TEAM ORANGE

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Kinetic Sculpture

- Kinetic sculptures are examples of kinetic art in the form of sculpture or three dimensions.
- In common with other types of kinetic art, kinetic sculptures have parts that move or that are in motion.
- The motion of the work can be provided in many ways:

mechanically through electricity, steam or clockwork;

utilizing natural phenomena such as wind or wave power

relying on the spectator to provide the motion, by doing something such as cranking a handle

Rolling Ball Sculpture

Rolling Ball Sculpture

Maine Discovery Museum

Located in Downtown Bangor, Maine

Descriptions

Niles Parker-

- Executive Director of Maine Discovery Museum
- Wants an exciting way to draw in more children as well as appeal to the adults and teenagers passing by the museum
- Would like to incorporate a “Maine” theme to the sculpture

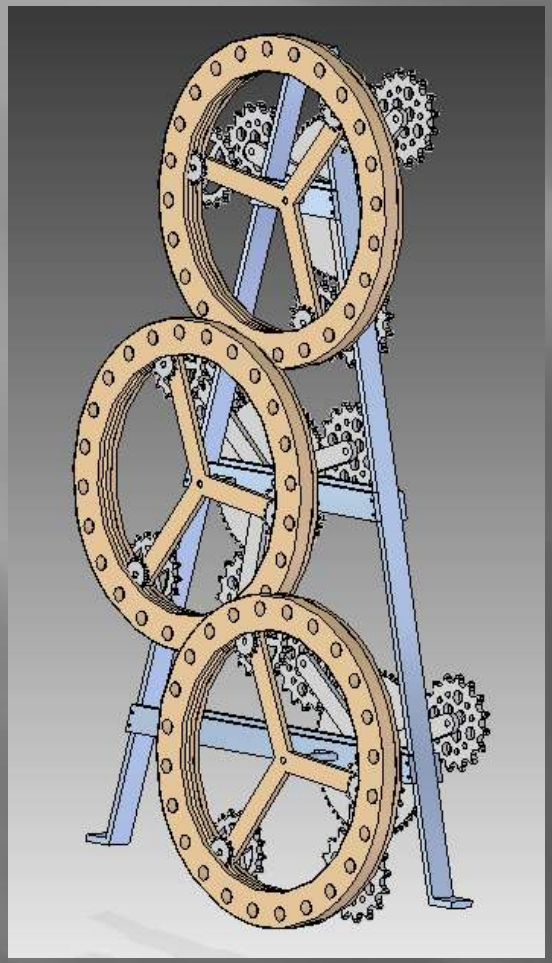
Our Goals

- Weigh less than 750 pounds
- Meet OSHA Standards
- Fully enclosed in Plexiglas and mounted on four caster wheels
- Production cost less than $2000
- Require less than $50 in electricity per month
- Intended Design Durability of 20 years
- Children ranging from 4-14
- Average Height: Boys(50 in.) Girls(48 in.)
- Average Weight: Boys(68 lbs.) Girls(65lbs.)

Gear Lift Prior Art and Benchmarking

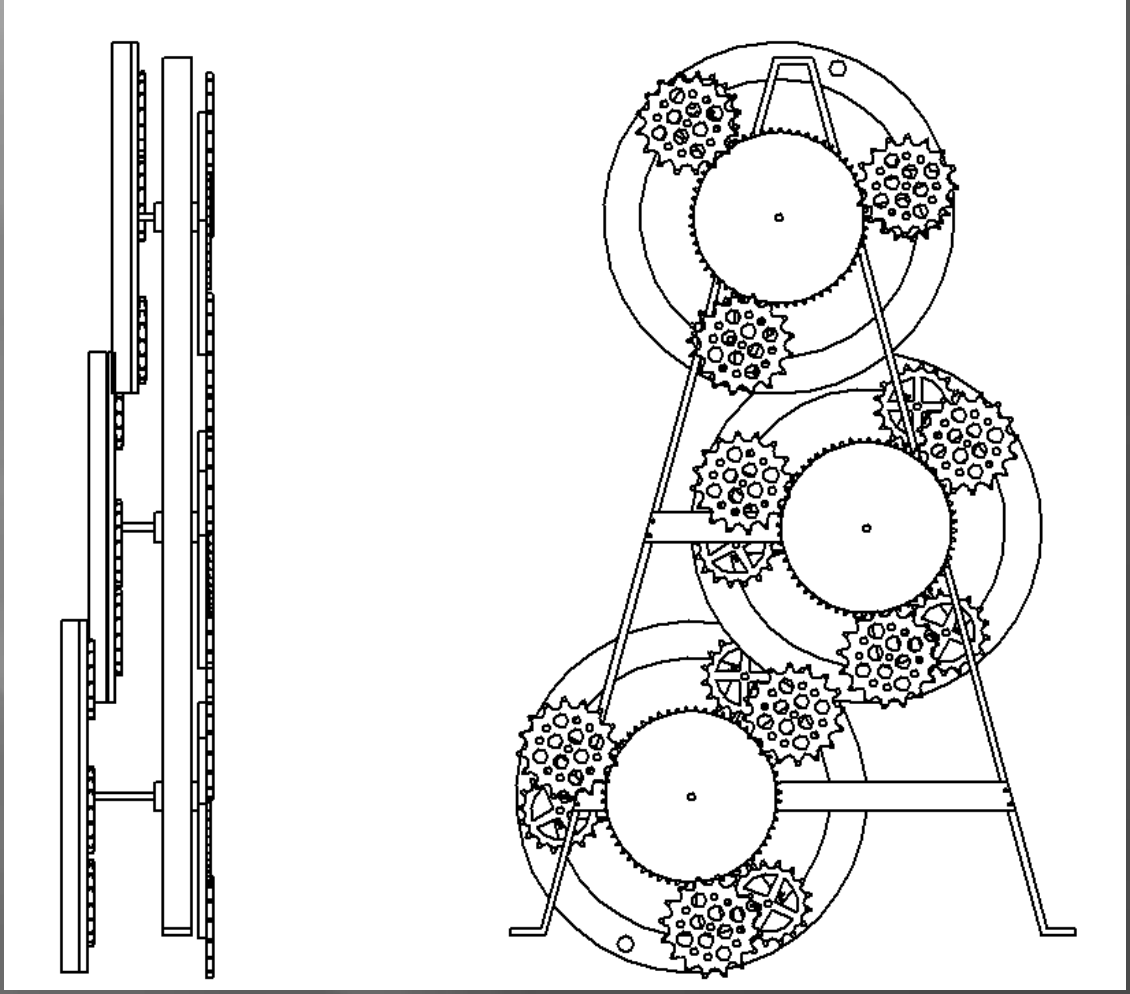
- Uses gears to turn wheel carrying the balls
- Supported by the driver gears
- Gear ratios are the same for each level
- Tilted so the balls are loaded by gravity
- Can lift any ball type: ball bearing, marble, or wooden sphere

