

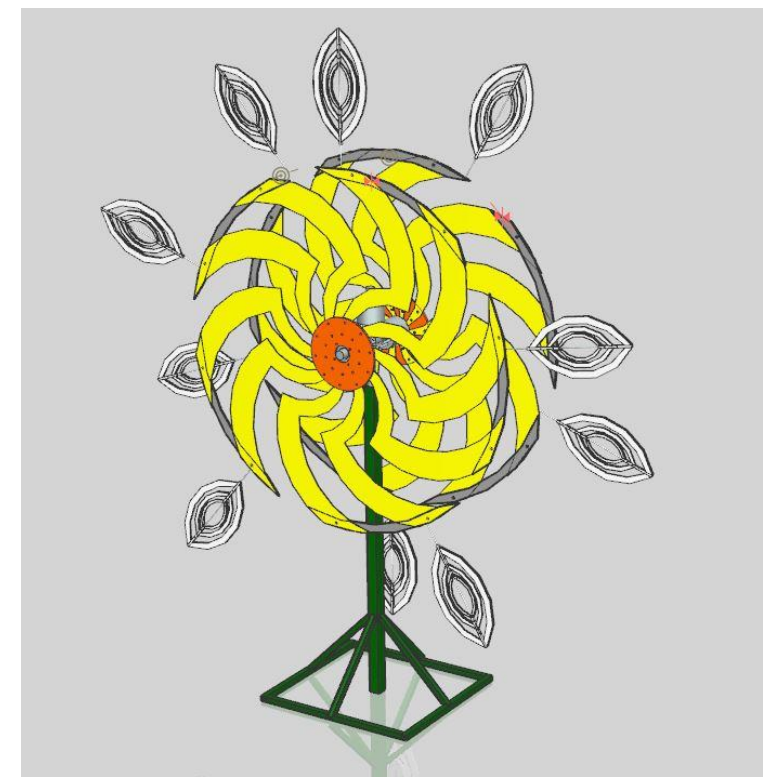
Kinetic Sculpture

Team Members:

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Customer/Sponsor:

Professor Anne Wilcox



Project Overview

The kinetic sculpture, titled "Dandelion Fire" was created as a physical representation of the University of Rochester flower while exemplifying the connections between art and engineering. It aims to highlight the beauty of mechanical systems and challenges observers to learn more about the intersection of art and kinetic motion.



Problem Statement

The art that the University displays is mostly two-dimensional and does not represent or include the technical fields, like mechanics and dynamics. Mechanical structures tend to not have the positive connotation that is typically associated with art.

This sculpture is intended to be used by students on campus to raise awareness and encourage them to explore the connections between mechanical systems and art through their studies.



Deliverables, Requirements and Specifications

Deliverables:

- Drawing set and bill of materials
- Operation manual on how to assemble and use the sculpture
- Functional and movable kinetic sculpture

Requirements:

- Act as an interactive art form
- Can be set into motion by hand
- Contains a balanced mechanical system

Specifications:

- Sculpture must visually remain in motion for 15 seconds observed from 6 feet away
- Base of sculpture must fit in a 3 ft X 8 ft space
- Minimum force of 2 lbf must be applied to set sculpture into motion
- Each assembled piece of the sculpture cannot weigh more than 51 lbf

Component	Weight (lbf)
Frame and Hub (including screws, nuts, and washers)	9.520
Petal (including inserted rod)	0.376
Ring	0.500
Horizontal Gear	2.18
Top Gear	1.5
Base, Stem, and Cross	13.458

Total Weight of System (lbf)	47.12
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Component	Size Measurement (ft)
Base length	1.51
Base width	1.59
Sculpture height	6.17

Trial	Time of Free Motion Spin (s)
1	24.64
2	23.62
3	20.75



Current Project Status

The project was tested against the specifications outlined on the previous slide. The sculpture passed every trial and meets all the requirements that were set.

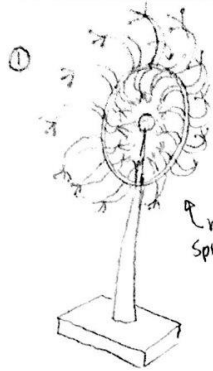
From researching and concepting designs, to manufacturing and adjusting the mechanical aspects of our design, our sculpture has maintained the bright and playful energy that our team envisioned from the start.

The sculpture is currently displayed in Rettner Hall. Current conversations are aimed towards placing "Dandelion Fire" in the new Sloan Performing Arts Center over by Todd Union.

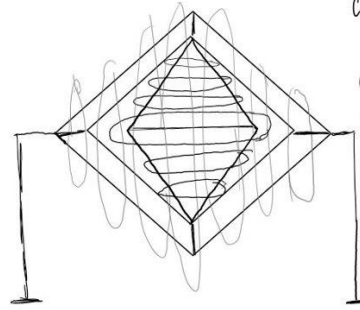
Further slides will include more Concept Designs, Manufacturing methods, and Drawing packages.



