

Power Generation Using Gym Equipment

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Abstract - Now- a-days due to scarcity of conventional energy sources there is a need to use renewable sources of energy. This project deals with the system which will develop power using gym equipment. We are using human as the power source operating the gym equipment. This equipment is designed to act as an exercise equipment as well as a source of power generation. For this operation the reciprocating motion of the equipment will be converted into rotary motion using rack & pinion arrangement & the speed of rotation will be increased by using chain drive as the method of gear reduction. Further alternator will be used to convert the rotary motion into electrical energy.

Key Words: By simply pull up & pull down, non conventional, converting mechanical energy into electrical energy, human-powered electricity generation.

1. INTRODUCTION:-

Pull up pull down power is the transfer of energy from a human source through the use of rack and pinion system. This technology is most commonly used for gym centre or house .less commonly gym power is used to power agricultural and hand tools and even to generate electricity. Some application include battery charge home appliance. The articles on this page are about the many wonderful application for power generation by gym pulley technology. Whenever the person is allowed to pass over the gym pull up pull down. As the spring are attached to gym equipments, they get compressed and the rack, which is attached to, the bottom of the rod moves down reciprocating motion of rack in to rotary with certain RPM these shafts are connected through a chain drive to the dynamos, which converts the mechanical energy into electrical energy. Now made to rotate a wheel in one direction by supplying power to shaft, while other made to rotate freely on the shaft, as the free wheel is inserted in the gears.

Man has needed and used energy at an increasing rate for his sustenance and well-being ever since he came on earth for few million year ago. Due to this lot of energy resources have been exhausted and wasted. Proposal for the utilization of waste energy of power generation by gym pulley is very much relevant and important for highly populated countries like India and china the people are crazy about gym. In this project we are generating electrical power as non-conventional method by simply pull up and pull down. Non-conventional energy system is very essential at this time to our nation. Non-conventional energy using pull up pull down is converting mechanical energy into electrical energy. In

this project the conversion of force energy into electrical energy. The use of human-power in more efficient manner for generation has been possible due to modern technology. Pull up pull down power is an excellent source of energy, 95 percentage of the exertion put into pull up pull down power converted into energy.

A human-powered electricity generation has been unveiled by company. In this apparatus, the user has to pull up pull down the gym equipment for generating power.

2. PROBLEM IDENTIFIED

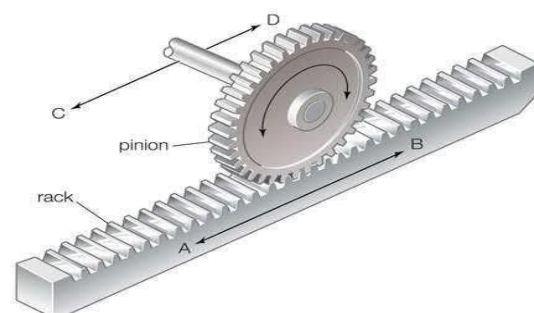
We are using a gym (pull up) equipment to generate power. In addition to the equipment there will be a battery, rack & pinion, chain drive, alternator, rectifier, inverter and step-up transformer to complete the project. The main aim of this project is to generate power while working out on the gym equipment.

2.1 OBJECTIVES

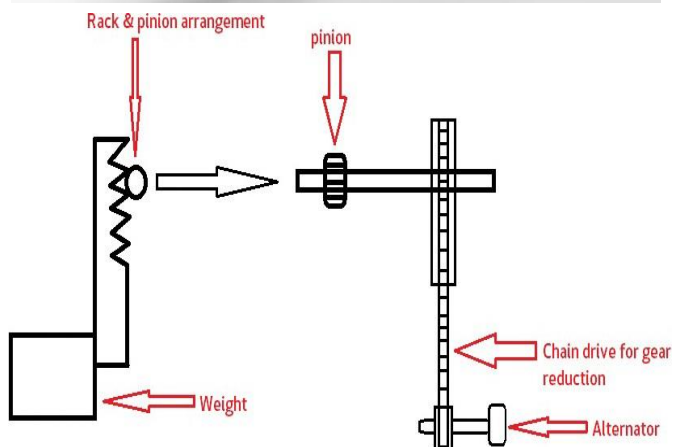
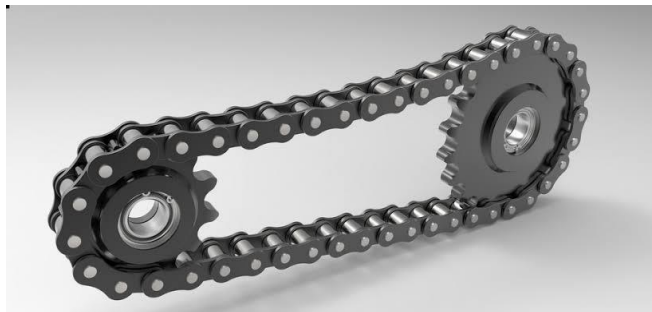
- 1.To use the human efforts for the generation of electrical energy.
- 2.To find new sources of renewable energy.

