



Project Update #1

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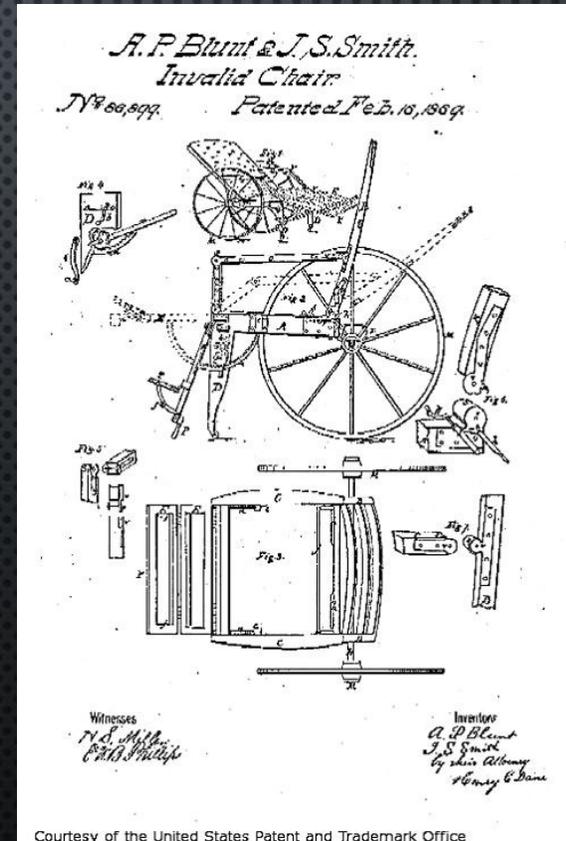
An Introductory Presentation

Wheelchairs have experienced little innovation

BATH WHEELCHAIR, 1783



PATENT FOR REAR-PUSH WHEEL, 1869



Courtesy of the United States Patent and Trademark Office



SELF-IMPOSED ENGINEERING AND DESIGN REQUIREMENTS

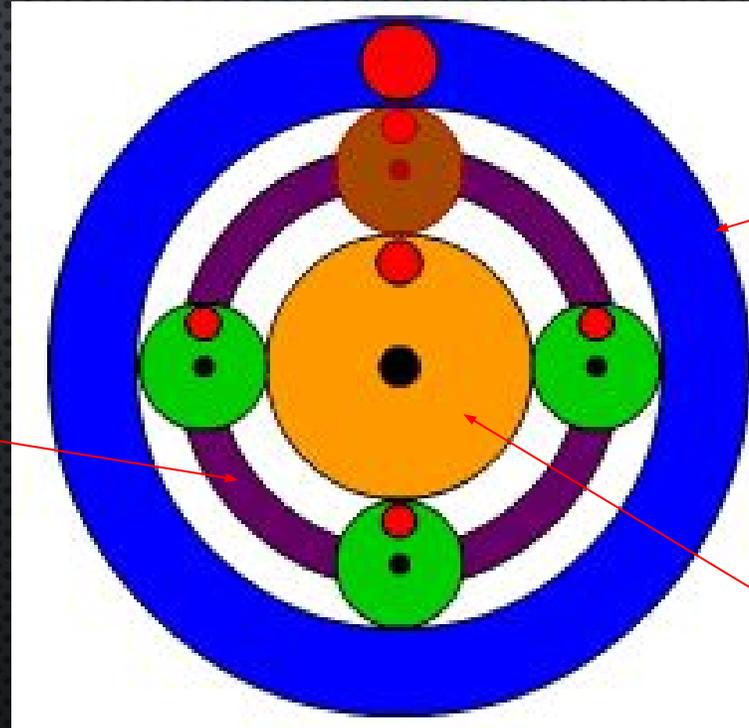
- WHEELS MUST BE LIGHTWEIGHT, UNDER 7 POUNDS EACH
- WHEELS MUST BE QUICK RELEASE AN EASY TO TAKE ON AND OFF
- WHEELS MUST BE RUGGED/DURABLE (OVER 1 MILLION AVERAGE CYCLES PER YEAR)
- DESIGN MUST ALLOW FOR EASY USE OF MULTIPLE WHEEL SIZES (22 INCH, 24 INCH, 25 INCH, 26 INCH)
- DEVELOP COMPONENTS AND USE MANUFACTURING PROCESSES NEED TO BE DESIGN TO LOWER COST OF PRODUCTION AS MUCH AS POSSIBLE
- ROLLING RESISTANCE AND FRICTIONAL LOSSES MUST BE MINIMIZED
- ALWAYS DFM/DFA
- WHEELS MUST BE VISUALLY APPEALING



Rowheeling is the right way to roll



HOW ROWHEELS REV WHEELS WORKS



Planet carrier-
fixed
connected to chair

Ring gear-
Input (High gear)
Connected to handrim
Output (Low gear)
Connected to wheel

Sun gear-
Input (Low gear)
Connected to handrim
Output (High gear)
Connected to wheel



Needs Assessment

- PHYSICAL FEATURES

- SWAP BETWEEN HIGH(1.33:1) AND LOW(0.75:1) GEAR RATIOS
- MINIMIZE ROLLING RESISTANCE/FRICTIONAL LOSSES
- SHOULD FIT CURRENT ROWHEEL MODELS
- ACCESSIBILITY FOR MAINTENANCE

