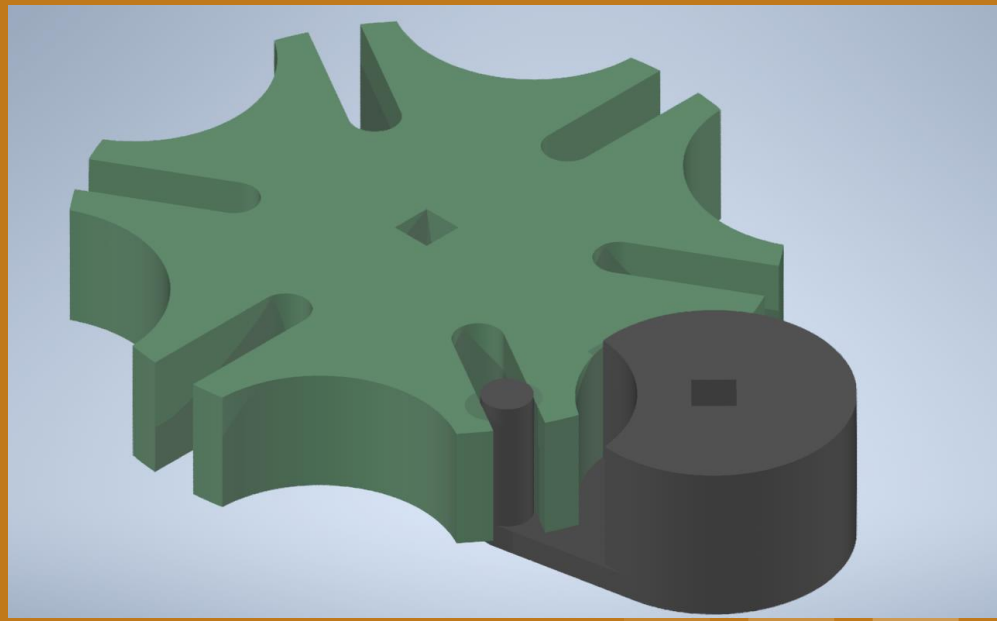
VEX Geneva Mechanism Gear Kit

By Team 39k

Purpose and Usage

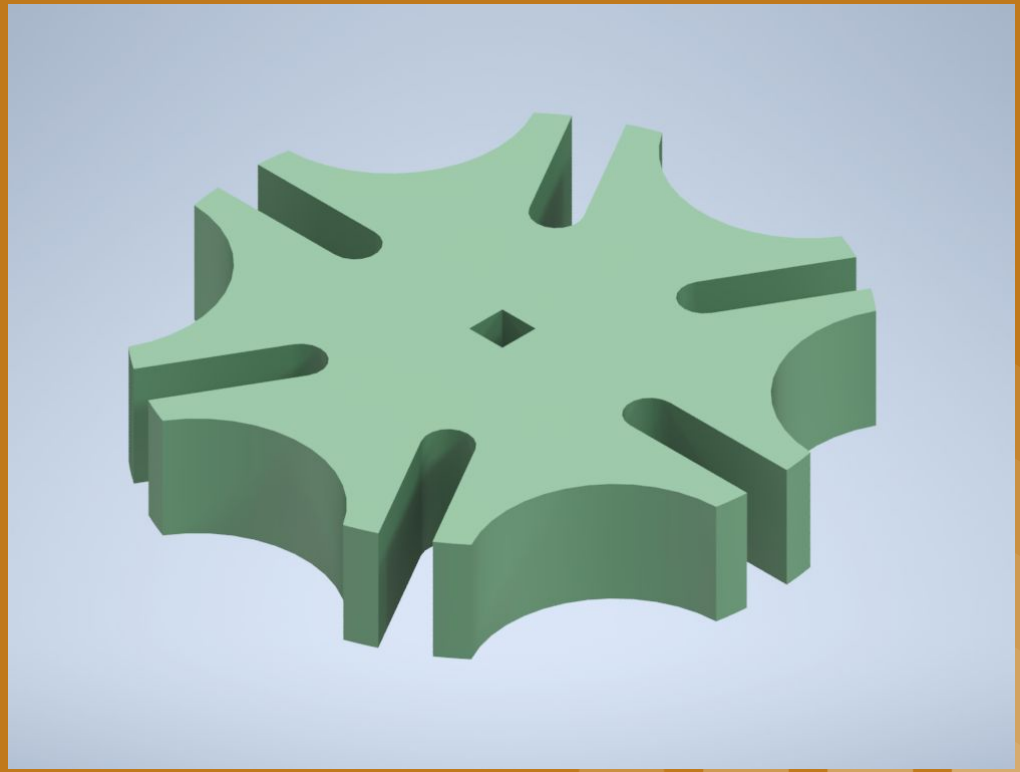
A geneva mechanism allows for precise timing increments from a sole input. For every rotation of the drive gear (black), ⅔ of the time the driven gear (green) will stay in place. For the remaining ⅓ of rotation, the driven gear will turn rapidly.



