

# Perpetual Motion Devices and Machines

© 8 August 2014

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Reprinted 2014

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## Outline

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  - C. The idea of creating a perpetual motion machine has been ongoing for centuries. There are many people who have said that they have created a machine that works, yet a lot of them only used tricks to make the machine appear to be running with an input source. There are many people to discuss failed perpetual motion machines, but why aren't countries spending more money and effort to make successful devices?
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  - A. How the laws of thermodynamics affect the idea of a perpetual motion device.
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  - C. With all of the problems facing perpetual motion machines, is it possible to say that it is impossible to create one? With the increases in technology, only time can tell.

Imagine a world where power is unlimited and produced with little to no pollution. With perpetual motion devices and machines, this could be possible. Having a machine that is able to produce energy without any input would open the world to many new possibilities in how we travel. The idea of creating a perpetual motion machine has been ongoing for centuries. There are many people who have said that they have created a machine that works, yet many of them only used tricks with an input source in order to make the machine appear to be running. There are many people who could be discussed when speaking of failed perpetual motion machines, yet a bigger question should be why aren't countries spending more money and effort to make successful devices?

A perpetual motion machine is a machine that would practically run forever (as long as the parts aren't faulty or become damaged), without the need of an energy input source. That would be great! Every country should allocate resources and focus on creating machines like this. The big question is "Why are they not doing this?" For starters, because of the laws of thermodynamics, many scientists don't even think that is it possible and, therefore, would be a waste of time to focus on something that they think is theoretically impossible. Then an important place to start research would have to be with these laws. The first law of thermodynamics, "also known as Law of Conservation of energy, states that energy cannot be created or destroyed; it can only be redistributed or changed from one form to another" (Boundless, n.d.). What this law is saying for a perpetual motion device is that if it has moving parts, energy would be lost through the movement by friction, heat and other factors, This means that the machine should not be able to fully power itself, and whatever momentum it

has would continue to fade and eventually stop. This is not sounding too good for a perpetual motion machine.

Moving on to the second law of thermodynamics, let's continue to badger the idea of a perpetual motion machine. The second law states, "The entropy of any isolated system not in thermal equilibrium almost always increases" (Boundless, n.d.). This is saying that the temperature inside an enclosed machine that is running will almost always increase. That is simple enough to understand. If the machine is running, the components will produce some heat. Why does this matter? This matters for two reasons. First, this is saying that heat cannot be transferred from a cooler surface to a warmer surface without increasing the temperature of the cooler surface (Rader, 1997). This implies that if a person were to try to make a perpetual motion machine that relied on a reaction to produce heat as its source of energy, eventually the temperature of all of the parts in the device would increase and more than likely overheat. This brings us to the second reason why this law is important. The temperature of a machine doing work would need to be controlled and maintained, so in order to cool the machine, it would need an outside source to maintain its temperature or a portion of its unit dedicated to cooling the system, which could possibly decrease its performance. For a machine to be classified as a perpetual motion machine, it has to be completely self-sufficient and efficient. So, no other machine assisting with temperature regulation, or in the case of being self-cooled, the cooling portion, must not compromise the efficiency and reduce the possibility of its staying in motion.

There have been many people recorded for centuries who have made efforts to design or create a perpetual motion device. Unfortunately, almost all designs and machines were said

to have failed, and the few that were said to have worked, failed to make it to proper examinations to study the validity of their claims. One of the first known recorded designs came from an Indian author Lalla around the year 748, who proposed a spoke like design with chambers filled with mercury. Later on, another Indian author, Bhaskara, would suggest a similar idea of a spoke design, also self-propelled by mercury. The thinking behind this design

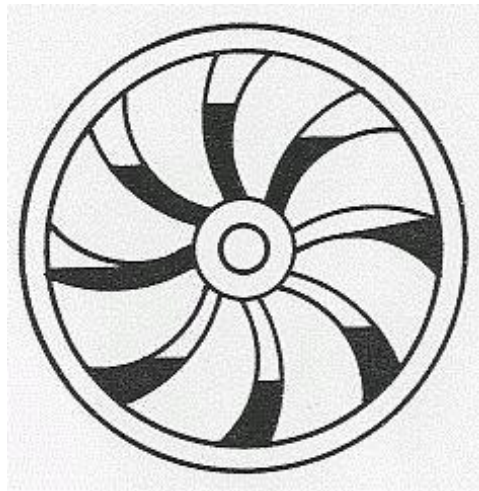


Figure A: Bhaskara Wheel (Simanek, 2007)

was that the mercury (in black in the Figure A above) would move around in the chambers in such a way that the weight of the mercury would always be heavier on one side of the wheel as it pours to the outer edge and become lighter on the opposite side when it retracts (Simanek, 2007). This, and many other designs that would be later constructed, fail because the movement is abrupt, but it balances its momentum once the top area reaches the bottom area and eventually loses momentum. As simple as the design is, it would be nice if the design worked, but the fact that these designs don't work doesn't mean that a perpetual motion machine is impossible.

