

Gravity Powered Light

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Abstract- This Energy Generation mechanism is a gravity powered light designed for use in developing or third-world nations, as a replacement for kerosene lamps. It uses weight (a bag filled with rock or earth, attached to a cord) which slowly descends similar to the weight drive in a cuckoo clock. This action powers the light for up to ten minutes.

Fig.1 shows a prototype which generates little voltage. Research is being carried out to make improvements to this idea. It can be made economical by minimizing the generator cost. Large scale production can be achieved using this knowledge.

Keywords- Gravitational Energy, Initial power, DC Generator, Electrical Energy, Gravity light.

I. INTRODUCTION

Age of energy in any frame is request of the day and electric energy in particular is the most elevated energy popular. The greater part of the electric energy is delivered by warm power plant and rest of it is created by hydro-electric power stations, tidal power, sun powered, atomic, geo-warm and wind factories.

As of late there is a solid drive from every one of the administrations all through the world for age of clean energy without dirtying nature and utilizing sustainable power source assets. Wind factories are utilized as a part of a large portion of the nations to produce the spotless energy which can be created by utilizing the high breeze weight which is accessible plenitude in nature and non-contaminating the nature. Notwithstanding copious accessibility of wind and non-contaminating characters of the breeze process, there are couples of confinements in utilizing the breeze factories.

In and around the breeze process establishment areas, there can't be any human and winged animal's inhabitations because of high vibrations from the breeze factories and gigantic clamor levels created from wind process outfit box. Likewise high breeze weights and great soil quality required to introduce the breeze factories. Because of every single above confinement, energy age because of wind factories isn't practical dependably.

Another most normal type of clean energy is sunlight based energy. Indeed, even sun oriented energy is plenteous and non-contaminating in nature. Sun oriented cells are utilized to change over the plentiful light beams falling on sun based cluster into electric current. Sadly, the measure of energy produced per unit range of sun powered cells is less contrasted with some other type of energy. Additionally sun powered energy can be produced just amid crest summer season to the most extreme degree and is regular. Less or insignificant measure of energy is created amid winter and blustery season which is tremendous downside of sun based energy. Likewise the underlying venture made to build up the setup required to trap sunlight based energy is colossal as there is a need of battery dependably to store the energy caught. Contrasted with different types of energy, due to above reasons it is infeasible to utilize sun oriented energy on regular schedule. Is just sun oriented, wind and hydro energy are sustainable and clean energy accessible to deliver electric current..? Be that as it may, the developments and inventiveness changed those fundamental musings.

Presently we can deliver electric current utilizing gravitational power, vehicle hitting guard, recent gear development, cycling and so on gravitational power which is sustainable power source likewise spotless and non-dirtying which is better contrasted with other type of sustainable power source.

Utilizing gravitational energy, we can create electric flow in all seasons. In current circumstance, nations like India and Africa are utilizing lamp fuel lights in remote zones which are exceptionally unsafe to wellbeing. Gravity light which replaces this place to give clean and non-contaminating energy the space required for establishment of gravity light is little contrasted with some other sustainable power source assets. The gravity light is essentially blend of planetary apparatus framework, little generator and dead weight which changes over potential energy into dynamic energy. It takes enough venture expenses and gives the yield which is free till its lifetime. Executing this in every single home can change the world to deliver eco-accommodating energy and brings down the interest for non-sustainable wellsprings of energy primarily incorporate coal, oil based goods. The gravity light encourages the world to be a superior place by giving contamination free electrical energy.

II. PROBLEM DEFINITION

To design a portable, eco-friendly power generation device or setup for converting gravitational potential energy into electrical energy, which can be used for the applications like lighting, charge electrical devices etc. The goal of this project is to provide cheap and harmless energy alternative.

III. LITERATURE SURVEY

Martin Riddiford and Jim Reeves have spent around four years working on an inexpensive and safe alternative that will be of great benefit to many people across the globe. Unlike solar-powered lamps, the gravity light can be operated throughout the day and under any climatic conditions with zero running costs. The primary objective of his invention was to provide continuous power using gravity as a mechanism by converting gravity potential energy into kinetic energy and then kinetic energy into electrical energy.

Russian Inventor **Mikhail Dmitriev** has devised a mechanism whereby static gravitational pull can be harnessed to generate useful energy. He has worked for many years developing and testing gravity powered devices. His various designs are based on the principle of having weights attached to a wheel and arranging for those weights to be offset outwards when falling and offset inwards when rising. Since different lever arms being involved, a force imbalance is created which causes the wheel to rotate continuously and if the weights are of a considerable size, then the rotation is continuous and can be used to generate electrical energy.

Chun-chao Wang and Yuh-suiang Wang has successfully invents the concept of gravity power generation mechanism. In his concept, more simplified mechanism is used for the generation of the electricity. The primary objective of his invention is to provide gravity power generation mechanism which can provide a continuous and stable operation to continuously convert the gravity potential energy into the kinetic energy and then to convert the kinetic energy into electrical energy, so as to perform a long time, effective and stable energy output.

