

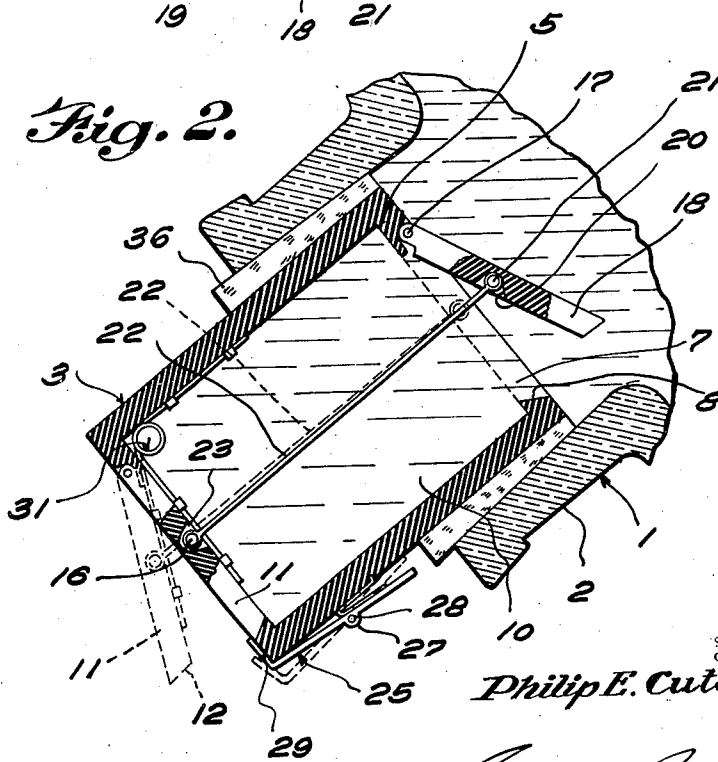
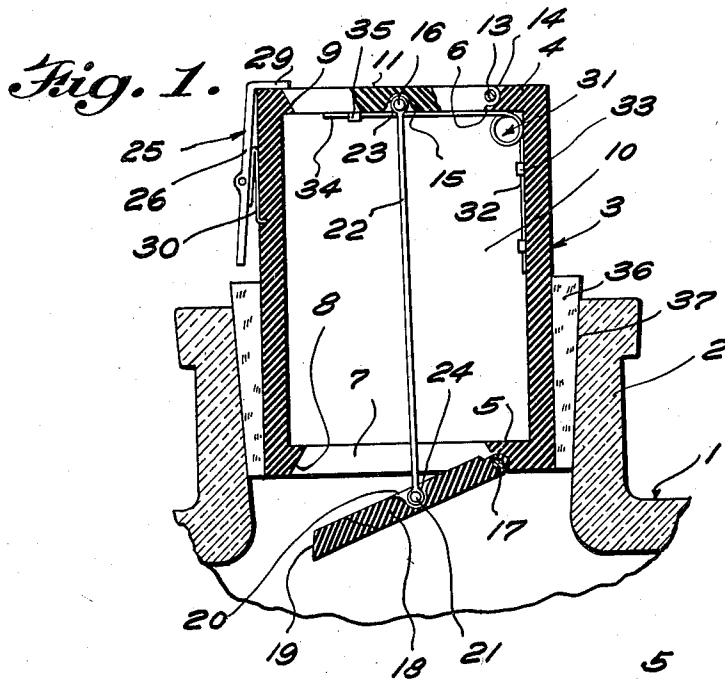
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MEASURING DEVICE

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MEASURING DEVICE

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4 Claims. (Cl. 221-147)

This invention relates to closures and more particularly to an improved measuring device.

One object of the invention is to provide a measuring device, by the use of which it will be possible to measure and dispense for consumption a required dose of medicine or other material so that the need of a spoon, measuring cup or the like will be made unnecessary.

Another object of the invention is to provide a measuring device which will fit conveniently in the neck of a bottle and provide a normal closure therefor and which, when tilted, will receive a portion of the contents of the bottle for discharge into the mouth, or a container, upon release of the latch employed.

A still further object of the invention is to provide a device of this character wherein instantaneously operable valves are employed, said valves being shiftable upon disengagement of the latch for permitting discharge of the predetermined amount of material from the device, one of said valves preventing flow of additional material into said device until both of said valves have been returned to their respective inoperative positions.

