

Background

In 2019, a senior design team fabricated a penny press machine. Over time, the machine failed due to design errors and was decommissioned until our team undertook its restoration.

Problems

Force Calculation Error

Gear ratio was too low, resulting in a high force requirement from the user.

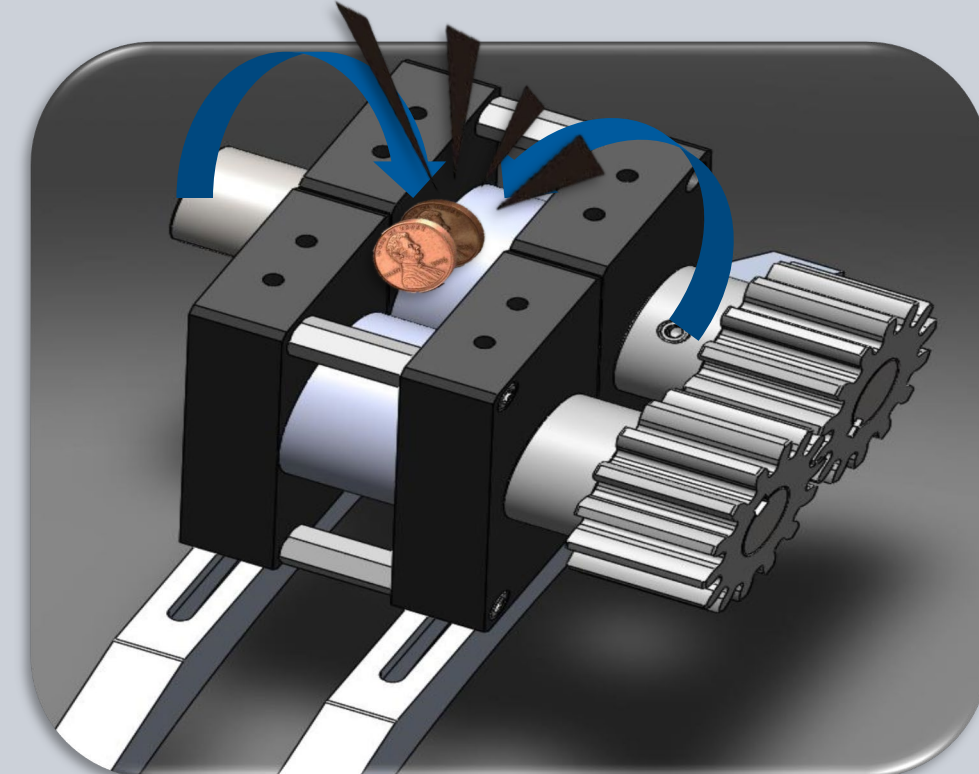
Structural Failure

Due to incredible forces on the acrylic frame, cracks formed.



