Work Completed
Paint Cap Remover

We made a lot of progress on our paint cap remover this week. In the previous week we built a metal encasement for the paint tube. The encasement was milled from a raw block of aluminum. We used a mill press to mill a slot out of the metal encasement so that we could insert the paint tube into it.

This week our goal was to take that same paint tube encasement and attach it to the motor. After we attached it to the motor we would be able to remove the paint cap by spinning the motor and twisting the tube itself. While the tube is twisting the paint cap will be secured with the clamp and will be unscrewed from the tube.

The first step was to drill a hole in the bottom of the aluminum casing. The hole needed to be exactly the size of the motor shaft. We measured the motor head using a calipers and the head was exactly 6 mm = 0.24”. We found the corresponding drill bit and traced the exact center of the metal encasement. We then used the mill press to drill a .24” hole ¼” deep in the bottom of the metal. The shaft could now fit snugly into the encasement.
This figure shows what the motor looks like after it has been inserted into the hole we drilled. The motor shaft fits into the hole snugly. Like any cylinder inside of a circular hole, the motor head can rotate freely inside. Although the hole fits exactly around the shaft of the motor, the friction alone will certainly not be enough resistance to impede the rotation of the shaft.

The best way to lock two pieces of moving metal together like in the instance of the motor shaft spinning inside of the hole is by using a “Set Screw”. A set screw can be used to lock the moving pieces orthogonal to the piece.

The first step of adding the set screw was to drill a hole to put the screw into. We picked a set screw that we liked and found the associated tools. The tools needed were the drill bit for the screw, and the thread builder. After the hole was drilled, we were able to put the threads into the aluminum by hand using the thread screw.
Monitor Lift

This week we also made serious progress on the monitor lift. We made a base for the linear actuator to sit on. It is thick HDPE Plastic and is light but rigid.

![Monitor Lift Images]

The platform has a metal rod extending through the center which secures the linear actuator to the plastic. The plastic will in end be screwed into a sheet of metal that will act as the platform for the entire monitor lift.

Project Overview

The project went great this week. We accomplished many physical tasks with both the paint cap remover and the monitor lift. The paint cap remover is all set to make the frame and we’ve designed exact dimensions of metal we will be working with next week.

Future Work

We need to start making the frame for the paint cap remover according to the prescribed design dimensions we have drawn in Visio.

We need to attach the motor to the frame.

We need to attach the clamp to the frame.

We need to attach the plastic frame to a base metal for the monitor lift.

Total Work Hours  14