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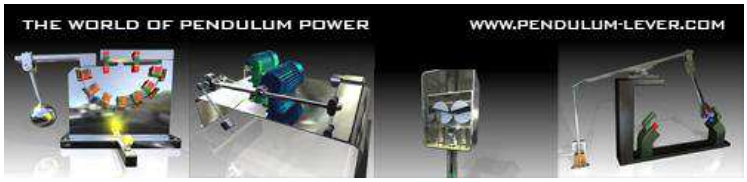
TWO-STAGE MECHANICAL OSCILLATOR - PENDULUM-LEVER SYSTEM - A Mechanical Amplifier -

The impossible is often the untried. - Jim Goodwin

"...I wondered how anything so small could grow to such an immense size." - Nikola Tesla

This is technically simple, but it should not be approached lightly. - Veljko Milkovic

Visit our new website



- **Brief Description of the Invention**
- **Videos**
- **Input/Output Energy Measurements & Experiments**
- **Mathematical & Theoretical Analyses**
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- **Approved Patents**
- **Hand water pump with a pendulum - a practical application**
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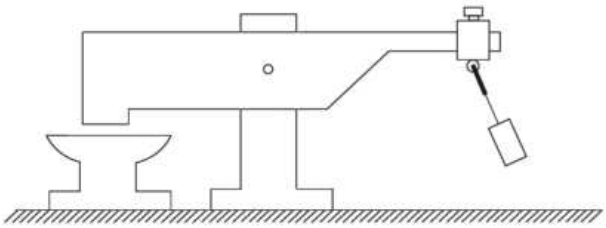
TWO-STAGE MECHANICAL OSCILLATOR - PENDULUM-LEVER SYSTEM - A Mechanical Amplifier of Clean Energy -

Free Mechanical Energy Device
- The Simplest Technology -

A Top 100 Energy Technology in 2006 (by New Energy Congress)



A simple mechanism (Figure 1.) 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 (mechanical hammer, press, pump, transmission, electric generator...). * watch the video presentations for the full insight in this research - click here

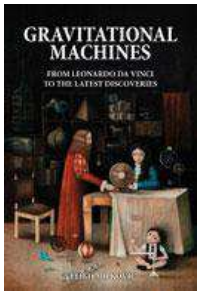
Search site

search

Email Newsletter

Sign up for our Email Newsletter Mailing list - click here -

New Book



Gravitational Machines - From Leonardo da Vinci to the Latest Discoveries

The book that can change the world

New Book

Basic Principles of Over Unity Electromagnetic Machines

Learn basic ideas of making new ultra efficient electric motors and generators and how to improve existing patents which use permanent magnets

New Website

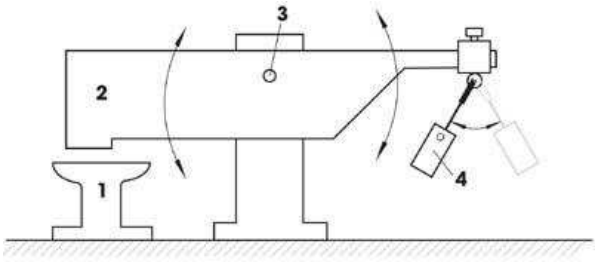


Figure 1. Mechanical hammer with a pendulum
1 - anvil, 2 - massive lever, 3 - lever axel, 4 - physical pendulum

The best results were achieved with the lever axel and pendulum at the same height, and the base of the massive lever above the centre of mass, as shown in Figure 1.

ORIGINS OF ENERGY BASED ON DIFFERENCE IN POTENTIAL

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.

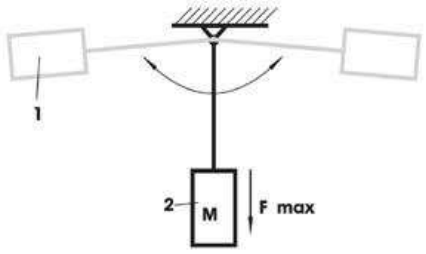


Figure 2. Difference of the potential during oscillation of the physical pendulum
1 - weightless state in the upper position
2 - culmination of force during the fall in the lower position

Since there is a difference in potential (Figure 2.) 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.