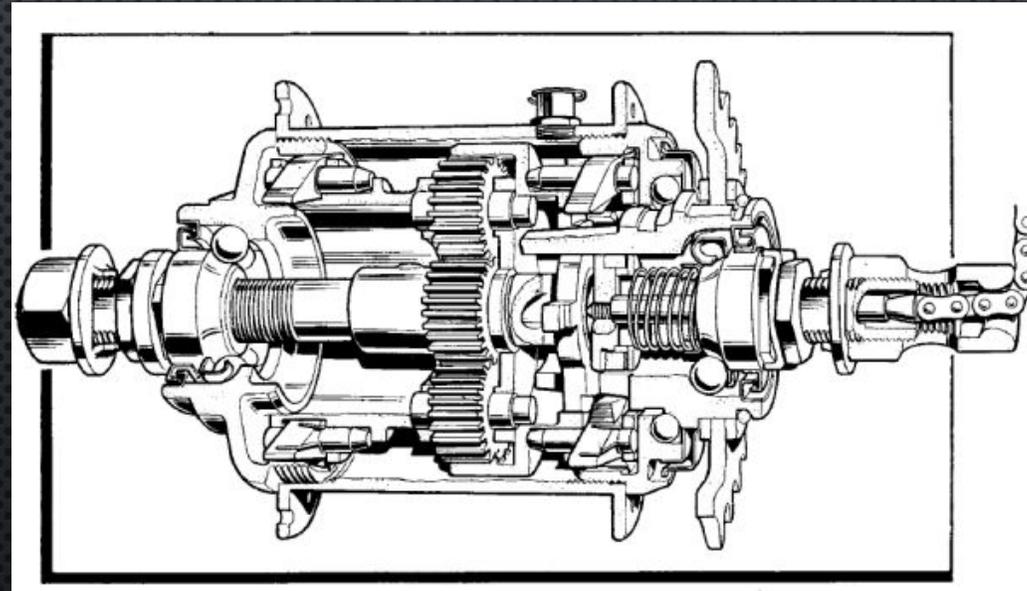
- COST

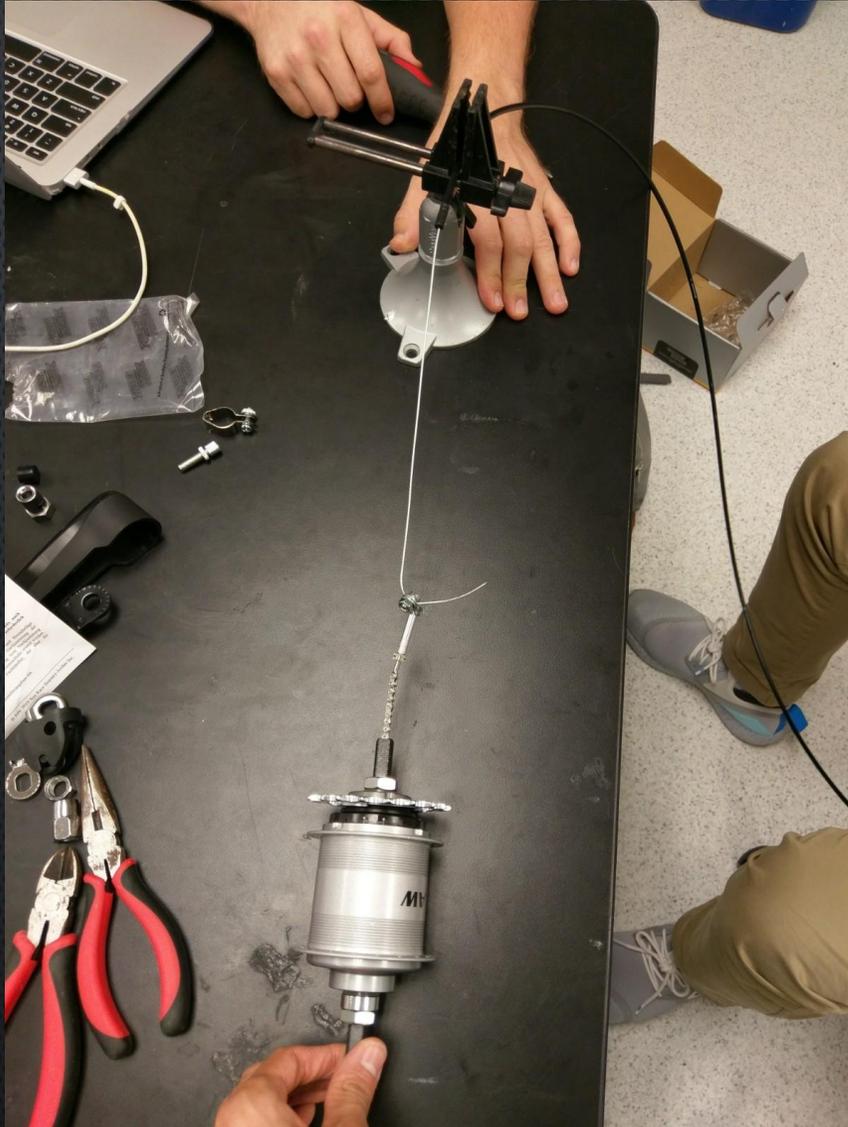
- LONG LIFESPAN/DURABILITY
- LOW MAINTENANCE
- MASS PRODUCTION

- SAFETY

- ENCLOSED GEARS
- GEARS SHOULDN'T JAM

Sturmey-Archer 3-speed Hub







THE RIGHT WAY TO ROLL.™





THANK YOU!

