Portable Carrier B

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Abstract

One major problem after grocery shopping, is transporting the bags from the car to the house. Also, the number and heaviness of the bags can make you do many trips from your car to your house. Another issue is that living on high floors with no elevator, will take much effort and more time in order to transport the bags.

The purpose of Portable Carrier project is to design a carrier that can easily carrying people's bags and climb stairs. The portable carrier can easily fit into a car trunk and travel from 100 to 500 feet. In this project, the team is focusing in creating a device that will save people's time and effort by decreasing the number of trips from the car to their places.

Requirements

Table 1: Engineering Requirements

Engineering Requirements	Technical Value
Traveling Capacity	100 feet to 500 feet
Number of Bags to carry	5
Size	3 x 3 ft^2
Weight	20 pounds
To carry weight	50 pounds
Persons age to use	7 – 70 years
Number of Tires	12
Tire Radius	6 inches.
Height	1 ft.

Manufacturing

Figure 1: Tank Thread

Figure 2: 3.5in inner room

Figure 3: Two sides of the product

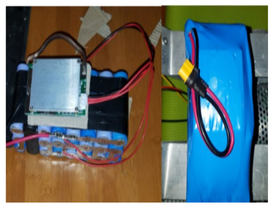

Figure 4: Battery Assembled

Figure 5: 3D printed wheel

Testing & Results

Testing Traveling Capacity:

- The device must be able to travel with one charged battery.
- The battery used in the device 12V lithium ion made with 18650 cells and the output of it 12 volts. So, the traveling capacity requirements has been fulfilled.

Number of Bags to Carry:

- Motors used in the device are 22 motors, which means the high torque made the device able to carry 5 grocery bags.

Size:

- The device must fit on a car trunk. Meanwhile, it must not take more than half of the car trunk.
- The device length is 3 feet and the device width is 1 feet.
- The device has been tested by putting it into a Dodge Charger Trunk and it took half of it.

Weight:

- The device has tested on weight scale and measured the weight of around 30 pounds but it was required to make the weight of total 20 pounds so this weight is over than the given requirement and the reason for this weight is the number of motors that we used to make the device climb incline ramps.

Final Design

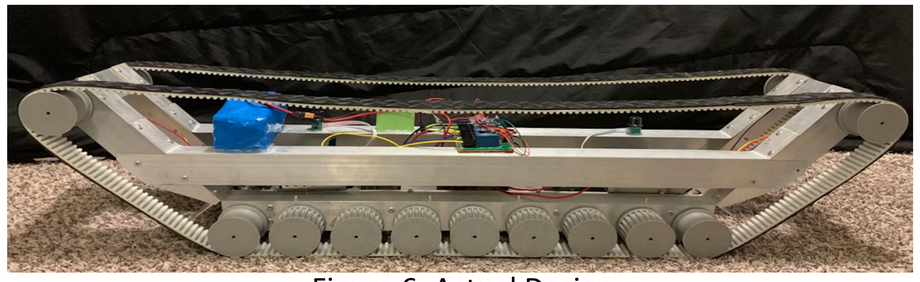

Figure 6: Actual Design

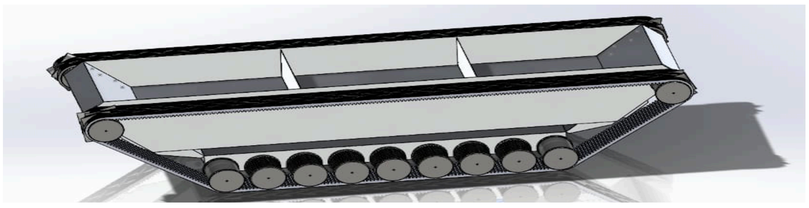

Figure 7: CAD Design

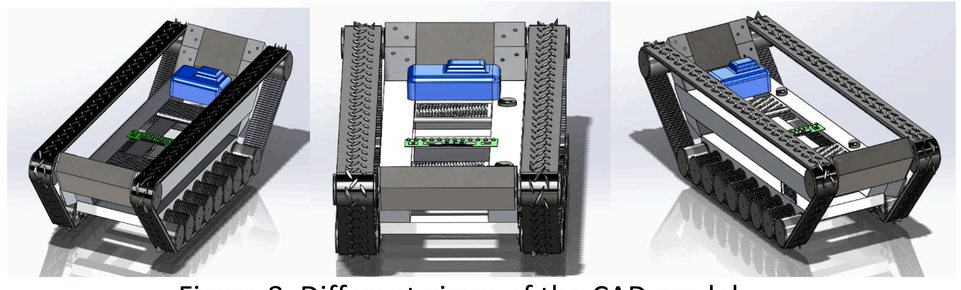

Figure 8: Different views of the CAD model

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