Leonardo Da Vinci was a brilliant mind of his time. He was interested in perpetual motion machine (see Figure B below) and studied the ones that had already been built and later came to conclusions why they would not work (Perpetual, 2007). Although Da Vinci set out to

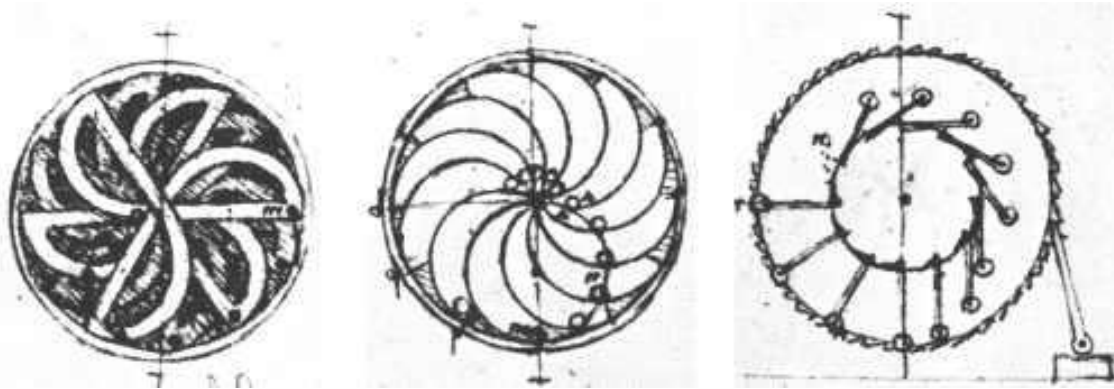


Figure B: Leonardo Da Vinci's drawings of overbalanced wheels (Simanek, 2007)

prove many things possible that were thought impossible, he was skeptical that the perpetual motion machine would work. To people trying to make a perpetual motion device, Da Vinci said, "Oh, ye seekers after perpetual motion, how many vain chimeras have you pursued? Go and take your place with the alchemists" (qtd. in Simanek, 2007). With his choice of words, it seems that he was saying that to build a perpetual motion machine that actually worked would require something mystical or outside the realm of typical human knowledge. Yet sayings like these should not deter people from trying to build such a device. Throughout time, people have been ostracized for their gifts of knowledge and creativity and not complying with what was typical of that era. Da Vinci was forced to keep many of his inventions secret because people did not believe that they could work, and many of those people thought he was crazy.

In the case of Sean McCarthy, he knows oh too well about having to keep one's invention secret. McCarthy said that he created a perpetual motion machine and made its existence known in the magazine *The Economist*. After this publishing, he started to receive worldwide attention involving his machine. When it had gotten to the point of his receiving "death threats," he decided not to publish his design (Sharrock, 2006). It was said that other "very well-respected scientists" observed and tested the machine and were able achieve the same results as claimed, yet none of these scientists as well were willing publish their findings. If this machine works as they said it does, it could move the world forward for many amazing possibilities. Even if it only functioned somewhat well, it could be a model for efficient machines or even basis of a machine to improve on. So, why then would these scientists not publish their information? Supposedly, they were in fear of their reputation on such the subject of being called a fraud, but is there something else that they were afraid of (Sharrock, 2006)?

Bob Swanson, an executive of Linear Technology, has been working with the company to increase the energy harvested in electric and hybrid vehicles through analog semiconductors. The company has been "...developing the analogue block that will work off the 10-20mV outputs from the energy harvesting transducer" (Linear, 2010). This means that there is less energy used in the running of components in the system, making the cars run more efficiently. Many people may look at that as only slight increase in efficiency. If efficiency is increased and continues to increase, the electric vehicle could have possibility of its being able to completely harvest the power from its input sources, which could eventually make it a self powered, or perpetual motion machine.

The idea of perpetual motion machines is up against lots of controversy. The first law of thermodynamics says that a machine could not run forever on its own power because energy is not perfectly transferred. The second law of thermodynamics says that perpetual motion machines are not possible because all of the parts of machine would eventually overheat without an outside cooling source. Then perpetual motion machines have been battered over centuries with fraudulence, failed designs, and strong advocates for why they are not possible. Yet, there are people like Sean McCarthy who have possibly made working devices, and people like Bob Swanson and the company Linear Technology, who are working towards efficiency in energy harvesting. So, with all of the problems facing perpetual motion machines, is it possible to say that it is impossible to create one? With the increases in technology, only time can tell.



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