PATENT TECHNICAL BRIEF & FEASIBILITY REVIEW

Adjustable Solid Commodity Measuring Device

Multi-Scale Volumetric Design Optimized for Dry Goods with Zero-Slip Detention

Product Note & Executive Brief

The **Adjustable Solid Commodity Measuring Device** is engineered specifically to eliminate the inconvenience of standard single-capacity volumetric kitchen tools when managing dry goods. Traditional systems fail to consider that ingredients like rice, flour, lentils, and peas possess fundamentally separate mass-to-volume densities.

This utensil integrates dynamic adjustment with explicit weight-conversion indicators alongside a secondary telescoping utility wand. By restricting usage entirely to dry solids, the instrument shifts structural priorities away from fluid tension rules toward highly stable particulate isolation.

Commercial Intent

A premium, single-chassis utensil targeted at professional culinary applications, specialized baking markets, space-constrained smart kitchens (RVs, urban minimalist apartments), and laboratory material-handling settings.

Primary Specifications

Food-grade Polypropylene (PP) core body assembly; high-elasticity Thermoplastic Elastomer (TPE) scraper boundaries; toolless breakdown latching; cross-calibrated multi-density metrics.

End Product Visual Design Rendering

Industrial Product Design Aesthetic

The finalized commercial product presents a unified, streamlined hand-held tool layout. The durable outer chassis integrates ergonomic handling surfaces with dual-scale visualization windows.

High-contrast parallel metric lines allow clear, side-by-side material mass targeting. Releasing the slider instantly locks the inner chamber volume rigidly in place.

