

Electromagnet

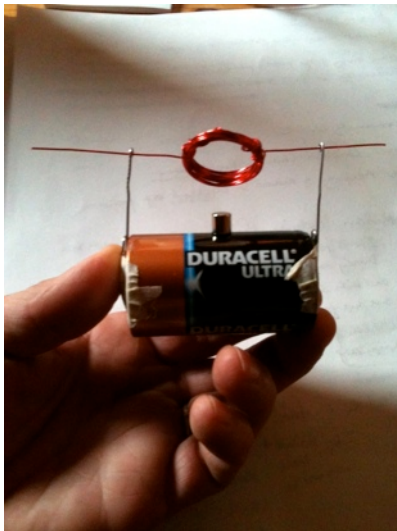


When there is electricity from the battery flowing through the copper wire, the coils make a magnetic field. This turns the large nail into a magnet, so it can pick up small nails, paperclips etc.

Break the circuit by removing one wire from the battery and the nail is no longer magnetic and it drops the objects.

Note: this uses up batteries fast. IF it doesn't work first try replacing the battery.

Motor



When electricity from the battery goes through the coil, it makes a magnet. The coil magnet is attracted to a strong permanent magnet held near to it, making the coil turn. This is a basic motor!

(If you are wondering why the coil is only sanded on one half of the wire on one side: this makes the current only flow half the time, so the coil is only magnetic half the time. If the coil was magnetic all the time (by fully removing the insulation on both sides) it would be alternately attracted and repelled by the permanent magnet, so the coil would just oscillate, not spin).