The Venetian Bench: A Reliably Dry Seat

Opportunity:
Our goal is to produce a bench that will always provide a dry seat - even in rainy Pittsburgh! Family safe and easy-to-use, this mechanically actuated bench will work in any public area.

Design Solution:
We designed a “rotatable bench” by connecting the bench slats to a linking mechanism, which is then geared to a foot pedal that enables 180° of rotation for the slats. Key ideas include:

- Minimal time and effort required: <5 seconds and ~5lbs.
- Suggested ADA features: seat height, seat back, & armrests.
- Ease of installation & upkeep: entirely mechanical system.
- Child safe: including latching mechanisms and safety panels.
- Additional functionality: hydrophobic materials, water-shedding slat design, & rain shields.

Market Research:
This product is targeted at families with young children and senior citizens. As such, safety and ease of use are of paramount importance.

Benchmarks:
Standard benches offer no solution to wet seats - while covered benches cost between $2-5,000.

The Rolling Bench requires significant effort and lacks the comfort of seat backs and armrests.

We offer a less expensive, highly effective, easy-to-operate solution.

Engineering Analysis:
Each bench slat requires an actuation force of 0.25lbs - resulting in a required torque of 1.45lbs-in at the rotation joint. This requires a user input force of about 5lbs.

The lowest factor of safety is 1.07 - found on a single bench slat with an assumed load of 500lbs.