Coin drop failure

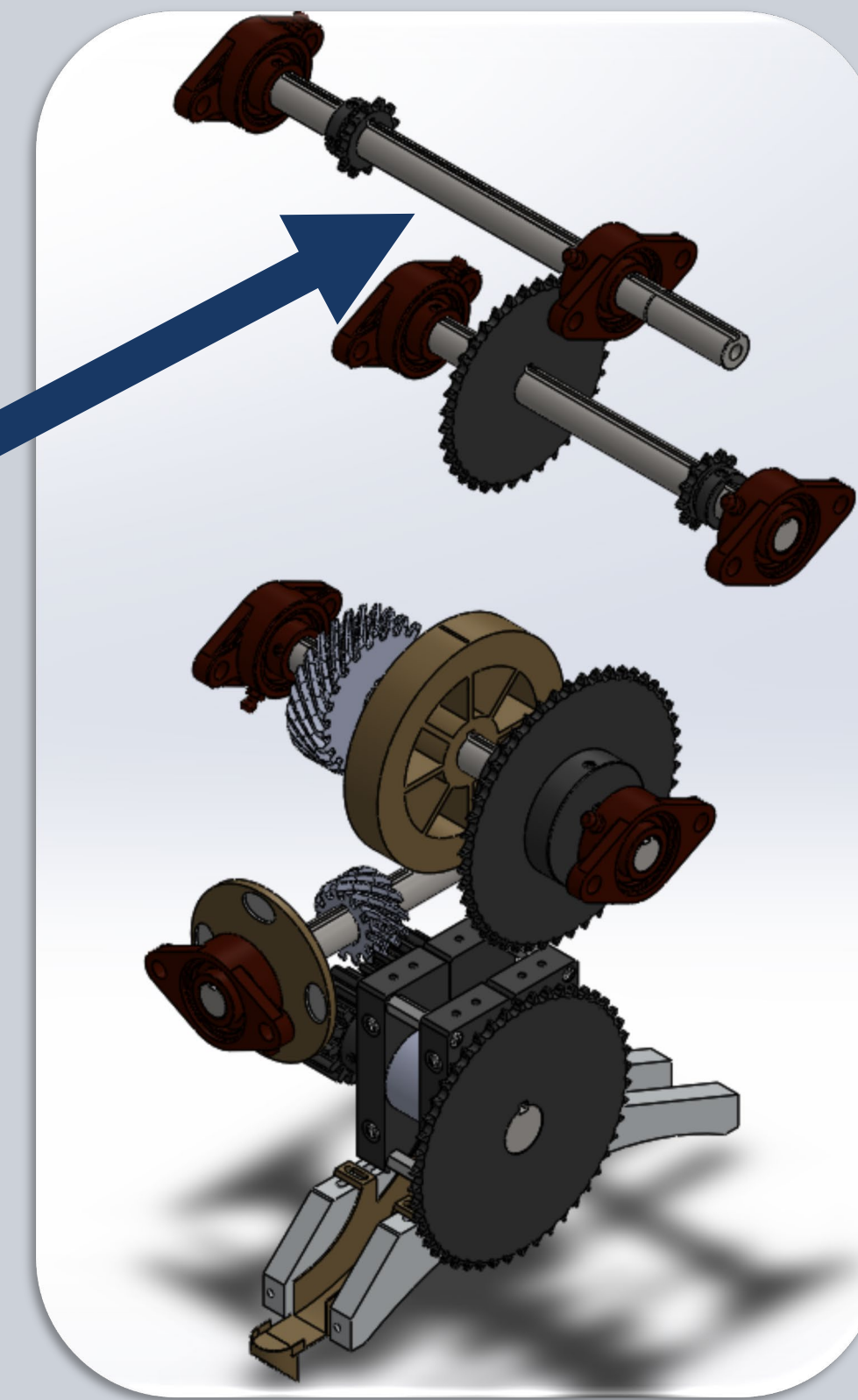
Multiple pennies fell through die simultaneously resulting in an overload of force