Our Gear Lift



- Three Levels of lift (24in dia. each)
- Vertical, not tipped back
- Less gears to keep an open look
- Gears in the back for roadside view
- Chain inserted on inside for wheels for driving

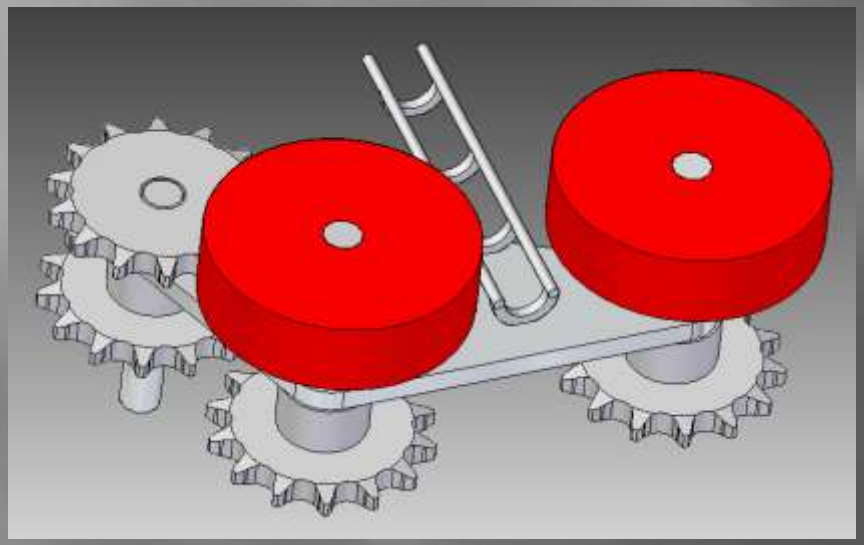
Side and Back Views



Pitcher Prior Art and Benchmarking

- Used in baseball, softball, football and soccer.
- Rubber wheels spin in opposite direction
- Ball is compressed between wheels, launching it
- Balls feed down track

Our Interactive Marble Pitcher

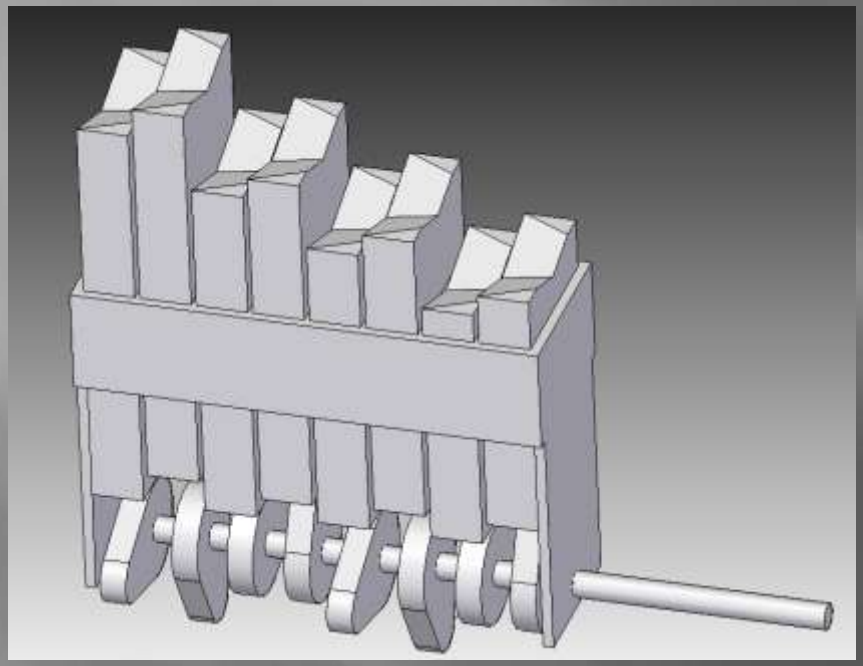


- Bike peddles power wheels
- Limited max velocity
- Speed controlled ball feed
- Track feeds marbles
- Solid rubber wheels
- Chain drives wheels

Piston Walker Prior Art and Benchmarking

- One crankshaft
- Move on the vertical axis
- Pairs move in unison
- Basic engineering used in everyday life

