

Engineering Machine Design Contest 2024

Angry Birds 2.0

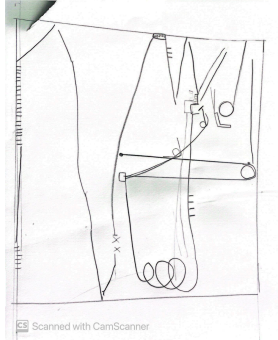
Wildlands

Jeremy, Jaxson, Jonas

Alexa Hurd

Planned Machine Design Sketch and Description

In our first draft, we knew what we wanted to have in our machine but we change the end of the



design because we were having problems with it

Final (or Near Final) Machine Design Drawing/Image and Description |

It begins with having a marble roll down, then it would get attached to a magnet and hit another marble continuing the course. It would then roll backwards falling into a cup. This cup would set off a reaction pushing a toy car and then hit a ball sending it down a circular course and continuing. After that the marble falls into a basket triggering a mechanism sending a second marble back at the top on its course. It follows the same path but the activated mechanism blocks it, sending it down a different path with several drops and turns and ending up at the bottom.



Our engineering project was worked on by three people: Jaxan, Jeremy, Jonas. We began by discussing and sharing our thoughts and plans. We decided we wanted to do something pertaining to the digestive system, with our primary idea of our marble rolling through an intestine-like structure. We couldn't just do that so we explored more ideas like, having our starting point being a head and where the marble would end up once the course was completed. After discussion and planning it was time to act, Jaxan first constructed our base and board. Then we painted it gray for a background of sorts. We began work on the top of our course first having a marble roll down, then it would get attached to a magnet and hit another marble continuing the course. It would then roll backwards falling into a cup. This cup would set off a reaction pushing a toy car and then hit a ball sending it down a circular course and continuing. After that the marble falls into a basket triggering a mechanism sending a second marble back at the top on its course. It follows the same path but the activated mechanism blocks it, sending it down a different path with several drops and turns and ending up at the bottom. Overall it was a long project with a lot of planning and physical work but was also a fun learning experience.

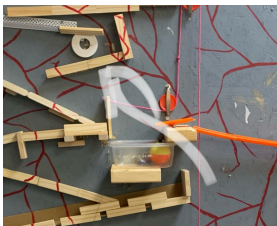
A few challenges from the project were getting the bucket of vinegar to drain and having the magnetic marble to move out of the way so the other marble could get by, getting a lever to move to close a gate, making the string to move the marble, and working together we all had different preferences so it got quite hard at times! But we got a way to dump out the vinegar, and got a weaker marble so it was not a problem, the lever is connected to a pulley and a weight, I put hot glue on the string to move the marble, and last but not least we put our differences aside and got the project done.

What we used
99% recycled

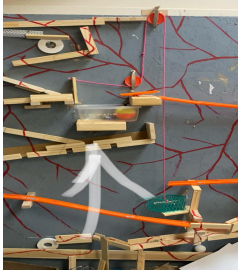
Wood	Free	Mardels	Free
Screws	Free	paint	Free
Rope	Free	Janga	Free
Tub	Free	Wood glue	Free
Pipe	Free	starw	Free
Hot wheels	Free	Magnet wheel	Free
cardboard	Free	Magnetic mardle	Free
Hot glue	Free	Food die	Free
Vinegar	Free	bober	Free
Baking soda	Free		Free

Stem process

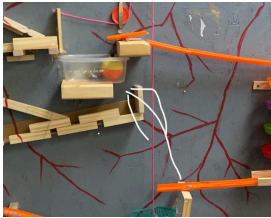
The magnetic marble is rolling down then the centrifugal force that pulls the marble around the wheel.



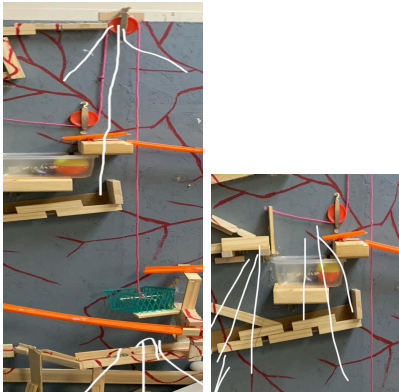
Baking soda to falls into vinegar causing it all the liquid to foam changing the buoyancy and the level of the liquid



The buoyancy changes and the bobber wants to rise to the top and lets it tip the car ramp down.



A water filled Ping pong falls into a bucket pulls the bucket down and the Rope makes a marble start going down a ramp also causing a lever to shut



Journal

Jan 29 we had 10 pieces of newspaper and 18 inches of tape and the design had to hold a textbook. We lost the competition.

Feb 9 we went building hope to look for an inception for ideas. We got some ideas of using tile but we decided it wasn't going to work.

Feb 17 I cut pieces of plywood 2x4 to fit the door and have enough space we also made are first design

Feb 23 We constructed are base over the weekend than we painted it and made are new design

Feb 27 We began to build a machine we got to do chemical reactions and we stopped because we needed to change it.

Mar 18 We started on the rest of the step and we got 3 more steps.

Mar 20 We added a lot of rails to prevent the marbles from rolling off the track, and expanded the main course



Mar 21 glued and screwed in a lot of supports for our track printed off our numbered steps, began working on our final step



May 28 we put the last of the steppes and put are name on the base

April 1 I repainted parts of the basic and did a few minor touch ups

April 2 we went to are regional companion

April 4 we sat down and started to redesign are machine

STEPS

- A small metal ball rolls down a ramp and connects to the magnet and uses ciptripacal force and gains tons of speed
- Then it hits a marble down another ramp
- And hits a cup of baking soda
- Into a bucket of vinegar to create a chemical reaction
- And lifts the bober because of the buoyancy and weight measurements
- Then it pushes the car down a ramp
- And hits a water filled ping pong ball and rolls all of the way down a coyal
- Drops into a bucket and pulls a pulley down to shut a lever
- And the string momentum pushes a marble
- Marble rolls right under the magnetic marble and hits the lever wall