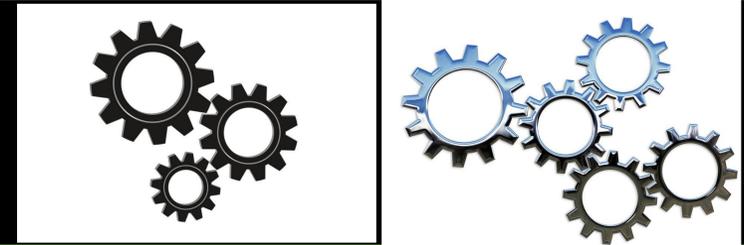


How does an electric car charge the battery while it brakes?



Problem / Testable Question

How does an electrical car charge the battery when braking?

Background Information



The pictures shows energy flow in an electrical car. In the orange region the motor is using energy. In the green region the battery is being charged when the car decelerates.

Hypothesis

My hypothesis is that the motor can also work as a generator.

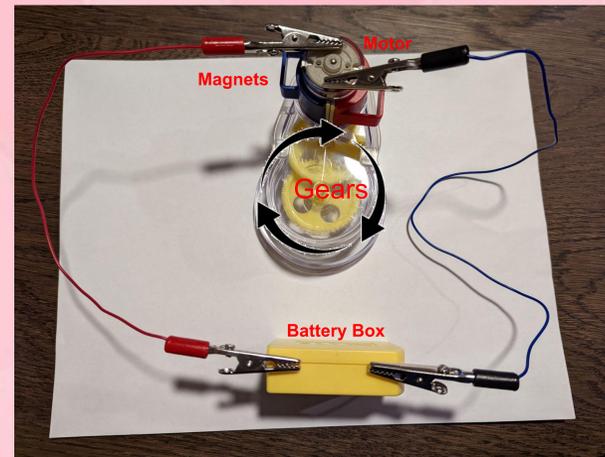
Materials

Quantity	Materials
2	Wires
4	Crocodile Clips
1	Battery Box
1	Light
1	Motor
2	Gears
2	Magnets
1	Crank

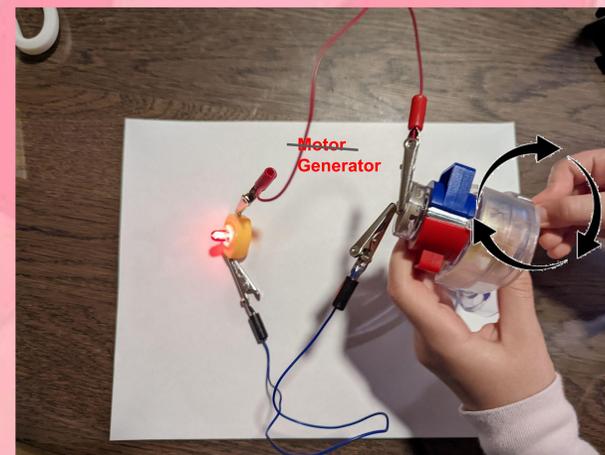
Procedure

1. To operate as a motor I connected the battery box to the motor.
2. I observed that the motor spun by itself.
3. Next I connected the motor to the light.
4. I spun the crank using my hands

Photos / Results



- When the motor is powered by the batteries it spins and I could see the gears turning.



- When we force the motor to spin by turning the crank, it generates electricity and makes the light turn on
- **It's working as a generator!**
- It may seem amazing but it is not easy work. The crank is hard to spin because I need enough force to generate enough electricity for the light to turn on

Conclusion

When an electrical car decelerates it takes energy from the spinning wheels and the motor can operate like a generator and provide energy to charge the battery. This is called regenerative braking.

We saw that when we crank the motor we can generate electricity to power the light.

Regenerative braking helps electric cars to not waste too much energy when braking.

A similar principle can be used in windmills to generate power for our homes.

References

Interview
Tiago M.

Book:
Thames & Kosmos; Experiment Manual: Motors and Generators.

Video
[How does a Regenerative Braking Work - Electric car Braking Explained](#)

Photo and Display Credits

My dad and I took the photos.

Comments and Questions

Sorry dad but Ms. Creanshaw knows nothing about the fair.