



SAN DIEGO STATE UNIVERSITY

One-Handed Pill Bottle Opener

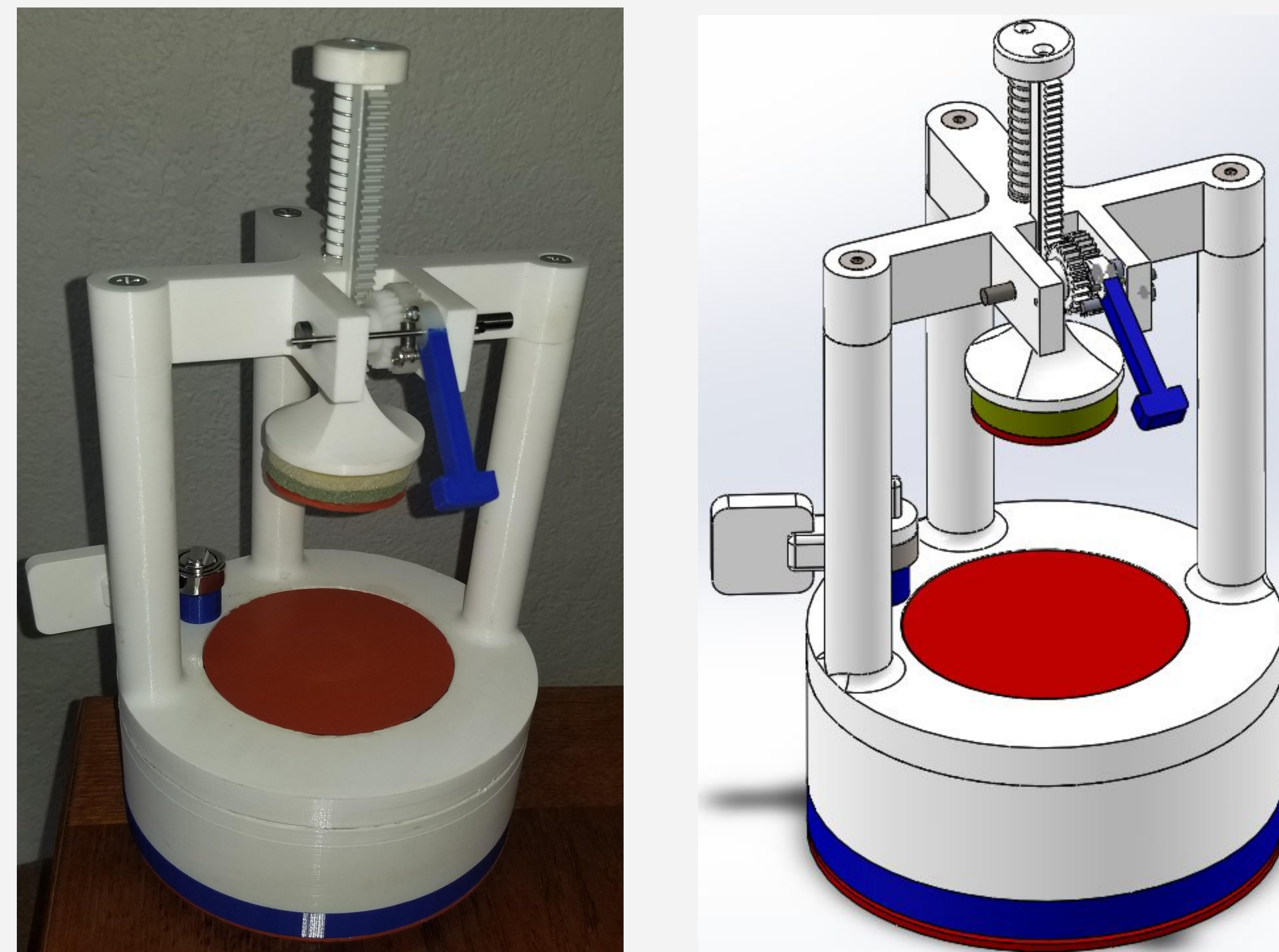
Sponsor: Quality of Life Plus (QL+)



Project Overview

QL+ works with several clients that have been injured in the line of duty. Due to their injuries, clients often lack fine motor skills which make it difficult for them to open pill bottles. The team was tasked to create a device that allows users with neuromuscular disorders and injuries such as amputation and hemiplegia, to independently manipulate push turn pill bottles. This device functions without the use of any batteries or electricity and can be operated using a single hand.

