

Reverse Engineering a Magic Flying Ball

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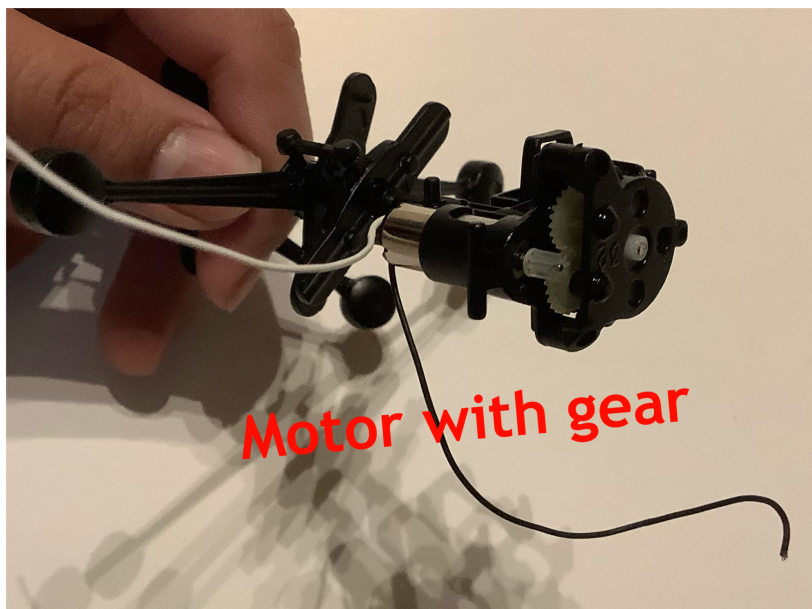
What We Chose and Why

For our Reverse Engineering item, we chose a magic flying hover ball. It worked for about the first 15 minutes, and then it started going haywire and flying all over the place whenever you tried to fly it. It has two sets of wings that can spin around, giving the the drone lift under its wings. The bottom part is just a plastic shell with some lights and a battery inside. We chose this item to take apart because it was cheap, not working normally, and simple to understand how it worked.



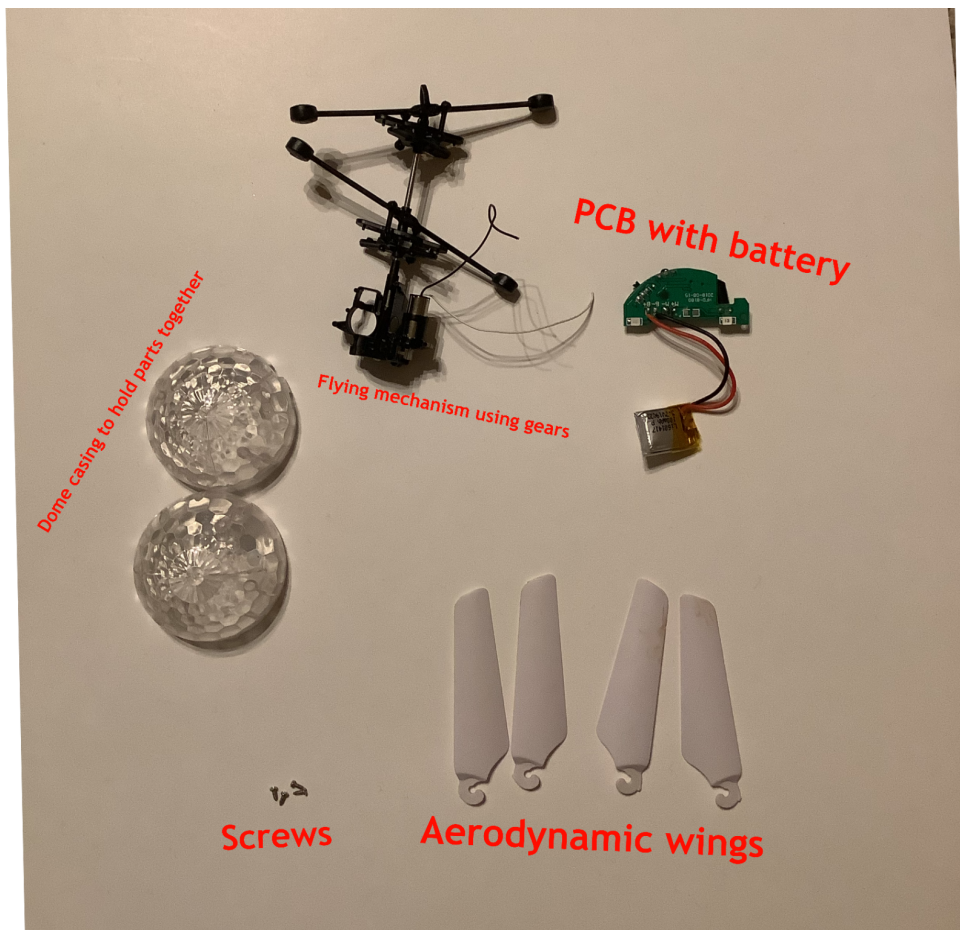
Our Parts and the Roles That They Played

It was a small device but when we opened it, there were many components to it, most of them plastic. First of all, we had two sets of plastic wings that helped the flying ball gain lift and “hover” in the air. The wings had an aerodynamic curve which helped with maximum lift with maximum power. They had small hooks on the ends so that they could hang on to the central pole that held the wings. The central pole had two poles that were stuck out on either side for the same length. On the bottom of the pole, there is a motor with wire sticking connected to it. The motor spins the pole, spinning the two smaller horizontal poles, therefore spinning the wings.



The white wire connected to the motor was connected to a small battery pack. There was writing that identified the battery. The top line means that it is a lithium-ion battery (Li-ion battery), which is a type of battery that uses lithium ions. The second line means that this battery is 100 milliampere/hour in power. This means that it can provide 100 mA in power per hour. The last line is voltage. The voltage means how much electrical current is able to flow. One

AA battery has 1.5 volts, while this has 3.7 volts. That means that this battery is equivalent to about 2 and a half AA batteries in terms of power.



Lessons Learned From This Experience

First of all, we learned a lot about electrical engineering and batteries. We researched a lot about different kinds of batteries and how they work. We also learned about voltage and milliamperes. We learned more mechanical things such as the aerodynamic wings, and why they make it that way. We also had to learn information outside of just facts. We had to learn certain skills, such as learning how to find reliable websites for information, and have all of your writing organized and neat.

Sources:

- *Cei.washington.edu*
- *Ubergizmo.com*
- *Batteriesplus.com*
- *Money.cnn.com*