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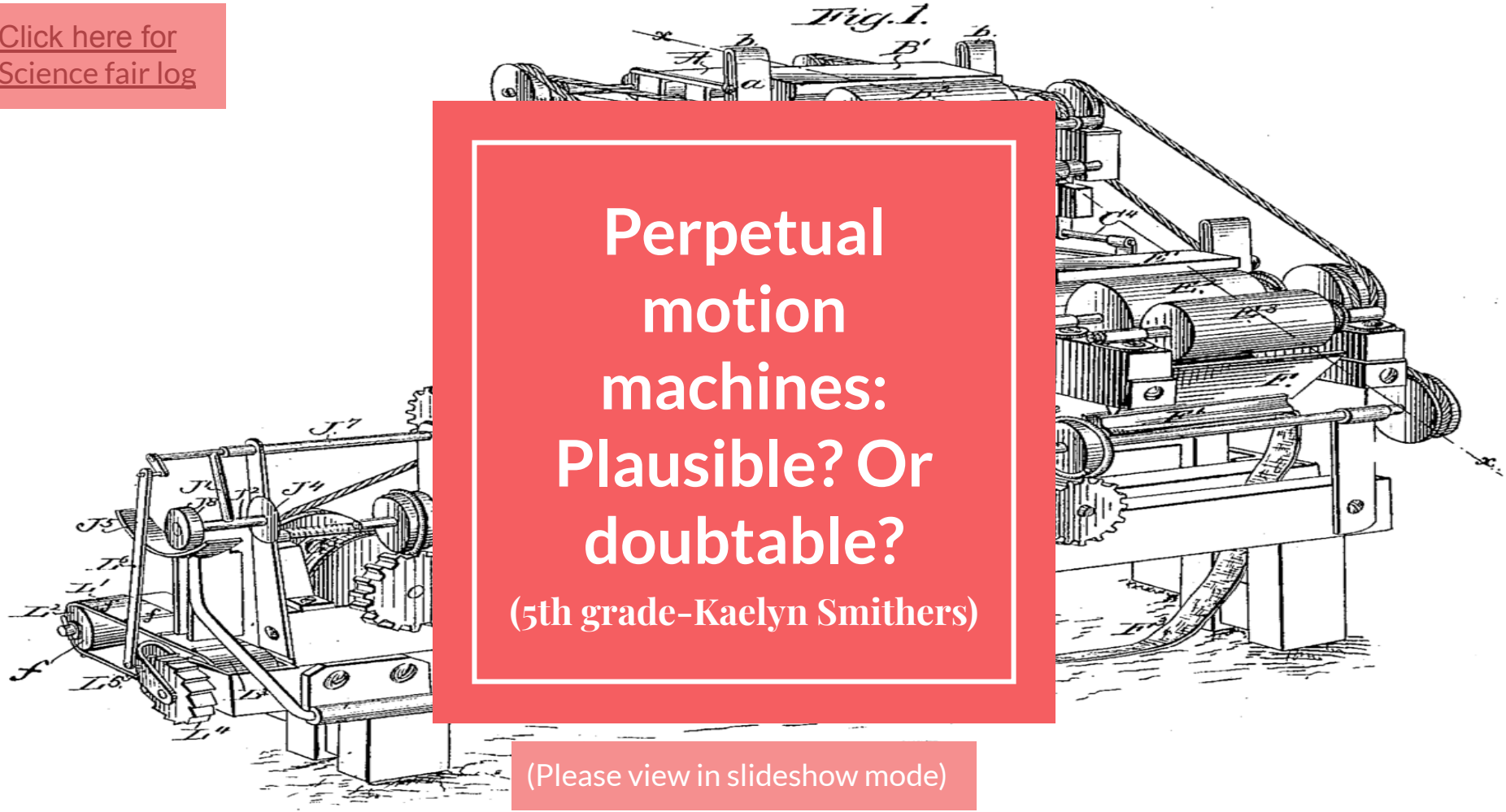



# Perpetual motion machines: Plausible? Or doubtable?

(5th grade-Kaelyn Smithers)

(Please view in slideshow mode)

# Perpetual motion machines: Plausible? Or doubtable?

In multiple instances in history, people have claimed to have made perpetual motion machines. However, the devices never have and likely never will work as their inventors hoped.

