Glorified Bubble Popper – Gearbox 6 Documentation

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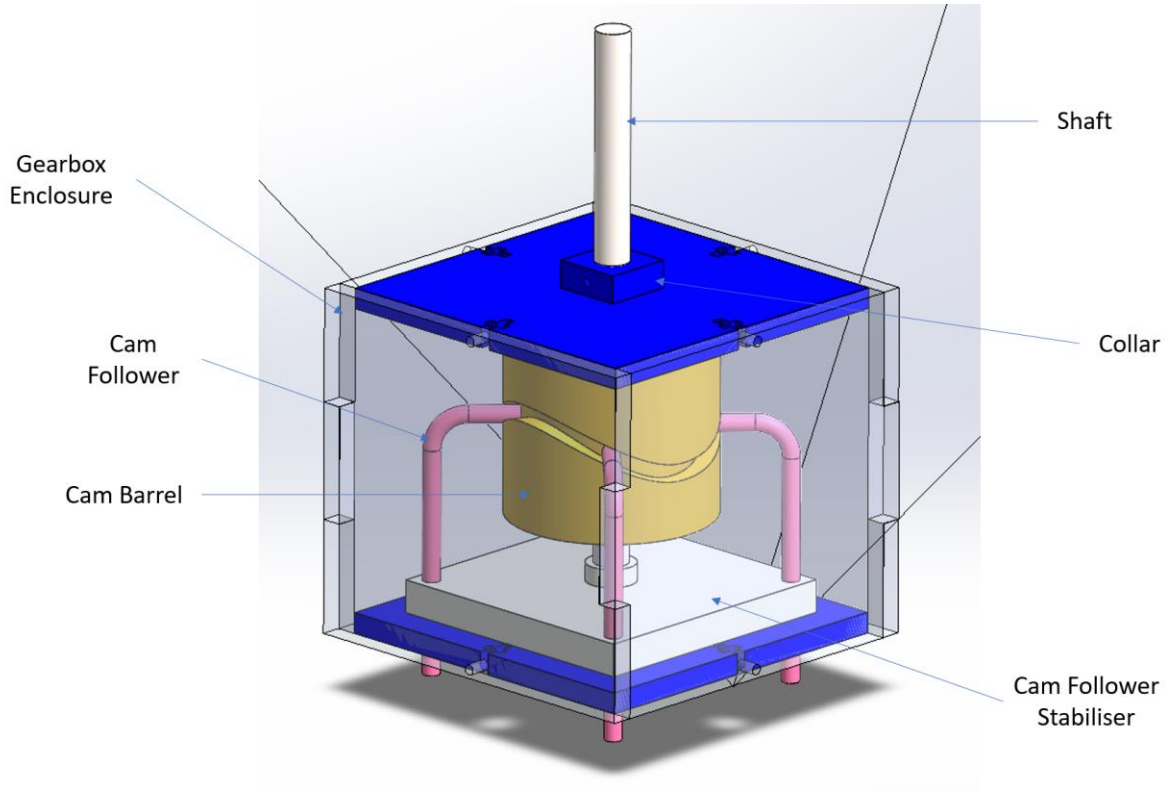

How It Works:

This variation of a cam and cam-follower gearbox, called the axial (cylindrical / barrel) cam, functions by translating rotational motion to linear motion:

The shaft rotates the cam barrel with the grooves engraved into it, where within these grooves are four cylindrical Allen-key shaped rods which acts as the cam follower. These grooves force the short end of the cam followers to oscillate relative to the sinusoidal arrangement of the cam barrel grooves, as the cylinder rotates with the shaft. Consequently, four rods (The cam followers) protrude outside of the enclosure, thus acting as “glorified bubble poppers”, which are stabilised with an extended base that hold them in place as they move. Furthermore, this additional base acts as a chamber to ensure the alignment of the cam barrel as it rotates.

Parts required:

Due to complications, time constraints and overall lack of experience with the program, the parts required are all custom built and did not include importing parts, which resulted in the lack of implementation from the provided email. Though said list parts were optional, our design was built from scratch, therefore the manufacturing of the gearbox will be predominately done via 3d printing.

Work Done:

Toby was responsible for the majority of modelling the gearbox enclosure, and fully implementing the cam barrel, shaft and collar. Furthermore, he assisted with adding the camera panning effect as seen in the animation.

Hau Shian modelled the cam follower rods and previous iterations of the cam follower prototypes and the cam follower stabiliser. He was in charge of doing the majority of the animation, and participated in the improvement of the enclosure, such as transforming side panels include interlocking connections.