

Sept. 16, 1958

E. REYNOLDS
DISPENSING DEVICE

2,852,170

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2 Sheets-Sheet 1

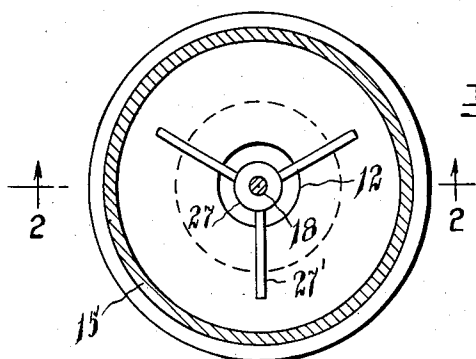


FIG. 1.

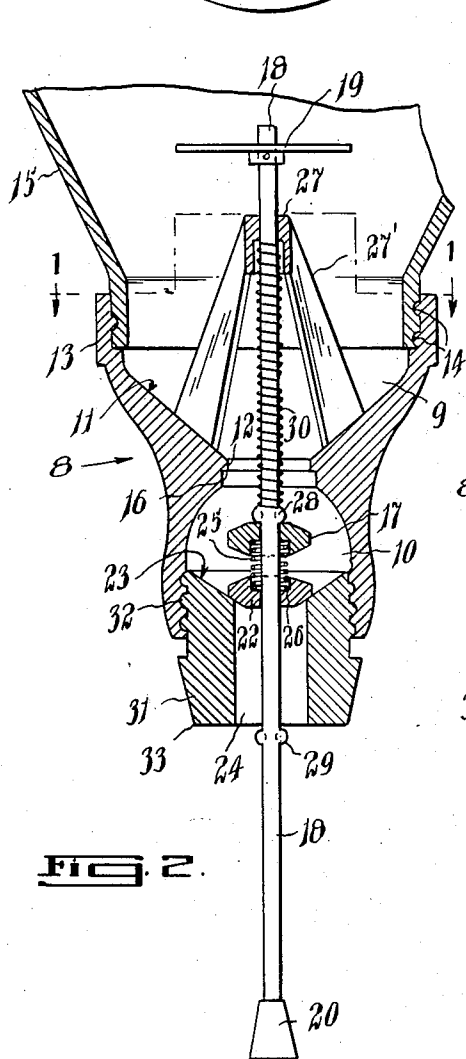


FIG. 2.

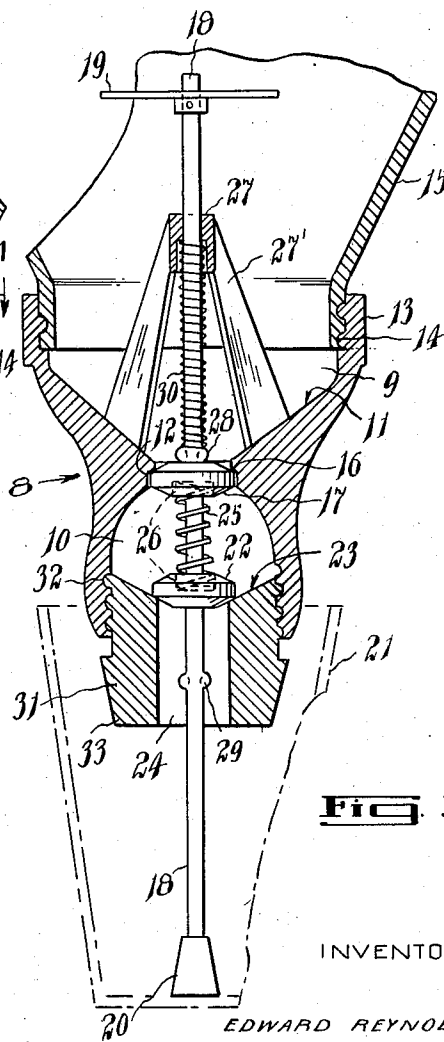


FIG. 3.