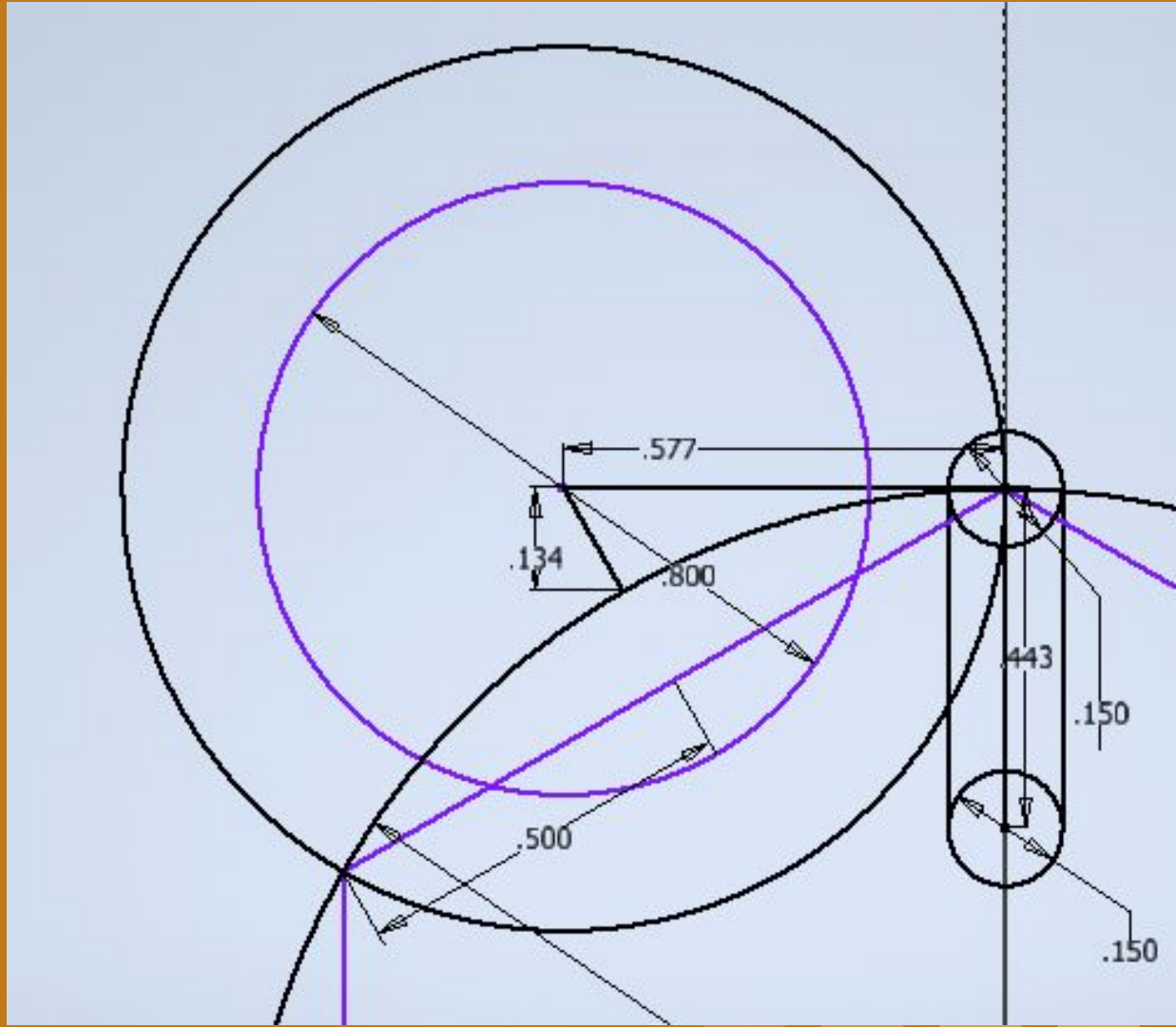
Designing the Gears

Driven Gear

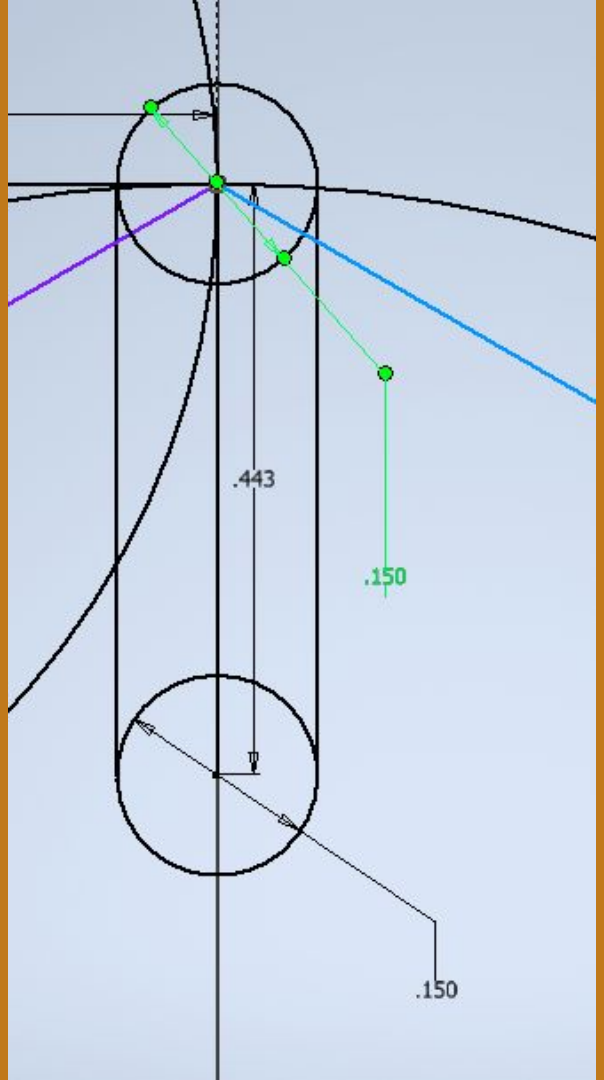
First, we had to design the driven gear, as the drive gear meshes into it. We first made the initial circle, cutting initial holes for the drive gear to slot into. Finally, we used angle lines to repeat these cuts 6 times symmetrically. Each of these steps is shown on the following slides



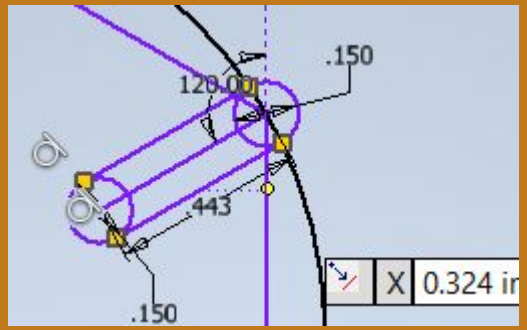
Cutting the hole so the driven gear will lock when the pin is not engaged.