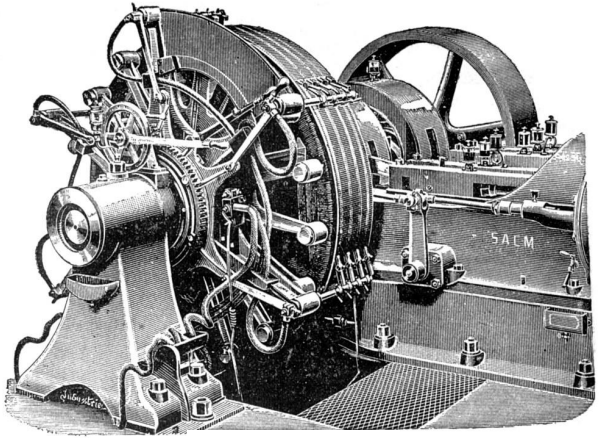
In this project, I will be sharing my information about perpetual motion machines, and will be answering two overarching questions.

How can we identify them(Into groups)?

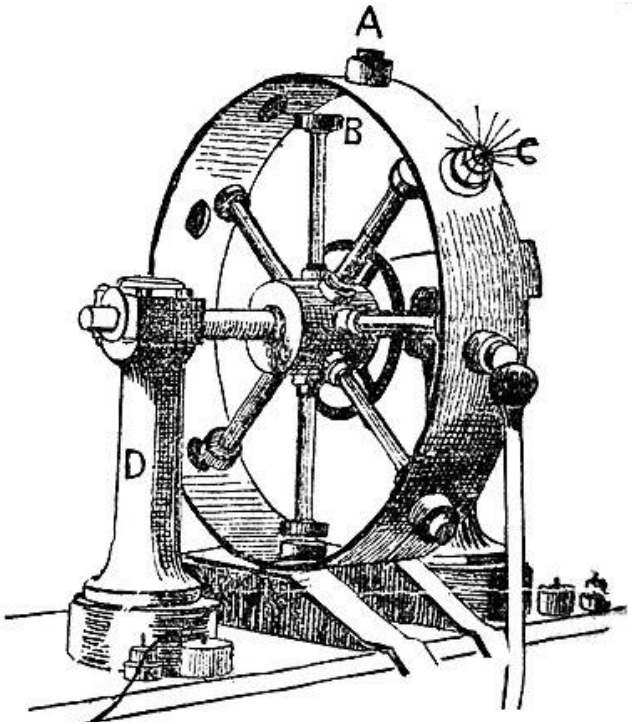
And

What are examples of machines from both groups

and more?



# What are perpetual motion machines?




“Perpetual motion is the motion of bodies that continues forever in an unperturbed system.”

-Wikipedia-Perpetual motion

A perpetual motion machine is a hypothetical machine that can do work forever without an external energy source.

# What would perpetual motion machines do for us?

Perpetual motion machines would benefit our daily lives. What if there was a windmill that produces its own wind? Or a light bulb whose glow provided its own electricity? These ideas have captured many inventors' imaginations because they can transform our relationship with energy, and help us understand science better.

# Overarching questions review

How can we identify them (Into groups)?

And

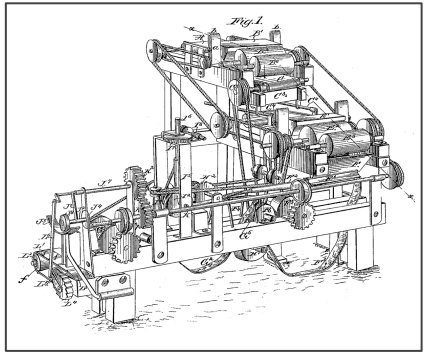
What are examples of machines from both groups

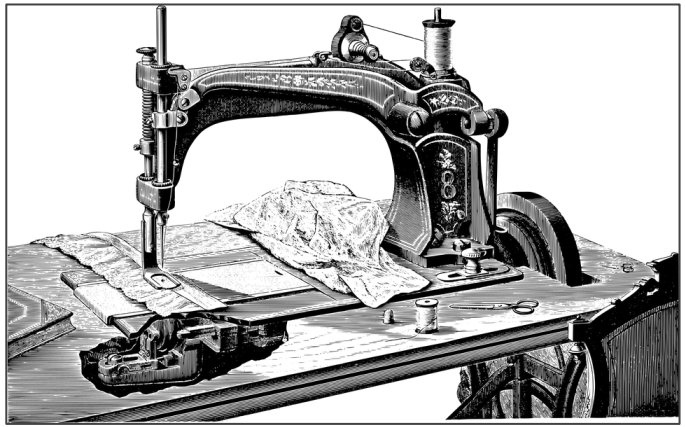
and more?