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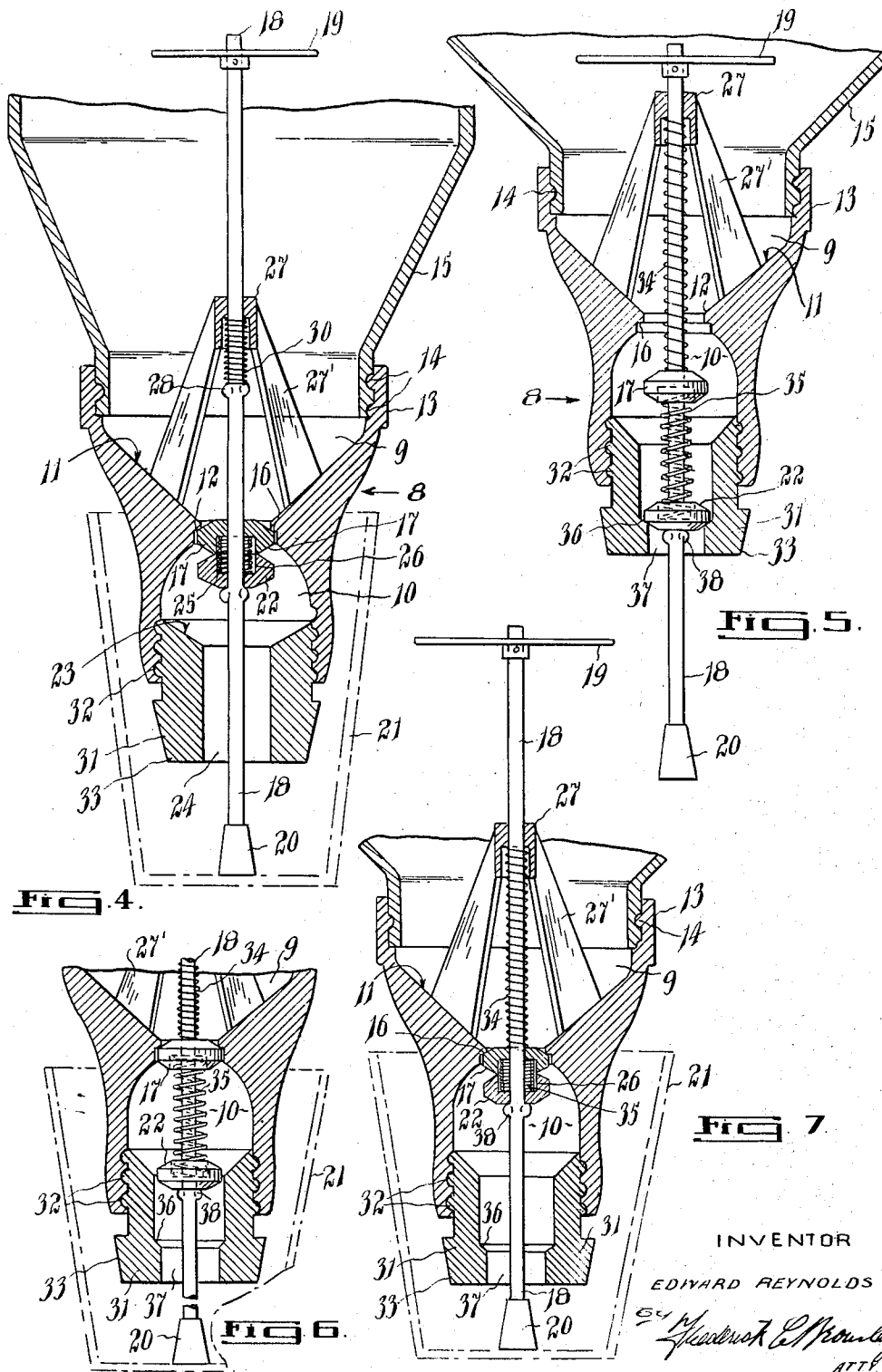
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DISPENSING DEVICE

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2 Claims. (Cl. 222-439)

My invention relates to new and useful improvements in dispensing devices, and in particular to dispensing appliances for dispensing a predetermined amount of material from a container or comparable receptacle for holding a supply of material.

My invention more essentially concerns a dispenser for material in finely comminuted form, such as powder, and it is an important object of the invention to provide a highly serviceable and efficient dispenser of this type by which a measured amount of material may be dispensed in a dispensing operation.

