CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
Kaoru Takashima

Project Number
J1022

Project Title
Electromagnetic Launcher

Abstract

Objectives/Goals
Investigating CLEAN and GREEN next generation object launcher. Especially experimentally confirm how number of current sources (Capacitor) and number of wrapping of coils affect flying distance of an object (Nails) which is electro magnetically accelerated.

Methods/Materials
Methods:
Attach capacitor and battery circuit to coil wrapped around straw
Put in an object (nails)
Charge capacitor and discharge
Record data (how far the nail moved)
Attach one more capacitor and/or increase # of wraps

Materials:
Disposable camera (for capacitor and main circuit)
Extra capacitors
Copper wire (copper is the most conductive)
Straws
Tape
Nails

Results
Adding more capacitors will increase the power of the device.
Increasing the # of wraps of the magnet didn#t really do much.

Conclusions/Discussion
Conclusions: My hypothesis was partially proved to be correct.
Adding more capacitor did increase the power of the device.
However, the # of wraps did not affect the movement of the nail.

Future Plan:
Maybe the direction of the wrap (Clockwise, Counter clockwise) did matter. We will double check.
Diameter of the coil was not tested, We will double check with it too.

Summary Statement
My project is about effectively accelerating an object by electro magnetism which is potentially a clean and green solution for launching objects, such as commuter vehicles in space in future.

Help Received
My dad for helping me get materials and helping me build my project. My Mom gave me a constructive criticism on my presentation;-)