Our Piston Marble Walker

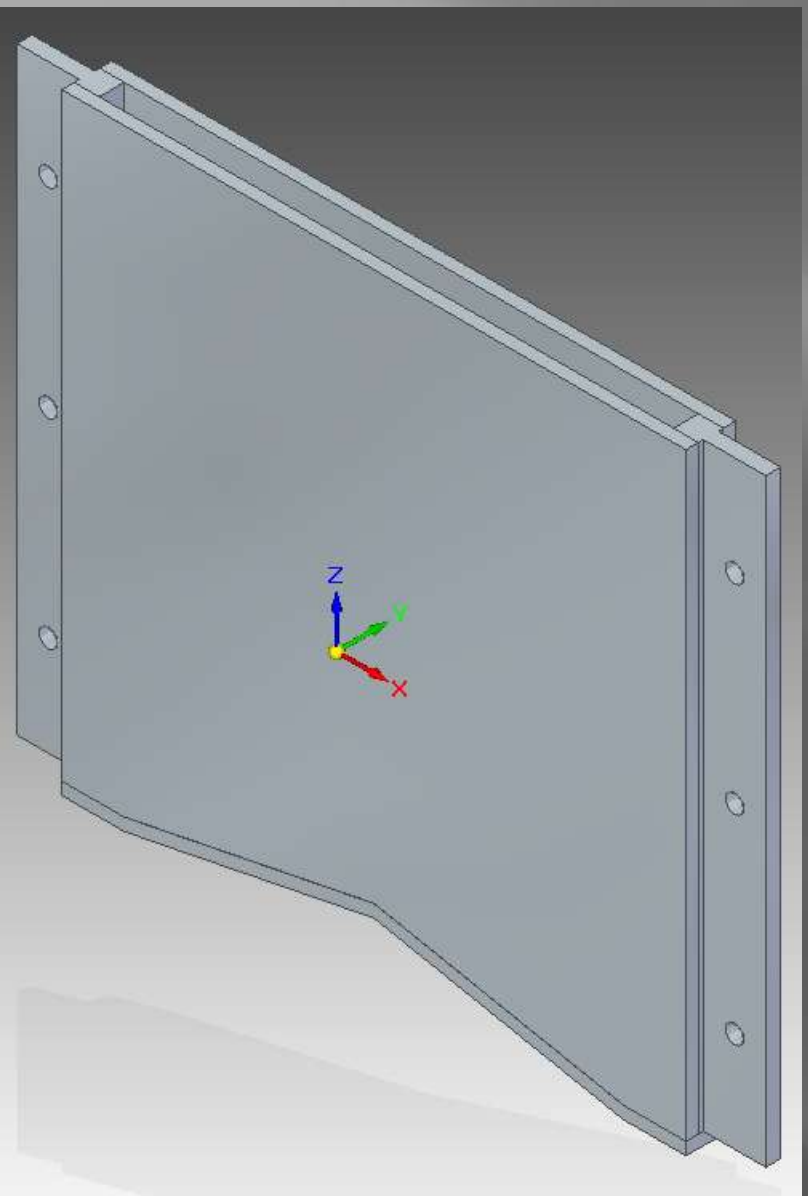


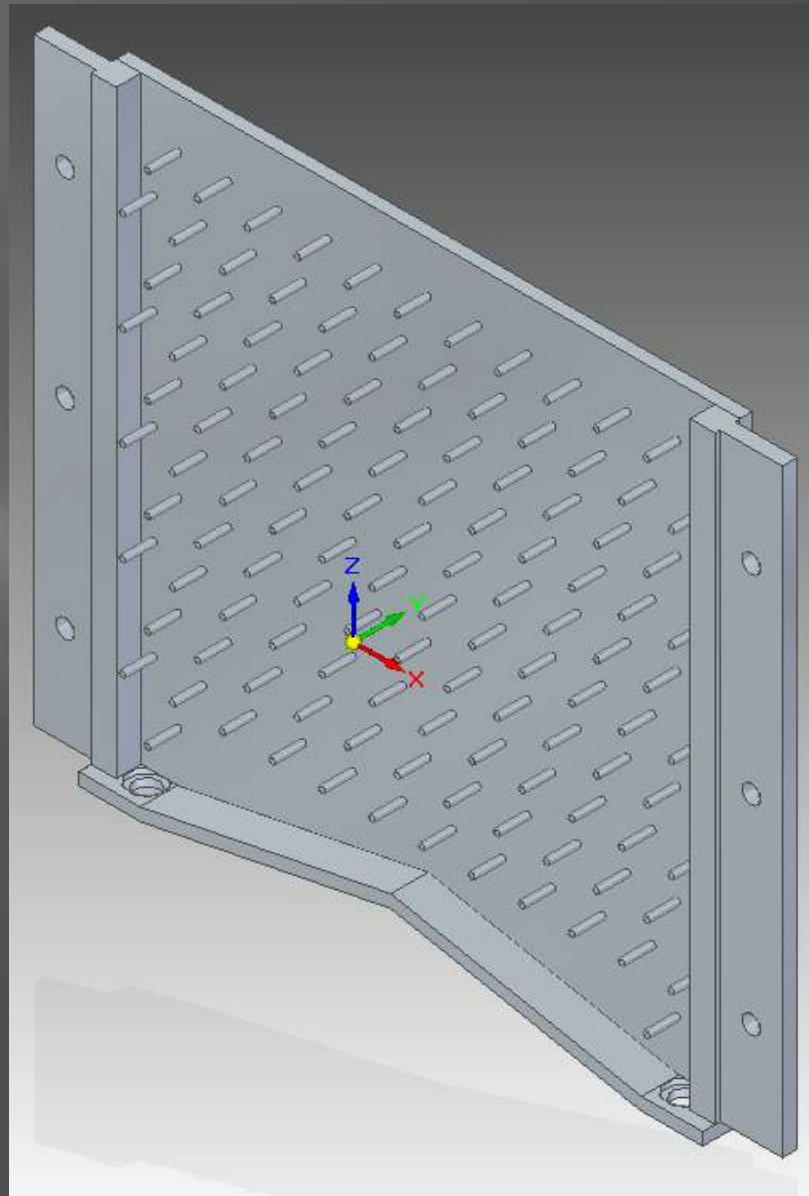
- Replicates the movement of pistons
- Uses cams to lift the blocks
- Blocks are cut to slope towards next step
- Driven off the Gear Lift