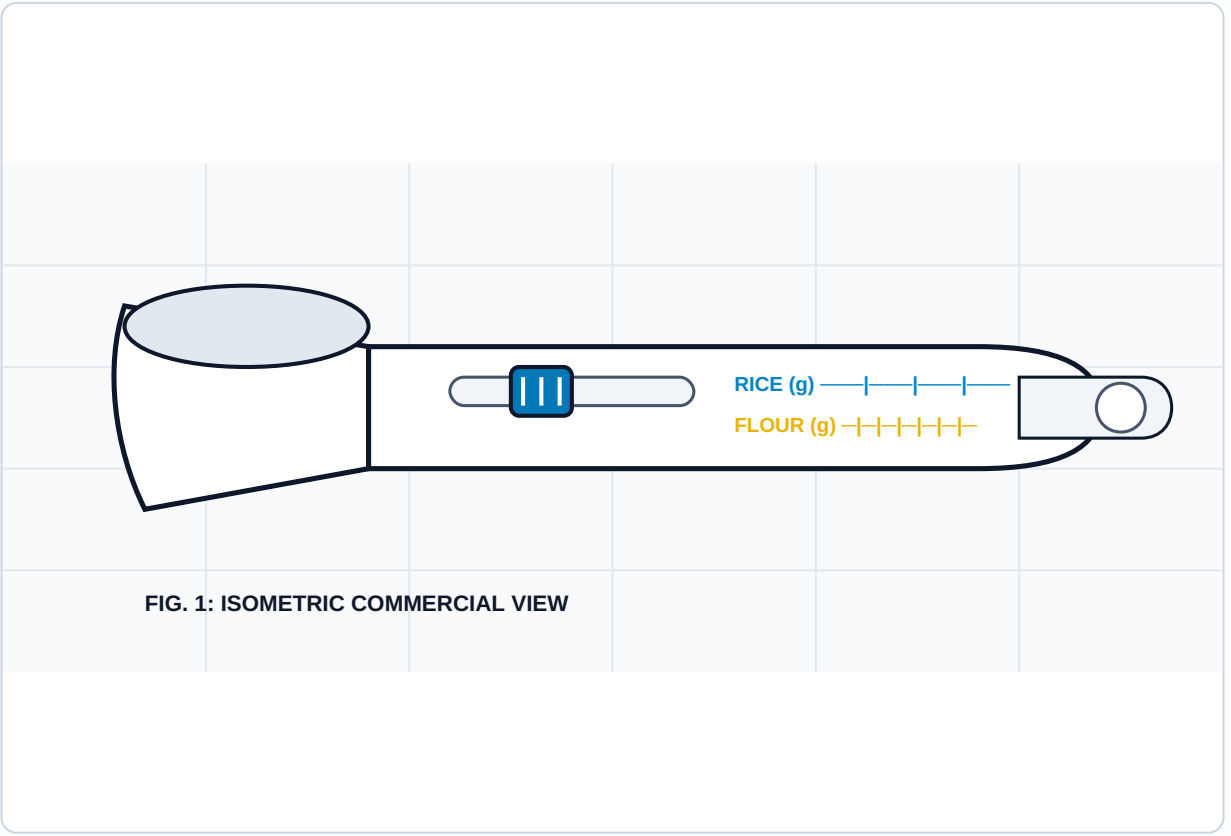

FIG. 1: ISOMETRIC COMMERCIAL VIEW

Mechanical Design & Cross-Sectional Schematic

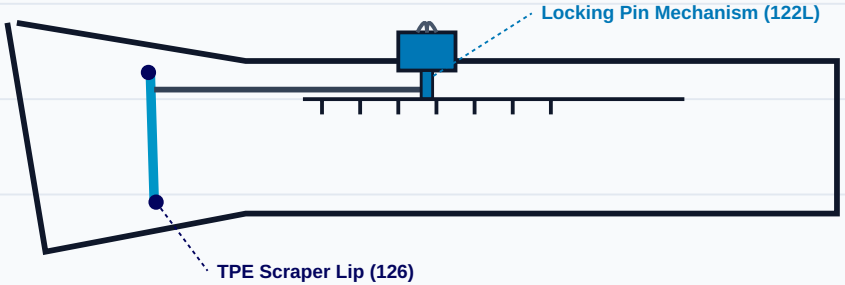

FIG. 3: CROSS-SECTIONAL INTERNAL SCHEMATIC

Interlocking Tolerance Layout

Engineering tolerances specify tight clearances between the moving wall and hull, forcing fine powder to remain in the active chamber area.

Spring Vector Mechanics

The internal vertical detent pin **(122L)** snaps downwards under continuous spring loading, ensuring zero mechanical slide-creep during high scooping resistance.

The 4-Step Adjustment Mechanical Cycle

STEP 1: VERTICAL ENGAGEMENT (PUSH)

User applies vertical pressure onto the thumb slider actuator **(122)**. This manual force compresses an integrated internal micro-spring, lifting the structural locking detent pin **(122L)** out of the handle chassis alignment track.

STEP 2: LINEAR VOLUMETRIC SHIFT

Maintaining down-pressure, the user shifts the actuator horizontally along the central handle chassis **(112)**. This action moves the internal coupled wall assembly **(124a/ 124b)** to dynamically size the primary cup chamber.

STEP 3: CONTINUOUS TPE WALL WIPE

As walls translate, an integrated overmolded **TPE Scraper Seal (126)** flexes flush against the curved inner perimeter of the cup **(120)**. It squeegees stray grains and powder forward, preventing tracking residue entrapment.

STEP 4: SPRING-DRIVEN RIGID DETENTION

Upon aligning the indicator to the targeted commodity mark, releasing the button allows the micro-spring to snap the lock pin **(122L)** deep back into the rigid chassis slot, securing the partition against high scooping forces.

Product Feasibility Assessment

Why the Product Strategy is Viable

Many multi-measurement tools fail because fluid seals warp, leak, or exhibit low fatigue thresholds over short life cycles. By isolating application parameters strictly to **dry, solid commodities**, engineering requirements are significantly simplified:

- **Reduced Seal Complexity:** Liquid-tight hermetic seals require close manufacturing tolerances. Dry scrapers focus simply on particle exclusion, which reduces scrap rates during factory production.
- **Low Production Friction:** Components are optimized for high-volume injection plastic molds, keeping unit production costs down.

High Manufacturing Margins

The entire utility assembly can be built using only four main injection-molded components. Minimal tooling setup requirements mean fast scaleup capabilities with excellent unit margins.

Strong Consumer Value Proposition

Replaces up to 6 distinct kitchen cups and 4 measuring spoons. Provides immediate market differentiation via integrated, dynamic weight-density adjustment conversion tracking scales.

Patent Drawing Component Index

Ref No.	Component Nomenclature	Primary Engineering Function
112	Central Handle Structural Chassis	Provides the core ergonomic framing and integrated horizontal guideway tracking rails.
116 / 118	Parallel Commodity Weight Scales	Laser-etched indicator tracks tracking weight compensation curves (Rice, Flour, Peas).
120	Solid Commodity Outer Cup	Serves as the main physical vessel receiving and stabilizing solid raw materials.
122 / 122L	Thumb Slider Actuator & Lock Pin	Provides spring-driven, zero-slip detention to lock capacity boundaries securely during use.
124a / 124b	Internal Moving Boundary Walls	Concentric sliding partition boundaries that scale interior container capacity.
126	Perimeter TPE Scraper Edge Seal	Flexible contact lip that plows stray particles and fine starch powder forward to avoid track jams.