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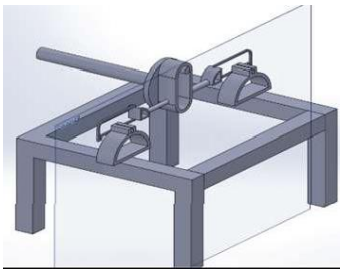
Design and Fabrication of Double Acting Hacksaw using Scotch Yoke Mechanism

Majji Prasanth Krishna, Pappala Sravan Kumar, Ommi Varaha Satyanarayana Yaswanth, Vijjapu Koti SuryaSatyanarayan

Department of Mechanical Engineering, Vignan's Institute of Information Technology,Visakhapatnam, Andhra Pradesh,India

INTRODUCTION

Many electrically power hacksaw machine saw are currently available for material cutting of bars with various requirements . These machines are precise and good for material cutting, and they have a low materialmade uptime with a variety of materials, but material cutting is done on a single work piece at time. The Scotch Yoke is a mechanism that converts a crank's rotational motion into a slider's linear motion. Thereciprocating part is connected to the spinning part by a sliding yoke with a slot that engages a pin. Thispaperisabouttoeliminatethedifficultiesfacedbyothermethods. The mainproblemsfacedbyothersystemsarethose are a traditional power hacksaw machine with a single hacksaw blade and a single hacksaw frame andare not economicallyfeasible.The main objectiveof thispaper, a suggested four-way power hacksaw machine with the capability of cutting four material pieces simultaneously will be introduced, which will outperform the current one in terms of cuttingrates.



LITERATURE REVIEW

Wilson; studied the vast literature to understand the concepts which effect the performance of the machine The concept of two-way hacksaw cutting machine mainly carried out for production-based industries.

Khan; expressed that Industries are essentially implied for generation of valuable merchandise and enterprisesat low creation cost, Machinery cost and low stock cost. Information about built up a model of a machine reach would be fit for performing diverse task all the while, and it ought to be monetarily productive. These machines can be utilized as a part of remote spots where power is customary. It is planned as a versatile one which can be utilized for cutting in different spots. It can be utilized for working on materials like thin metals, wood. A solitary stage vertical electric engine unbendingly set at the focal point of metallic establishment gave.

Linxu et al.; research about the shaft of motor rotates at 90- 100 rpm with the power 2HP. The circular disc is mounted on the shaft of motor with the help of key and key slot arrangement. It consists of pedal powered machine setup which has a simple mechanism operate with chain and sprocket arrangement.
Chaudhary; learned about the chain is put on the teeth of the haggle. The pole is mounted on platform direction.To begin with mechanical linkage is evacuated by expelling nut and screws and v belt drive boring connection. It is realized that regular power hacksaw machine can be supplanted with robotized control Hacksaw machine.

METHODOLOGY

In this project the power supply is provided to the motor and the power is transmitted to the ventured pulley which is connected to the shaft by the belt drive. Toward one side of the shaft is associated with bearing, opposite end is being joined to a roundabout circular disc, through this round plate scotch yoke system is being performed (rotatory

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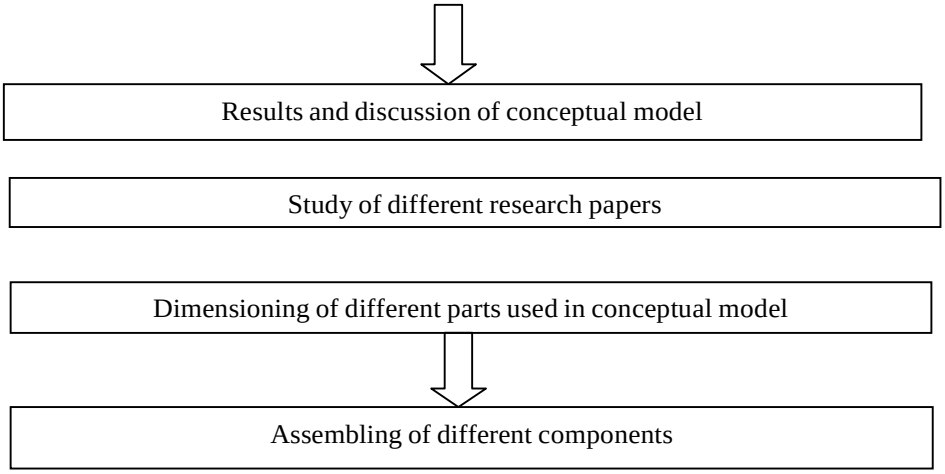
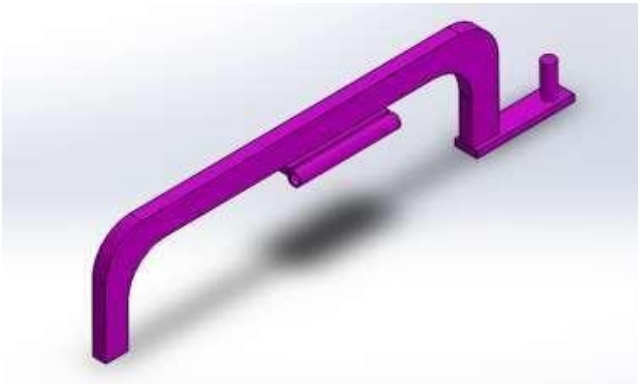
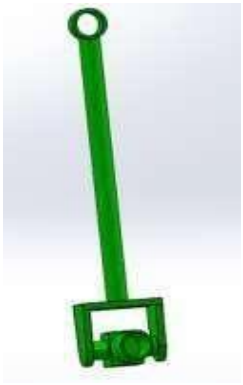
movement is changed over to reciprocating movement) and the slotted links are attached to the pin of the disc of scotch yoke mechanism and the two hacksaws are attached to the slotted links opposite to each other. A ventured pulley is arranged to the shaft which is put at the center of the base edge and a plate and scotch yoke mechanism conceived to the shaft. Furthermore, two slotted connections are put on the plate at opposite to one another.



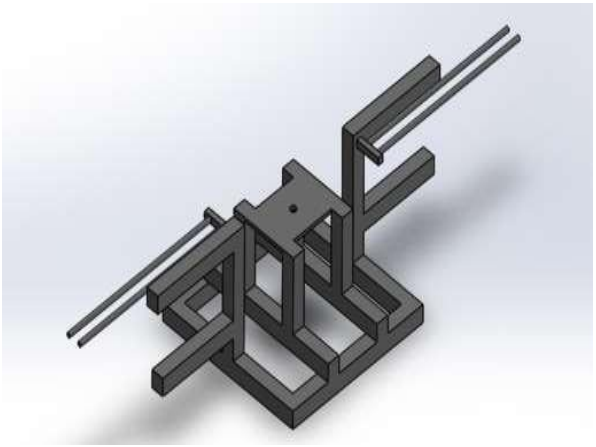
DESIGN AND MODELLING

Drawings are all carried out in **Solid Works** ,Dassualts Systems





Hacksaw Blade Connecting Rod
Frame
Components Design



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REFERENCES

[1] David Gordon Wilson "UNDERSTANDING PEDAL POWER" ISBN:0-86619-268-9 [C] 1986, Volunteers in Technical Assistance" Technical paper 51 VITA 1600 Wilson Boulevard USA.

[2] ZoebKhan , " Design and Fabrication of Human Powered Wood Cutting machine" ,International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 3 Issue: 2072– 074.

[3] Linxu, Weinan Bai, JingyuRu,Qiang Li, "Design and Implementation of the Reciprocating Pedal Powered Electricity Generating Device", Advanced Materials Research (Vol.282-283 (2011) pp 735-738