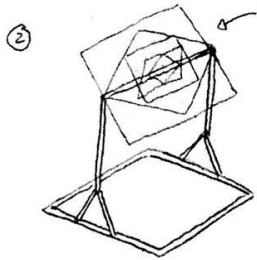
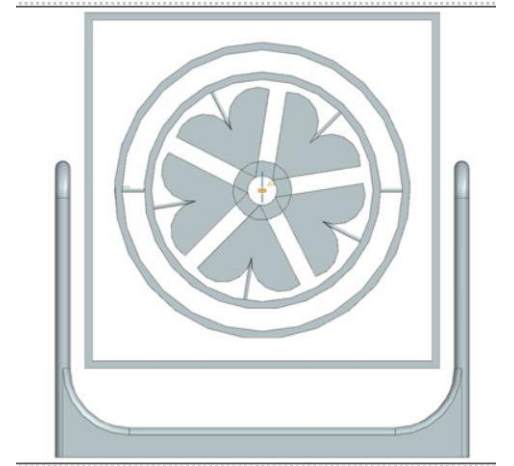
Early-Stage Concepts



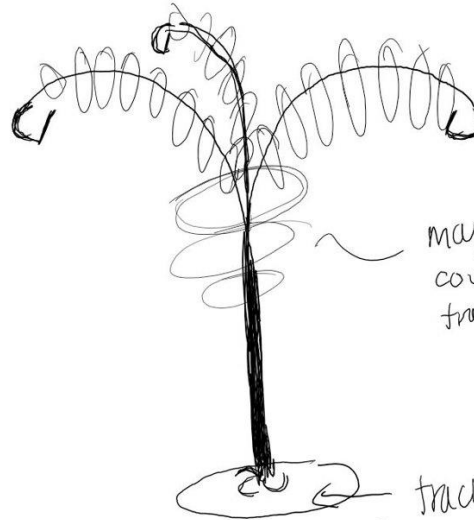
①
 Image: dandelion
 motion: kinda pulsating
 - maybe incorporate shadow?
 - rotor?
 Inspiration: Anthony Howe
 more spherical?



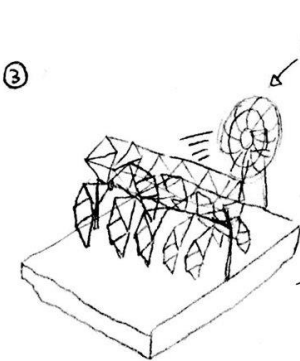
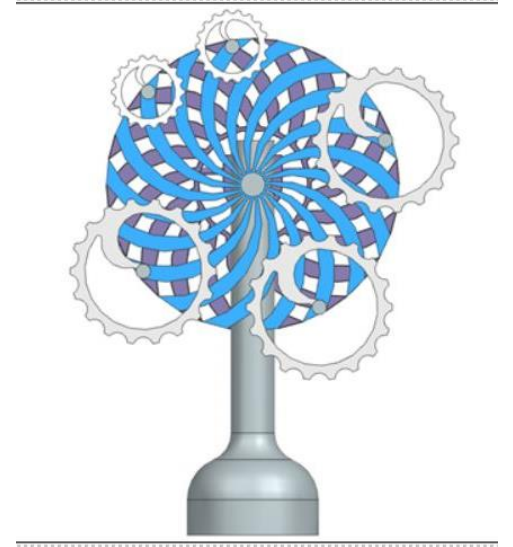
cubes/square shapes
 disks/rings/circular shape
 falls over cubes/squares as mechanism shifts in motion



②
 experiment w/ different shapes
 Image: Geometric shapes
 motion: spinning, flipping
 Inspiration: Square Wave by Ivan Black
 - metal



momentum
 maybe rotation of disks could push limbs to follow track?



③
 powered by fan? or maybe wind-up is better
 Image: something organic like a bug
 motion: spinning → looks like walking
 Inspiration: "strandbeests" Theo Jansen
 - wood?
 - this one would lean more heavily on aesthetic design to make it look more like a bug