IV. METHODOLOGY

The essential goal of present project is to convert gravitational energy into the active energy (kinetic) and in turn to electrical energy. This conversion is achieved by using compound gears which are coupled to the alternator at one end and other end attached with load. As the descending of mass starts due to gravitational pull a torque is generated which is

transmitted to generator. The generated energy is utilized to glow the LED's.



Fig: 1 Fabricated Gravity powered light

The main components used in this project are:

1. Spur gear
2. Shaft
3. Alternator
4. LED
5. Rectifier circuit
6. Chain and Sprocket.

1. Spur gear

Spur gears are the least difficult kind of gear. They comprise of a chamber or plate with teeth anticipating radially. Despite the fact that the teeth are not straight-sided the edge of every tooth is straight and adjusted parallel to the pivot of turn.



Fig: 2

These rigging work together accurately just if fitted to parallel shafts. No hub push is made by the tooth loads. Load gears are incredible at direct speeds however have a tendency to be loud at high speeds.

2. Shaft

A drive shaft is a mechanical component for transmitting torque and rotation, usually used to connect other components of a drive train that cannot be connected directly because of distance or the need to allow for relative moment between them.



Fig: 3

3. Alternator

The alternator used is a 120-volt AC generator. It uses the gravitational energy as a source to develop power.

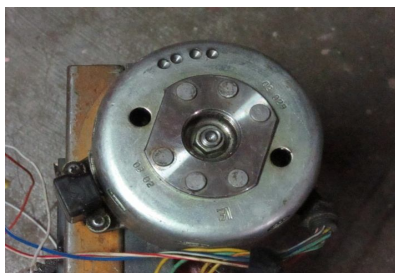


Fig: 4

4. LED Light

A light-transmitting diode (LED) is a semiconductor light source. LEDs are utilized as marker lights in numerous gadgets and are progressively utilized for other lighting. Showing up as down to earth electronic segments in 1962, early LEDs discharged low force red light, how-ever present day variants are accessible over the unmistakable, bright, infrared wavelengths, with high brilliance.



Fig: 5

5. Rectifier

A rectifier is an electrical device that converts alternate current (AC), which periodically reverses direction to direct current (DC), which flows in only one direction. In a Full wave rectifier circuit 2 diodes are used, one for each half of the cycle, which is 100% efficient compared to half wave rectifier.

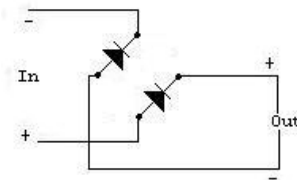


Fig: 6

6. Chain and Sprocket

Chain drive is a method for transmitting mechanical power starting with one place then onto the next. It is frequently used to pass on energy to the wheels of a vehicle, especially cycles and bikes. It is likewise utilized as a part of a wide assortment of machines other than vehicles.

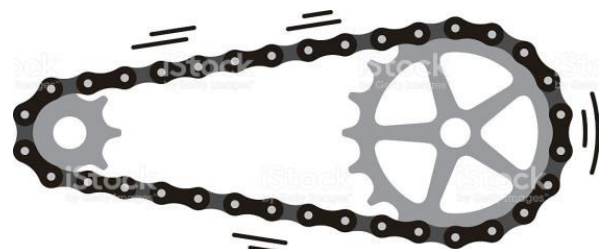


Fig: 7

V. RESULTS

Table 1: Observations of Glow time for fixed height for different weight.

Observations	Weight (kg)	Height (m)	Glow time (sec)
1	10	1.54	42
2	12.5	1.54	30
3	15	1.54	22

Table 2: Observations of voltage and current for different masses from a fixed height.

Observations	Weight (kg)	Voltage (v)	Current (mA)
1	10	6.2	5
2	12.5	9.1	6.3
3	15	11.3	7.1

Table 3: observations for Power v/s varying mass.

Observations	Weight (kg)	Power (W)
1	10	31
2	12.5	37.33
3	15	80.23

VI. CONCLUSION

Generation of gravity power can be increased by applying much heavier load, though heavy load increases the voltage but it decreases the lighting time of LED. Applying heavy load, it may cause bending to the stand. So a suitable mass must be used to fall it as much long time as possible.

Renewable energies are currently looked at as the sources which will meet the future energy requirements. Solar, Wind, Tidal, Geothermal are some popular examples of renewable energy sources. Yet these sources have their own unique geographical as well as other limitations and are not available throughout. But gravity is available across our entire planet. Thus we can use something like electricity from gravity on a large scale to generate electricity any time at any place.

Gravity light will be able to replace Kerosene Lamp and other obsolete lighting mediums. Also it will provide renewable, sustainable and cheap alternative to conventional lights. The impact will be beneficial for the social, health and economic situations of end users. With gravity light installed in each one of these homes eliminates the hazards of kerosene lamp, biomass which in turn improves environment, health and also reduce greenhouse emissions.

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