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### Design and fabrication of gravity inertial device

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**Abstract -** This project is indented to develop a free energy device that works on gravity. A simple mechanism with new mechanical effects represents the source of clean energy. This gravity machine has only two main parts: a massive lever and a pendulum. The interaction of the two-stage lever multiplies input energy into output energy convenient for useful work. The effect of creating the free energy is defined in this study as the difference between the energy which is the machine transfers to the user system by the lever and the energy which is input from the environment in order to maintain the oscillation of the pendulum. Appearance of the free energy is not in accordance with the energy conservation law. The effect of creating the free energy results from the difference between the work of the orbital d damping forces of the lever and the work of the radial damping force of the pendulum motion. This effect enables increase of the input energy.

**Index Words -** Inertia, Gravity, Potential energy.

#### I. INTRODUCTION

Energy is created due to the difference in existing devices. Consumers of energy use the difference in the potential between the plus and the minus (direct current) and zero and the phase (alternate current). All heat and thermal motors accomplish useful work due to the higher temperature and pressure. Mills and power plants use different levels of water...

However, difference in the potential of two-stage oscillator, "unusual machine" has not been considered so far.

Since there is a difference in potential between the weightless state (1) and culmination of force (2) during oscillation of the pendulum, the same is true for centrifugal force, which is zero in upper position, and culminates in the lower position at maximum speed. Physical pendulum is used as a single-stage oscillator in the system with a lever.

After many years of trials, consultations and public appearances, it could be said that this occurrence is being researched and investigated all over the world (author is in possession of evidence). Simplicity enables construction of houses by owners themselves. Efficiency of the model can be increased by mass, since

the relationship between the volume of the lever weight and its surface increases the mass.

#### II. ORIGINS OF ENERGY BASED ON DIFFERENCE IN POTENTIAL

It is important to note that we are not supporting over unity claim for the oscillator where its pendulum was initially raised to some height and then left to swing until it stops.

Our idea is that after initial rising of a pendulum it is necessary to keep adding a little energy to a pendulum to keep it swinging. Because two stage oscillators is supposed to be used for long period of the time, energy spent for initial raising can be disregarded. The same logic is for Diesel engines where it is necessary for them to achieve working temperature before measuring its efficiency. Nobody would also include energy spent for magnetization of permanent magnets in an electric motor for calculation of efficiency ratio of his electric motor.

It is necessary to measure small energy continuously added to maintain pendulum swinging. Note also that output force on the lever side is variable and change from zero to a maximum defined by its mass. The reason for it is variable force of the pendulum which exert pulling the lever on opposite side. This makes mathematics complex and precise tools for measuring variable force are necessary for calculation of efficiency ratio of a two stage oscillator.

The well known fact is that pendulum with fixed pivot point can keep swinging for several hours. Two-stage oscillator has movable pivot point. It moves in rhythm of the lever which frequency is double higher than frequency of the pendulum. The movement of the pivot point, or better to say its acceleration, keeps spending energy of the pendulum which decelerates its swinging fast. Friction in pendulum pivot point is very small in comparison with losses due to movement and acceleration of the pivot point and can be disregarded. Oscillators with small and harmonic movement of the pivot point have better performances and that is the reason why special attention should be given to that problem.

### a. Mechanical Fission

Two-stage mechanical oscillators should be set in accordance with geometry progression system, by which mechanical chain reaction could be achieved:  $1 < 2 < 4 < 8 < \dots$  oscillators. This could be the best way to confirm the over unity effect and accomplish replacement for nuclear fission.

Previous examples emphasize the importance of synchronized frequency with every model. Oscillations of the physical pendulum have to be maintained with certain speed, energy is wasted. Mechanical and a pump with a pendulum (photo & video) work more efficiently with a shorter pendulum, but with air movement longer pendulum works better. According to the theory of oscillation, oscillatory movements in nature are the most frequent ones, and can be difficult to analyze.

Preposition for decreasing of the friction two-stage mechanical oscillator or some other gadget lay in direction east-west in order to decrease axial friction on bearings caused by Coriolis force.

### b. Postulates

The easiest way is to proclaim something as impossible and refer to laws. Luckily, and most probably, they are not. In the same way, the speed of light can be deemed unreachable, according to Einstein's formula  $E=mc^2$ , because the mass would be infinite. However, the mass does not change with speed, and the kinetic energy increases with the square speed. Therefore, the speed of light can be reached by future space crafts, if these ideas are considered.

To someone it is a problem if the idea was simple, but coming to the simple solution is the hardest and there are the most reasons for that.

