CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J0207

Project Title
The Gravity Engine and Its Application in the Self-Propelled Garbage Can

Abstract

Objectives/Goals
The objective is to determine whether it is possible to harness wasted gravitational potential energy and convert it into easily accessed kinetic energy. My application of this principle is a garbage can that can bring itself out to the curb when full and back to the house when empty.

Methods/Materials
A model was built using styrene plastic and various other materials. The axle mounts were oiled and the device set on a model train track with a yardstick along side it. The device was set so the mechanism#s counter weight was down and the garbage-pulley-and-hook-system up. Various amounts of weight were put in the bucket and then attached to the pulley. When the weight was released, the device was to move along the track. Measurements were recorded of the distance the device moved, the amount of time that it moved, and its average velocity. After the weight had dropped to the platform of the device, it was removed, letting the device roll back into the starting position.

Results
The device did indeed move forward when weight was put in and back when the weight was taken off. The more mass that was put into the trash container, the faster and farther the device moved.

Conclusions/Discussion
The explanation of these results was that the greater mass in the container, the greater the force with which gravity pulled it back towards the earth. With a heavier weight, the friction was overcome faster and therefore the object dropped faster, moving the whole device faster and farther. Specifically my device converted the gravitational potential energy produced by lifting the trash into the container into kinetic energy that was captured and used when it fell. This energy was then used to power the vehicle. This invention is used to demonstrate a single example of the possibility of harvesting unused potential energy. The principle could be applied in mines, dumps, and construction sites. It can be used almost anywhere that a mass is lifted or transported.

Summary Statement
My project proposes and tests the capturing of unused gravitational potential energy, and its conversion into usable kinetic energy

Help Received
Mother helped determine model making materials and techniques, gave instruction in basic model building