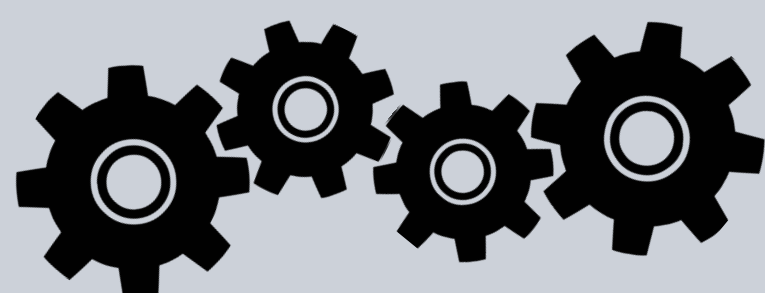
Improvements

Increased Force

Added a third shaft for an extra gear pair in order to increase the ratio

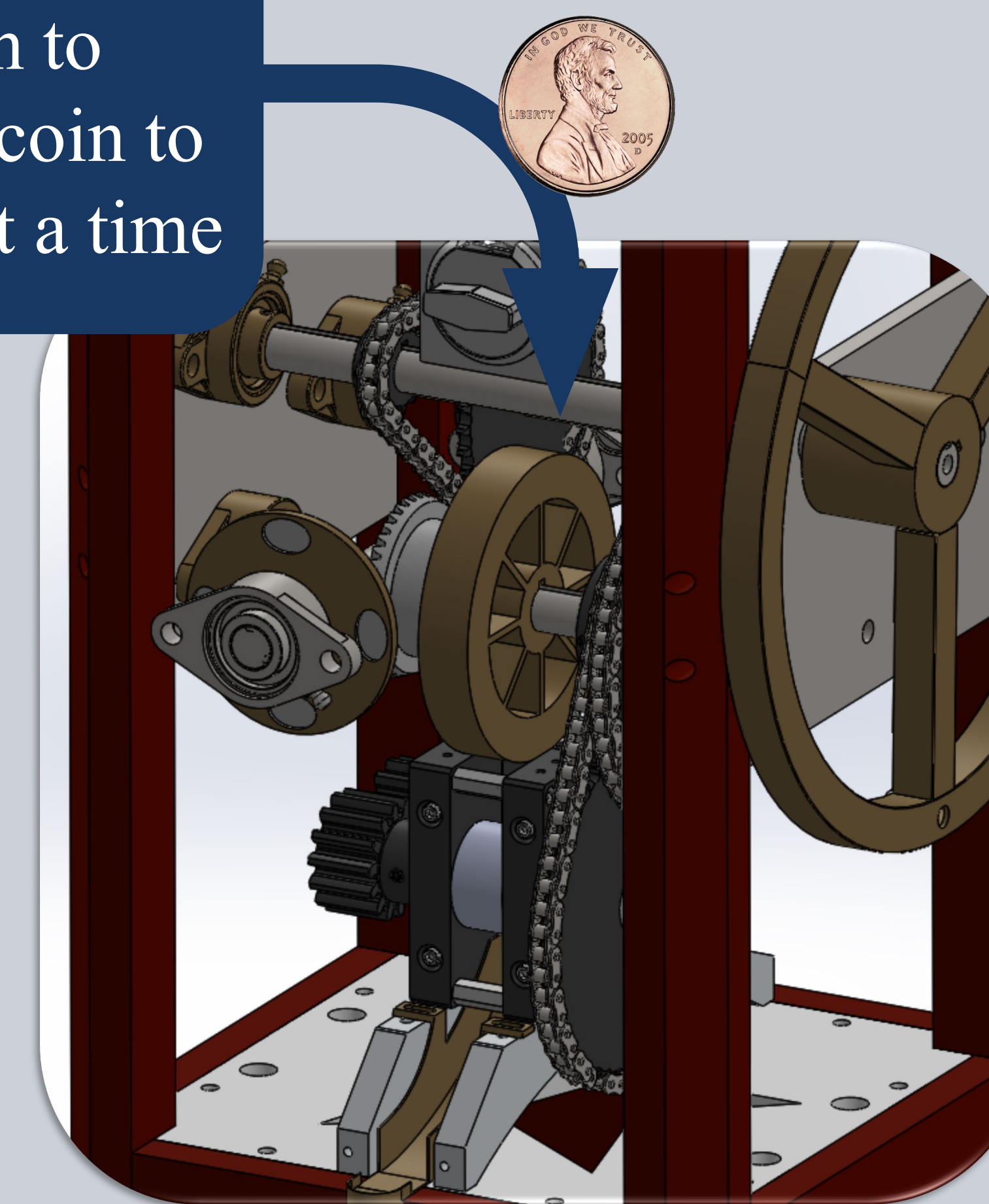


Old ratio 16:1 → New ratio 24:1



Better Coin Drop System

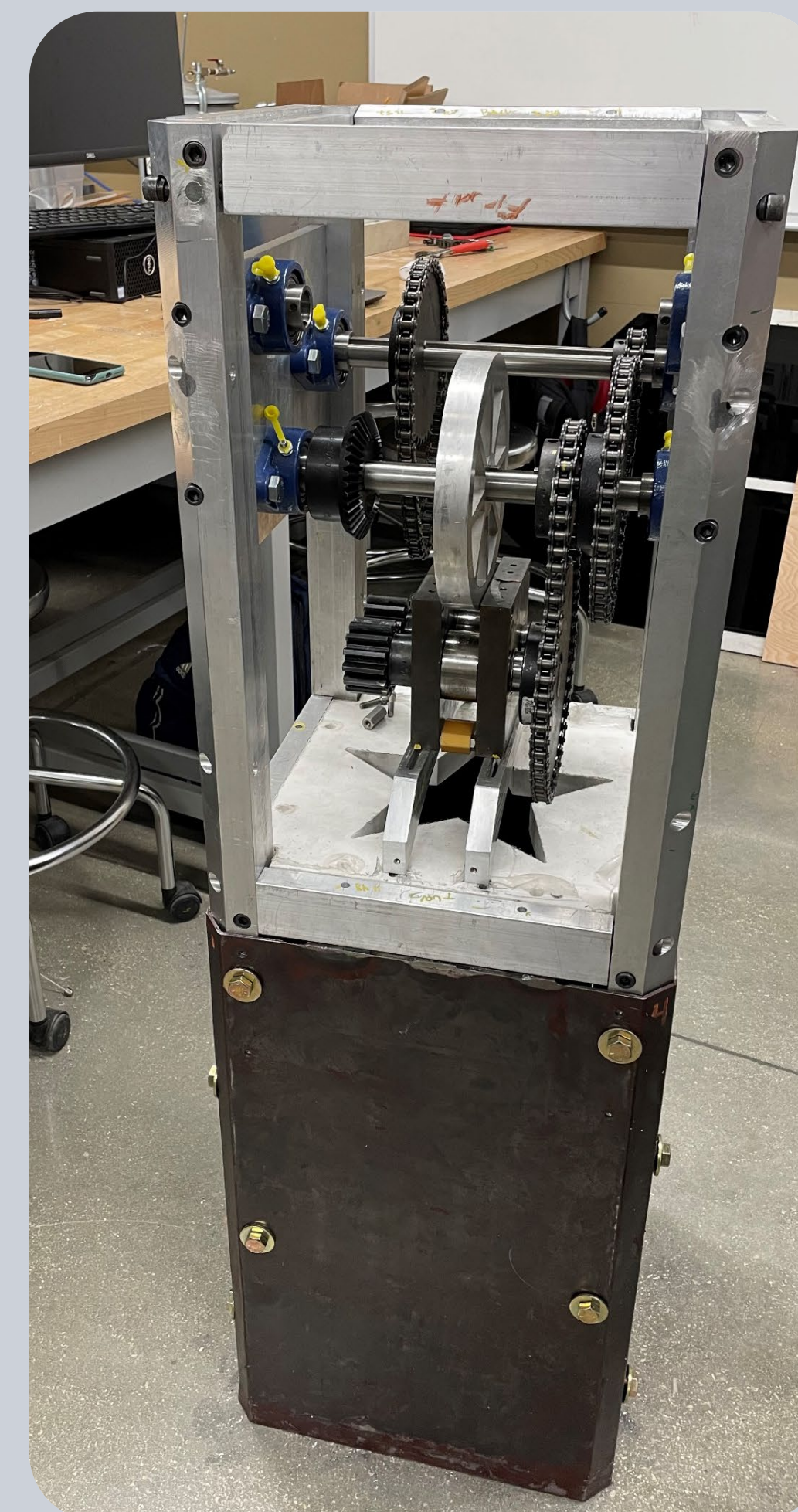
Added coin drop mechanism to allow one coin to enter die at a time




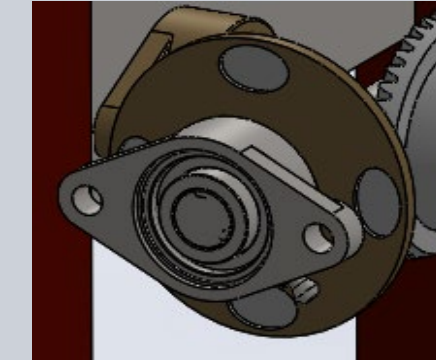

More Robust Structure

Old

New



New Additions

- Installed a counter to track the number of pennies pressed 
- Reoriented the die selector to face the front 
- Removed payment requirement to press a penny 

Manufacturing

Machining



Grinding, Tapping, Cutting