Mr. Gilmore…
Come on Down

Plinko Ball Drop

Plinko Board

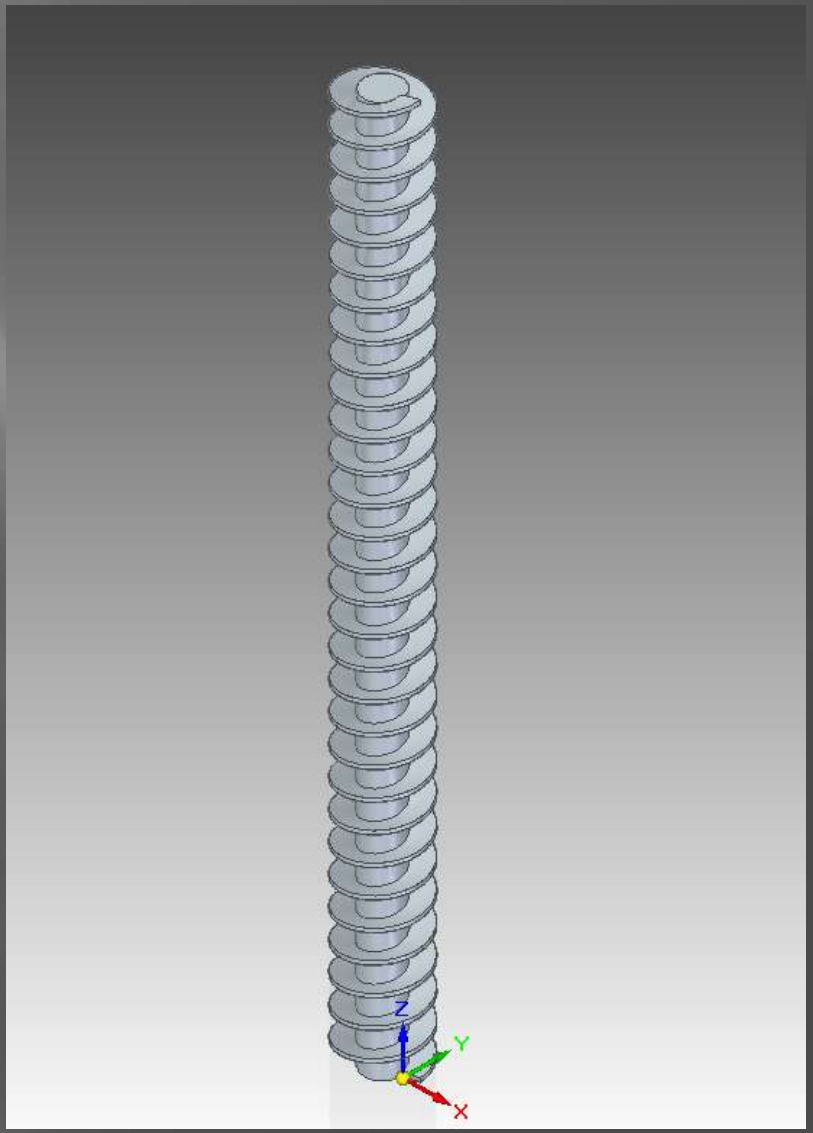




Auger Lift

Auger Lift

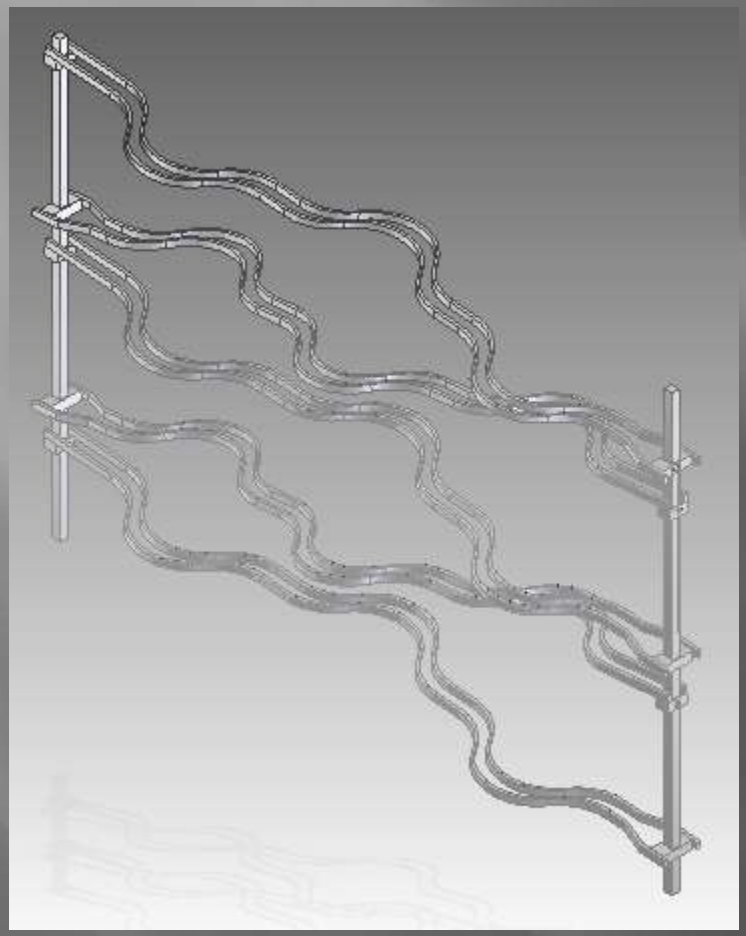
- The Auger Lift carries the balls upward just as ice auger would to pull ice out of the hole.
- Powering the twisting action the auger is a simple and attractive way of moving the balls to the top of the sculpture.



Reversing Ramp Prior Art and Benchmarking

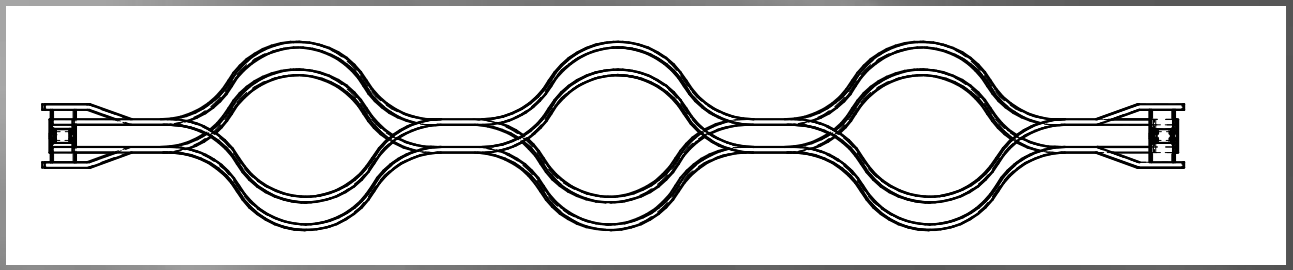
- The reversing ramp is a way to move a marble from one place to another.
- It uses gravity to move the ball down the tracks.
- Makes the simple act of moving a marble downward on tracks into a slightly more complex and is better to look at than just watching a ball go down a straight ramp.

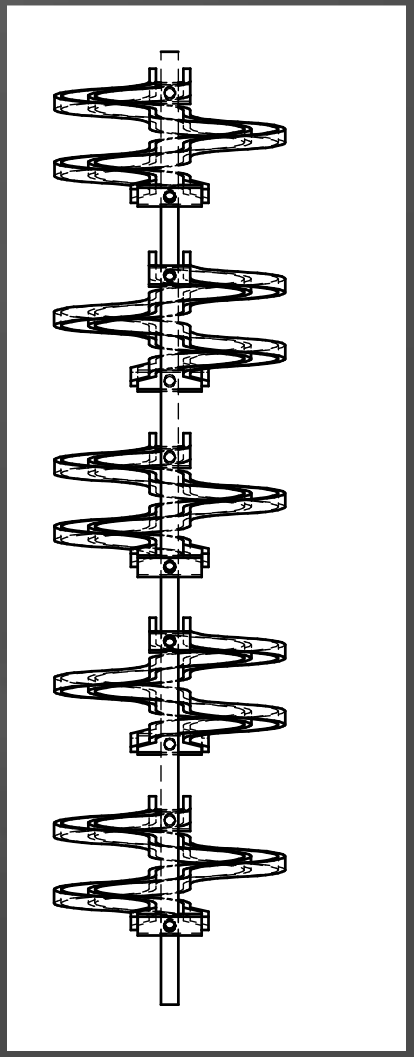
Our Reversing Ramp



- We took this idea of the reversing ramp and made it into something unique for our product.
- Using the same basic concept I designed this reversing ramp to move downward back and forth on tracks that oscillate back and forth.
- As you go down the feature, the oscillations offset one another so that the tracks are alternating downward.