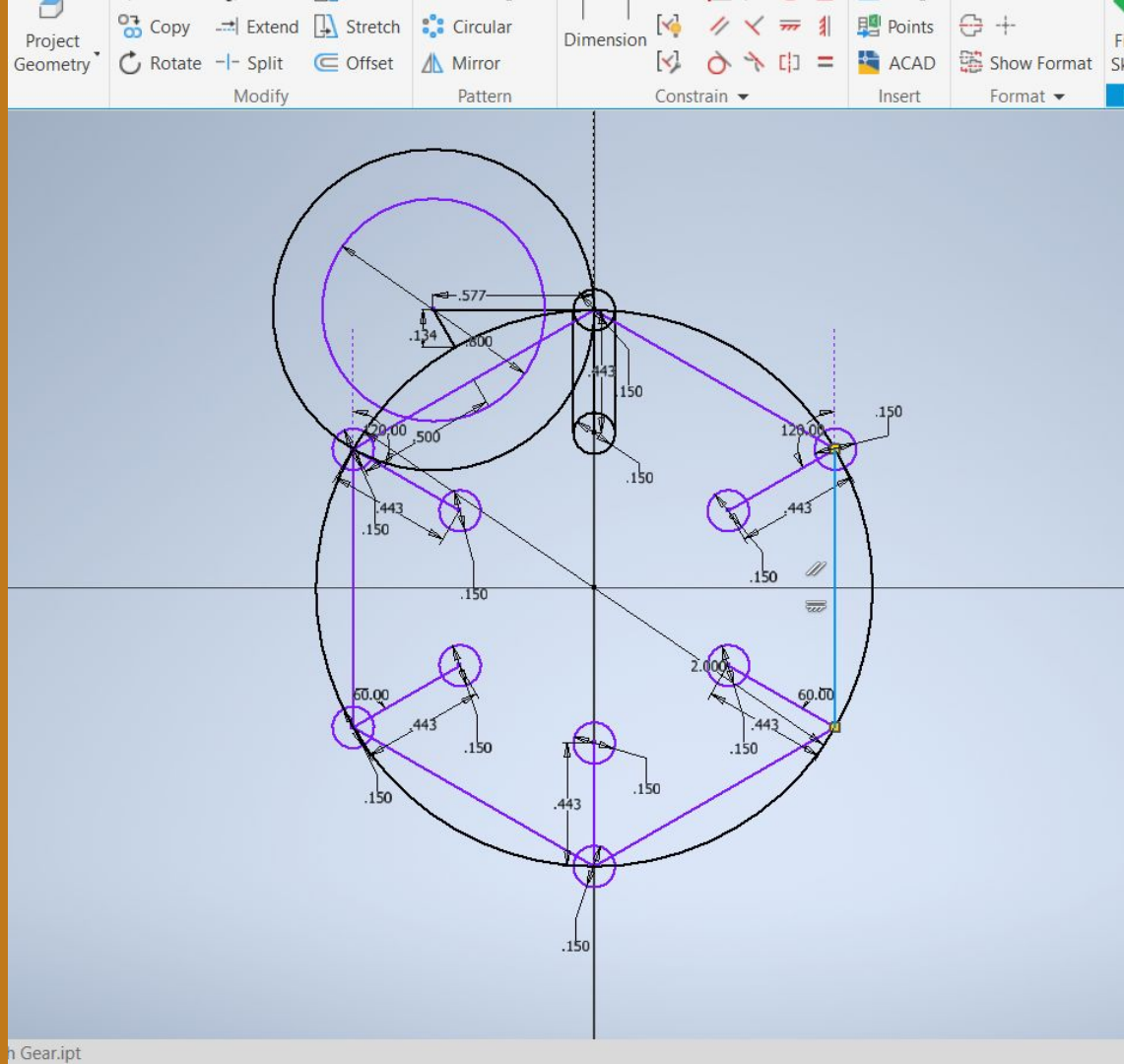
“Slot” for the pin on the drive gear.

