INTO ORBIT

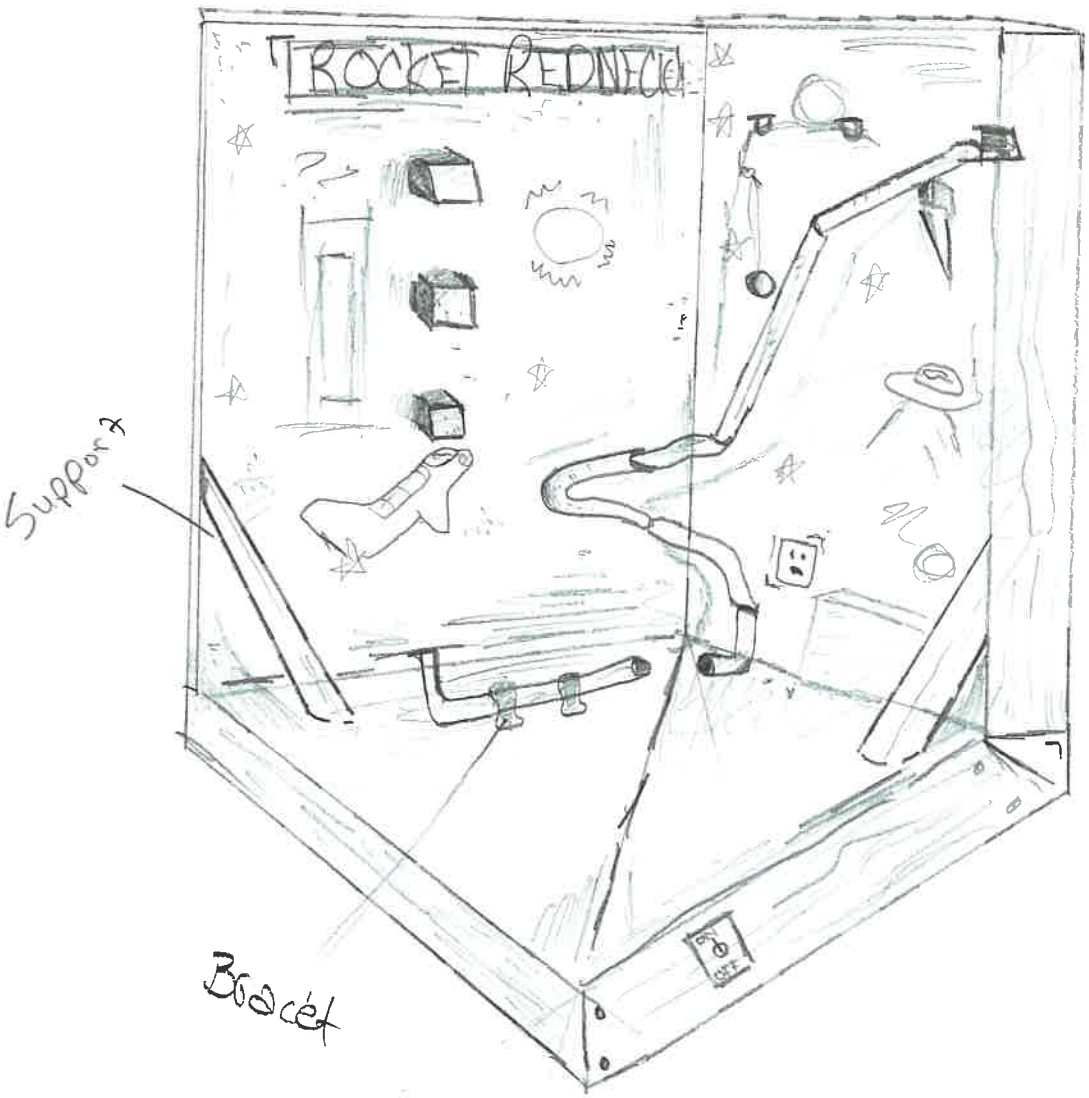
Rocket Rednecks

Lake Holcombe

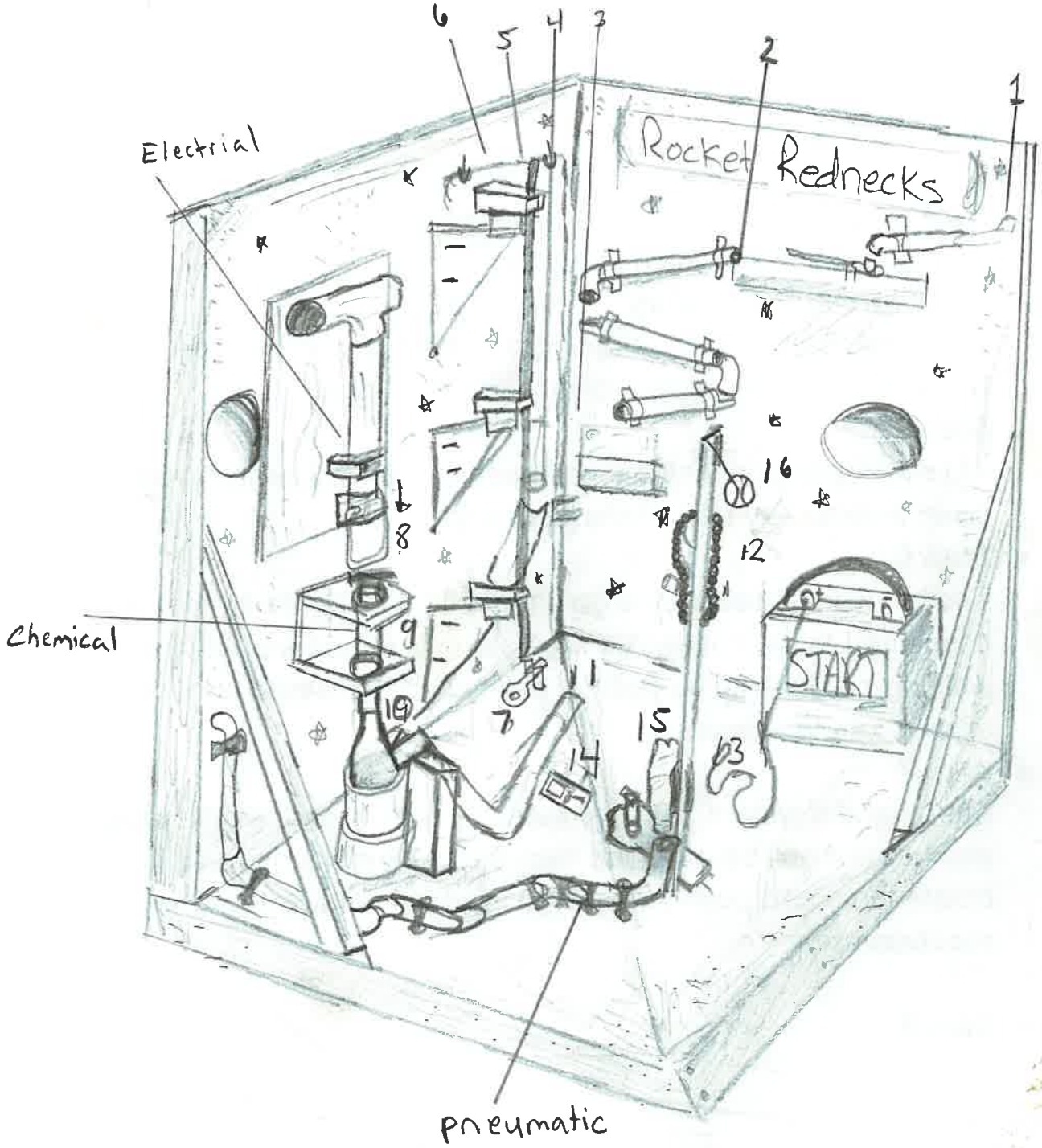
Danny,Jaiden,Hunter,
Trenton, Robert, Chase,
Riley

Mr. Lorenzen

Planned Machine Sketch



Final Machine Sketch



Machine Steps

1. **Spring loaded pushrod is pulled back releasing the ball bearing.**
2. **The ball bearing travels down the tube landing in a lever mechanism releasing another ball bearing.**
3. **The ball bearing travels down a series of copper pipes contacting a plunger.**
4. **The plunger pushes a golf ball releasing it to swing down and contact another ball bearing.**
5. **The ball bearing travels down a ramp, dropping into a tin cup. The cup is attached to a pulley system that releases some rare earth magnets. The magnets travel slowly down a copper pipe and contact another lever.**
6. **The lever contacts a switch that turns on the recliner motor.**
7. **The recliner motor travels downwards compressing a syringe full of vinegar.**
8. **The vinegar reacts with baking soda in the pop bottle**
9. **CO_2 gas blows up a balloon.**
10. **The balloon pushes another ball bearing down a copper tract**
11. **The ball bearing travels down a copper ramp and contacts a switch.**
12. **The conveyor belt chain rotates around dropping a ball bearing on a track.**
13. **The ball bearing contacts the mousetrap**
14. **The ball valve is opened using the electric windshield wiper motor.**
15. **The rocket launches upward**
16. **The rocket contacts a tennis ball sending it into orbit.**

Cost Of Machine And Recycled Items

Item	Cost
Copper Pipe	Free
Copper Fittings	Free
Base Materials	$100
Electrical Components	Free
Ball Bearings	$20.00
Battery	Donated
Windshield wiper motor	Donated
Pop Bottles	Free
Paint	Donated
Rare Earth Magnets	$30.00