Top and Side views

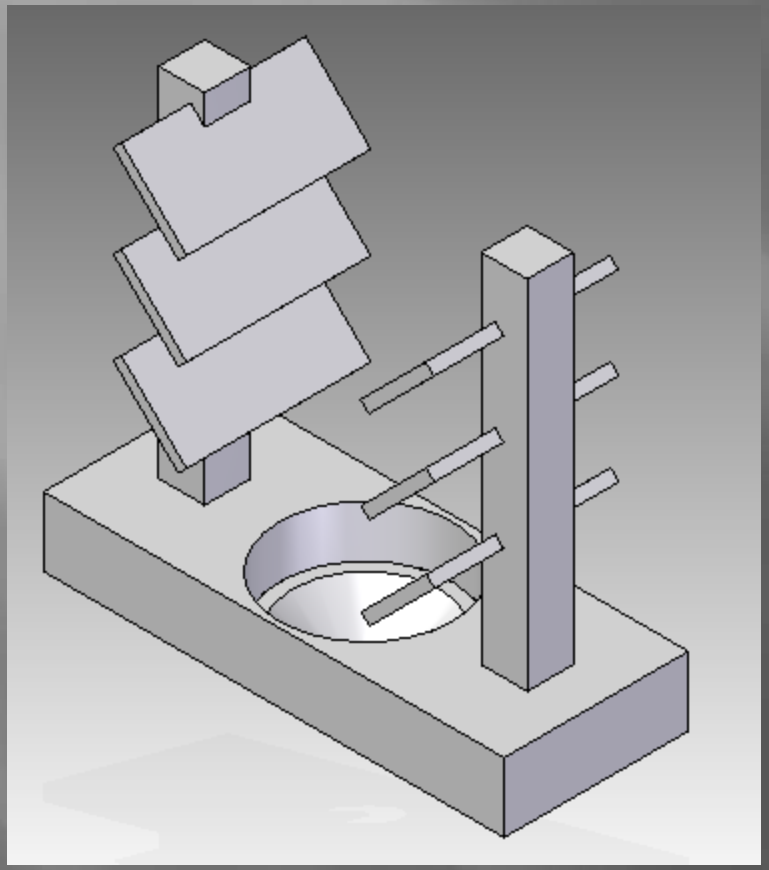




Xylophone Drop Prior Art and Benchmarking

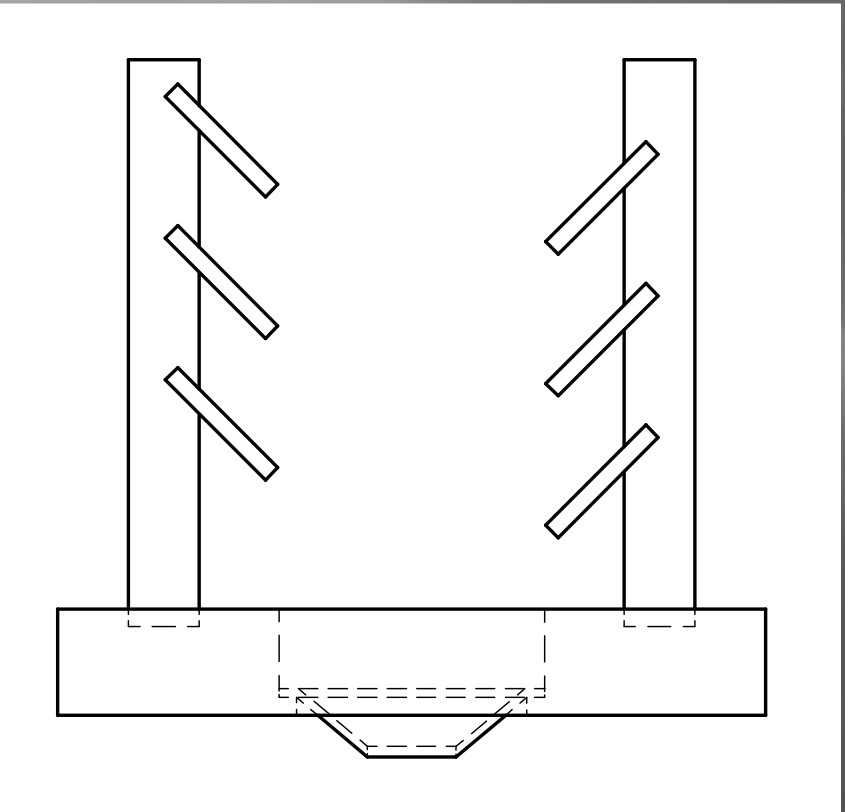
- The xylophone drop is a noise emitting drop made of wood.
- It is a way of moving vertically down the sculpture while making some noise.
- We thought this would be good to implement for the children's museum because children love noisemakers.

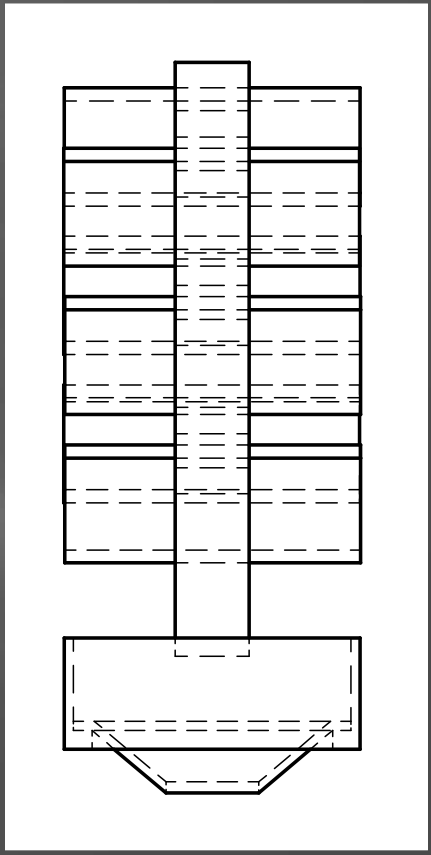
Our Xylophone Drop



- We decided to go with the benchmarking example and make this out of hardwood to produce a soothing sound.
- Changes in the structure were made in order to implement a funnel into our drop to settle the marble down before going back onto some tracking.

