HACKSAW MACHINE will work, and knowing the construction and how mechanism work in the machine. We learnt how the theoretical design is possible in practical. Other hacksaw machine is only cut one part at one time but

this machine cut the four part at a time, this hacksaw machine has lighter weight compare to other machine. The cost of machine is less and easy to operate so it affordable for all industry.

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