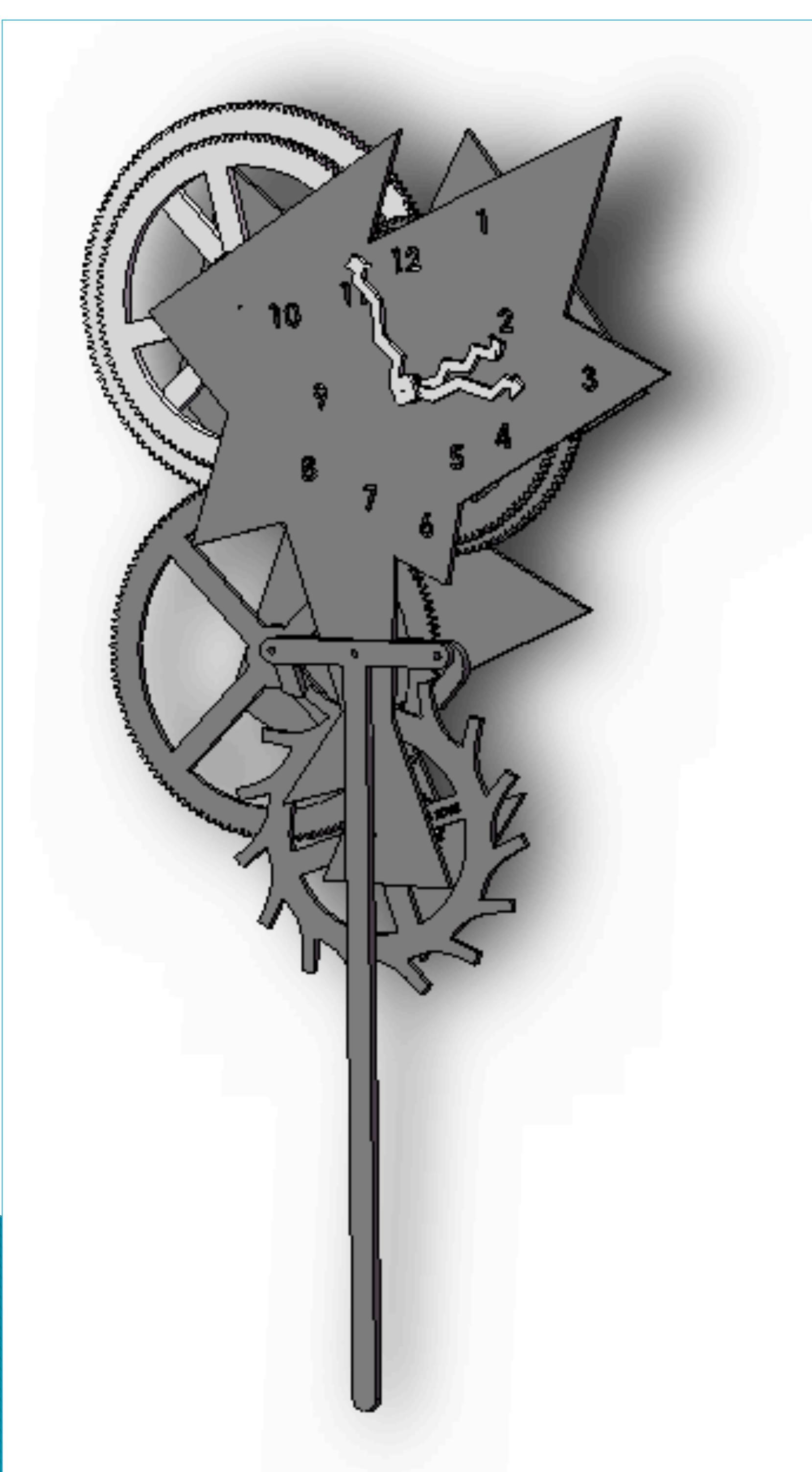


# Design



- Wall clock
- All hands on the same face