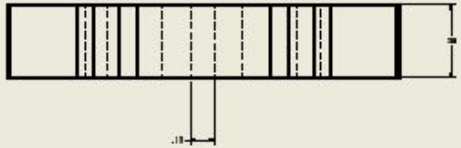


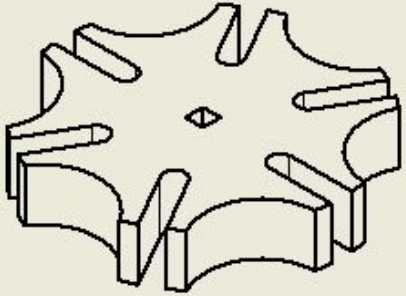
Repeating the cuts in a hexagonal pattern across the gear

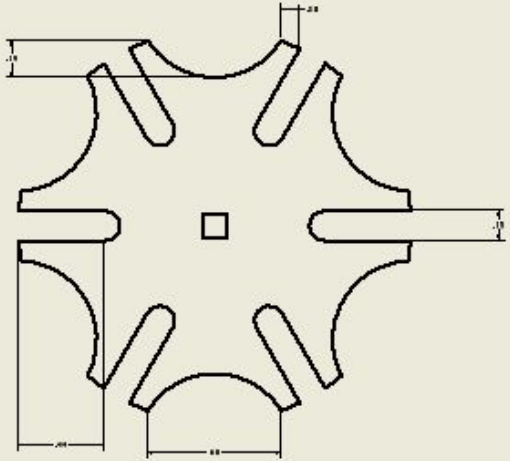


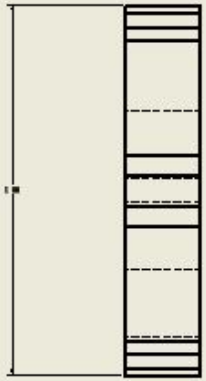
Making use of the tangent locks in Inventor







