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Design and Fabrication of Pneumatic Bar Bending Machine

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Abstract: *Today in this world the use of bending machine is increased. Bending is used in Industries for a wide variety of uses, including blanking and pressing. There are much different types of bending. The many popular are pneumatic bending and hydraulic bending. But pneumatic bending is much effective than hydraulic bending. The advantage of Pneumatic bending is their speed. Pneumatic bending is 10 times faster than hydraulic bending and they can perform many jobs faster and more effectual Pneumatic bending is extremely flexible, that they can be placed in a factory in any required position.*

Keywords: Bending operation, Pneumatic system, Clamp, Manual stirrup making, Fixture

I. INTRODUCTION

Since long time ago the labour work has essential role in constructions including mixing coarse aggregate-sand water-cement, ramming sand, land levelling, and digging the foundation for base of structure, cutting rod in required length, rod bending and pouring the mixture of concrete in columns and beams. Now days, due to development in technology itis required to reduce the labour work and time since there are lot of available resources. As population increasing very rapidly, demand of the construction to build the buildings for industries, overhead bridges, human livings The paper is designed based on the principles of pneumatics and the system is automatic type. By using mechanization the productivity of the product can be increase.

II. OBJECTIVE

1. To make a bending machine to bend metal pipe.
2. To make on simple working principle.
3. To reduce the time for operation.
4. To make in minimum cost.
5. To produce a bending machine which Pipe be carried from one place to another,
6. To produce a bending machine with low cost

III. LITERATURE REVIEW

I am Jagadale Atul Dnyanadev, Design and construction of hydraulic rod bending machine, Jan 2022. Worked on design and construction of rod bending machine and they concluded that Each and every work of human is reduced by a machine, but few areas like construction the usage of machines for bending rods for clamp which are used to withstand loads in beams and columns are undone by machine because the cost of machine is high and need skilled labours to perform . So this project is marked to do bending operation for clamp using hydraulics and named as hydraulic rod bending machine. The main objective of our project is to apply the hydraulic rod bending machine in the construction sites with less cost compared to the existing bending gives the efficienence performance from that we conclude solar energy can efficiently generate electrical energy to drive the boat. machines, and increasing the productivity of the clamp. Jagtap Raviraj Mahendra, Labade Mahesh Dattatray Design and fabrication of hydraulic stirrup making machine, Jan2022.They worked on Design and Fabrication of Hydraulic clamp Making Machine and they concluded that Since testing the stirrup making machine it is observed that how much time is required to make single piece of stirrup by effective working. The detail description is given as below: Loading and unloading combining clamping the bar to fixture it almost takes only 5 to 6 seconds. Time required to forward and backward stroke is about 10 to 11 seconds during which clamp is made. Considering machine ergonomics that is interaction of human operator with machine, it is very easy to perform it because operating switch is provided at

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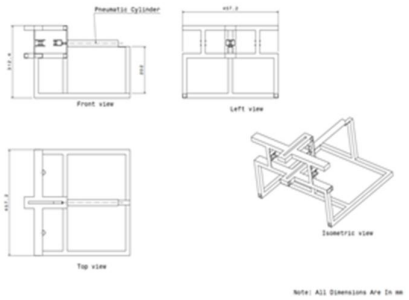
suitable place of machine. Again loading and unloading is not complicated since not very specialized tooling is used it is very simple structure.

IV. CONSTRUCTION AND WORKING

In this paper the rod is angled with the help og pneumatic force. The rod is nourish automatically with the help of motor and pulley arrangement. In this paper we perform to bend 8mm diameter of bar. We can assemble the stirrup of required dimension by using limit switch arrangement. When the rod is contacts to the limit switch that time limit switch gives signal to the control unit, then control unit stop the motor and nourishing of rod is stop automatically. After this, signal is given to the first cylinder by control unit and Cylinder bend the rod within a 3-4 stroke and we make complete stirrup. Cylinder second is only used for holding purpose.

V. PROJECT CAD MODEL



VI. ADVANTAGES

- No conventional grid electricity required
- Long operating life
- Highly reliable and durable
- Easy to operate and maintain
- Eco-friendly
- Less consumption of time
- Easy to handle

VII. APPLICATION

- Industrial purpose
- Agricultural purpose
- Domestic purpose
- Commercial purpose
- Automobile application
- Natural purpose

VIII. CONCLUSION

In latest attempt a solution for the manual stirrup making is obtained By using many fixtures in the table we can able achieve different shapes and sizes of the stirrups. The system can be handled by any operator very smoothly. Since it is reasonable and simple design this machine can be sell to anywhere across the nation. Advance bar bending machine applied for mass production. By applying advance bar bending machine increases production rate and reduce labour cost stirrups. The system can be handled by any operator very smoothy. . Since it is reasonable and simple design this machine can be

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