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## FlipDroppy laboratory dispenser for solid particles, powders, and beads

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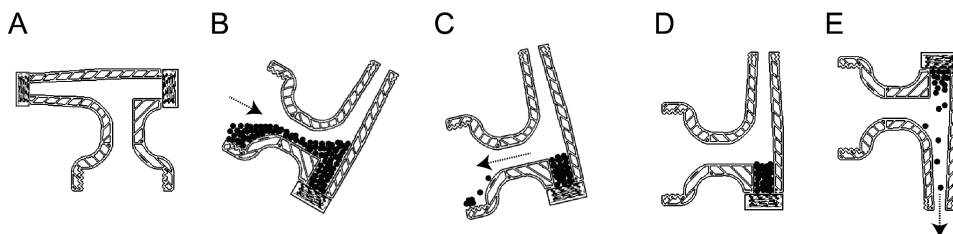
### *An accurate dispensing device for powders and irregularly shaped particles*

#### Background

In the laboratory, it is often necessary to measure and distribute dry particles, powders, and beads. This is usually done with scoops or measuring cups, which are challenging to use cleanly. Alternatively, this is done with mechanical devices involving moving parts, which are difficult to hermetically seal, difficult to clean, and furthermore can grind or jam.

#### Technology

The FlipDroppy is a transparent dispensing device for powders, irregularly shaped particles, and beads. It can be attached to the opening of screw-cap containers as an alternative storage lid, can be hermetically sealed, and involves no moving parts. The dispensing action involves tilting the container to fill an integrated measuring cup (Figure 1, B-C). The accurately-measured substance can be dispensed by twisting the entire container so that the measuring cup is upside-down, allowing the contents to fall by gravity into a new vessel (Figure 1, D-E).



**Fig. 1, Mechanism of use** | A) The FlipDroppy storage position on top of a storage container. B) The entire unit is tilted with the release pipe facing upward to fill the measurement reservoir. C) The entire unit is tilted the opposite direction to send excess dry substance back into the storage container. D) The correctly measured amount can be observed through transparent walls. E) A 180 degree rotation of the entire unit, including the storage container, along the axis of the shaft inverts the FlipDroppy, allowing the substance to fall through the exit pipe.

The FlipDroppy can be adapted in size and shape for diverse applications in the laboratory (Figure 2).



**Fig. 2, 3D-printed prototypes**

**LEFT:** With a 60 mL measuring cup attached to a 0.65 L vessel (here with silica gel in position **C** as shown in Fig. 1)

**CENTER:** With an adjustable 0-2 mL measuring cup attached to a 50 mL vessel (here with sharp garnet particles in position **D** as shown in Fig. 1)

**RIGHT:** FlipDroppy shown with measuring cup adapters for 0.5 mL, variable volumes, and four 4 mm steel balls (shown left to right).

Figure 2, center: Laboratory stock photo modified from <https://pixabay.com/de/photos/laboratory-medical-medicine-hand-3827738/> , Open pixabay license

## Advantages

- Accurate dispensing
- Doubles as a storage lid (hermetically sealable)
- No moving parts (long life, easy cleaning, no jamming, maintenance-free)
- Intuitive, spill-free use
- Can be made from standard materials in any size
- Can be sterilized and used in clean environments
- Suitable for mass production, including injection-molding

## Patent Information

A patent application has been filed in 2021