Energy Measuring

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 raising of a pendulum it is necessary to keep adding a little energy to a pendulum to keep it swinging. Because two stage oscillator 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.

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< oscillators...
This could be the best way to confirm the *overunity effect* and accomplish replacement for nuclear fission.

Figure 3. Experimental models

Extreme technical solutions can be **tourist attractions** even as prototypes.

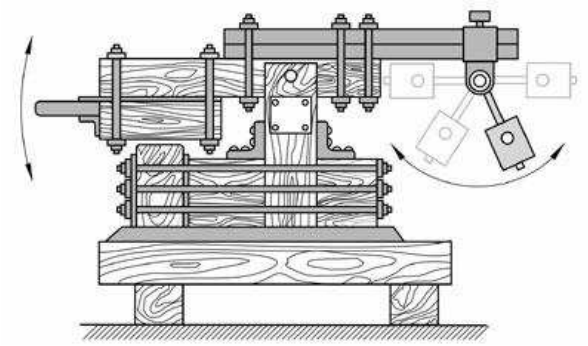


Figure 4. Two-stage mechanical oscillator as a tourist attraction

Previous examples emphasize the importance of synchronized frequency with every model. Oscillations of the physical pendulum have to be maintained with certain speed, otherwise input energy is wasted.
Mechanical hammer (photo & video) and **a pump with a pendulum (photo & video)** work more efficiently with a shorter pendulum, but with air movement (**educational toy - photo & video**), 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.

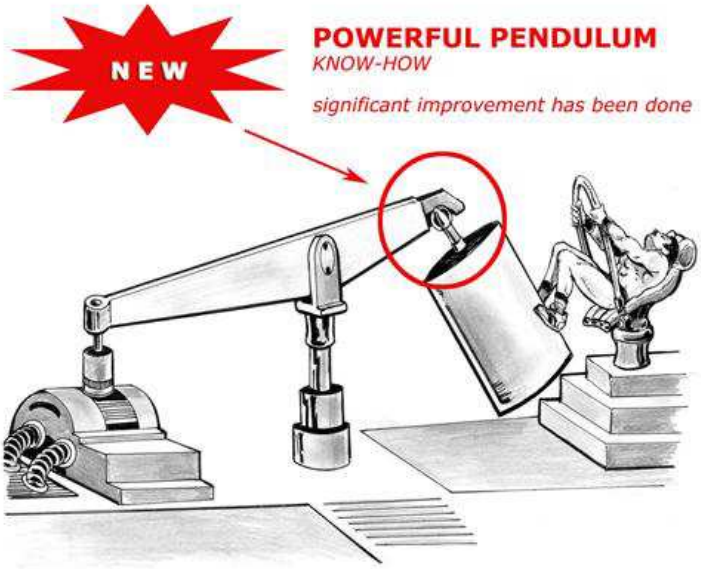
Preposition for decreasing of the friction

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.

POSTULATES AND DOGMAS

The easiest way is to proclaim something as impossible and refer to laws. However, are all laws of Physics perfect and eternal?
Luckily, and most probably, they are not. Therefore, exceptions of extremely efficient machines are possible (Fig. 1-3.).
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.



POWERFUL PENDULUM - *KNOW-HOW*

After many years of research optimal solutions are tested on a prototype and a sophisticated and ultra efficient pendulum has been found applicable to fitness centers (*New Sport for Clean Energy - Possibility of Practical Application*) and can also be used as a mechanical amplifier for alternative energy (wind power, hydropower ...).

Besides that, there are new advanced technical solutions (like various magneto-gravitational hybrids) and other know-how solutions in the same area which have immense application width.

For more information, please contact the author Veljko Milkovic.