# Are perpetual motion machines plausible?

To answer this question briefly, the answer is no. Perpetual motion machines violate at least one or more of the laws of thermodynamics. (Thermodynamics is the branch of physics that describes the relationship between different forms of energy.)

But, now we know how we can identify them. We can identify them by which law of thermodynamics that they break.



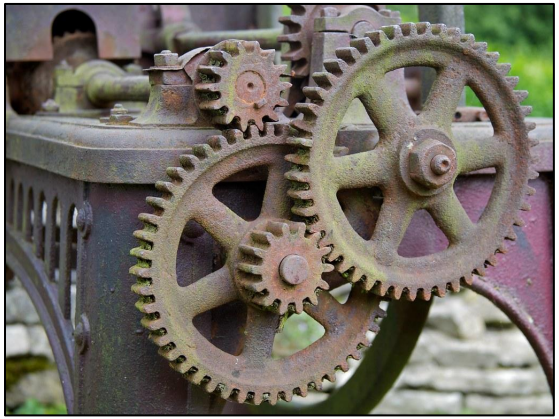


# 1st fundamental law of thermodynamics

The first law of thermodynamics says that energy cannot be created or destroyed. You can't get more energy that you put in.

That rules out perpetual motion machines that give extra energy and are helpful for our day-to-day lives.

# Inventors have proposed many ideas for perpetual motion machines with one sole purpose: To keep moving.



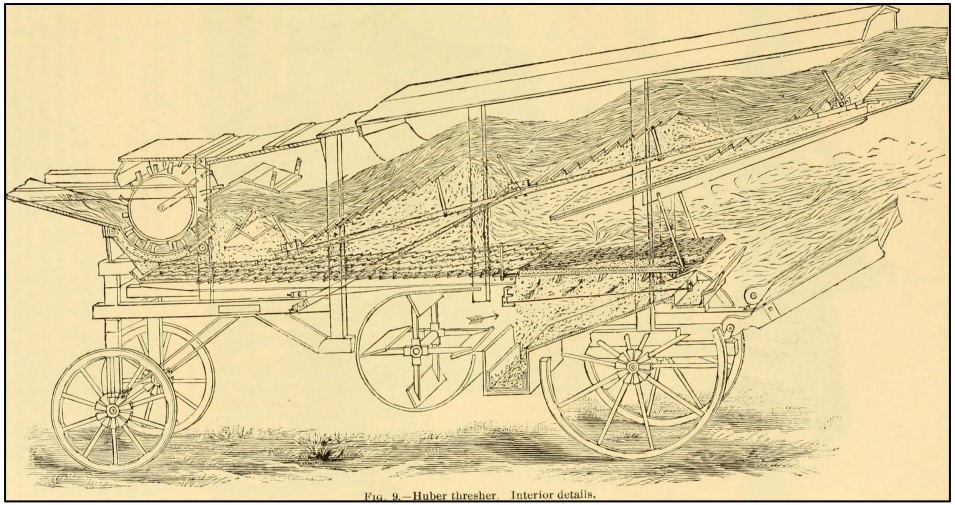
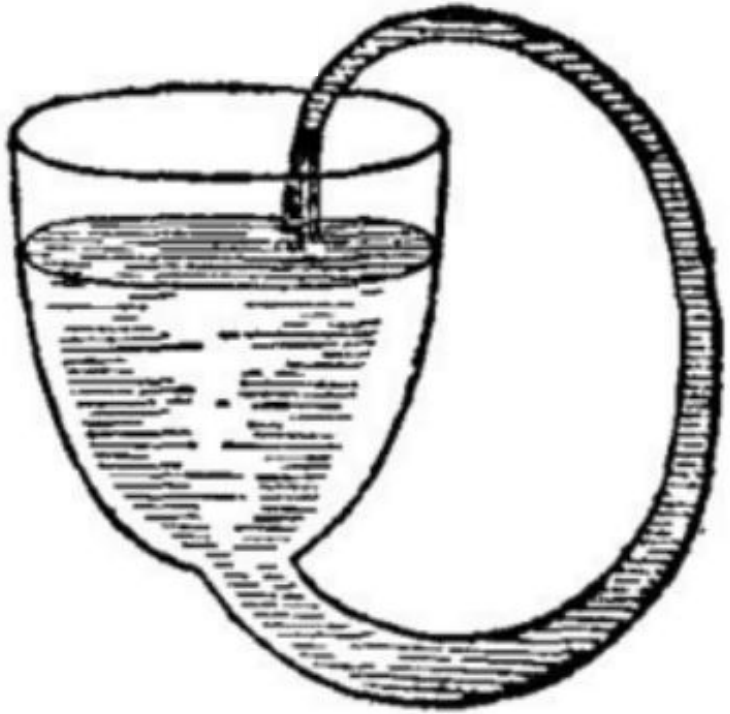


