Fabrication of Device for Generation of Energy using two Stage Mechanical Oscillators

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Abstract— The purpose of this project is to explain the practical functioning of two-stage mechanical oscillator, i.e. to demonstrate the possibility of practically generation of excess energy in the form of electrical energy by using two-stage mechanical oscillator. Our object is to develop such mechanism which is used in hand pump for rural application with minimum investment. The project would discuss the dynamics of the body when a gravitational force acts upon it.

Key words: Fabrication of Device, Mechanical Oscillators

I. INTRODUCTION

The two-stage mechanical oscillator technology can be used today as a mechanical for clean energy applications. Current Applications include a mechanical hammer, press, water pump, Transmission and electric generator. The two-stage mechanical oscillator process is like no other and is a proven Demonstration to show a higher efficient transformation of a smaller force which convert into a bigger Forced rotation.

Currently there is no known mechanical water pump method that is more efficient than the two stage oscillator's process. This method also have eco-friendly design and mostly applicable in rural area at low cost and minimum investment.

The output of energy is greater than the input energy. However, these models are still not using practically. Gradual decrease of energy of the Primary oscillator, which is usually a physical pendulum, must be supplemented from Outer energy sources.

Some other applications of two stage mechanical oscillator are as under.

1) Fan with pendulum.
2) Mechanical hammer with adaptable pendulum weight.
3) Press with pendulum and magnets.
4) Water pump with pendulum and electromagnets.
5) Electro generator with pendulum and magnetic buffers.
6) Wind propelled electro dynamo and gravitational potential.
7) Electro dynamo with elastic pendulum handle.
8) Electro dynamo with double lever and eccentric mass windmill.

II. TWO STAGE MECHANICAL OSCILLATORS

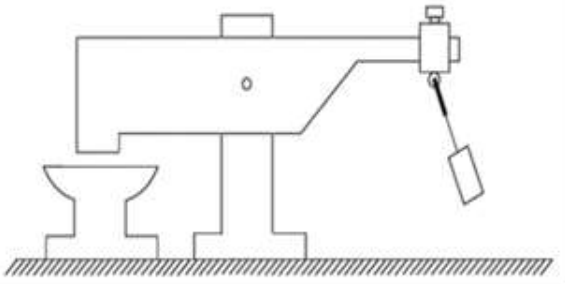

Fig. 1: Principle working of oscillator

Above Figure should be viewed as a five -component system: the lever, the lever's fulcrum, the pendulum, the pendulum's fulcrum, and the counter-weight (not shown in the picture as a separate component).

To understanding the device is in the overlooked motion of the pendulum's fulcrum. The pendulum's fulcrum is attached to the Lever, its motion describes an arc, in other words, has a both vertical and horizontal component to its movement. Thus, the pendulum can be viewed as a hybrid, vertically-driven and horizontally-driven pendulum. Vertically-driven pendulums and horizontally-driven pendulums are classes of pendulums in their own right, exhibiting two important effects of non-linear dynamics, namely, instability and bifurcation. Vertically driven pendulums are typical examples of parametric excitation.

Lever systems comprise of a pendulum on one side and a counter-weight on the other side may be viewed as a parametric oscillator, we can show that the pendulum varies its physical property twice per one oscillation of the lever. The weight of the driving pendulum in this device is being varied at twice the frequency of the lever. When the counter-weight is in top position, the pendulum has maximum speed and maximum weight.

When the counter-weight is in the bottom position, the pendulum is in a top position, and has zero weight at half of the cycle. For the whole cycle of the counter-weight and the lever, starting in the top position, going down, and back up again to its starting position, the pendulum weight varied in two extremes from max weight to zero weight, and then back from Zero weights to max weight. Thus for one cycle of the lever, the driving pendulum's weight changed twice. By symmetry, both the vertical and horizontal displacements of the pendulum by the lever are also in the parametric 2:1 ratio, for two full oscillations of the lever, there are two half-oscillations or one full oscillation of the pendulum at its pivot. Thus, the two stage oscillator fulfills the requirements for parametric excitation, in other words - parametric pumping.

When the counter-weight is moving down, the pendulum's pivot is being forced up by the weight on the counterweight side (left) via the lever. The fact that the pendulum is also getting "lighter" in this phase also contributes to the surplus of weight on the left side of the lever.

When the counter-weight is moving up, the weight from the rotationally moving pendulum is responsible for the pendulum's pivot moving downward. Again, it is not the pendulum's individual motion that's causing its pivot to move downward. Rather it is the imbalance of weights in the lever.

Thus, one can say that the pendulum is being "driven" by an outside mechanism force. One could argue that the initial energy required for lifting and start the pendulum is being reapplied to the system via pendulum's constantly changing moment of inertia exhibited during its

half-rotation around its fulcrum. Which having to slightly push the pendulum when the system is doing actual work is damping caused by a load, the overall system's air resistance, as well as the fulcrums' friction, which, all put together, tend to push the system out of parametric resonance. Keeping the pendulum moving, the instability of the system is maintained and therefore its ability to continuously provide the mechanical advantage of a lever.

III. Output Work of Two Stage Mechanical Oscillators

It is important to state which force is doing output work in the two stage mechanical oscillator, in order to determine general over unity conditions.

