CASH & COIN COLLECTOR

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Introduction

In the past, the QEH Foundation had coin collectors in or near the main entrance of the Queen Elizabeth Hospital that has raised significant funds for the foundation. One of the coin and cash collectors was a crib formerly used in the nursery fitted with a box for coin collection. Another was a funnel that had coins travel from the main floor to the lower level where they were collected.

The client is looking for the new design to be a positive experience for those who donate. The main audience is expected to be children, but the design should encourage people of any age to donate. The design will be implemented in the main lobby of the QEH as this is a high traffic area.

Materials and Methods

- ❑ The coin selector collects the coins and translates the pulse generated by the coin to Arduino as input.
- ❑ The Arduino Uno board was selected to be the "Brain" of the design and control the path of the coin.
- ❑ The servo motor was chosen in place of the stepper motor for better precision to guide the coin down the intended pathway.
- ❑ Each coin goes through a different pathway based on its value and assigned pulse amount.
- ❑ Stainless steel was used to create the bottom part of the outer casing to collect the coins at the end of its path.
- ❑ The outer casing is made of transparent Plexiglass so the donator can see the journey of the coin from the start to finish.
- ❑ A poster holder is added to the top of the design which lists what the donations are for.
- ❑ The whole design is portable as it is powered with a 12V battery.

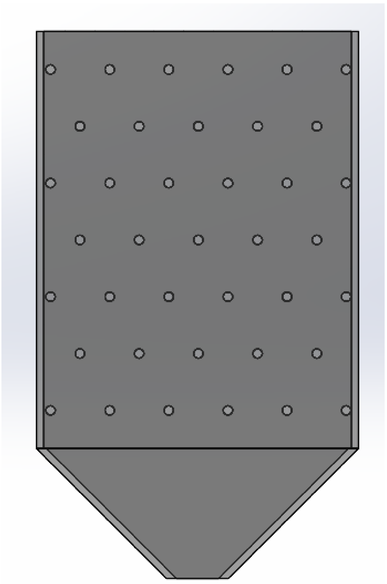

Fig 1:Plinko board pathway

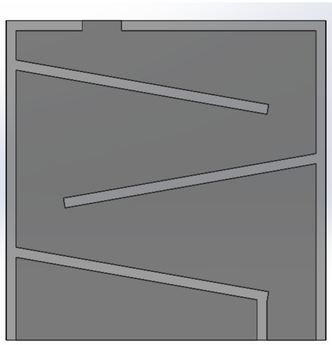

Fig 2 : Downward slopes pathway.

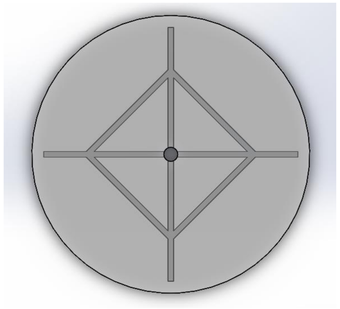

Fig 3: Water wheel pathway

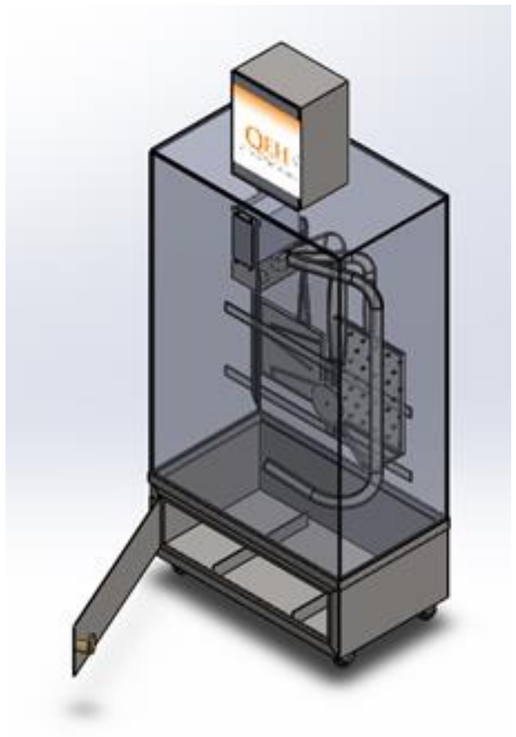

Fig 4: CAD design of cash & coin collector

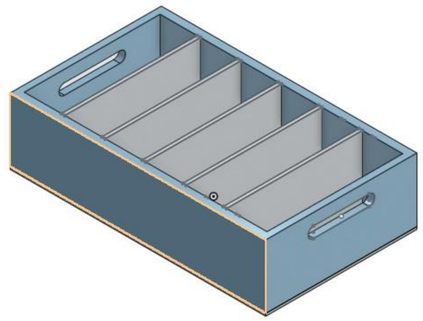

Fig 5: CAD design for coin tray

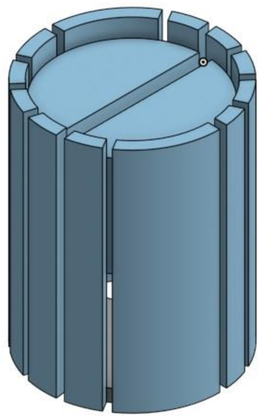

Fig 6 : CAD design for Coin acceptor

Results and Discussions

- ❖ Coin selector reliably put out the proper pulses for each coin when tested with Tektronix MDO 3024 Mixed Domain Oscilloscope
- ❖ Arduino is able to communicate with the coin selector by reading the number of pulses per second.
- ❖ Glitch in code causes the Arduino to sometimes get a delayed reading of the pulse amount and split it causing an incorrect money value added to donation total
- ❖ Servo motor only moves up to 120 degrees but this is still read as 180 degrees in the programming
- ❖ The design allows easy access for operators to donations through the sorting tray.
- ❖ The cash and coin collector's theme is easily changeable through its poster holder
- ❖ The cash & coin collector is easy to move as it is well equipped with casters.
- ❖ The donations are secure from theft with a lock on the tray that stores the donations
- ❖ The design allows the donor(s) to see the donation(s) through the plexiglass.

Conclusions

➢ Build of Full Assembly was not possible due to the closure of in-person classes.

➢ Further research to fix all glitches in the code for the design to enable it to run efficiently.

➢ Complete Testing with full Assembly and electronic components

Acknowledgments

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