Still another object of the invention is to provide a measuring device which is simple in construction and which may be readily installed on or removed from the neck of a bottle.

Still further objects of the invention, not specifically mentioned hereinbefore, will appear as the description proceeds.

In the drawing forming a part of my application.

Figure 1 is a vertical sectional view of my improved measuring device as it would appear mounted on the neck of a bottle and in closed, inoperative position, and

Figure 2 is a longitudinal sectional view showing the device as it would appear in the neck of a downwardly tilted bottle and showing, in full lines, said device in inoperative position with liquid therein, the valves and latch being shown, in dotted lines, as they would appear in operative position.

In the drawing similar reference numerals designate like parts in both of the views.

Referring now to the drawing in more detail, the numeral 1 indicates in general a bottle and 2 the neck thereof. The bottle 1 may be of any suitable size and, in this connection, it is desired to state that the device forming the subject-matter of my invention may be made in various sizes for use in measuring various predetermined amounts of material. While my invention is particularly well adapted for use on bottles containing medicine, it is desired to emphasize that it may be used on bottles or containers containing other material, such as sugar, salt, and liquids other than medicines.

In carrying my invention into effect, I employ a body 3 which is formed of glass, Bakelite, or other suitable material. The body 3 is preferably cylindrical in shape and includes an outer wall 4 and an inner wall 5, said walls being cut away throughout the major portions of their areas to define, respectively, a discharge opening 6 and an inlet opening 7. As will be seen, the edges defining both of said openings are inclined outwardly to define valve seats 8 and 9. The body 3 is provided with a chamber 10 which extends throughout its interior and is adapted to contain a predetermined dose or amount of liquid or other material flowing into the neck 2 of the bottle 1.

Swingly connected with the outer wall 4 and normally closing the opening 6 therein is an outer valve 11 which is substantially circular in shape and is provided with a face 12 to cooperate with the seat 9. The valve 11 is swingly connected to the outer wall 4 by means of a pin 13 which extends through cooperating ears 14. Formed in the under surface of the outer valve 11, substantially axially thereof, is a recess 15, and extending transversely of the recess is a pin 16, the purpose for which will be explained in more detail hereinafter.

Hingedly connected with the inner wall 5, by means of a pin 17, is an inner valve 18, said valve, like the valve 11, being substantially circular in shape. The valve 18 is formed with an inclined face 19 which, in closed position, cooperates with the face 9. The valve 18, however, is, as best seen in Figure 1, normally in open position. Formed in the inner surface of the valve 18, axially thereof, is a recess 20, and extending transversely of the recess is a pin 21. As will be observed, the recesses 15 and 20 are disposed in substantially axial alinement.

Extending substantially axially of the chamber 10 and operatively connecting the valves 11 and 18 is a rod 22. The rod 22 terminates at its upper end in an eye 23 which extends into the recess 15 and hingedly receives the pin 16. Similarly, at its lower end, the rod terminates in an eye 24 which extends into the recess 20 and receives the pin 21 therethrough. As will be observed, the rod 21 is of a greater length than the body 3 so that, when the valve 11 is closed, the valve 18 will be held in open position. Similarly, when the valve 18 is closed, the valve 11 will be shifted to open position by the said rod 22.

The numeral 25 indicates in general the latch I employ for normally retaining the valve 11 in closed position. The latch 25 is of substantially inverted L shape and includes a relatively long leg 26, which is pivotally connected, at its mid-portion, with the body 3 by means of a yoke 27 and a pin 28, and a relatively short leg 29 which is normally positioned to project into overhang-

ing engagement with a portion of the valve 11. Mounted between the leg 26 and the surface of the body 3 is a bowed leaf spring 30 which urges the latch into latching position.

In order to urge the valve 11 to open position, and at the same time to urge the valve 18 to closed position, upon release of the latch 25, I provide a spring 31. The spring 31 is of the coil type and has one terminating leg 32 secured to the inner surface of the chamber 10 by clips 33. The other terminating leg of the spring 31 is indicated at 34 and is held to the under surface of the valve 11 by a clip 35.