Fig. 9.—Huber thresher. Interior details.

# Example of a perpetual motion machine that broke the first law

In the 17th century, Robert Boyle came up with an idea for a self-watering pot. He theorized that capillary action (the attraction between liquids and surfaces) would keep the water cycling through the bowl.

Even if it could overcome gravity, and if the capillary action was strong enough to pull the water through the tubes, it would not fall back into the bowl.

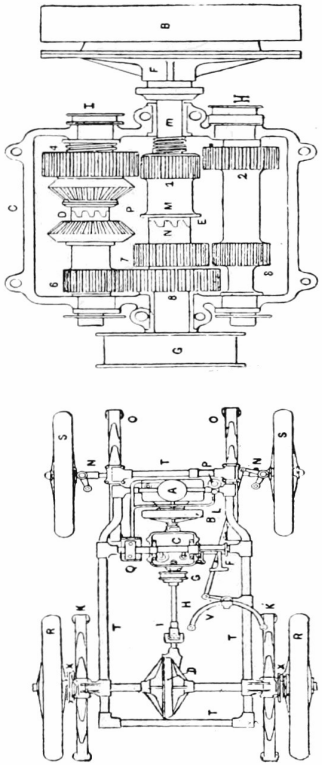


# 1st law of thermodynamics conclusion

The perpetual motion machines so far were not successful.

As this first law was discovered, inventors shifted their machines to fit the first law, but violate the not-yet-discovered second law.

# 2nd fundamental law of thermodynamics



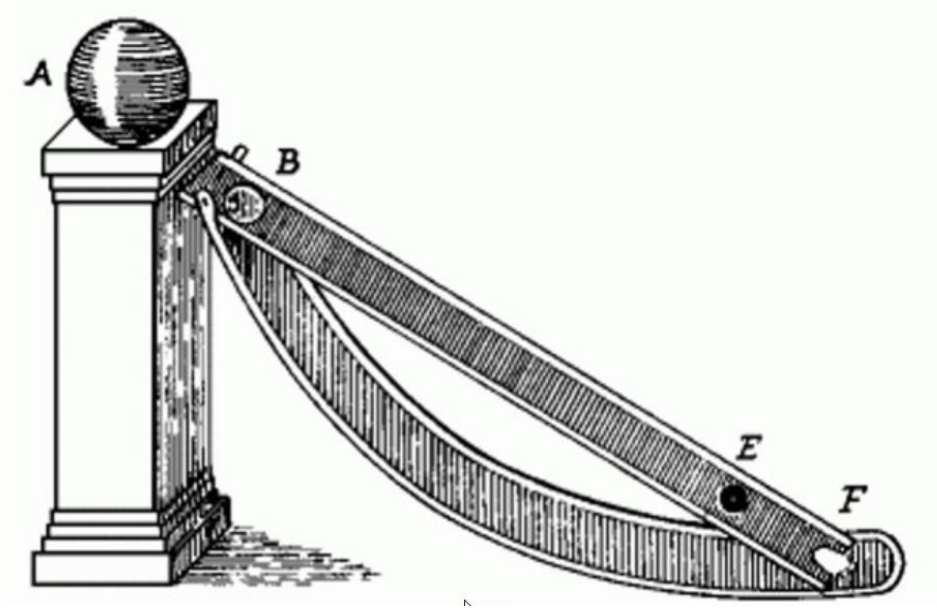
To put it in simple terms, the second law of thermodynamics is that energy tends to spread out by processes like friction.