REPLICAS FROM INDIA

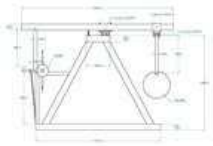
New official measurement

Oscillations more efficient than rotations

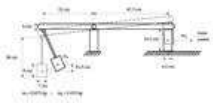
Laboratory proof of the superiority of the flexible pendulum versus the electric motor

Laboratory measuring which proves the oscillation of a flexible pendulum to be a hundred times longer than the rotation of an asynchronous motor

measurement performed by **Prof. Slobodan Milovancev, Ph.D.**, Faculty of Technical Sciences, University in Novi Sad, Serbia, June 04, 2014



Hand Water Pump with a Pendulum: Technical Drawings - Dimensions and Weights (rough version)



Dimensions and Weights of the Two-Stage Oscillator Table Models

VIDEOS

of two-stage mechanical oscillations research
(prototypes and models, the new mechanical effects, experiments...)

R E C O M M E N D A T I O N

*** PLEASE WATCH THESE VIDEO PRESENATIONS BELOW FOR THE FULL INSIGHT IN THIS RESEARCH! ***

Pendulum-lever system different from simple machines, better than transmissions

Power of the Pendulum - Proof of Ultra-Efficiency?

Re: video response by Branislav Serdar, mechanical engineer:

Analysis of movement of a system with elastic pendulum (pdf)

Hand water pump with a pendulum
- new design -

Superiority of Pendulum Drive
- Potential Energy to Kinetic Energy -

Video
Cart with a pendulum - Vehicles with internal and inertial drive

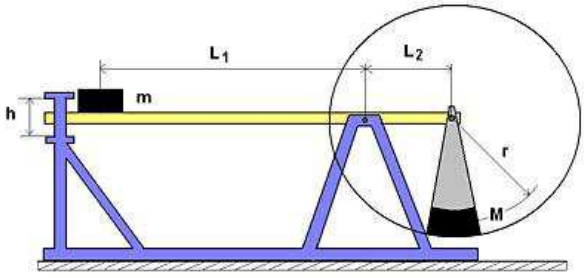
watch it in YouTube video

- click the "PLAY" button below or click here (on this link) -

Physics of the Pendulum-Lever Energy System: A Summary of Knowledge

Recommendations for Construction and Efficiency Measuring of the Two-Stage Mechanical Oscillator

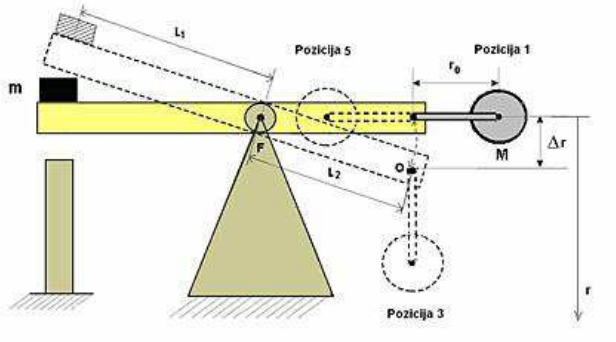
The goal of this work is to summarize the findings from previous papers along with some additional comments and also to answer two basic questions: how to construct an efficient Veljko Milkovic two-stage oscillator and how to measure the quotient of efficiency of the constructed oscillator. The goal of this paper is to explain all the facts about construction and measuring in order to facilitate other people's efforts towards a replication embodying a high efficiency quotient.



New Breakthrough in Physics of Two-Stage Oscillator

The Secret of Free Energy from the Pendulum

In this work, the author for the first time has identified the centrifugal force as a source of over unity work under some conditions and also calculated maximal efficiency quotients of the machine. Problems which easy can undermine over unity behavior of machine were identified and solutions were proposed. Influence of length of pendulum and critical angle on machine efficiency were clearly explained and mathematically supported.



