2012 年臺灣國際科學展覽會

優勝作品專輯

國家：India

編號：100028

作品名稱

Extreme Mouse Mobile

得獎獎項

四等獎

作者姓名

Varun Shridhar

Abstract

Objective

To design build and run 5 Mouse mobiles – vehicles which use mousetraps as their only source of energy.

Targets-

- Go up a ramp
- Raise a flag
- Hit something and set it free
- Deliver something
- Catapult

Details

These mouse mobiles are original creations which include some commercially produced parts. They are powered by single spring driven standard wooden mousetraps. They are 5 in number each being used for the respective tasks.

Basic structure

Each mousetrap consists of a 2 parallel wooden planks which has 2 holes drilled on either sides for the rear and front axles. A rod is used as the axle and CD disks are used as wheels. The mousetrap is attached to the planks.

Movement and Locomotion

To move the mouse mobile a string is connected to the rear axle. The string runs

through 2 pulleys which change the direction of the applied force and are attached to the hammer of the spring. When the vehicle is pulled backwards on the floor tension is created in the string (as the hammer is stretched) which gets stored in the form of spring energy. When the wheels are released on the floor the rear axle starts rotating hence propelling the mouse mobile forward.

Completion of objectives

1) To go up a ramp

For the required task a high amount of torque would be needed .That will be sufficiently provided by the spring energy.

2) Raise a flag

For the required task a rod is placed on the wooden platform. The flag is placed at the bottom of the rod; it is connected to the hammer of the mousetrap using a string. The spring and the rod are placed in the opposite directions. When the hammer is released after being stretched it pulls the string and raises the flag.

3) Deliver something

For the required task 2 mouse mobiles are used. A platform of any hard and light material is attached to the rear of a mouse mobile. After reaching the desired location, when the hammer of the primary spring is fully relaxed it hits the catch of another stationary mouse mobile. The hammer of the respective catch is connected to the platform using a string. Upon activation the hammer is released, the platform is pulled with extremely high speed and the materials on the platform, due to their moment of inertia fall down.

4) Hit something and set it free.

For the required task 2 mouse mobiles are used. A small mousetrap is attached to the front of the mouse mobile which is in contact to the required object. The other mouse mobile on reaching the above vehicle hits its catch using its hammer. The hammer of the stationary mouse mobile is released and the object is hit and set free.

5) Catapult

For the required task 2 mouse mobiles are used. A mousetrap is attached to the front of stationary mouse mobile which is attached to a strainer and the object to be catapulted is placed inside it .Another mouse mobile approaches is and hits the catch hence activating the hammer and the object is catapulted.

評語

所開發之 Mouse mobiles 不需電力驅動，可應用於距離輸送物件或舉旗等，具實務應用價值。