track for each limb to rotate around when aggregated

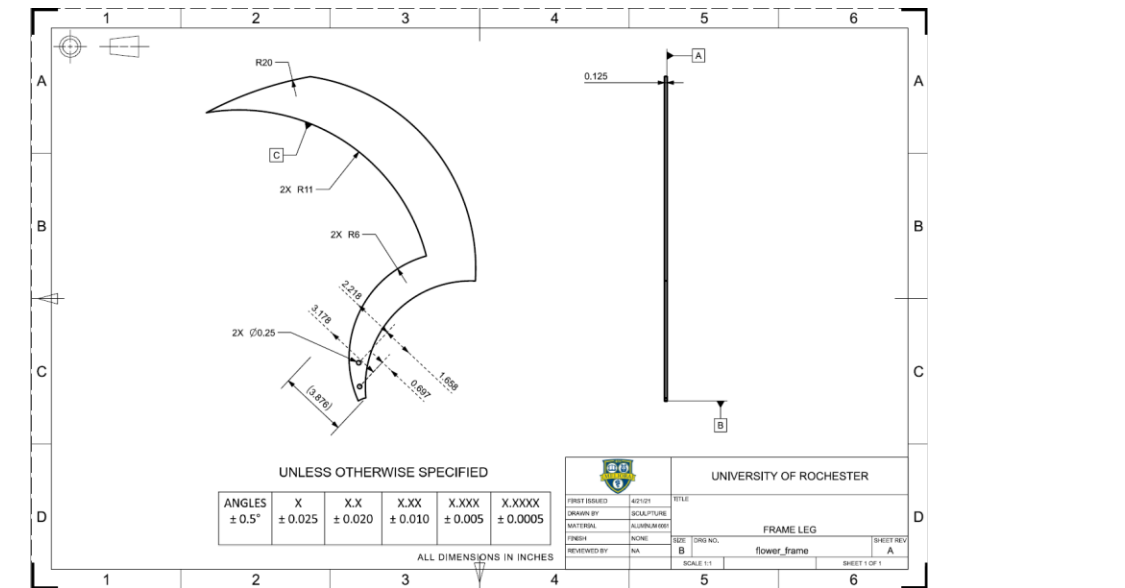
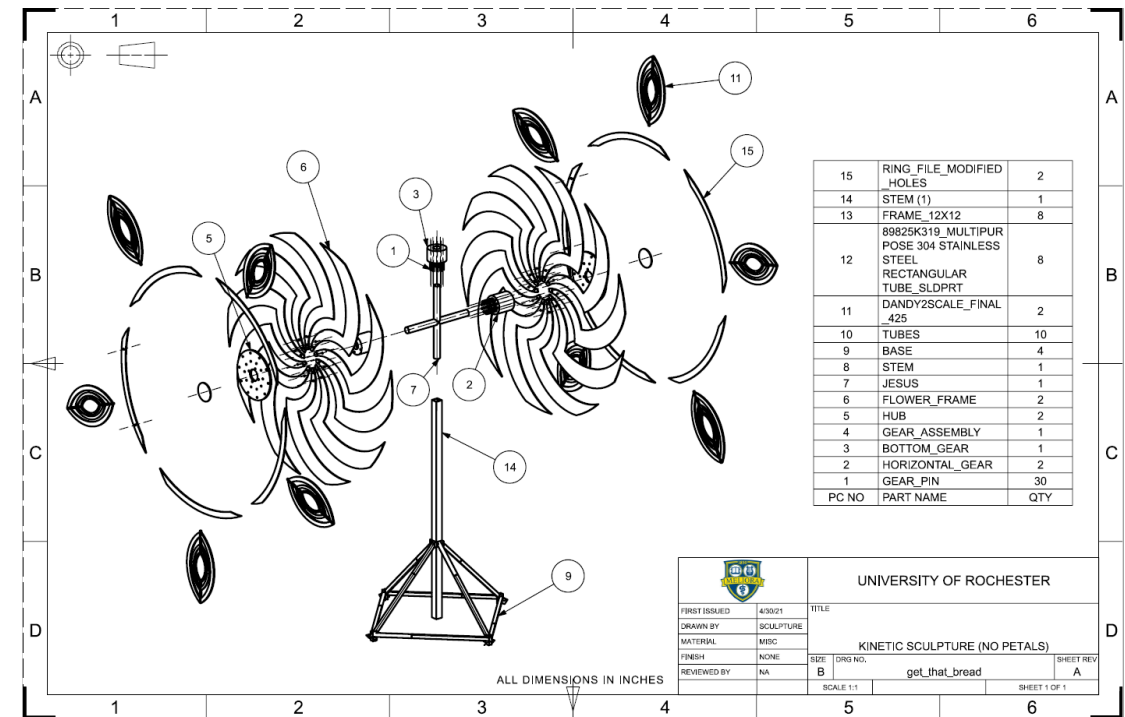
Manufacturing



Welding



Plasma Cutting



Conclusions/Future Work

As mentioned earlier, Dandelion Fire is currently in the process of finding a semi-permanent home on campus for the enjoyment of students.

A protective coat of polyurethane will be added to the painted components to protect the paint from scratching.

A wooden platform will be constructed, and a title plaque will be prepared for display.