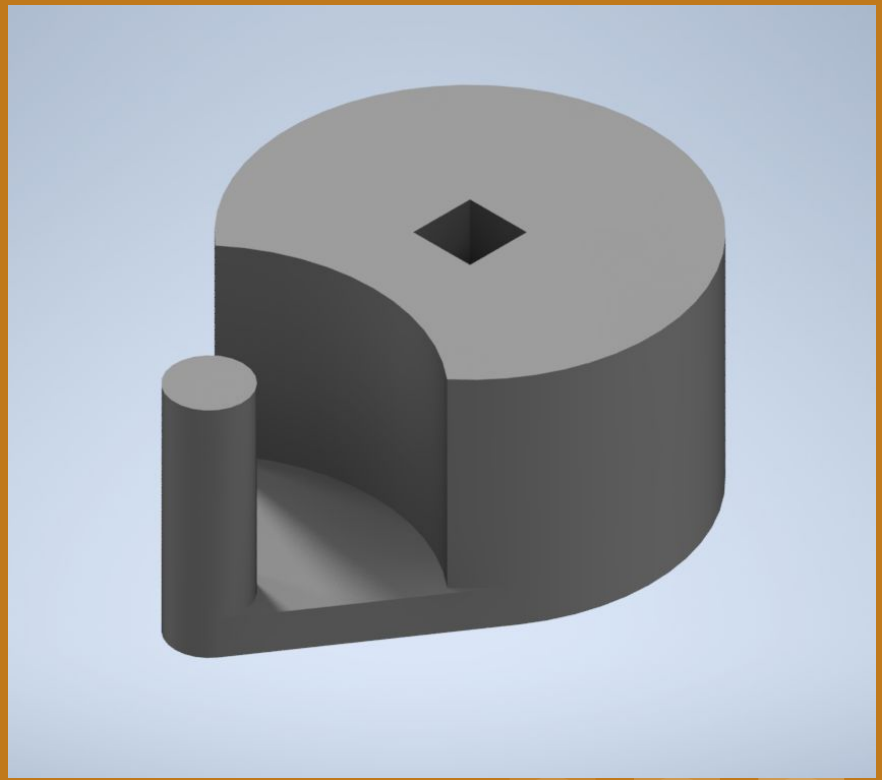


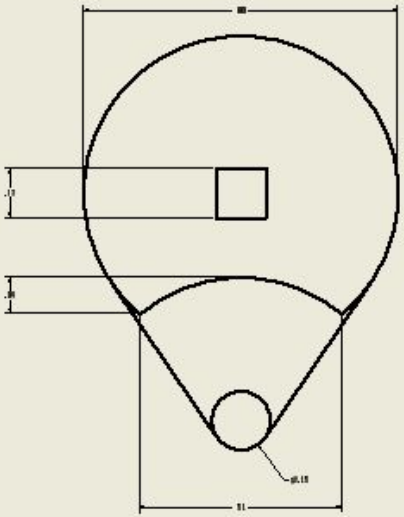


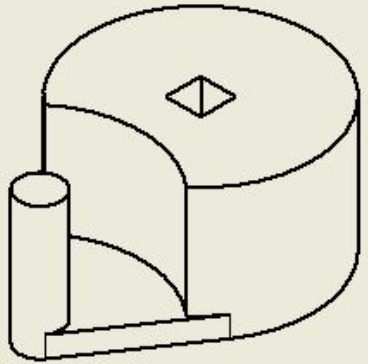
Driven Gear of Geneva Mechanism

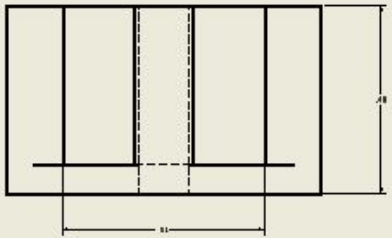
Drive Gear

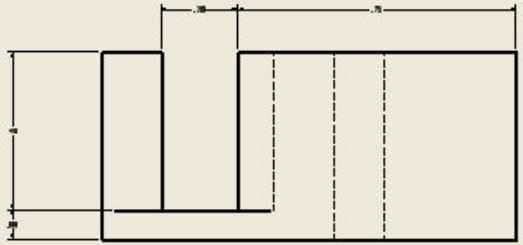
By the time the actual Drive Gear is designed, most dimensions have been determined. From here, we just drew the 2 circles for the lock and pin, and extruded up. Finally, we make cuts in the big circle to ensure it doesn't jam.





