



"USPTO Provisional Capz EnClosure 180739_64073717_05-24-2026_SPEC.PDF" application. This is structured to clearly present the dual-value proposition (mechanical compliance and digital data acquisition) for your investor portal.

Capz Enclosure: Provisional Patent Summary

The Technical Problem

- The global packaging industry faces strict regulatory mandates, such as the 2024 European Union Single-Use Plastics Directive, requiring closures to remain permanently tethered to their containers.
- Current industry solutions rely on fragile "living hinges" that degrade the user experience and compromise hermetic resealing.
- Simultaneously, global brands suffer from a profound deficit in post-purchase data, lacking a physical-to-digital mechanism to track consumption locations, time-of-use metrics, and direct consumer engagement once a product leaves the retail environment.

The Mechanical & Security Solution

- **Permanent Tethering & Flow Regulation:** The Capz apparatus utilizes a highly durable, two-piece bonded assembly that permanently attaches to the container without obtrusive hinges, ensuring 100% compliance with tethering mandates. An internal valve acts as an adjustable, self-venting flow control mechanism to substantially reduce spillage.
- **Dynamic Anti-Leak & Hygiene Shield:** A flexible annular lip creates a secondary hermetic barrier against capillary-action leakage. Additionally, an articulating environmental over-cap physically blocks the dispensing orifice from airborne contaminants, insects, and the surreptitious introduction of illicit substances during intermittent outdoor use.
- **Visual Safety Indicators:** The physical hardware integrates smart materials, including thermochromic polymers that change color based on fluid temperature and dynamic seals that act as permanent visual tamper-evident alarms if breached before purchase.

The Digital IoT Gateway & Accessibility

- **Post-Purchase Data Node:** The top-facing "billboard" of the closure securely houses an embedded NFC or RFID digital node. Interacting with this node via a mobile device launches gamified promotional platforms or Augmented Reality (AR) environments while capturing highly specific, opt-in consumer data.
- **Cryptographic Provenance:** The embedded node acts as an immutable supply-chain tracker to verify product authenticity and prevent counterfeiting. Consumer interaction transfers digital ownership protocols, permanently altering the retail state of the node to prevent illicit refilling.
- **Audio-Spatial Accessibility:** Transforming the cap into an ADA-compliant medical device, the NFC node can bypass visual engagement to instantly execute an audio-spatial readout, dictating exact dosage instructions or allergen warnings directly to a visually impaired user's connected audio device.

This summary highlights both the physical engineering solutions and the massive data acquisition potential of the Capz technology.