The oscillator, in picture below, has proven to be very complex for exact mathematical analysis. The returning of mass m, on the left side of the lever, contributes to the complexity. The unused energy of mass would oscillate if the oscillator worked as a hammer, unless there was attached and energy consumer, like a water pump of left side of the lever.

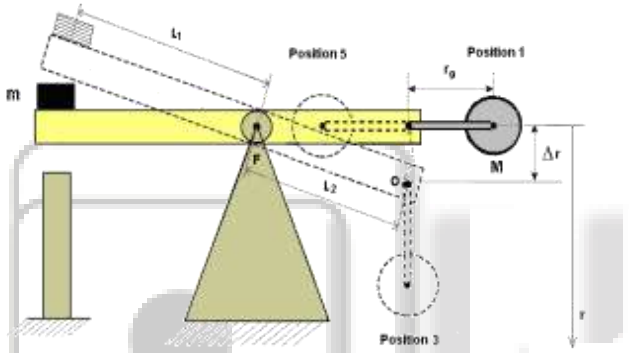

Fig. 2: the Oscillator

The main function of mass m is to return pivot point O to its beginning position when the pendulum becomes weightless in the end positions. That work of mass m is minimal and will be disregarded. Another function of mass m is to reset an energy consumer in its beginning position, if it was for example, a water pump with piston. In the case of double winged water pumps, there are no starting positions because it works in both directions.

In both cases, mass m performs useful work, but only with the help of potential energy which it received from the pendulum. The same would be the case, if instead of mass m a spring was installed on the left side of the lever.

The conclusion is that the output energy of the oscillator depends only on a pendulum with a movable pivot point.

IV. Pendulum and its Energy

The same logic can be applied on mathematical pendulum and be show that there is energy increase at upper points, when the pendulum has velocity, this acting an impulsive force. Then the pendulum will be accelerated with velocity, and kinetic energy is increasing by rate of square of velocity. That energy should be increase during half period of oscillation. Increased velocity will increase centrifugal force and hence tension in pivot point of the pendulum. In Ideal case when there is no friction and air resistance. When the pendulum is raised in its initial position and released it will always oscillate on the same way, performing energy transformation.

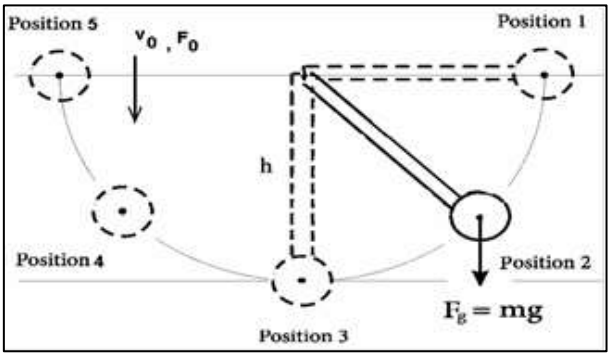

Fig. 3: Pendulum

Potential energy of the pendulum raised till height h is mgh. Potential energy will start converting into kinetic energy when the pendulum is released to fall freely. When conversion is finished at pendulum comes in low position 3, and velocity of the pendulum is also greater in that position. When the pendulum starts rising up kinetic energy will start converting into potential energy again.

Besides pendulum weight acts at the pivot point, in the same point is acting centrifugal force which is stronger if the velocity is greater. By increasing initial position of the pendulum, its velocity will be increased, but also centrifugal force which acts in the pivot point.

The sum of centrifugal force and the weight is giving total force which is a vector with magnitude of sinusoid character.

Vertical component of energy is spending on movement of the lever and rising of mass M in which potential energy increased for Mgh, but by lowering down of mass M in starting position a part of energy is returning back to the pendulum because moment of inertia is decreasing and tangential velocity increasing. Thus, the energy balance of the two-stage oscillator is stable if mass M has returns in low position. As it is not always possible, mass M strikes against the surface and transformation of vertical component of kinetic energy into mechanical energy is coming about. In ideal case, when displacement of pivot point O from position O1 to O2 would happen instantaneously, when the pendulum is in position 5, i.e. returning of pivot point O into upper position when the pendulum is in positions 1 and 0, then the work of total tension force in position 5 would be:

$E = mg\Delta r + mv^2\Delta r/r$

M - Mass of the pendulum;

g - Gravitational acceleration;

Δr - distance between points O_1-O_2;

V. Applications

The following inventions are different possibilities from application of the multi-level Oscillator:

1) Water hand pump with pendulum
2) Fan with pendulum
3) Mechanical hammer with adaptable pendulum weight.
4) Press with pendulum and magnets.
5) Water pump with pendulum and electromagnets.
6) Electro generator with pendulum and magnetic buffers.

7) Wind propelled electro dynamo and gravitational potential.
8) Electro dynamo with elastic pendulum handle
9) Electro dynamo with double lever and eccentric mass windmill.

VI. CONCLUSIONS

Performed different test by giving smaller input at one end of pendulum and generate mechanical energy at other side which is comperetively higher.approximate it is 12 times of it's input.

In this work determined maximal possible over unity quotients efficiency of the machine, under certain conditions. A machine without energy consumer would behave as if it has a much bigger quotient of efficiency than a machine with a water pump attached to it. The reason was partial oscillation of energy.

All our effort of work had been directed towards shortening of movement of the pivot point and increase of mass of the pendulum. The above logic had some success, but it had a limit because lever had mass too and its axis some definite width.

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