## III. A LEVER WITH PHYSICAL PENDULUM AS A SIMPLE DEVICE

Although the basic model, which Veljko Milković called "The mechanical hammer with a physical pendulum", showed in the first experiments that the output energy is larger than the input energy, Milković concentrated on the practical use of the model. This can be seen by the order of the patent requests. Later, it turned out that this model is also a perpetual mobile, when usage of input energy is in question. However, the model is energetically open both at the entry and the exit part, so the exact measurement of efficiency would be complicated. The matter of the exact measurement was postponed, but the noticed fact was that the model represents a new type of a simple machine, and that is very interesting and useful, even without multiplying input energy.

The next part will cover the characteristics of the "basic model" which make it a simple machine, putting aside the matter of the efficiency percentage.

Mechanical hammer with a physical pendulum is an original device - a machine which is turning the oscillations of the physical pendulum, hanged on an arm of a two-armed lever, into the oscillations of the weight

on the arm of the same lever. The axis of rotation, the axle of the physical pendulum is parallel to the axis of rotation, the axle of the lever. The axle bed of the lever is connected to the surface with girders. The axle of the physical pendulum is oscillating up and down, when the pendulum is out of balance. Thus, the weight on the other arm of the lever is oscillating as well. The arm on which the pendulum is positioned is lifted with every movement of the pendulum away from the balance, because the weight of the pendulum weight is decreasing, and the same lever arm is lowering when the pendulum is closer to the balance position and that happens in succession. The period of oscillation of the lever and the weight on it is twice shorter than the period of oscillation of the physical pendulum and the weight on it.

On the below picture, the triangle represents the support for the two-armed lever. The small circles are the two axis. The lever rotates on one and the physical pendulum on the other. On the right arm of the lever is an angle on which the physical pendulum is oscillating, and on the left arm is the weight which oscillates together with the lever. As soon as the physical pendulum is out of balance and begins to oscillate, the lever starts to oscillate as well.

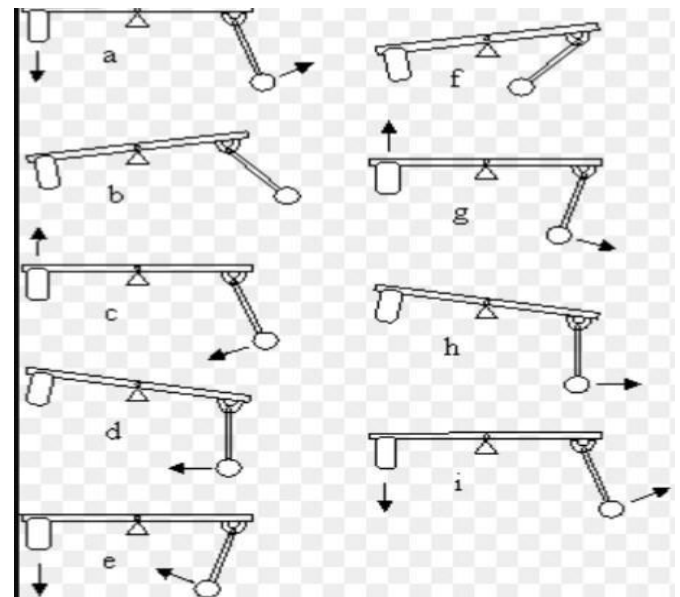


Fig. 3.1. Physical pendulum

Forced oscillation of the weight on the lever can be of an impact type when the weight, at the end of every oscillation, hits the surface or an object on the surface like a hammer. At that moment, the force of the impact is greater than the force maintaining the oscillation of the pendulum, which still does not say anything about the balance of energy since the effect of these two forces is not simultaneous. It would be a completely different story if we were talking about strength and not force, but we would need a different approach in that case.

#### IV. EXCESS ENERGY

Veljko Milković conducted a series of experiments on the basic model - mechanical hammer with a physical pendulum. All the experiments led to the conclusion that the input energy is smaller than the output energy. Since the law of energy sustainability could not help here, he did not spend too much time to explain the occurrence in a theoretical way.

One of the possible explanations was the effect of the forces involved in the work of the oscillators. Forces are more specific and simple physical entities than energy. However, there were many different forces present during the experiments, so it was hard to compare them.

Most of the experts and scientists familiar with experiments conducted by Milković did not go into more detailed analysis, with an exception of Professor Bratislav Tošić. Unfortunately, his extensive mathematical analysis did not provide a clear result concerning the energy balance.

