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Pedal Operated Hacksaw Machine for PVC Pipes and Wood

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Abstract: *In this project work an effort has been made to design and developed model of Pedal Powered Hacksaw. The pedal powered hacksaw is a device which is used for cutting wood, plastic and metals. The basic principles of power driven hacksaw is Slider Crank Mechanism which is an inversion of four bar chain mechanism. In this mechanism, the connecting rod is directly connected to the hacksaw for the processing of cutting the wooden blocks. The hacksaw move to and fro motion when the pedal is powered, so as the rotating disc rotates. The main aim of this project is to reduce the human effort for machining various materials.*

Keywords: Pedal Powered Hacksaw, Sprocket Arrangement, Slider and Crank Mechanism

I. INTRODUCTION

Pedal power is the transfer of energy from a human source through the use of a foot pedal and crank system. This technology is most commonly used for transportation and has been used to propel bicycles for over a hundred years. Less commonly pedal power is used to power agricultural and hand tools and even to produce electricity. Some relevance includes pedal powered grinders and pedal powered water wells. Some third world development projects currently transform used bicycles into pedal powered tools for sustainable development. This project concentrates on pedal powered hacksaw machining. Pedal Powered Hacksaw (PPH) is working on Slider Crank Mechanism. The PPH is used to cut ply wood in small scales. PPH helps to obtain a less effort uniform cutting. It can be used in places where electricity is not obtainable. It is designed as a portable one which can be used for cutting in various places. The main parts of PPH are hack saw, reciprocating rod welded to the pedal of a bicycle, flywheel, sprocket and chain drive. The hack saw is connected with the reciprocating rod. An individual can generate four times more power by pedaling than by hand-cranking. At the rate of ¼ HP, continuous pedaling can be served for only short periods, approximately 10 minutes. However, pedaling at half this power can be sustained for close to 60 minutes but power capability can depend upon age. As a consequence of the brainstorming exercise, it was apparent that the primary function of pedal power one specific product was particularly useful: the bicycle. Many devices can be run right away with mechanical energy. A saw isa tool that uses a hard blade or wire with an abrasive edge to cut through softer materials. The cutting edge of a saw is either a serrated blade or an abrasive. A saw may be worked by hand, or powered by steam, water, electric or other power. An abrasive saw uses an abrasive disc or band for cutting, rather than a serrated blade. The aim of the work is to design and construct a pedaldriven hacksaw machine that will use a less effort pedaling power to produce uniform cutting of PVC pipes, metals, wood andas the same time serve as an exercising machine for fitness.

II. BACKGROUND

Pedal Powered Hacksaw Machine is a device which is used for cutting wood, plastic and metals. The basic principle of thismachine is slider crank mechanism, which is an inversion of four bar mechanism. The concept of this mechanism is that therotary motion is converted into reciprocating motion.

III. PROBLEM STATEMENT

- A major disadvantage of power hacksawing machines is that they are slower than other sawing machines.
- It is heavier in construction and cost.

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- For low cutting operations, the machine cost and construction is too high with various maintenance charges.

IV. SOLUTION OVERVIEW

- We are trying to solve the problem of slower than other but it is not solve to working fast but better than before of working so it is better working now.
- It is costly but now we get the low cost products from the store so it is now cheaper.
- Now it is free to operate without maintenance only one remaining problem that weekly has to oiling in frictional place.

V. WORKING OF SYSTEM

The Pedal Operated Hacksaw Machine consists of the pedal arrangement which rotates the crank and through it slider consistsof oscillating mechanism. The power is transmitted to the crank and slider mechanism. This mechanism is used to rotate the crank disc; the disc which is having an extended rod is connected to the sliding portion of the hacksaw directly by means of a linkage. The hacksaw is passed through the guide ways by means of maintaining the cutting axis. As the user operated the pedal,the hack saw cuts the various materials automatically with less power. The dead weight is for compressive force while the user operated the foot pedal.

VI. CONCLUSION

A low cost and simple designed pedal operated hacksaw machine is fabricated, which reduces the human effort. This simple design of conventional type can be used to fulfill in for industrial applications during power shut down scenarios. By using this model one can do cutting operation as per the requirement without the use of electricity. And save the electrical power.

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