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AUTOMATIC BAR FEEDING MECHANISM FOR POWER HACKSAW MACHINE

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ABSTRACT

Nowadays, automation in the industries plays an important role. Almost all the machines are atomized. The electronic switches and servo motors are used for doing this automation process. This is one of the automation processes by using the torque motor. The bar feeding machine is our project, which is fixed with the motor and with the electronic automations. The motor controls the ms round bar in the mechanism automatically by using the electronic automations. The ms round bar can be moved in the mechanism with the regular time interval. The time interval can be determined by the keypad, which is interfaced with the controlling unit. The controlling unit will control the motor through the motor controller. This results ease in the process of feeding the bar in power hacksaw

Keywords: Power Hacksaw, Torque Motor, Controlling Unit.

I. INTRODUCTION

Automation or automatic control, is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications and vehicles with minimal or reduced human intervention. Some processes have been completely automated.

The biggest benefit of automation is that it saves labor; however, it is also used to save energy and materials and to improve quality, accuracy and precision.

The term automation, inspired by the earlier word automatic (coming from automaton), was not widely used before 1947, when Ford established an automation department. It was during this time that industry was rapidly adopting feedback controllers, which were introduced in the 1930s.

Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic devices and computers, usually in combination. Complicated systems, such as modern factories, airplanes and ships typically use all these combined technique. Nowadays almost all the manufacturing process is being automised in order to deliver the products at a faster rate.

This project is designed for accuracy while cutting ms round bar and for ease while feeding.

II. NEED OF FEEDING MECHANISM

During observation it was found that the ms round bar which is to be cut is fed by using hands .There are no proper equipments to fed the bar in the machine , the bar is rest on the bin which we can see in the picture above due to which sometimes the bar is being cut in wrong dimensions .To overcome this problems automation was needed for cutting the m/s round bar in accuracy as well to reduce human efforts and to reduce wastage of raw material .Therefore by using stands and mechanized motion the problem is solved .

PROBLEMS FACED WITHOUT AUTOMATION

- Length or size variations.
- Improper cutting.
- Wastage of raw materials.
- More time required to adjust required length.
- More machining is required on job.

III. COMPONENTS OF FEEDING MECHANISM

- **HIGH TORQUE MOTOR**

Motor specifications

Weight: 3810g	high speed: 45+/-5 rpm
low speed: 30+/-5	power: 120w

This motor is used in our bar feeding mechanism to obtain the actual feeding action of bar .

As per the specifications the motor capacity is good enough to push/feed rod in the machine by using chain and sprocket mechanism . The motor we are using has an application in automobile as a windscreen wiper motor

- **SIMPLE PUSH BUTTON**

The main function of the push button in our project is to cut off the power to the motor as soon as the bar touches the button to avoid over feeding of bar and to get the exact dimensions of bar

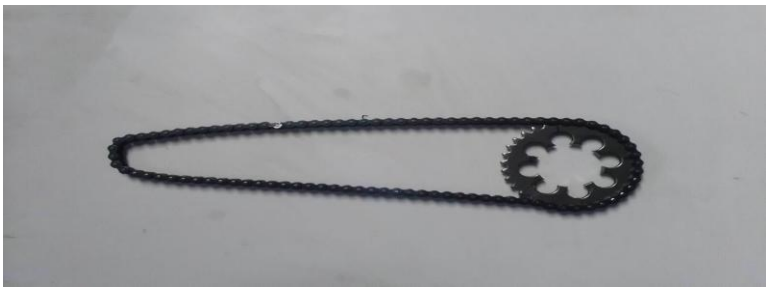
This push is located on the end size of the machine.

Application of simple push button in our project is is below

- **SQUARE TUBING 1.5 INCHES**

The Square tubing of m/s 1.5 inches is used for construction of frame which can withstand the load of heavy bar.

- **CHAIN AND SPROCKET**



Chain drive is provided do avoid the slippage as the motor has to fed the rod which is heavy at low rpm .so chain drive was the best suited option among various types of drives.

- **ROLLERS**

Rollers are provided for the frictionless movement of the rod so that the bar can be easily fed or pushed with less power.

IV. WORKING

- The motor will be rotated, so that the bar is moving from initial position to the determined position.
- Length adjusting unit with push button is used to determine the bar dimension to be cut.
- When rod reaches and touches the push button electric supply stops and motor stops rotating.
- And further clamping the rod cutting starts.

V. ADVANTAGES AND APPLICATIONS

Advantages :

- Simple in construction.
- It is a compact one.
- Less components used.
- Fast production.
- It can used for solid as well as hollow materials.

Applications :

- Small and Medium scale industries Application
- Metal Cutting Industries and Work Shops
- Pipe cutting
- Splendor rod cutting
- Round, Square, Oval, Hexagonal, etc shape materials can also feed by using this mechanism

VI. CONCLUSION

While concluding this report, we feel quite fulfill in having completed the project assignment well on time, we had enormous practical experience on fulfillment of the manufacturing schedules of the working project model. We are therefore, happy to state that the in calculation of mechanical aptitude proved to be a very useful purpose.

VII. FUTURE IMPROVEMENTS AND INNOVATIONS

The paper included very simple type of Machine parts requiring very less component than conventional machinery. As work was successful studying & completing the results of this automatic feeding mechanism for hacksaw with solving other types of conventional feeding problems associated with machine that can be implemented from higher to lower units cost. Its lowermost requirement of maintenance can again be beneficial for keeping cost down.

This automation can surely reduce the loss thereby increasing the productivity by investing small capital less equipments.

As per Indian content is concern this machine can be very beneficial for virtually all type of power hacksaw machines as it has very low capital investment.

This machine may form a simple solution for feeding of bar in the future. This automation also can be controlled by computer programs.

REFERENCES

[1] Khurmi and Gupta “Theory of Machine” Edition Reprint 2007.

[2] Khurmi and Gupta “Machine Design” Edition 2005.

[3] Workshop Technology, Hajara Chaudhari.

[4] Production Technology, R.K. Jain.

[5] PSG Design Data Book.