- Modern look



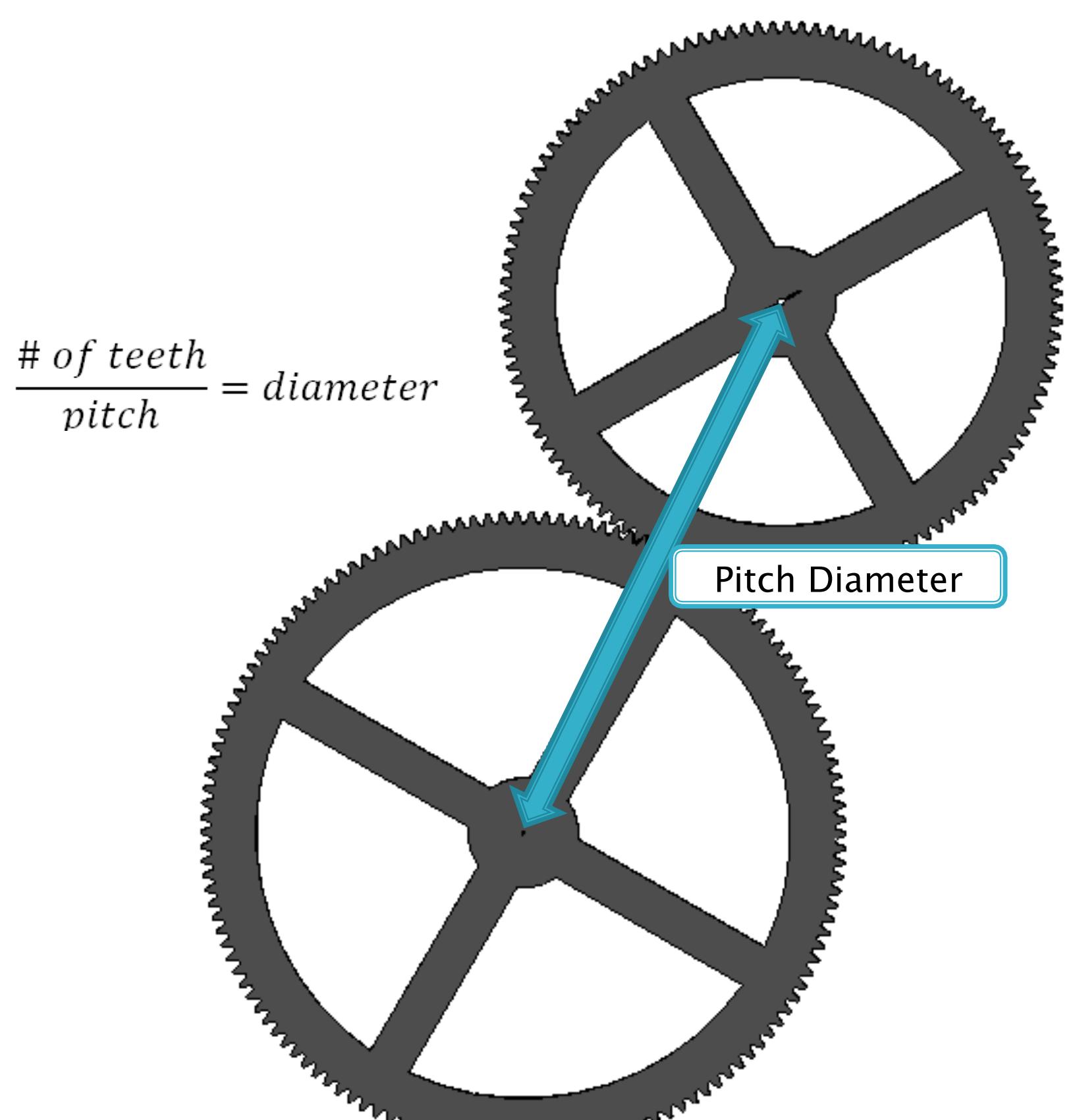
▪ Parts were modeled in SolidWorks© and lasercut