Another way to say it is: As energy is transferred or transformed, more and more of it is wasted.

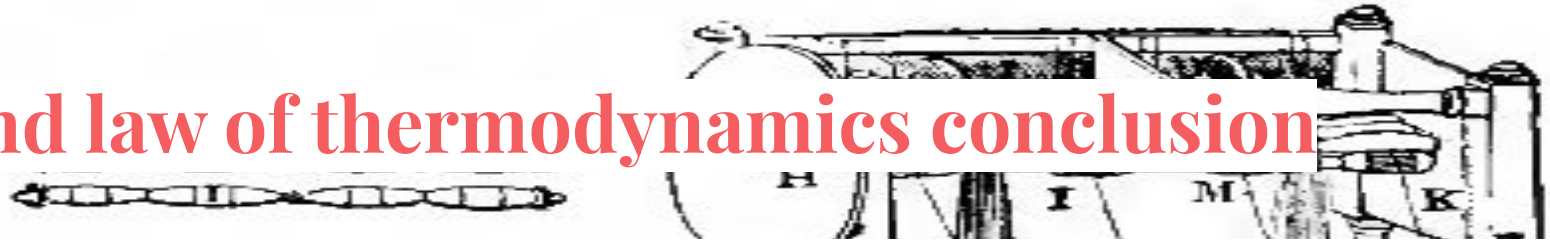
# Examples of perpetual motion machines that break the second law

There are some versions with magnets. The ball is supposed to be pulled to the top, where the magnet is, and then fall back down, through a hole at the top.

This one is like the self-watering pot because the ball would just stay up at the top. Even if it kept moving, the magnet's power would degrade over time, and eventually stop working.



# 2nd law of thermodynamics conclusion

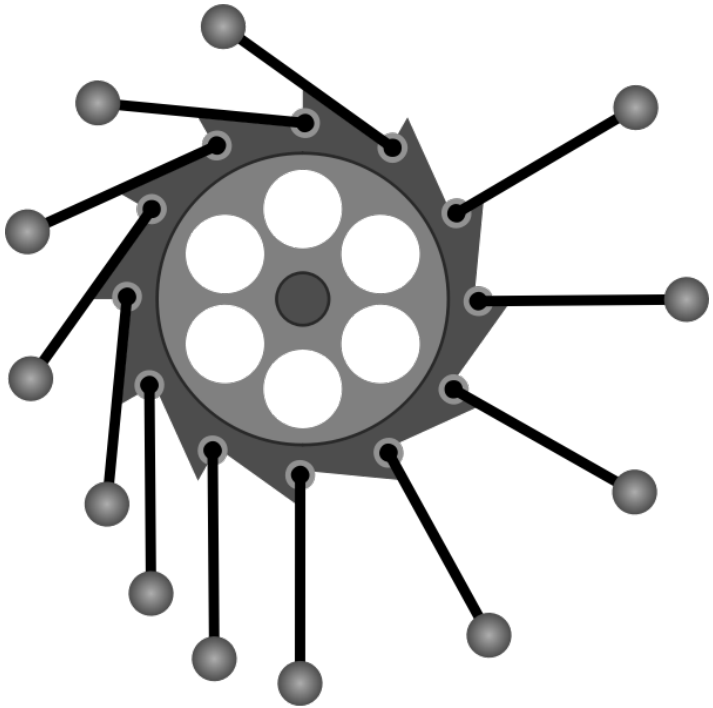


Every machine has moving parts, or interactions with air or liquid molecules. That would generate tiny amounts of friction and heat, even in a vacuum, which means that no actual machines could sustain energy and keep working.

