Portable Carrier A

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Abstract

Our team's responsibility is to build a "portable carrier" for anybody who shop in a grocery store. It should be able to carry at least 5 regular sized plastic bags with 50 lb of weight.. The project should satisfy customers who lives in the second or third floor tand need his shopping bags easily transported from from his car to his home or to his trash from his home. It should also be able to travel a distance of 100 - 500 feet. The carrier is designed so that it is easily used by anybody within the age range of 7 to 70 years old. The main purpose of the design is to help people who can't carry much weight like people with injuries,disabilities, back pain, and older people, which makes this project important

Implementation

-Movement: Tracks are controlled by DC motors, which are controlled by a joystick using Arduino. It will travel on ground and stairs
-Car Trunk: The design will go into the car trunk using a scissor lift.
-lifting bags: The device has a pneumatic system attached to a telescope that will carry the bags up to the kitchen table level, that will help the user unload the bags .

Project Requirements

| Customer Requirements	Engineering Requirements
Safe	Speed control – joystick
Capacity	Carry 5 bags-hanger material
Easy to use	controlled by a joystick
Light Weight	Less than 15lb
Climb stairs	Tilted tracks will achieve that
Travel distance	100-500 Feet
Fit into a car's trunk	Volume: 7.5 feet Cubed
Operates in different weather condition	Use tanks tracks instead of tires
Portable	Tracks and motors

