

Prototype summary

ME476c-008

Team C5

12/07/2018

As a team, we met during our regular meeting minutes to choose whether we go with building a subsystem or design the product. The team chose to go with designing a subsystem that can show an idea of what we are aiming for next semester. The subsystem chosen is “Telescoping” because it’s one of the most important parts in our design. The telescoping is mainly used to lift shopping bags and reach the kitchen’s table level.

Since there wasn’t any telescoping system in the market that would fit in our product. The team decided to design our own telescope by buying the parts and combing them. The parts were bought from ‘Home Depot’. ‘Two pipes’ with different diameters were bought with ‘rubber o ring’ to connect the pipes. Five hiking hanging kits were also in the purchase for carrying one (10lbs) bag each.

The next day was mainly for building and combing the parts to create a subsystem. The team went to the work shop at NAU next to the police station. A team member has an experience at manufacturing so he led the process. The smaller diameter pipe was grooved three times in different spots, so the rubber or rings will not be moving while sliding it into the bigger pipe. A lubricated oil was put also on the smaller pipe, so it would be smoother on the movement and sliding. The bigger pipe was drilled at nearly the bottom with a 5 mm hole on both sides and then use a screw with that size to fit into the two holes. In that way, the smaller pipe wouldn’t go under the bigger one. The team noticed that the process has to be smoother and that why the lubricating oil was used. A moving box was also used in this subsystem and it was cut into a circle and five holes on it, so the hanging kit would stick.

This subsystem was primarily for being as an elevator for the bags and lift them up to the kitchen’s table level. It would be the telescoping part on the middle of the base in the system. After sharing the idea of this subsystem to Dr.Trevas, the professor suggested that the tubes can also be used as our pneumatic cylinder. This would actually be saving us money, time and space for the system. This prototype can actually carry 50lbs of five different shopping bags.

The attached three figures can show more details into this prototype:



Figure 1: (front view)



Figure 2: (down view)



figure 3: (up view)