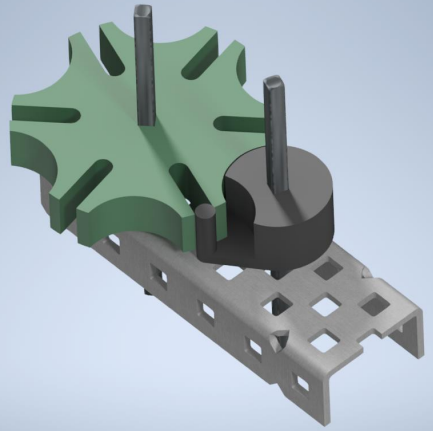


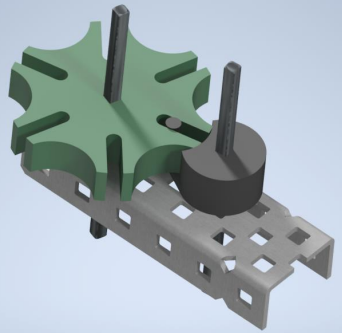


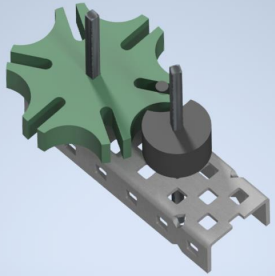


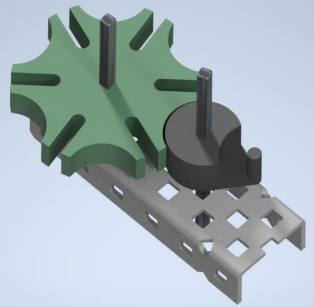
Drive Gear of Geneva Mechanism

Full Rotation of the Gear

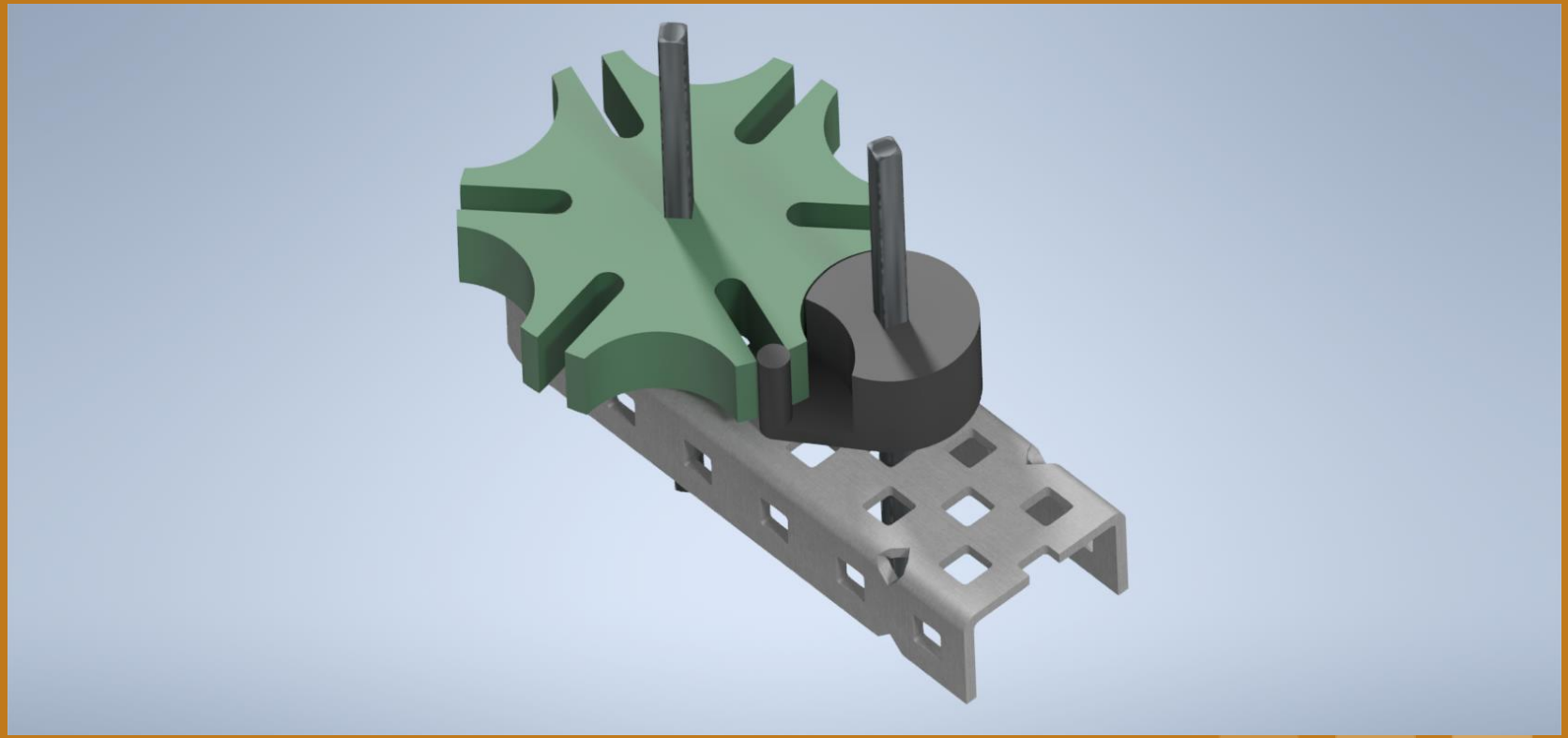








Ray- Trace Render



All work done and rendered in Inventor 2021.1 (Build 245)

Thank You!