Mechanic laser

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1 Introduction

Before I start writing about my project I want to mention something about how my project was created. At the beginning I had to choose topic. It was a little bit hard because I wanted to do something interesting. I was looking for inspiration in world around me and I noticed gravity force. Maybe it's not unusual or innovative, but it can be very interesting. I used only the basic phenomenon and I achieved exciting results.

2 How to make gravity amplifier

To built my amplifier you need some different-sized aluminium or wooden blocks. You have to put these blocks in queue (Fig.1).

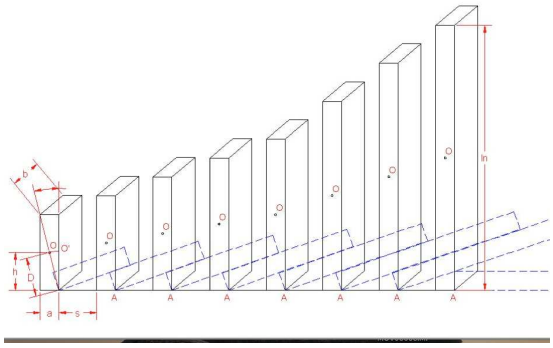

Fig.1 Scheme of my amplifier

And now you have to collapse first block and you can observe how my amplifier works.

3 How does it work?

If we collapse first block, then this first collapses second etc. First you have to put some work to knock first, and then more and more blocks will fall and their energy will grow. The rules of work are very simple, but we can analyse some interesting factors.

4 Optimization

The most important part of my investigation was optimization factor, which has influence on efficiency of amplifier. I wanted to check what happens when I change base or distance between blocks. Now I want to focus on these factors.

Fig.2 My amplifier is working

4.1 Friction

One of the most important factors is friction. When friction between block and base is high, the axis of block rotation will be near base. Transfer of energy is better then if in case of low friction because in that case we would lose a lot of energy.

4.2 Distance between blocks

The next important factor that has influence on efficiency of my amplifier is the distance between the blocks. I have noticed that when we change the distances between them properly, we are able to increase efficiency of this amplifier by a few times

4.3 Number of blocks

Another important factor influencing my amplifier's results is the number of blocks it consists of. Namely, if we have two amplifiers with identical number and size of blocks and we take the shortest block from one of the amplifiers, we can observe that the energy produced by the longer amplifier is much bigger.

5 Measurement method

To investigate, what influence on my amplifier have factors mentioned above, I had to construct a device which would enable me to measure the amount of obtained energy. That's why a pendulum turned out is the best solution because thanks to it I can compare energy produced by the amplifier designed in different ways.