Product Design



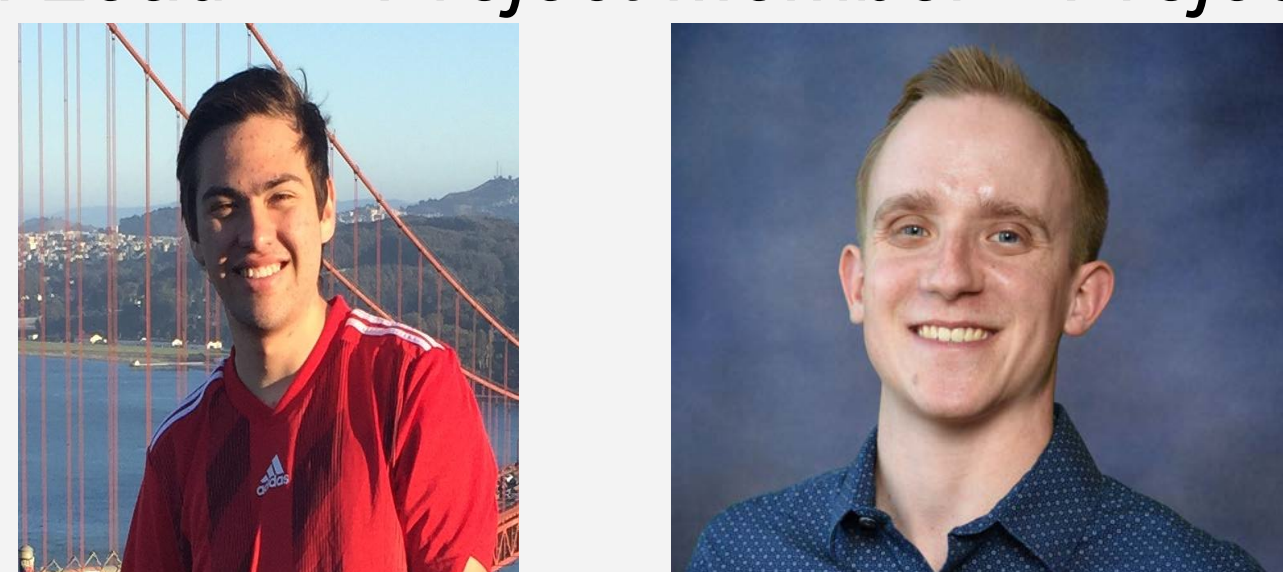
Design Overview

This product allows the user to open and close push-turn pill bottles using only one hand and no fingers. It consists of a circular base on which pill bottles are placed, as well as a plunging mechanism that compresses the bottles from the top. A paddle lever is used to spin pill bottles in the direction needed to open or close them. After use, the user only needs to push a lever to allow a spring to reset the plunger. All of the moving parts of the design are actuated by pushing, which means no complex dexterity is needed.