# Building a Mechanical Clock

Raphael Cherney, 2011 – Expo ID: 324

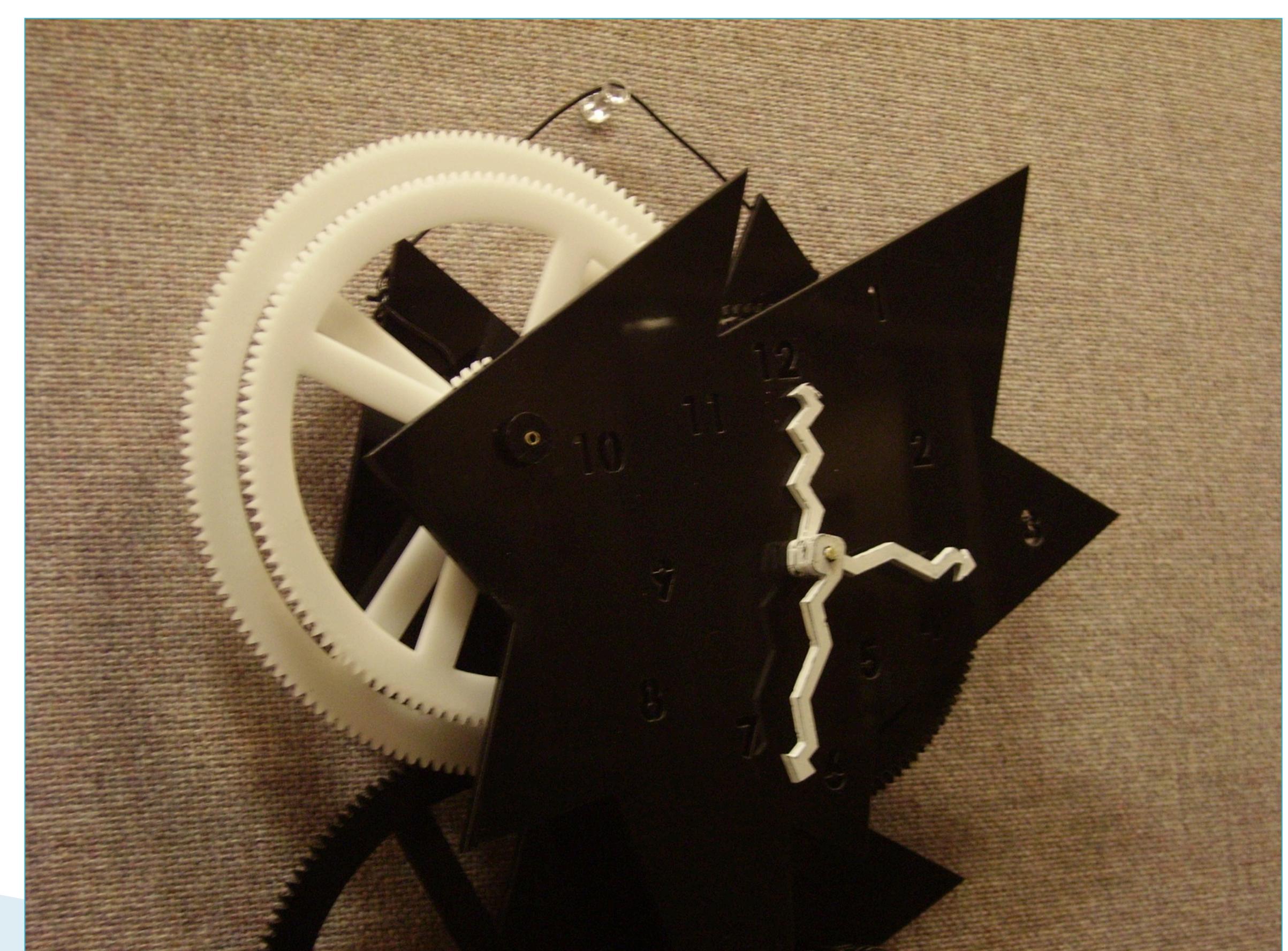
## Gears

- Gear down to minutes and hours
- Distance between rods must be kept constant because of single clock face
- Tried to minimize number of gears used
  - Reduces error
  - Results in larger gears