Ball Valve	$12.00
Metal Objects	Scrap
Pulleys	$9.00
Nails and Screws	$30.00
Baking Soda	Donated
Vinegar	Donated

Total Machine Cost: $200.00

Percent Recycled: 80-90%

Stem Process

Chemical Reaction: The syringe is compressed releasing vinegar into a bottle with

baking soda. CO_2 gas is produced

inflating a balloon.

Electrical: A recycled recliner motor is turned on using a pressure switch. A recycled windshield wiper motor is used to open and close the ball valve.

Pneumatic: Compressed air is used to launch the rocket.

Fluid Power: A syringe is compressed to create the chemical reaction.

Reflection

A few of the problems we encountered were that the spring we were using for the pinball rindel wasn't strong enough and compressed too easily so we replaced it with a stronger spring. Later in the process when the magnets were going to be going through a copper pipe to slow its fall the copper brackets we were using to hold the pipe were actually only copper coated and made the magnets stick to the inside to the pipe so we had to replace them with custom made wooden brackets. After the magnets went through the pipe they aren't heavy enough to hold the button down on the moder. So we had to fill the catapult with epoxy and a large washer to add extra weight so that the button would stay down. Another problem we encountered was that the mother from the reclining chair was too strong. If you accidentally bring it up past the point it's bracketed at it will rip itself off the wall, but there was no solution for it so you have to take much care when raising up the moder. I may use this information as well as the activity itself to get into a future school or career, I plan on going into the manufacturing or small construction fields so this project could be helpful in some ways.