Meet the Team

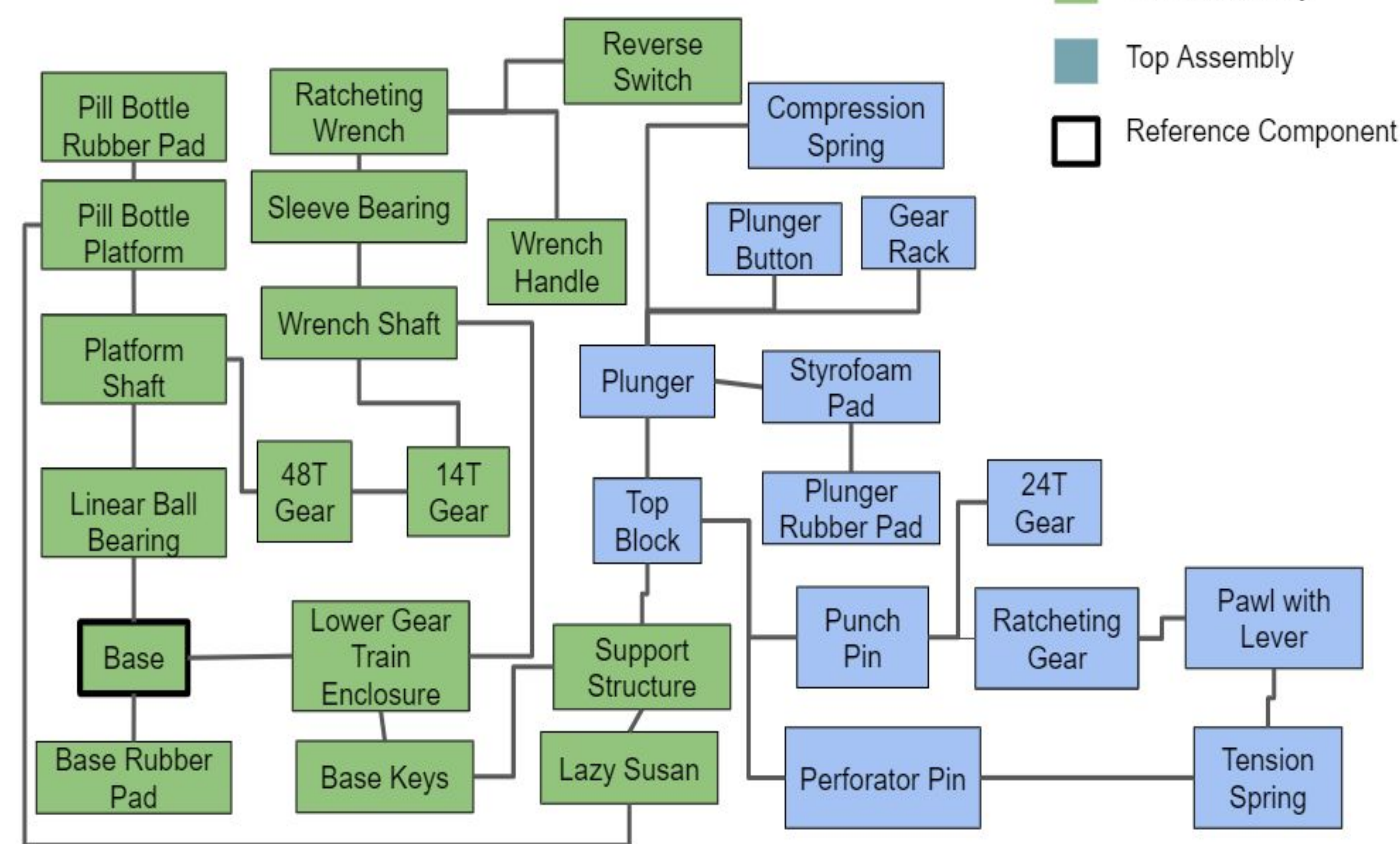


Daniel Campas Design Lead
Claire Santos Project Member
Matt Schierman Project Member