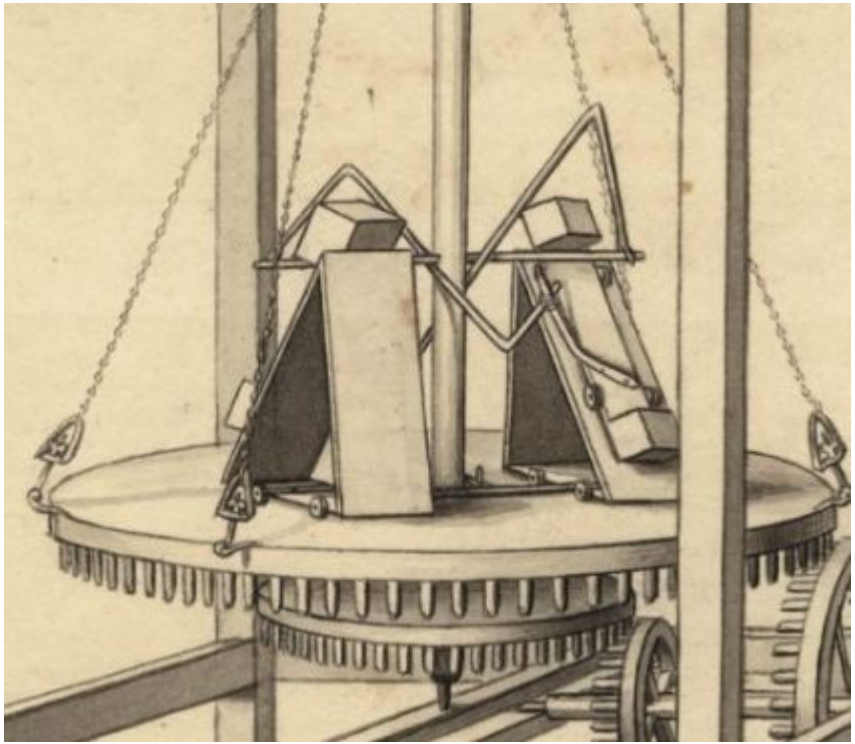
On the next slides, I will be sharing a few more perpetual motion machine examples.

# More machines

Around 1159 A.D, a mathematician called Bhaskara The learned, sketched a design for a wheel containing curved reservoirs of mercury. He reasoned that as the wheels spun, the mercury would flow to the bottom of each reservoir, leaving one side of the wheel perpetually heavier than the other, the imbalance would keep the wheel turning forever.



# More machines

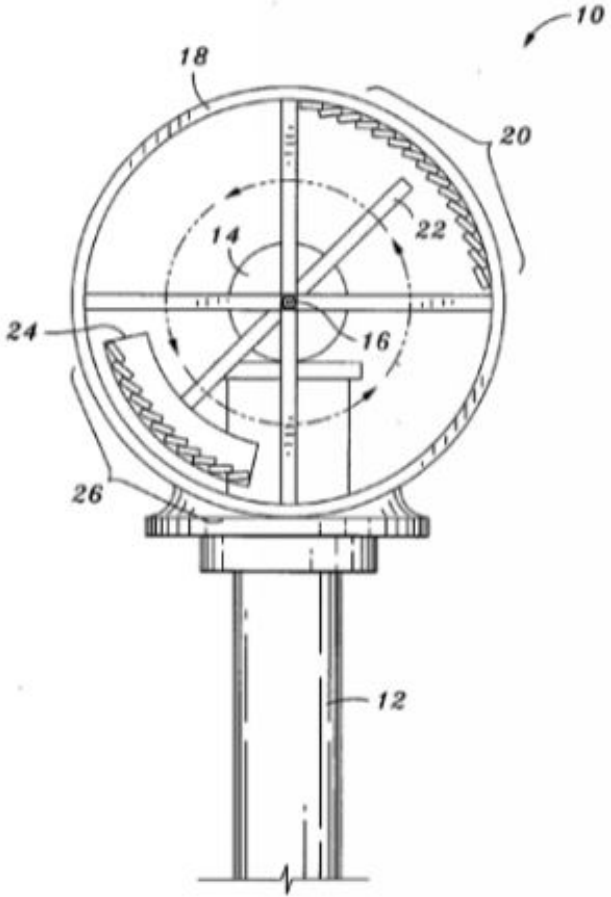


There were also some self-pumping waterwheels, or self-blowing windmills. Losses due to friction means that neither of these would be able to produce enough energy to fully complete the cycle.