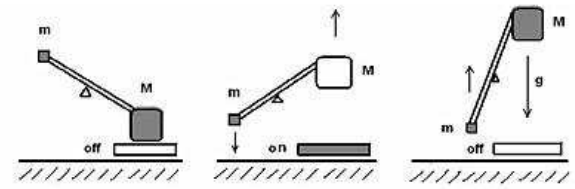
Traduzione "The Secret of Free Energy from the Pendulum" in ITALIANO
Energia "Free" da un Pendolo - VERSIONE ITALIANA - ITALIAN VERSION

NEW - August 04, 2010

New Breakthrough in Physics of Two-Stage Oscillator

Theory of Gravity Machines

After two years long research and analytical work, Jovan Marjanovic, B.Sc. in Electrical Engineering, presents extraordinary scientific paper with a simple theory of using conservative gravitational field as a fuel. In order to extract energy from conservative field, gravity shield effect is necessary. With proper usage of the shield, variable gravity field should be created in part of a system. Energy can be extracted only if difference in potential exists between two poles. The logic of this theory is also used to explain two-stage mechanical oscillator of Veljko Milkovic and areas of its improvement.



Traduzione "Theory of Gravity Machines " in ITALIANO
Teoria delle Macchine a Gravita - VERSIONE ITALIANA - ITALIAN VERSION

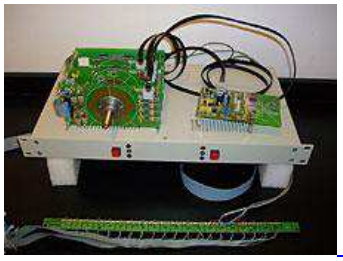
* NEW - November 13, 2009 *

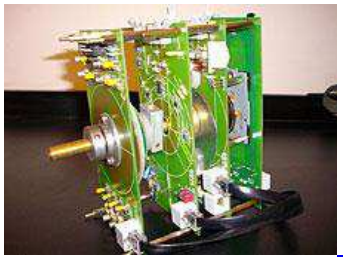
Two-Stage Mechanical Oscillator Research Progress Report

Pendulum Electric Brain

During the past year, Laboratory of Two-Stage Mechanical Oscillations Research (a subsidiary of Veljko Milkovic Research & Development Center) has been successfully developing "The Electric Brain" for the pendulum oscillations - a sophisticated multi-sensor system for collecting all necessary information from the pendulum swing/motion with the movable pendulum's pivot point in order to deeply study the pendulum-lever system and research the possibility of its automatisation. The development is in the final

stage and the finalization is expected in the coming months. There are few snapshots of the current development status of this device.






*see **MEASUREMENTS & EXPERIMENTS** confirming excess energy

*** NEW - November 17, 2008 ***

New theoretical analysis by Jovan Marjanovic, electrical engineer

Recommendations for Measuring the Efficiency Quotient in the Two-Stage Mechanical Oscillator of Veljko Milkovic

"Jovan Marjanovic gives the recommendations for correct efficiency measurements and stresses some errors in input/output energy measurement methodologies." **more**

*** N E W ***

October 28, 2008

New energy surplus measurement by Jovan Bebic, engineer:

Precise Measuring of Input and Output Energy in the Two-Stage Mechanical Oscillator

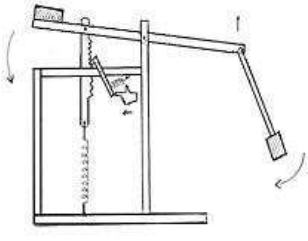
Jovan Bebic demonstrates the new efficiency measurement of Milkovic's two-stage oscillator in his new paper and reports that the output/input energy ratio is 2.284. **more**

MATHEMATICAL & THEORETICAL ANALYSES

*** NEW - December 15, 2008 ***

New theoretical and replication analysis by Jovan Marjanović, electrical engineer

Mechanical Feedback Loop Problems and Possible Solutions for the Two-Stage Oscillator of Veljko Milkovic




"The goal of this work is to share findings and problems in an attempt to close mechanical feedback loop for two stage mechanical oscillator of Veljko Milkovic. This work is a continuation of my first work with some additional insights after several attempts to finish the mechanical feedback loop.