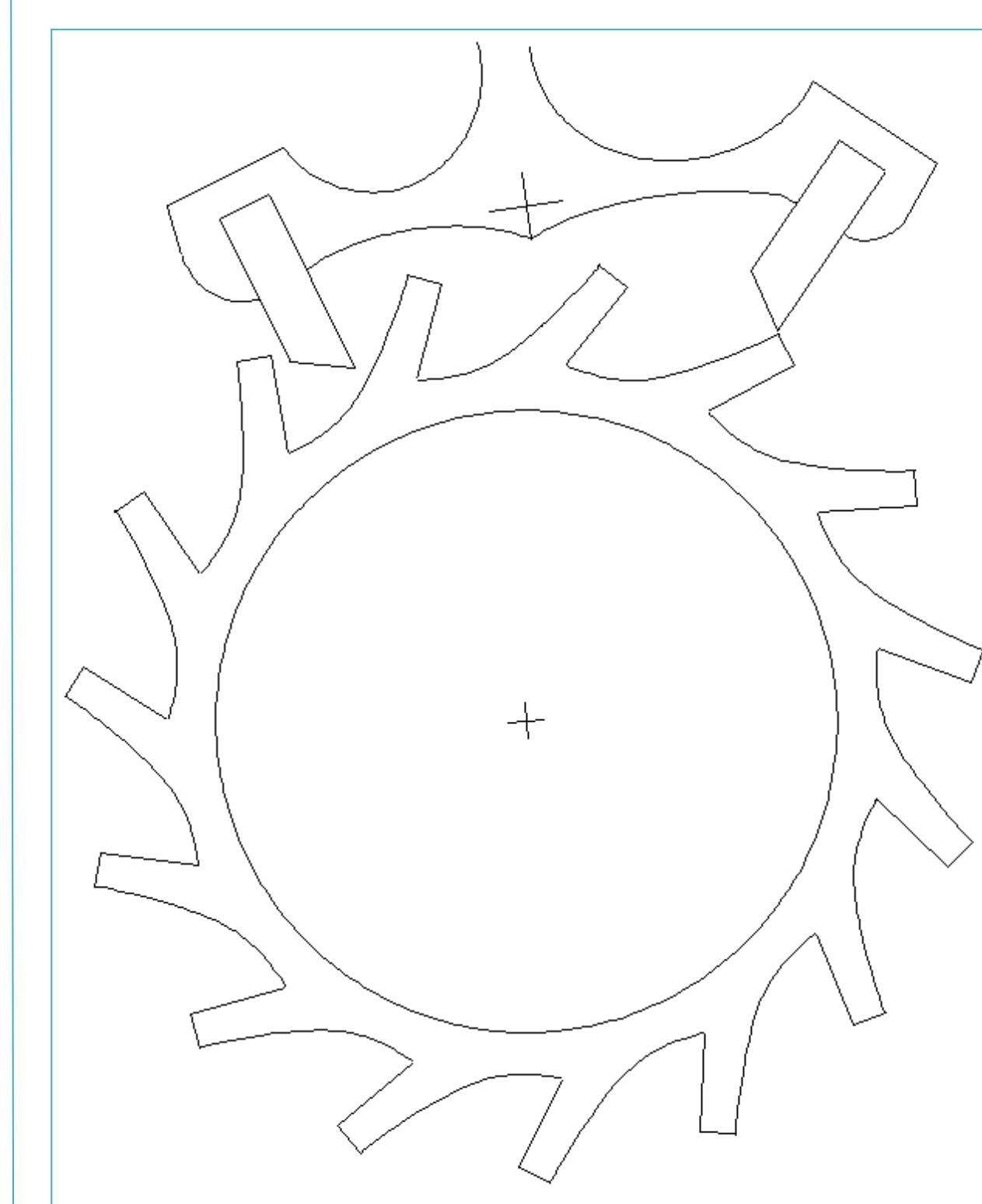
## Prototype

- Built prototype to test components
- All worked separately



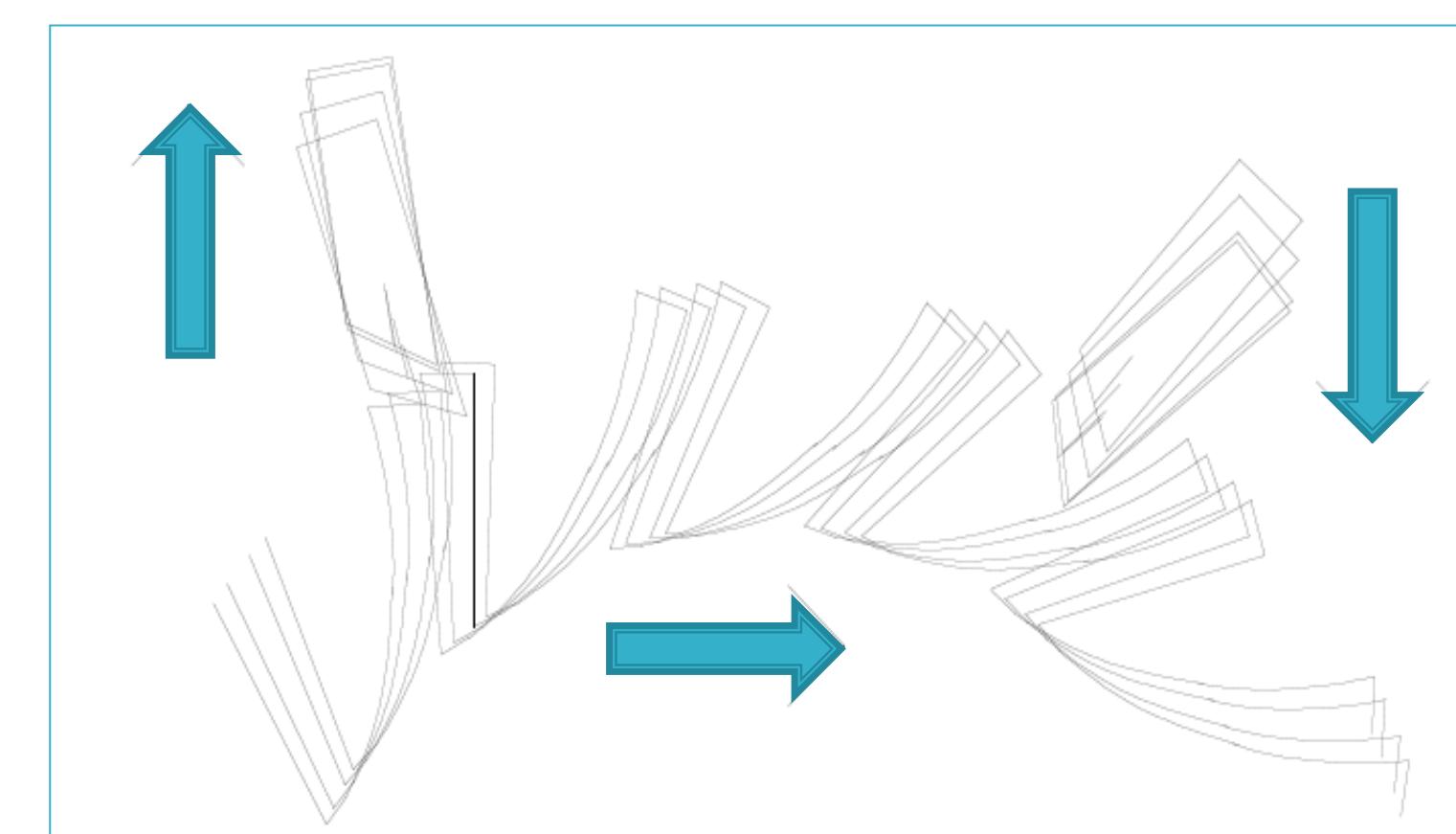
## Final Construction

- Parts fit nicely together and run when manually powered. However, problems arose:
  - Too much friction to be powered by the motor
  - Weak press fits get loose
- Possible improvements include:
  - A permanent motor mount
  - Sturdier construction method