Final Design

[1]
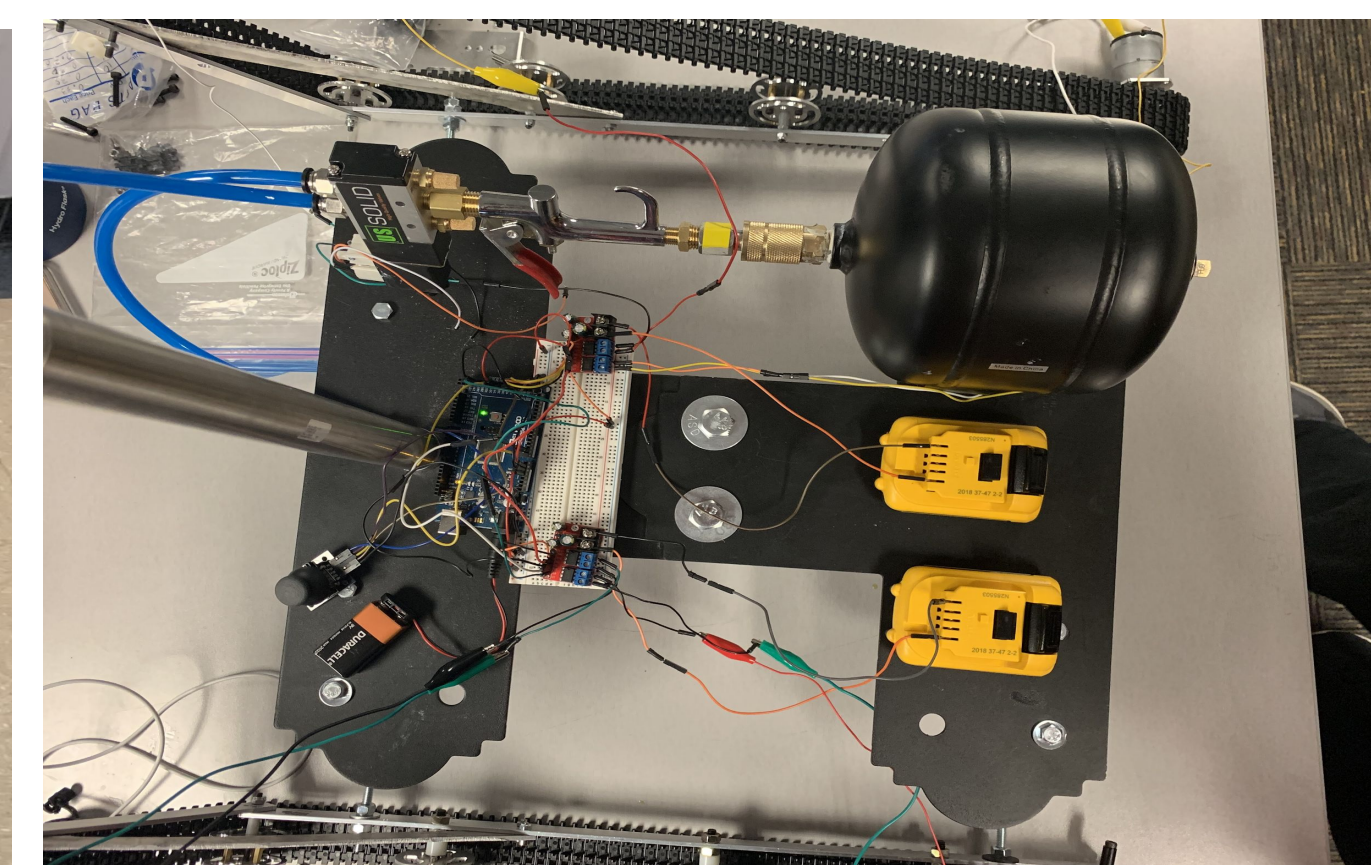
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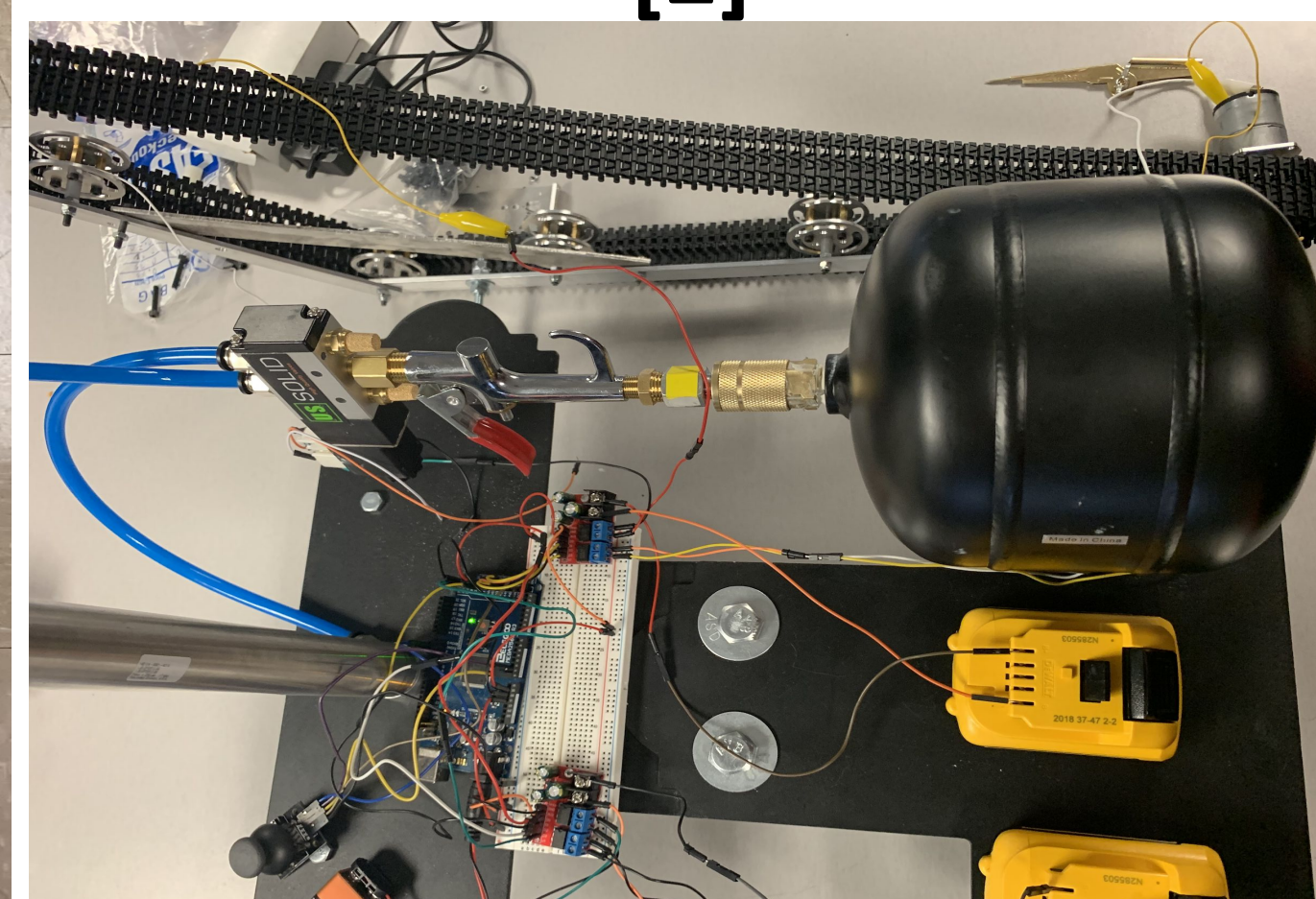
[3]