In this work I will try to:

- point out omissions in modeling the system and suggest solutions,
- further discuss issues with mechanical feedback loops,
- explain the problem of passing energy to the pendulum." **more**

*** NEW - October 10, 2008 ***

New theoretical analysis by Jovan Marjanović, electrical engineer

Keys of Understanding Gravity Machines of Veljko Milkovic

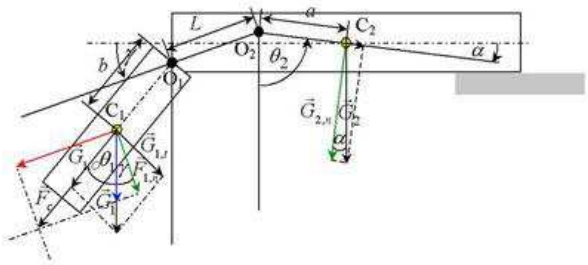
"The goal of this work is of to clarify some issues concerning two inventions of Serbian inventor Veljko Milkovic. The first invention is two-stage mechanical oscillator and second one is inertial propulsion cart.

In this work I will try to:

- point out omissions in modeling the system,
- discuss issues with mechanical feedback loop,
- discuss some errors in measuring and re-calculate output energy done by Jovan Bebic,
- continue addressing issues started by Colin Gauld concerning Centrifugal force terminology and omission to use moment of inertia in formula for kinetic energy,
- explain errors in Lead Out theory developed by Lee Cheung Kin and Lawrence Tseung,
- challenge the first and third Newton's laws and confine the law of conservation of quantity of the movement of the system in analysis of inertial propulsion cart." **more**

Mathematical model and simulation by Bojan Petković, engineer:

MODELING AND SIMULATION OF A DOUBLE PENDULUM WITH PAD



"In this paper, results of the simulation of a double pendulum with a horizontal pad are presented. Pendulums are arranged in such a way that in the static equilibrium, small pendulum takes the vertical position, while the big pendulum is in a horizontal position and rests on the pad. Motion during one half oscillation is investigated. Impact of the big pendulum on the pad is considered to be ideally inelastic. Characteristic positions and angular velocities of both pendulums, as well as their energies at each instant of time are presented. Obtained results proved to be in accordance with the motion of the real physical system..." **more**

Original scientific paper by professor Nebojša Simin, physicist: *NEW

FREE ENERGY OF THE OSCILLATING PENDULUM-LEVER SYSTEM

"...The effect of creating the free energy results from the difference between the work of the orbital 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. The coefficient of efficiency of the machine can be more than one." **more**

New theoretical analysis by Ljubo Panić: *NEW

ON THE TRACK OF THE ENERGY SURPLUS OF A TWO-STAGE MECHANICAL OSCILLATOR BY VELJKO MILKOVIĆ

"...Given the fact that F1 is always smaller than the total amount of the centrifugal force which is acting vertically downwards on the pendulum axis for small angles f, the conclusion is that the efficiency of a two-stage mechanical oscillator by Veljko Milković is always bigger than 1 because cosf is always less than 1!"

New analyses and measurements done by Jovan Bebić, MSc, electrical engineer: *NEW

ANALYSIS OF THE INFLUENCE OF THE CENTRIFUGAL FORCE DURING OPERATION OF THE TWO-STAGE MECHANICAL OSCILLATOR

"...It seems clear that the influence of the centrifugal force is the key to the explanation of the energy surplus of the two-stage oscillator by Veljko Milkovic, the inventor." **more**

MEASURING THE RATIO OF OUTPUT AND INPUT ENERGY OF THE TWO-STAGE MECHANICAL OSCILLATOR

"...Therefore, ratio of energy at the output and energy at the input is 22.89..." **more**