3. COMPONENTS USED FOR POWER GENERATION

RACK AND PINION:- A Rack and pinion is a type of linear actuator that comprises a pair of gears which converts rotational motion into linear motion.



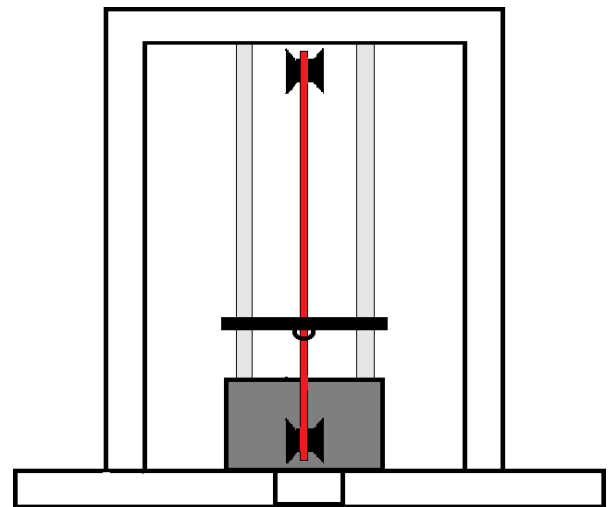
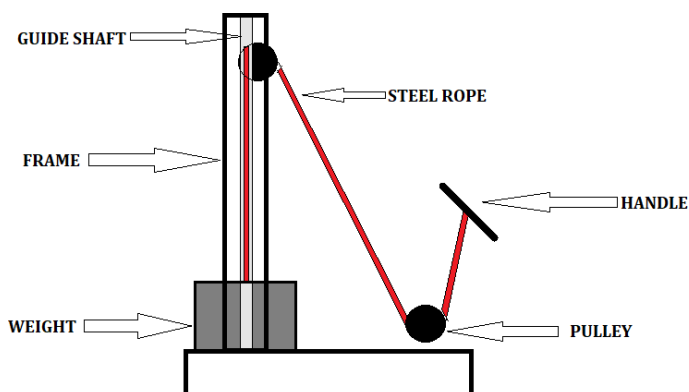
Chain Drive: - A Chain drive is a way of transmitting mechanical power from one place to another. Here we are using the chain drive to increase the speed of rotation



Rectifier:- A rectifier is also used which converts an alternating current into a direct one by allowing a current to flow through it in one direction only.

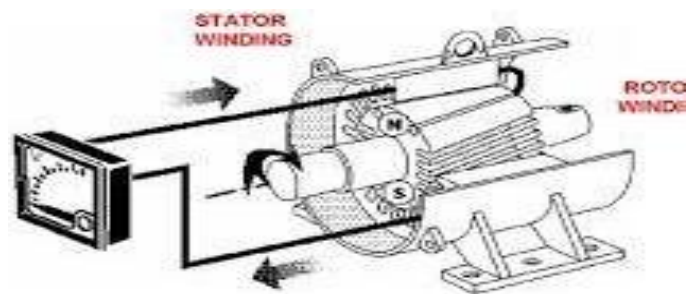
Battery Capacity:- A battery of 12 V and 40 W is used for this project

GYM EQUIPMENTS



FRONT VIEW

4. MODIFICATION



5. Consideration in Machine Design



when a machine is to be designed the following points to be considered: -

1. Types of load and stresses caused by the load.
2. Motion of the parts and kinematics of machine.
3. This deals with the type of motion i.e. reciprocating, Rotary and oscillatory.
4. form and size of components.
5. frictional resistance and ease of lubrication.
6. use of standard parts.
7. facilities available for manufacturing.
8. cost of making the machine

5.1 MATERIAL SELECTION

The proper selection of material for different part of the machine is the main objective in the fabrication of machine. For a design engineer it is must that he be familiar with the effect, which the manufacturing process and heat treatment have on the properties of materials. The choice of material for engineering purposes depends upon the following factors:

1. Availability of the materials.
2. Suitability of materials for the working condition in service.
3. The cost of materials.
4. Physical and chemical properties of material.
5. Mechanical properties of material.

6. Conclusion

The Power generation gym equipment will convert human efforts into electrical energy which otherwise gets wasted. It will help in finding new sources of renewable energy & help us to overcome the energy crises that we are facing & increase in global warming that we are facing to increased use of non-renewable energy sources for generation of electricity.

7. REFERENCES

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