Figure 1,2 and 3: Final design

[4]
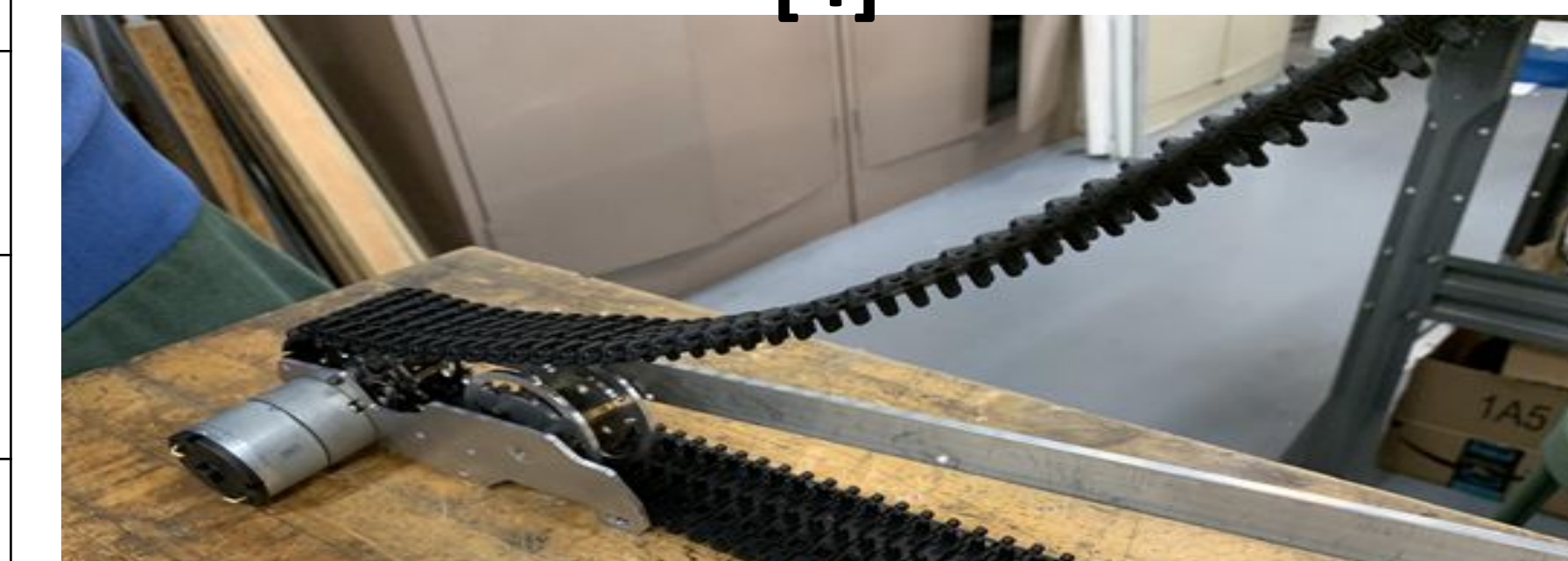
[5]

[6]

Figure 4,5 and 6:Design parts

Results

-Power to move device = 37W
-Motor: I = 1A, P=12W X4 = 48W, motors have enough power to move the device
-Telescope can hold 50 pounds.
-Pneumatic system can carry +50 pounds, but still having leaks in the air tank.
-Arduino system can control the project, but can't reverse the air cycle, which means it is a single action system.
-Motor is working properly and can be controlled by the joystick through the Arduino board.
-The body was assembled and has 4 DC motors, each motor has 12 volts, connected to it.
-The device aims to provide the user with an effective and convenient solution to the problem.

Acknowledgements