CALCULATION OF ENERGY SURPLUS OF THE TWO-STAGE MECHANICAL OSCILLATOR IN THE EXPERIMENT WITH MANUAL DYNAMO LAMPS

In one more analysis and measurement, Jovan Bebić considers the efficiency of Veljko Milkovic's two-stage mechanical oscillator in the famous experiment with the hand flashlights and reports that the output/input ratio is 2.8 times in his same replicated experiment. **more**

DOUBLE PENDULUM POWER
Method for Extracting AC Power from a Mechanical Oscillator

updated version December 28, 2013
Double Pendulum Power AC Power from a Mechanical Oscillator

EXPERT OPINIONS ON THE TWO-STAGE MECHANICAL OSCILLATOR - Peer Review -

***read the OPINIONS of professors, academicians, scientists, physicists, experts, researchers etc.**

Peter Lindemann, D.Sc. :
"*...This certainly ranks as one of the most important discoveries in science in the last 300 years...* **more** "

Prof. dr. Velimir Abramović:
"*...The double oscillator is also the best mechanical analogy of the alternating current, even better than Tesla's analogy...* **more** "

Academician prof. dr. Bratislav Tošić:
"*...It is estimated that the input of gravity in the performance of BIPHASE OSCILLATOR is around 80%...* **more** "

***see 22 approved PATENTS**

***see one of the practical applications - HAND WATER PUMP WITH PENDULUM**

*

WHAT IS NEW?!

more news

15th December 2008 - New theoretical and replication analysis by Jovan Marjanovic, engineer:
Mechanical Feedback Loop Problems and Possible Solutions for the Two-Stage Oscillator of Veljko Milkovic

09th December 2008 - New patent:
Instrument for examination of the effect of the mass of a two-sided lever to its oscillations when connected to a pendulum in a two-degree oscillator - P-2006/0094 - IN ENGLISH

17th November 2008 - New theoretical analysis by Jovan Marjanovic, engineer:
Recommendations for Measuring the Efficiency Quotient in the Two-Stage Mechanical Oscillator of Veljko Milkovic

28th October 2008 - New energy surplus measurement by Jovan Bebic, engineer:
Precise Measuring of Input and Output Energy in the Two-Stage Mechanical Oscillator

10th October 2008 - New theoretical analysis by Jovan Marjanovic, engineer:
Keys of Understanding Gravity Machines of Veljko Milkovic

11th September 2008 - New video presentation:

Pendulum-Lever system different from simple machines better than transmissions
watch it in Google video - click the "PLAY" button below or click here (on this link)

09th August 2008 - New replication video:

New experimental validation of Veljko Milkovic's claims
- two-stage mechanical oscillator replication by Raymond L. Head (USA) -

more news

RESEARCH OF TWO-STAGE MECHANICAL OSCILLATIONS*

*this text below was written in 2001, for more recent updates see the text and videos above

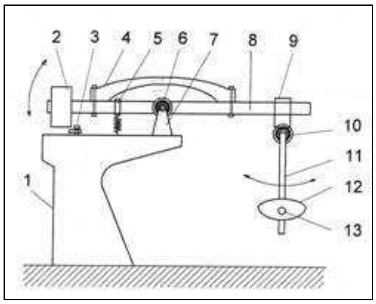
- **A LEVER WITH A PHYSICAL PENDULUM AS A SIMPLE MACHINE**
- **"EXCESS" ENERGY**
- **ENERGY OF A PENDULUM AND A LEVER**
- **GRAVITATIONAL POTENTIAL EVERYWHERE**

A LEVER WITH A PHYSICAL PENDULUM AS A SIMPLE MACHINE

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 **perpetuum mobile**, when usage of input energy is in question.

