STABLE REACH
STANDARD A-FRAME

STABLE REACH

STABILIZING GRIP BARS

ADJUSTABLE LEG LENGTHS
**USER RESEARCH**

**CONTRACTORS**
1. Uneven leveling  
   Current fix: plank
2. Limited range of motion
3. Narrow rung = Sore feet
4. Legs don’t stay aligned

**HOME IMPROVE DIYERS**
1. Uneven leveling  
   Current fix: second person
2. No place to put hands
3. Adjustable ladders look difficult

**AMAZON REVIEWERS**
1. Weak + Dangerous
2. Unwieldy + heavy
3. Confusing bad design
4. False Advertising
DESIGN PROCESS

DESIGN #1  CENTER OF GRAVITY (COG) MONITORING

USER
INSIGHT

DESIGN #2  ELECTRO MECHANICAL ADJUSTABLE LEG SYSTEM

EXISTING PATENTS
LITTLE GIANTS
COMPETITION
COMPLEXITY
NECESSITY

DESIGN #3  UNIVERSAL MECHANICAL ATTACHMENT + GRIP BARS

FOR STANDARD A-FRAME LADDERS
INCREASE STABILITY ON LADDER
# PRODUCT CONTRACT

**Universal Ladder Leg Attachment for Fast and Easy Leveling with Rotating Grip Bars**

**CUSTOMER:** CONTRACTORS & DIYers  
**MARKET:** $168 MILLION ADJUSTABLE LADDER MARKET

<table>
<thead>
<tr>
<th>CUSTOMER NEED</th>
<th>PRODUCT ATTRIBUTE</th>
<th>ENGINEERING SPEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be leveled on uneven surfaces</td>
<td>Stability</td>
<td>Can be leveled on a ≤20° slope and each leg is adjustable up to 16”</td>
</tr>
<tr>
<td>Lightweight</td>
<td>Weight</td>
<td>Adds ≤9 lb. to ladder</td>
</tr>
<tr>
<td>Quick + Easy to Use</td>
<td>Time</td>
<td>Maximum 10 seconds to level on any surface</td>
</tr>
<tr>
<td>Portable</td>
<td>Size</td>
<td>Adds ≤2” to ladder width and does not affect foldability</td>
</tr>
<tr>
<td>Simple to install</td>
<td>Installation Time</td>
<td>≤1 hour</td>
</tr>
</tbody>
</table>
KEY DESIGN FEATURES

ERGONOMIC ENGAGEMENT HANDLE

SPRING LOADED RELEASE

PIN LOCKING MECHANISM

LINEAR EXTENSION RAIL
CRITICAL RISKS

1. CAN A LADDER BE LEVELED IN AN ERGONOMIC, EFFICIENT, AND SAFE MANNER?

2. WHAT USER NEEDS CAN WE ADDRESS THAT CURRENT LADDER PRODUCTS DO NOT?

3. CAN WE ADDRESS A VARIETY OF UNEVEN SURFACES?
CRITICAL RISKS

1. CAN A LADDER BE LEVELED IN AN ERGONOMIC, EFFICIENT, AND SAFE MANNER?
   YES

2. WHAT USER NEEDS CAN WE ADDRESS THAT CURRENT LADDER PRODUCTS DO NOT?
   EASE, WEIGHT, TIME

3. CAN WE ADDRESS A VARIETY OF UNEVEN SURFACES?
   TBD
COST
$75
BASED OFF ADJUSTABLE LADDER + LADDER ATTACHMENT MARKET

FEATURES
STABLE
UNIVERSAL
EASY TO USE
PORTABLE

USERS
CONTRACTORS
HOME IMPROVEMENT DIYERS
STANDARD A FRAME LADDER USERS
FUTURE DEVELOPMENTS

MECHANICAL DESIGN FOR OSHA STANDARDS
LOAD RATING
SAFETY FACTOR
LIFETIME CALCS

ADDITIONAL PROTOTYPE TESTING
EASE AND SPEED OF USE
REAL USE FAILURE MODES
UNIVERSAL COMPATIBILITY