Open Vista

by Pill Gates

Problem Statement

- Opening a pill bottle requires a high level of dexterity and manual input by the user
- Target customer demographic for the device was identified as elderly individuals with high physical impairment and those with arthritis

Current Solutions

Walgreen's

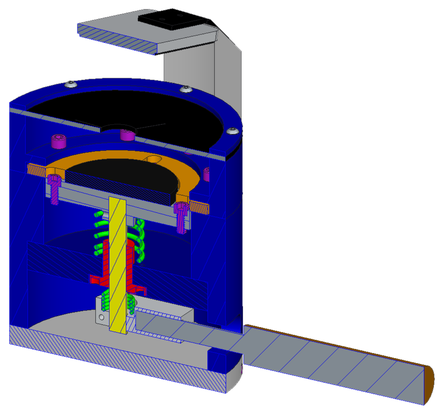
Gripper

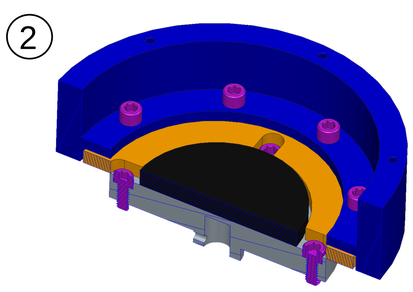
Med-Ease

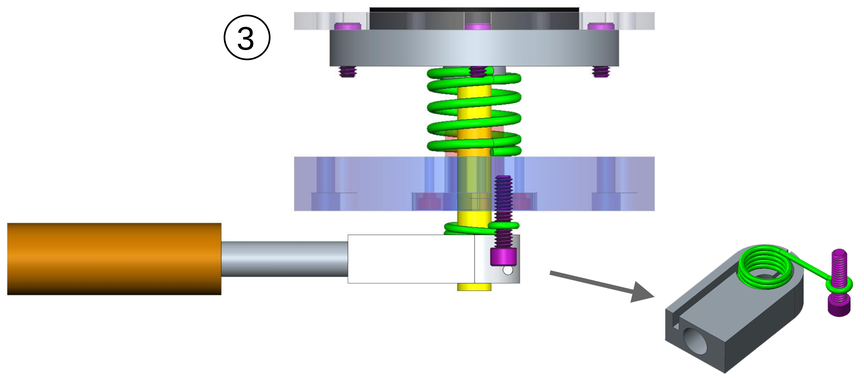
- Limited grip surface
- Fine motor skills and high dexterity required
- Inverted cap removes child security feature

Key Features

1. Flexible rubber increases static friction and deforms to distribute force. This creates even pressure around the edge of the cap necessary for unlocking the safety mechanism.
2. The applied torque is stored by the interference between the base plate's exposed bolts and the locking plate's form fit pockets.
3. The base plate is linked directly to the handle and torsion spring used to tension the system before unlocking. When rotated, the base plate and locking plate align and lock due to the preloaded compression spring forcing them together. When the bottle is depressed, the base plate and locking plate separate. This activates the torsion spring which rotates the base plate and opens the bottle.







Testing

- Compression force required to open bottle: 18 - 25 lb
- Compression spring preloaded to 26.5 lb
- Excess compression force necessitated larger torsion spring due to increased bottle-cap friction

Innovation

- Decouples torque and force inputs
- Minimal impact on joints in hands
- Self-centering for easy bottle alignment

Future Improvements

- Eliminate user input force through automation
- Improve user experience by lowering weight and minimizing size
- Optimize for large scale production
- Alter lid for larger range of bottles

Marketability

- Estimated 15 million Americans with osteoarthritis in hands
- Break even sales in year one of 1,254 units
- $30 target price point with a 50% average gross margin

PURDUE MECHANICAL ENGINEERING


Scott Campbell


Kelly Featherstone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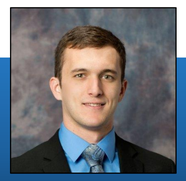
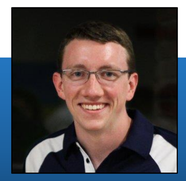

Scott Mohler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