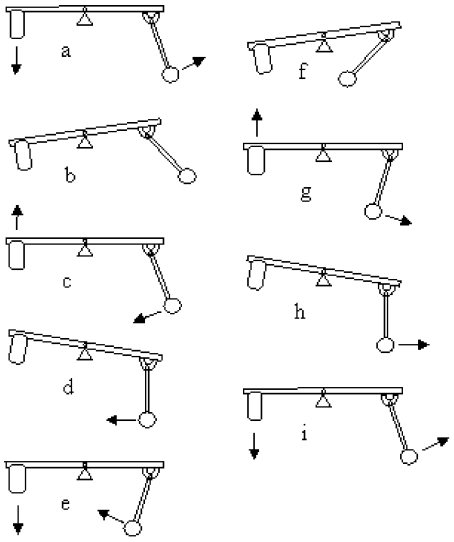
However, the model is energetically open both at the entry and the exit part, so the exact measurement of efficiency would be complicated. The matter of the exact **measurment** was postponed, but the noticed fact was that the model represents a new type of a simple machine, and that is very interesting 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 s 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 ***Picture 1.*** 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..



Picture 1. The position of the lever and the pendulum at the simultaneous oscillation of the lever and the 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.

"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.

Experts usually followed their instinct. Some were "in favour", some were "against" **perpetuum mobile**. Among the first group, after some hesitation, was **Nebojša Simin**. Sceptical at the beginning, as many other physicists involved in this research, **his resistance was defeated with a simple gesture. He put his hand on the lever which was oscillating. The pendulum continued to sway as if nothing happened, while the energy was transferred from the lever to his arm. The lever was working tirelessly, without a decrease in the oscillatory energy of the pendulum. Şimin did not need a more convincing proof than this to convince him that this is the perpetuum mobile. It practically makes no difference whether the lever is doing something or not. That work does not reflect the oscillation of the pendulum, and the pendulum in return, as it oscillates, makes the lever to oscillate too. Simin was positive that the efficiency percentage of the lever with a physical pendulum larger than the one.** At the same time, it meant that the law on energy sustainability can not be applied for this model, which is only a step away from the autonomous perpetuum mobile. For the model to be autonomous, it was necessary to come up with an idea how to return a part of the energy from the lever to the pendulum, so that it would not stop because of friction and air resistance. Milković solved this problem as well through his **patents**.

Unlike Milković and his **associates**, Simin did not like the idea of giving the main role to the gravitational potential. If the friction is neglected, pendulum work force is equal to zero. On the other hand, no one doubted the meaning of the centrifugal force of the pendulum. It was clear from the beginning that they should follow that lead.

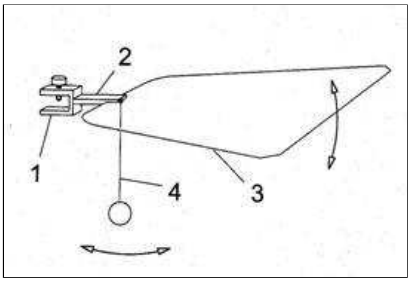
A lot of time was spent on the basic model and the matter of maintaining the oscillation of the pendulum, having in mind the friction and air resistance. Milković solved that problem with electromagnetic bumpers in the patent **"The piston water pump with the pendulum and electromagnets"** ,which he handed in for registration on 02/22/01. In that way, he completed his previous model:**"Electric generator with the pendulum and magnetic bumpers"** , from 06/14/00. Observed individually, neither of these two models are autonomous, but together, they are. **The combination of these two models is the first model of perpetuum mobile**.

Milković was also troubled with the problem of the relatively slow oscillation of the pendulum, which produced low-frequency current. He did not solve this problem fully so far. An attempt with the model: **"The electric generator with an elastic pendulum handle"** ,which offers faster oscillations, does not solve the problem, because that is a single-stage oscillator which has an efficiency coefficient lower than one. Among the first nine **patents**, this is the only one which has nothing in common with perpetuum mobile.