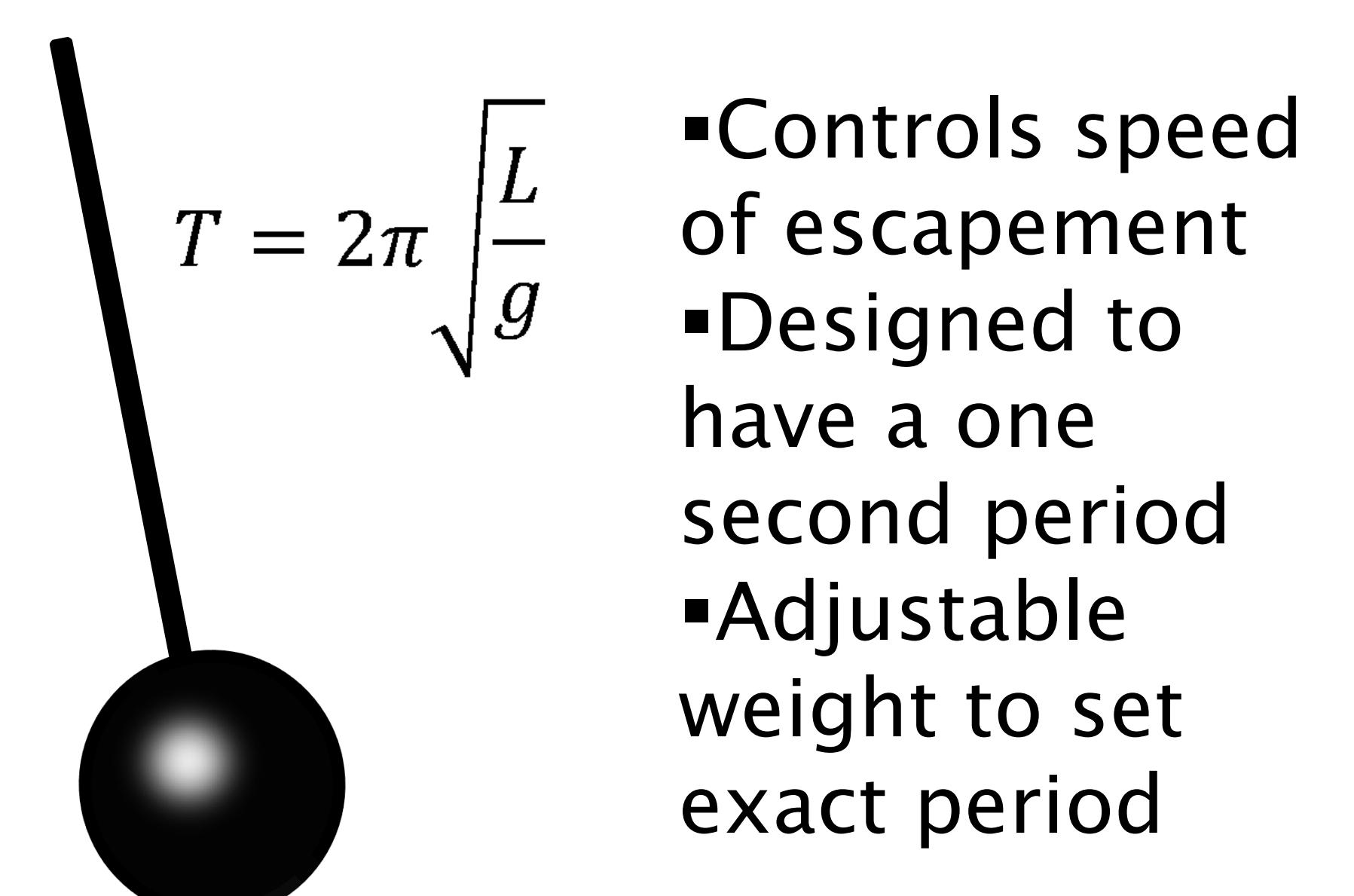


- The escapement breaks the rotation of the clock wheels into distinct motions regulated by the pendulum

- Careful attention to design is needed to ensure efficiency (even the best escapements have efficiencies below 50%)
  - Optimize angles
  - Minimize friction
- Modern Swiss Lever escapement with a club-tooth escape wheel was used
- Provides an equal impulse in *both* directions



## Pendulum



Collaborators:  
Daniel Grieneisen  
Carisa Leal  
Christina Powell