For mounting the device in the neck 2 of the bottle 1 and provide an effective seal, I employ a sleeve 36 which is formed of cork, fiber, rubber or other suitable material and has a tapered outer wall 37. As will be observed, the sleeve 36 extends throughout substantially the entire lower half of the length of the body and, as stated, provides an effective seal between the neck of the bottle and the body 3.

In use, it is first assumed that the bottle 1 is filled with medicine or other material to be dispensed. The device is tightly mounted in the neck 2. When it is desired to discharge a predetermined amount of the material from the bottle, said predetermined amount being an amount sufficient to fill the chamber 10, the bottle is tilted to the position shown in Figure 2. Inasmuch as the valve 11 is normally in closed position, the valve 18 is, as previously explained, in open position, with the result that material will be permitted to flow into the interior of the chamber for filling the same. When it is desired to discharge the contents of the chamber 10, either directly into the mouth or into a container, the lower end portion of the leg 26 of the latch 25 is depressed for shifting the leg 29 away from the edge of the valve 11. As soon as the leg 29 has been freed from the surface of the valve 11, the spring 31 will instantaneously snap said valve 11 open for permitting discharge of the contents of the chamber 10. As the valve 11 is moved to open position by the spring 31, movement will be transmitted through the rod 22 to the valve 18 so that, when the valve 11 is snapped open by the spring 31, the valve 18 will be snapped shut for preventing entry of additional material to the interior of the chamber 10 while the valve 11 is in open position. It will thus be seen that, inasmuch as no additional material will be admitted to the chamber after the valve 11 has been snapped open, only that material which was in the chamber before release of the latch will be discharged.

After discharge of the material from the chamber 10, the latch 25 is retracted and the valve 11 is again moved to closed position. The latch is released for normally retaining the valve 11 in closed position against the tension of the spring 31. Movement of the valve 11 to closed position will, of course, move the valve 18 to open position so that, when the bottle is again tilted, the chamber will again be filled with a portion of the contents of the bottle.

Attention is directed to the fact that my improved measuring device may be made in various sizes for handling predetermined dosages in various amounts.

Attention is further directed to the fact that

the rod 22 will, in addition to the function described, cooperate with the valves for preventing too great swinging movement of said valves away from their respective seats.

The device is simple in construction and, by its use, it will be possible to dispense with the usual spoon or other measuring device.

Having thus described the invention, what is claimed as new is:

1. A measuring device including a body having a chamber and walls formed with openings, valves alternately closing the openings, one of said valves being movable from a closed position retaining material in the chamber to an open position discharging said material from said chamber, the other of said valves being movable simultaneously with the first-mentioned valve from an open position admitting material to the chamber to a closed position preventing entry of material to the chamber when said first-mentioned valve is in open position, a spring for urging the first-mentioned valve to open position, and releasable means engageable with said first-mentioned valve and normally retaining said first-mentioned valve in closed position.

2. A measuring device including a body having inner and outer walls and having a chamber, said inner and outer walls having openings forming valve seats, an outer valve hingedly mounted on the outer wall and having a valve face to cooperate with the valve seat in said outer wall, an inner valve hingedly mounted on the inner wall and having a valve face to cooperate with the valve seat on said inner wall, a rod operatively connecting the valves, resilient means for urging the outer valve to open position, and releasable means for normally retaining the outer valve in closed position, said outer valve snapping open upon release of the releasable means for permitting discharge of material within the chamber, said rod transmitting shifting movement to the inner valve for shifting said inner valve to closed position simultaneously with shifting of the outer valve to open position for preventing entry of additional material into the chamber until said outer valve is returned to closed position.

3. A device of the class described including a body formed with a chamber, means removably mounting the device in the neck of a bottle, a normally closed upper valve on the outer end of the body, a normally open lower valve on the inner end of the body, means operatively connecting the valves, said chamber receiving material to be discharged upon tilting of the bottle, means releasably retaining the first-mentioned valve closed, and means for instantaneously shifting the first-mentioned valve to open position upon release of said last-mentioned means for permitting discharge of the material from the chamber, said second-mentioned means simultaneously shifting said second-mentioned valve to closed position for preventing entry of material into the chamber until said first-mentioned valve has been returned to closed position.

4. A device of the class described as recited in claim 3, wherein the upper valve shifting means consists of a spring mounted in the chamber and operatively connected with the wall of the body and the upper valve.

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