"Surplus" or "excess" energy was usually attributed to the gravitational potential. For sceptics, that was the "proof" that this could not be **perpetuum mobile**, because the gravitational field during oscillation of the pendulum is zero. In their opinion, that was enough to conclude that there could not be "excess" energy. **The only thing everyone agreed on was the efficiency of the device.**

Qualms about the efficiency coefficient could not be satisfied without a deeper analysis. The matter was the **participation of the centrifugal force of the physical pendulum in the lever oscillations**, as well as energetic consequences of that participation. **That force does not influence oscillation of the pendulum, but is directly responsible for the oscillation of the lever**. It is clear that the axis of the pendulum, if we neglect the rotation, does not have kinetic energy in the pendulum system, but it does in the lever system. However, potential energy of that point changes in the lever system. It was not clear whether the change of the potential energy, despite it is zero during one oscillation, has any effect on the phenomenon as a whole. As far as the work is concerned, the pendulum operates against friction and air resistance, and the lever operates, for example, through the hammer hitting the surface, or by producing the alternative current by means of induction. It was not clear which work force was bigger, the pendulum or the lever. The response could not be a direct one, because precise measuring was needed, but it could not have been conducted on the original model. This was also the case with the models Milković constructed in the meantime. One of them is the fan, which is a two-

stage oscillator (***Picture 2.***). The fan is swaying for unusually long time after the pendulum has only once been put out of balance. But, the theoretical explanation in this case is even more complicated that the one of the original model.



Picture 2. The fan

Let us get back to the basic model. Some things are obvious just when you look at the movements of the two-stage oscillator. There is a significant difference between the two conditioned oscillators. **The lever is forced to oscillate, unlike the pendulum. The opposite is not possible because of the influence of gravity on the weight of the pendulum.** If the pendulum is connected to an external energy consumer, the pendulum soon stops with oscillations, as well as the lever. However, if the lever is connected to an external energy consumer, the pendulum continues with oscillations. If the external consumer does not take all the energy from the lever, it will continue to oscillate with a smaller amplitude. If we suppose that the positive work force of the lever, and it's useful work force are greater than the work of the pendulum while it is overcoming friction and air resistance, we get **"excess" energy**. That "excess" can occur only due to the centrifugal force of the pendulum. However, is that really "excess" energy or does it just seems so?

ENERGY OF A PENDULUM AND A 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.

Even a basic model made by Milković established that a change of the lever energy does not change the pendulum energy. Mechanical energy of the lever, in the pendulum system, is equal to zero, so that the lever is not in position to affect the pendulum. In the surface system, the lever energy is different than zero, and it can perform work if something is on its way. The lever can perform work be hitting the surface, but it would still not affect the pendulum. **What ever happens to the lever, the pendulum energy will not change.**

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 continuos 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 a same amplitude as before. This is a clear and unambiguous sign of "excess" energy.**

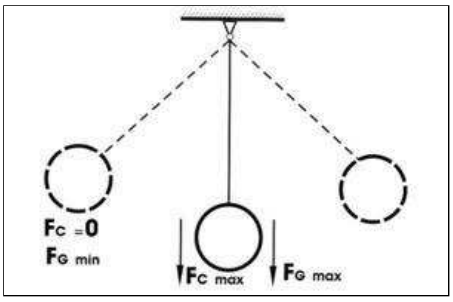
Mechanical energy of the lever occurs without additional input of energy from the outside, due to the way in which the pendulum is moving. Work force of the lever does not mean that a pendulum must lose it's part of the energy. Pendulum just needs to be moving. On the other hand, **the pendulum is not moving because it is getting the energy from somewhere outside, but because of inertia**. In other words, the lever is capable to denounce a part of its energy for the external consumer, even though that process does not include any working body outside of the device. This is all under condition that the pendulum is oscillating without obstructions. It is understood that the pandulum has been previously thrown out of balance. After a short time, this energy in the total operational, energetical or power balance can be neglected.

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.

In this way, interpretation of the device does not fall under the usual theory of energy sustainability. Classic mechanics either did not foresee objects such as multi-stage oscillators or it overlooked certain characteristics of these object. Or, maybe both.

GRAVITATIONAL POTENTIAL EVERYWHERE

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



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.

$$E_k = \frac{M(v_1 + v_2)^2}{2}$$

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.**