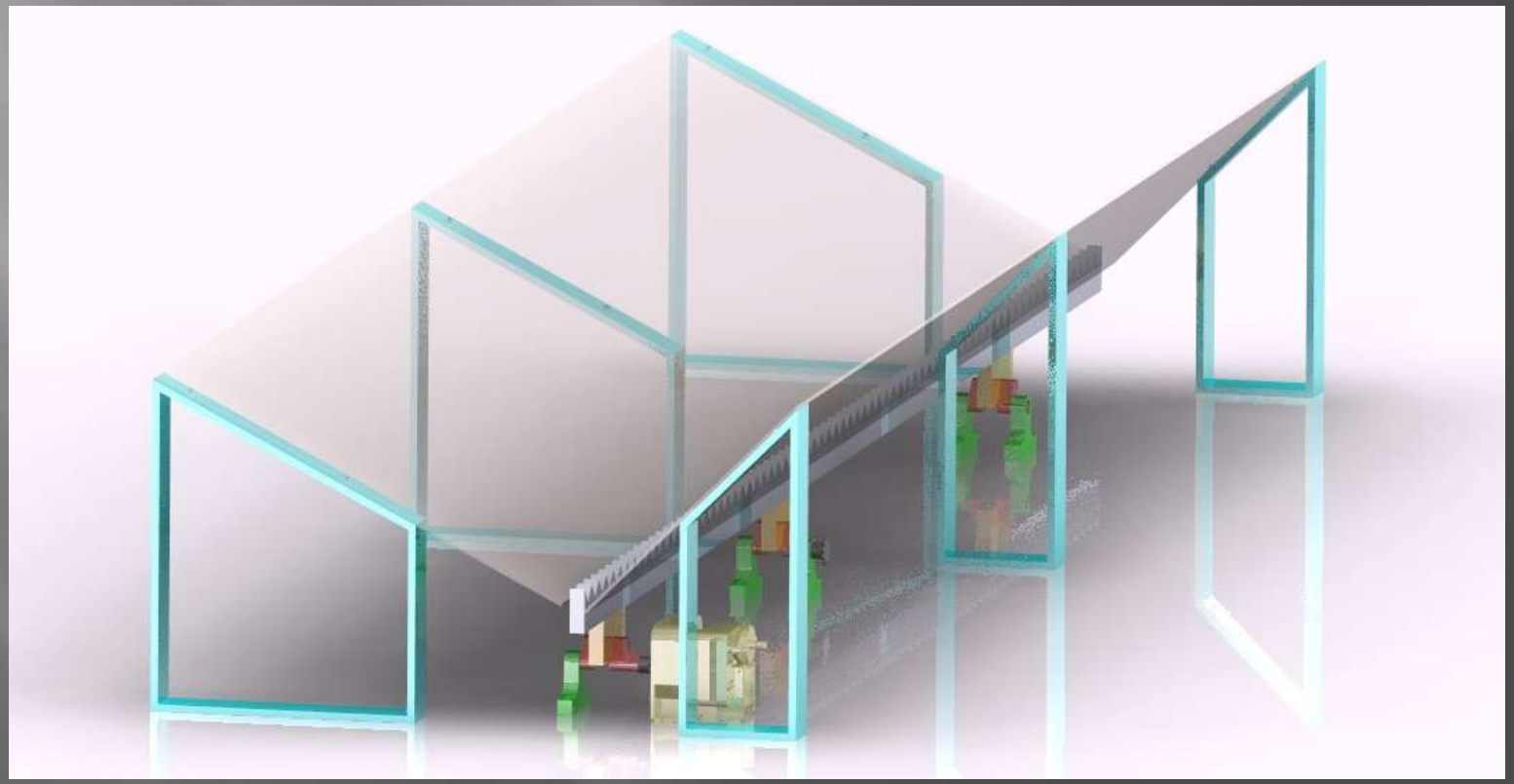
Front and Side Views



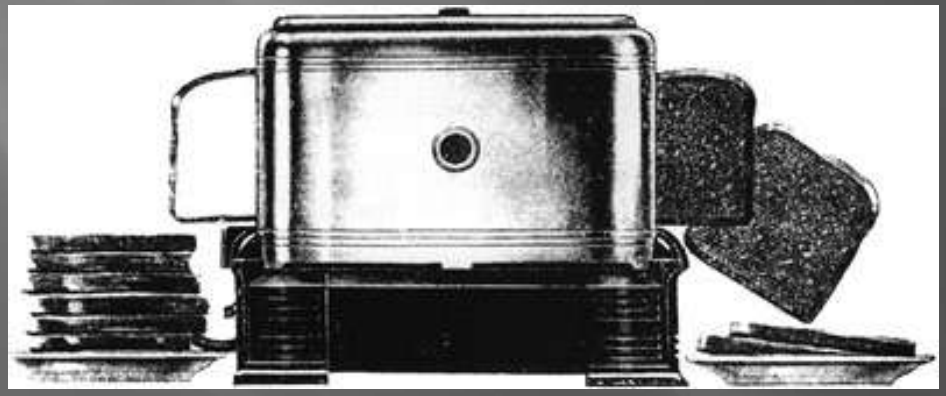


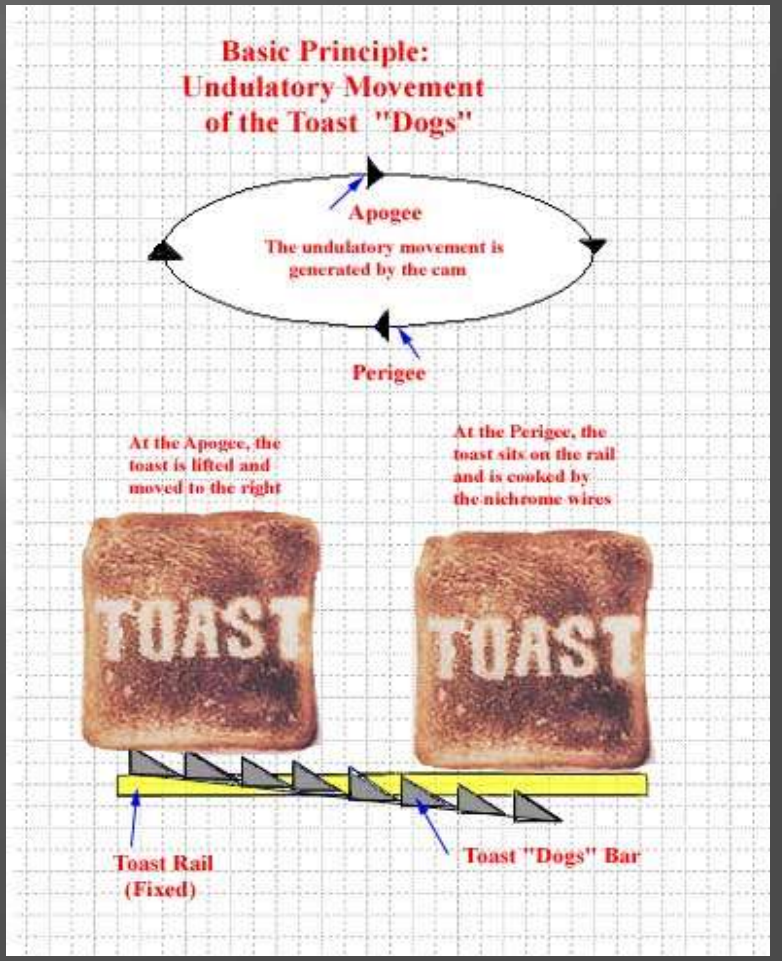
Ball Walker

- Forms majority of sculpture footprint
- Collects balls that have derailed / compensates for error rate
- Simple design, based on four – bar mechanism
- Not inspired by a prior sculpture!