#### V. ENERGY OF PENDULUM AND LEVER

By definition, energy is a capability of an object to perform work. Therefore, energy does not cause any consequences on anything, but it could and could not have consequences in regards of another object starting to move.

Energy of the lever is at the disposal of an external energy consumer, which does not affect the energy of the pendulum, whether the lever is doing anything or not. If the external consumer takes over a part of this energy, the oscillating amplitude of the lever will decrease. Since the lever is the one oscillating forcibly and not the pendulum, it continues with oscillations even when partly dampened. Oscillation of the pendulum is uninterrupted even when the lever oscillation is completely dampened. As soon as the lever stops being a working body and stops providing energy to the external consumer, it starts oscillating again, with same amplitude as before. This is a clear and unambiguous sign of "excess" energy.

Friction and air resistance were the stumbling block, in both theoretical and practical sense, especially on the pendulum. Milković solved this problem in an indirect way, with the combination of two models.

#### VI. GRAVITATIONAL POTENTIAL ENERGY EVERYWHERE

Whether we like it or not, gravity exists and we cannot influence it, since there is still no gravity isolator. However, physical pendulum is in weightless state in its upper position during oscillations.

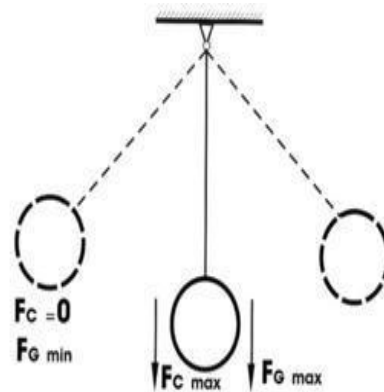


Fig. 6.1. Oscillating pendulum

This works as a substitute for a gravity isolator, and the efficiency proved to be extremely high at two-stage oscillators shown above.

Experiments also confirmed supplemented formula for kinetic energy, which explains the surplus of energy.

Speeds are added together, originating from the impulse i.e. energy invested in maintaining the pendulum in oscillation, which happens in the upper position.

Additional acceleration of the pendulum is due to gravity. If the above mentioned formula is applied for calculation, the surplus of energy is clear, and it originates from gravitational potential.

In addition to results in earthly conditions, space probes had excellent results, so it is useful to mention that kinetic energy can be increased with the help of gravity.

#### VII. FORCE ANALYSIS

The vibrating is acted upon by a restoring force. The restoring force causes the vibrating object to slow down as it moves away from the equilibrium position and to speed up as it approaches the equilibrium position. It is this restoring force that is responsible for the vibration. So what forces act upon a pendulum bob? And what is the restoring force for a pendulum? There are two dominant forces acting upon a pendulum bob at all times during the course of its motion. There is the force of gravity that acts downward upon the bob. It results from the Earth's mass attracting the mass of the bob. And there is a tension force acting upward and towards the pivot point of the pendulum. The tension force results from the string pulling upon the bob of the pendulum. In our discussion, we will ignore the influence of air resistance - a third force that always opposes the motion of the bob as it swings to and fro. The air resistance force is relatively weak compared to the two dominant

The gravity force is highly predictable; it is always in the same direction (down) and always of the same magnitude -  $mass \cdot 9.8 \text{ m/s}^2$ . The tension force is considerably less predictable. Both its direction and its magnitude change as the bob swings to and fro. The direction of the tension force is always towards the pivot point. So as the bob swings to the left of its

equilibrium position  $n$ , the tension force is at an angle directed upwards and to the right. And as the bob swings to the right of its equilibrium position, the tension is directed upwards and to the left. The diagram below depicts the direction of these two forces at five different positions over the course of the pendulum's path.

The pendulum follows simple harmonic motion always, a sinusoidal wave. Due to the gravity the pendulum oscillates and that oscillation is converted into rotational energy by the ratchet and pawl mechanism.

VIII. STUDY RESULTS

| Max   | Min                                       | Type                  | Name    |
|---|---|-----------------------|---------|
| 5.29452e+006<br>N/m <sup>2</sup><br>Node: 24433 | 26.3919<br>N/m <sup>2</sup><br>Node: 3143 | VON: von Mises Stress | Stress1 |