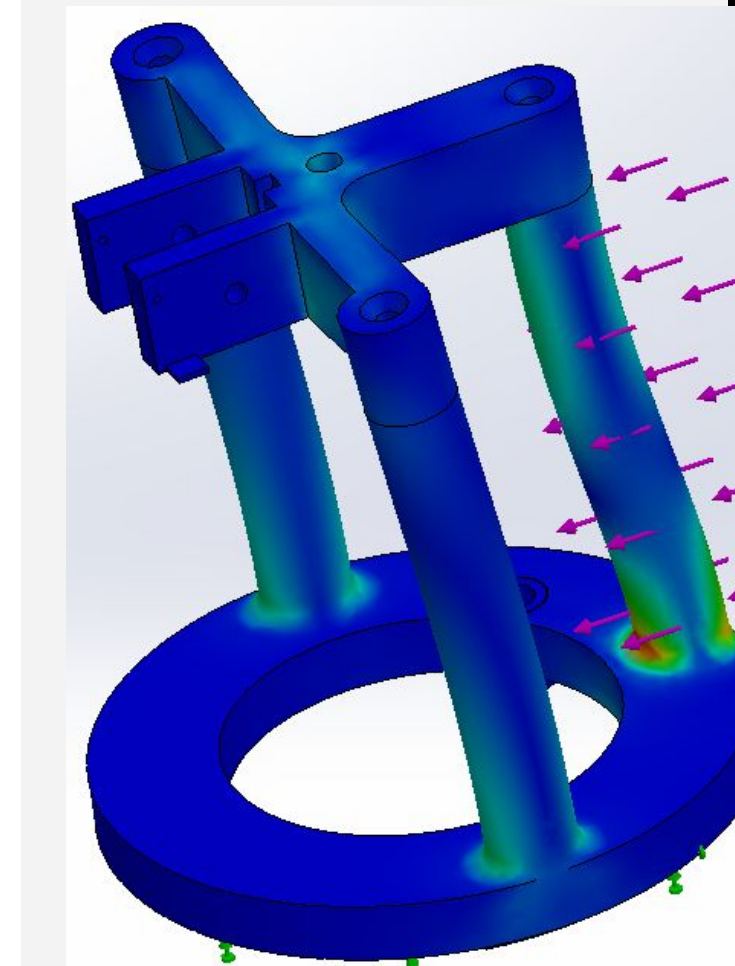


George Sosa Project Member
Kyle Williams Team Lead

System-Level Diagram

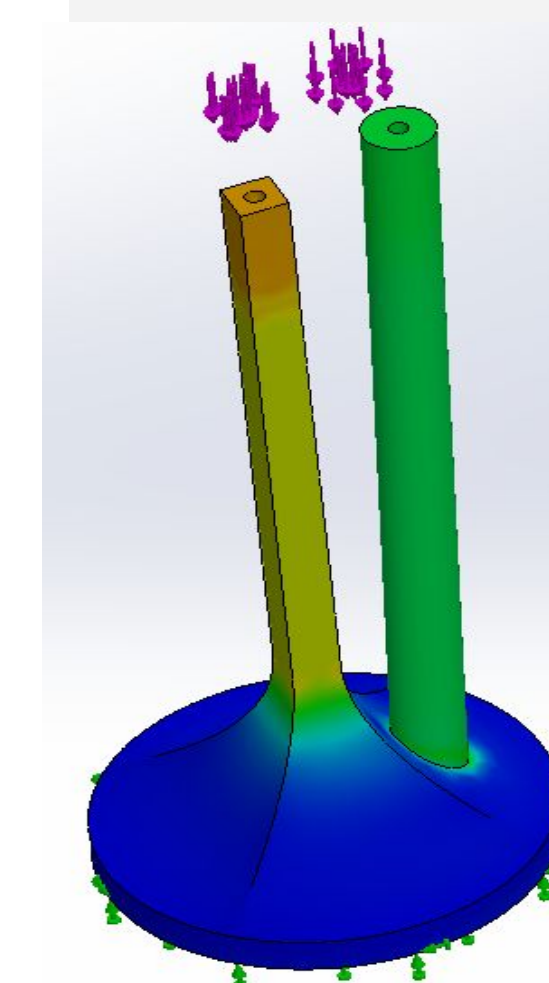
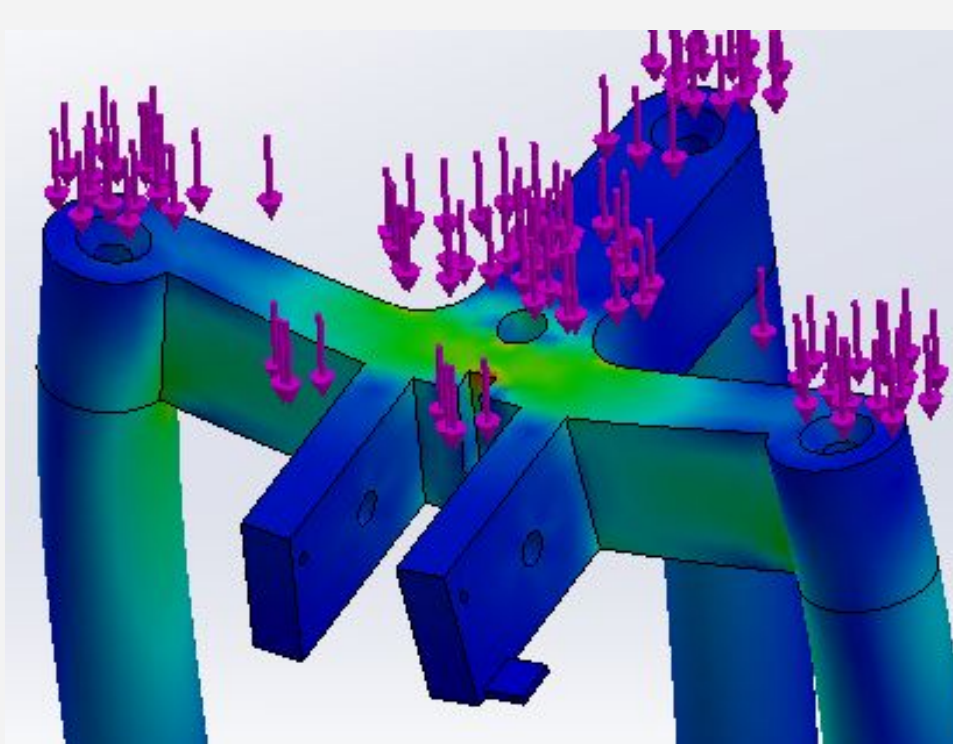


Analysis



The supports of the device have been tested against loads of 10 lbf, which is more than they will ever experience. This enables the device to be safely transported.

The top piece, which houses the compression mechanism, can withstand 20 lbf to ensure structural integrity.



The plunger experiences forces directly from the user and from the pill bottles, making it critical to the operation of the device. 11 lbf are needed to open pill bottles on average, but this component can withstand more than 20 lbf.

Acknowledgements

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