# Failed patent example

This perpetual motion machine blueprint was an attempt to generate more energy than that was put into the system. You cannot put any more energy-in than energy-out, which means it was an obvious fail.

It also (based on the source: Perpetual Motion Machines in Patent Applications) had an efficiency of 100% which is impossible.

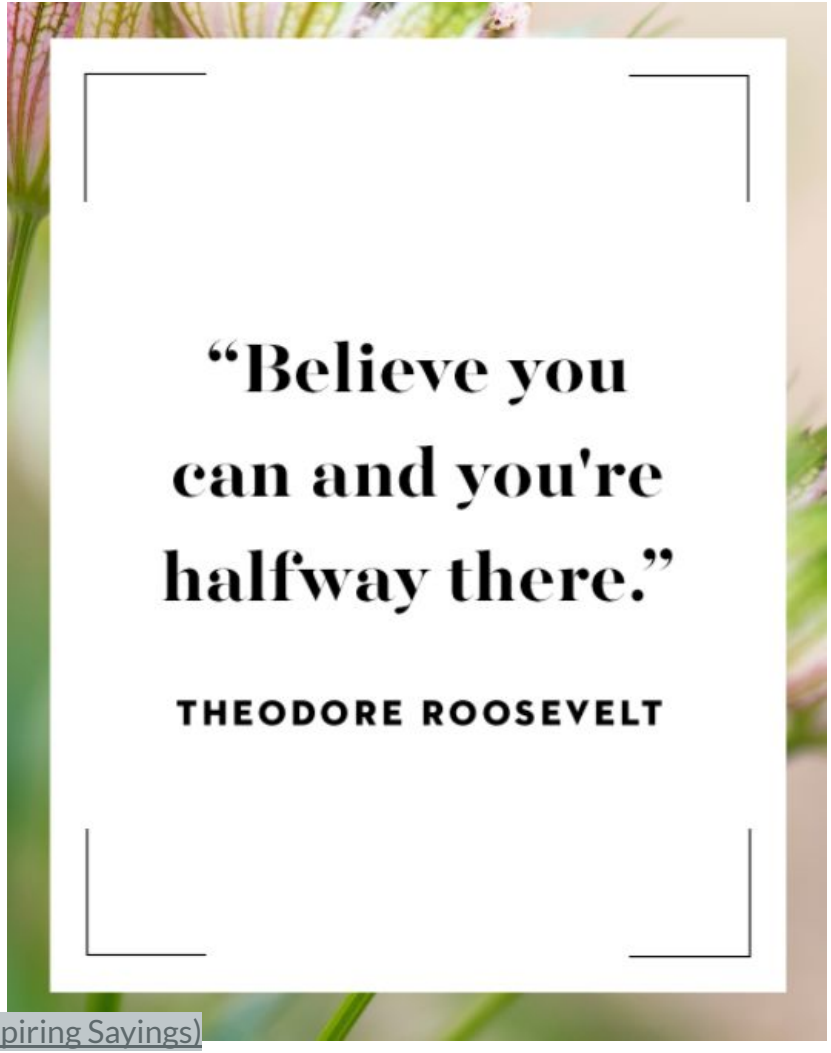


# Final conclusion (End)

So, as you can see, perpetual motion machines are intriguing.
There are some that seem to keep going but are drawing energy from some kind of external source, weather the temperature in the room it's in, connected to another power source or more.

They may not be possible in today's world, but maybe, someday in the distant future, inventors will find something that will make perpetual motion machines possible, and create a machine that benefits the world and our connection with energy.

Maybe it will even be you.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# Source page

“Nicolas Ponomarenko-Perpetual motion machines in Patent applications”

“Live science- Perpetual motion machines: Working against physical laws”

“PBS space time -The impossibility of perpetual motion machines”

“Physics Girl-Are perpetual motion machines possible”

“Ted Ed-Why don’t perpetual motion machines ever work”

“Wikipedia- Perpetual motion”