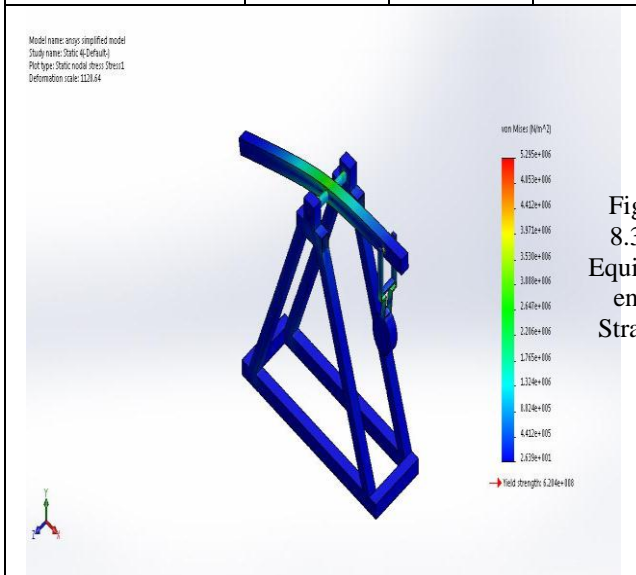


Fig. 8.1. Von mises Stress

| Max                           | Min               | Type                         | Name          |
|-------------------------------|-------------------|------------------------------|---------------|
| 0.169371<br>mm<br>Node: 14195 | 0 mm<br>Node: 213 | URES: Resultant Displacement | Displacement1 |

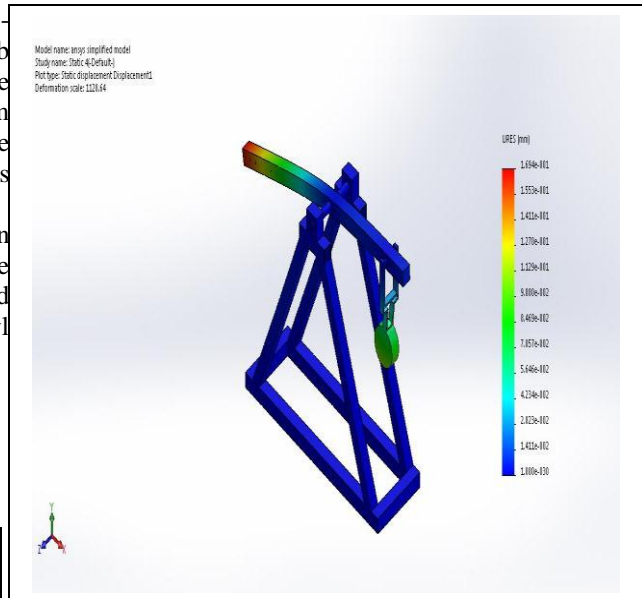
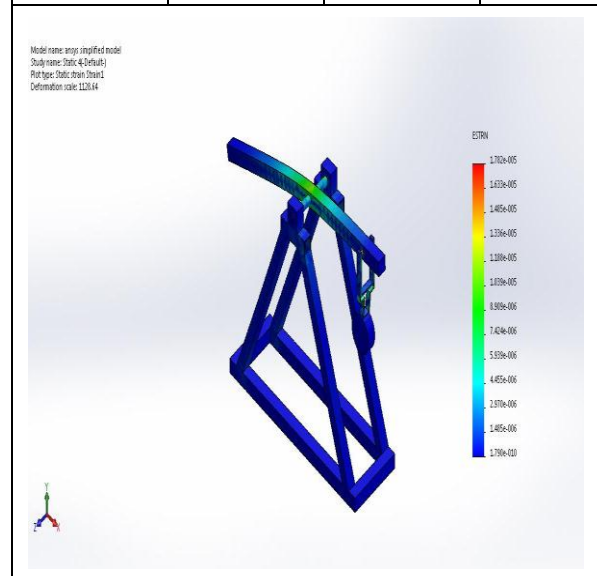


Fig. 8.2. Resultant displacement

Fig. 8.3. Equivalent Strain

| Max                            | Min                           | Type                     | Name    |
|--------------------------------|-------------------------------|--------------------------|---------|
| 1.78178e-005<br>Element: 12888 | 1.79009e-010<br>Element: 1146 | ESTRN: Equivalent Strain | Strain1 |



IX. CONCLUSION

Thus the project develops a simple mechanical device to convert the gravitational energy into the electrical power. The mechanism is connected to some suitable applications. This device acts a free energy device, which extracts energy from the gravity which is always a free energy source that is available anytime and everywhere. In short the gravitational energy is

converted into oscillating energy by using a simple pendulum. The oscillating energy is then converted into rotational energy by means of ratchet and pawl mechanism. The rotational energy is then stored in a flywheel. The mechanical energy is converted into electrical energy by means of a generator. A mechanical feedback system is employed to maintain the oscillations undamped. Thus the system will run forever by using the gravity and power output is taken out continuously.

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