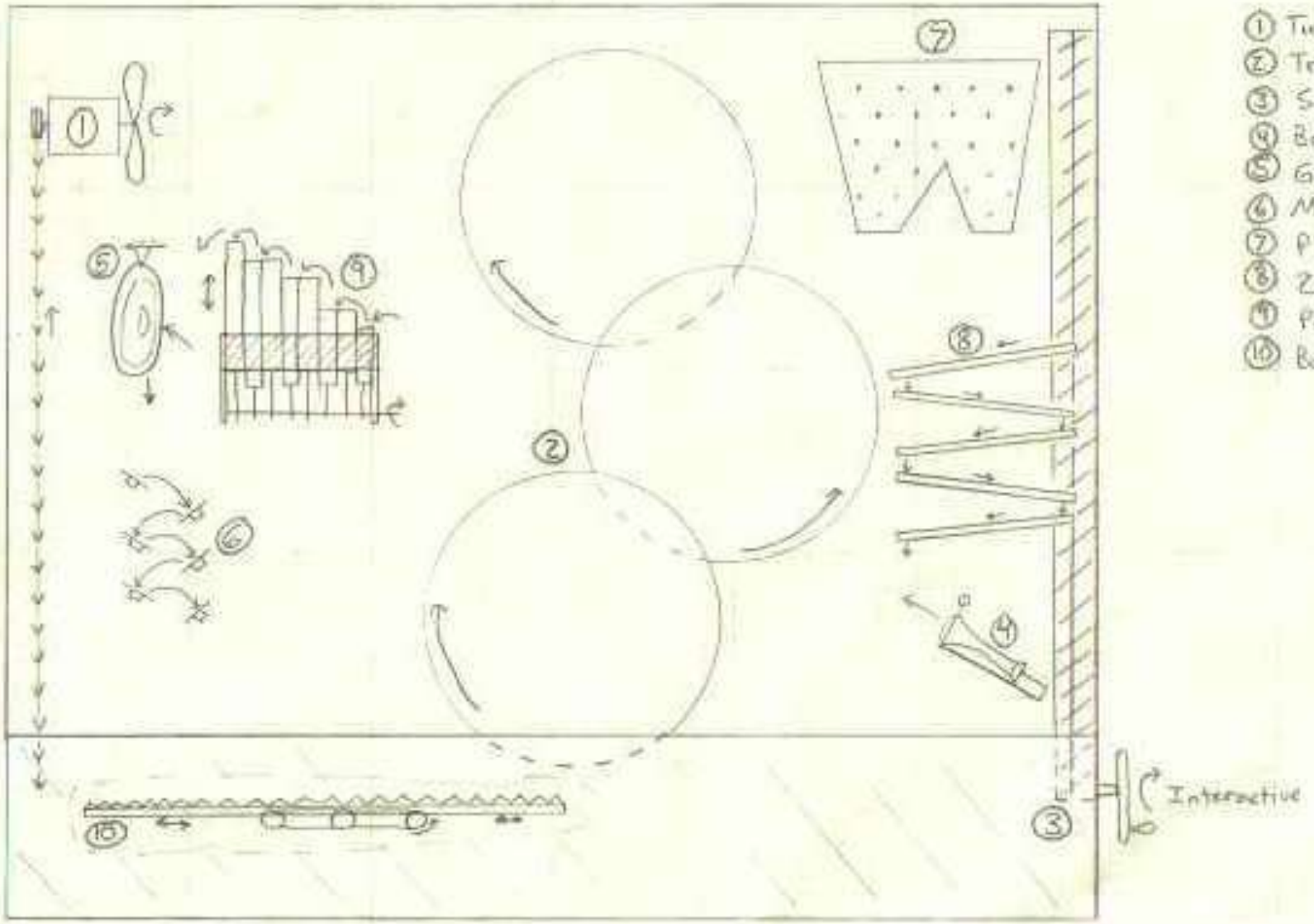


Ball Walker Origin: A Toaster



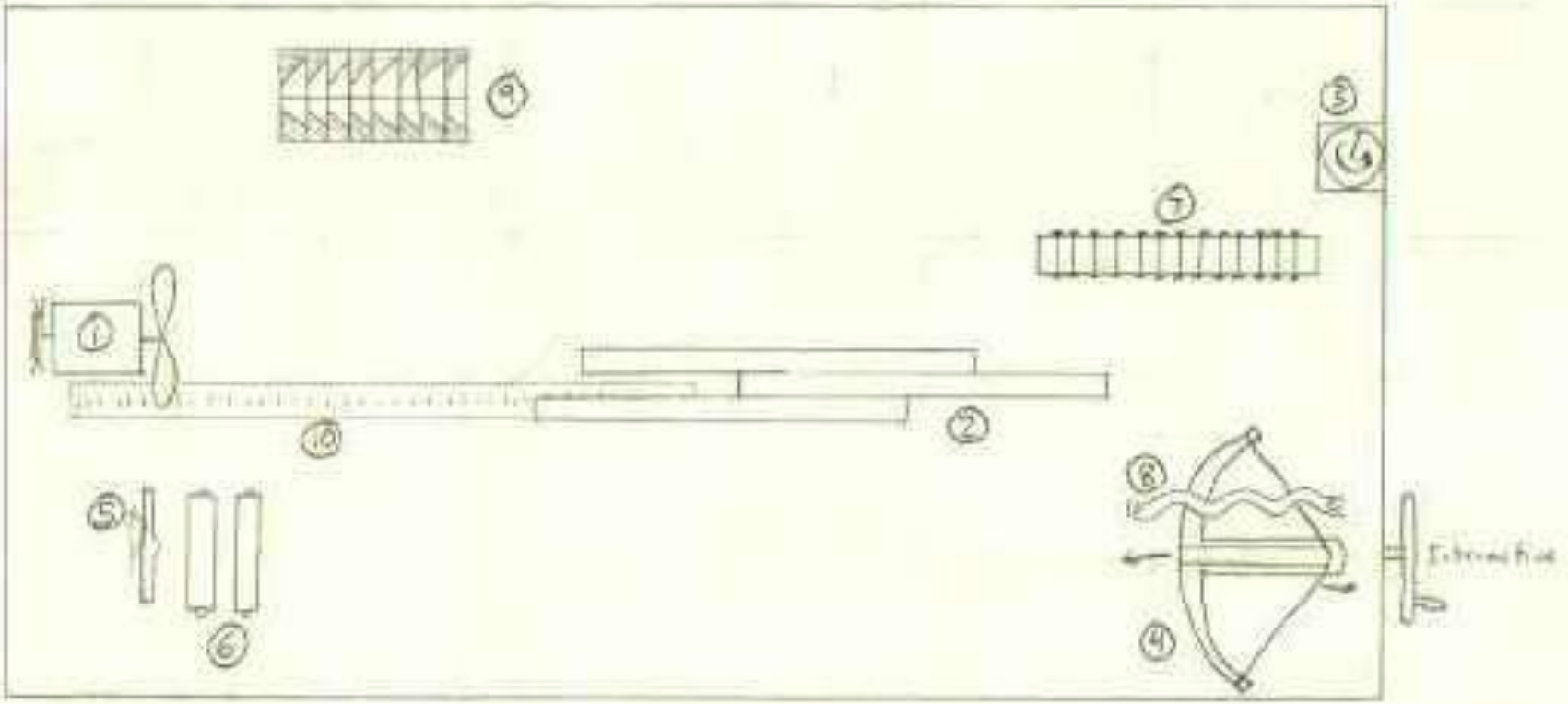


The Assembly



1. Turbine Chain Lift
2. Triple Gear Lift
3. Screw Lift
4. Ballista Launcher
5. Gonge
6. Musical Boards
7. Plinko Board (clear)
8. Zig Zag Ramps
9. Piston Walker
10. Ball Recycle Walker

The Assembly

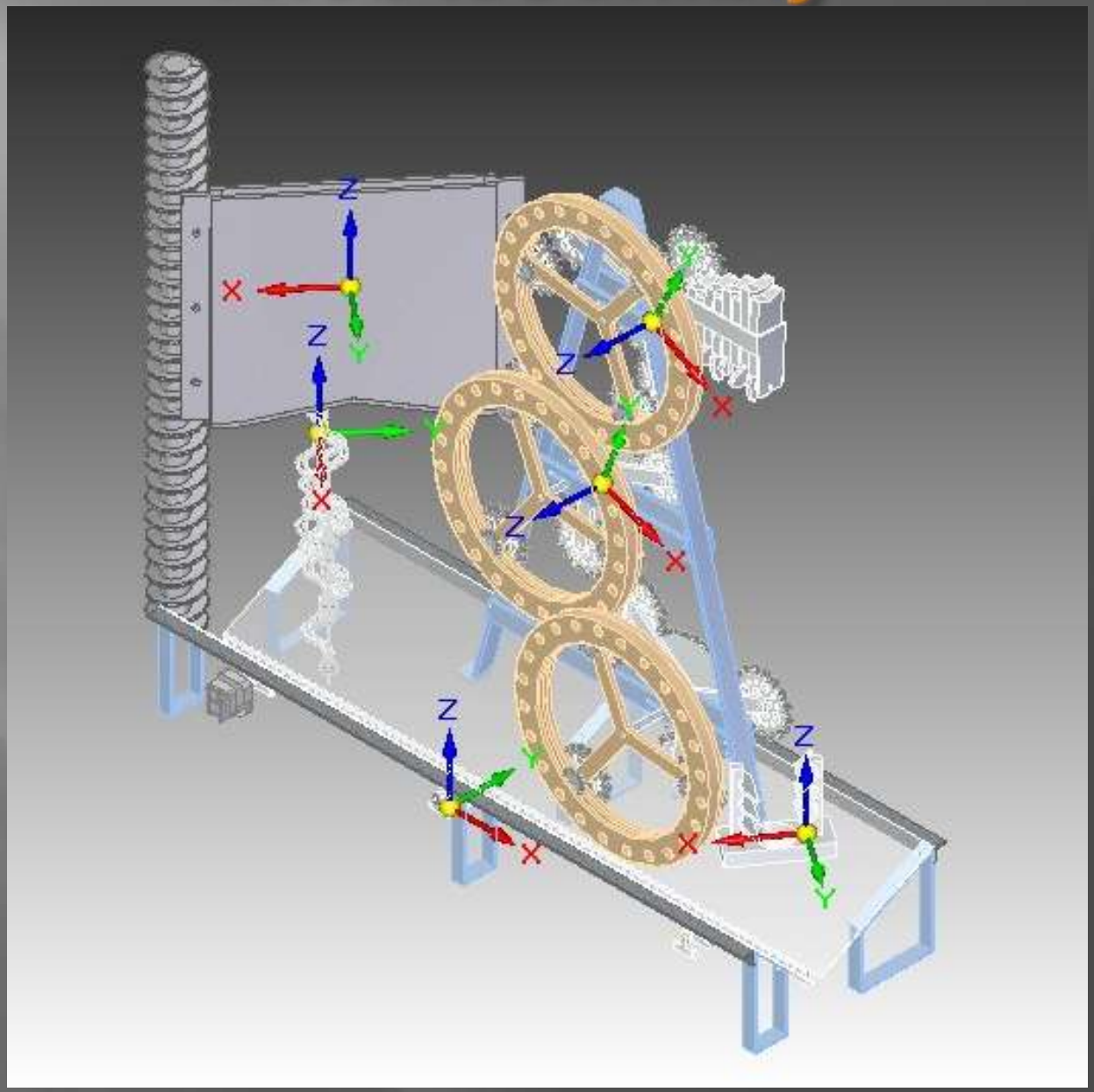


Loop 1 : wooden balls; 1 4 5 6 10

Loop 2: marbles; 2 7 8

Loop 3: large marbles; 3 9

The Assembly



The Future

- We plan on finalizing all of our designs for Monday December 12
- Over Christmas Break we will detail the tracking and fine tune our drawings
- In next few weeks we plan to secure our sponsors and donations
- The week of January 9 we will start building the base of the sculpture