Work Completed

For this week more machined parts were created. For the first part, we reduced the size of the turning disks in order to increase the size constraints. This was done using a ban saw to remove about forty five percent of disks. After finding the direction that the servo motor will rotate, we needed to leave an area between 180 degrees. From the first hole the disk will then rotate 45 degrees in order to separate the medication and to cover the medication while it is being cut. From there the disk will then rotate another 45 degrees to dispense the pill after being cut. So the total direction of the turning disks will be 90 degrees. To assure that we have the correct angles of the turning disk we decided to leave a 180 degree surface area. This area will then be used to troubleshoot the device so that the accuracy of the device will not be compromised. Also for the axis, we left a \( \frac{1}{2} \) inch semicircle in order for the axis to be placed with in. This area was also machined using the ban saw and thus we essentially created two half moon shapes on the disk. With one being \( \frac{3}{4} \) inch in radius and one with a 2 inch radius. This piece will then be added to the stainless steel axis and the correct rotation will be tested. To attach these two disks to the axis we will be adhering with crazy glue. The reason why we are adhering the disks with crazy glue is because last year another senior design tested the mechanical properties of different glues, epoxies, and adherents. They found that the best adhesive was the crazy glue brand; it by far had the best strengths and mechanical properties. Crazy glue also adheres surfaces that are plastic and metal which is the most important property for this adhesive to have.
The second piece that was machined was a backing for the cutting mechanism. Because the cutting mechanism has a square edge to it and the enclosure has a circular geometry these two surfaces would be difficult to adhere together. So what was developed was a slight moon shape with one side having a curvature of a 6 inch diameter and the other side having a flat edge. This piece will allow for the enclosure and cutting mechanism to form a tight seal. Because this device will be turned right side up and up side down, all pieces need to secure to the enclosure to insure that no pieces become unaligned and thus inaccurate. The positioning of the cutting mechanism will be most difficult, but with the aid of CAD drawings we will be able to position all of the parts in an accurate way. Also with this new backing the ability to add a spring system into the cutting device will be easier then attaching the spring to the enclosure.

Lastly a new slit was made into the razor backing, before the slit was too high on the backing which interfered with the cutting track. After making the slit lower the razor backing can now move freely along the track. Also the funnel was reduced in size to maximize the size constraints of the device. This can be seen below.
Future Work

For the next week, we will be using the CAD program to assemble the parts in the most efficient manner.

Hours Worked

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