Another object of the invention is to produce a dispensing device having a measuring chamber with valve-controlled ingress and egress passages wherein a pusher rod serves to actuate the valves for discharge of a regulable amount of material.

Still another object of the invention is to provide a dispensing device of the kind referred to in which opposing valves are employed and pressed to their seats by spring pressure, and in which the pusher rod is depressed to actuate the valves for discharge of a measured amount of material.

Still another object of the invention is to provide a dispensing structure of this character in which the body portion is attachable to the mouth of a container, as by a screw connection, and in which there is an upper chamber open to the mouth of the container and shaped to funnel the material into the measuring chamber.

The invention produces an inexpensive and reliable dispenser of which a selected embodiment is shown in the accompanying drawings, in which:

Fig. 1 is a cross section taken on line 1-1 of Fig. 2;

Fig. 2 is a vertical sectional view taken on line 2-2 of Fig. 2 depicting the dispenser in normal position with the lower valve closed and the upper valve open for admitting material into the measuring chamber;

Fig. 3 is a similar sectional view, but showing the pusher rod depressed and the upper valve closed as in the first phase of a dispensing operation;

Fig. 4 is a further and similar section in which the pusher rod is further depressed to open the lower valve for discharge of material as in the second phase of the dispensing operation;

Figs. 5, 6 and 7 depict a slightly modified form of the invention.

In these views, Fig. 5 is a vertical sectional elevation showing the dispenser in normal position with the lower valve closed and the upper valve open for admitting material into the measuring chamber.

Fig. 6 is a similar sectional view to Fig. 5, but illustrating the pusher rod depressed and the upper valve closed as in the first phase of a dispensing operation; and

Fig. 7 is another similar view to Fig. 5 in which the pusher rod is further depressed to open the lower valve for discharge of material as in the second phase of the dispensing operation.

Now, turning to the form of the invention shown in Figs. 1 to 5 inclusive, there is generally indicated at 8

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a dispenser body of a suitable shape and of a hollow structure to provide an upper funnelling chamber 9 and a lower dispensing chamber 10. The funnel-forming walls 11 slope downwardly to a central passage in the throat 12 which is disposed medially of said chambers.

The upper part 13 of said body is provided with an approved form of attachment means, such as the internal screw threads 14, for making a detachable connection with mating threads on the neck of a container 15 in which a supply of material is held. The container may be of a standard type in which powdered material or the like is enclosed and marketed. For example, the container may be of the commodity-holding type filled with ground coffee. The dispensing device is, of course, used on the container to dispense the material in measured amount from time to time as desired by the user.

The throat 12 is counterbored to provide a valve seat 16 within the measuring chamber 10 at the top thereof. A valve member 17 is engageable with said seat, 16, to close the same, and for this purpose is arranged to move to and away from said seat within the confines of the measuring chamber. The valve member is shown as being in the form of a discoid member and is freely slidable on a pusher rod 18. The pusher rod is axially arranged in the body 8 to project from the lower end thereof. The rod is desirably of a length to project upwardly of the funnelling chamber for entering the neck portion of the container, where it may be supplied with a known type of agitator, denoted at 19, for agitating material in the container and thus preventing clogging in the use of the device. On the lower end of the rod there is shown a button or pad 20 for contact with a relatively fixed surface in a dispensing operation.

It may be here mentioned that after the dispensing device has been applied, the container is inverted for dispensing material therefrom. In the inverted attitude of the container the pusher rod projects downwardly from the dispenser with the button or pad lowermost. It can be readily depressed by bringing it into contact with a relatively fixed surface.

In the use of the invention the material discharged from a container in a dispensing operation is deposited in a receptacle of some sort, such as that indicated at 21, for example. Accordingly, the dispenser is inserted in the receptacle with the pusher rod contacting the bottom thereof. The container, together with the dispenser, is lowered to effect a depressional movement of the pusher rod.

A valve member 22 is provided to co-act with the valve member 17 and is pierced to slide on the pusher rod 18 within the measuring chamber 10. Valve member 22 is engageable with a seat 23 at the lower part of the measuring chamber for control of flow of material from the chamber and through a discharge opening 24. A compression spring 25 of the coil type encircles the rod 18 and is tensioned against the opposing valve members to press them to their respective seats. The spring is seated in recesses 26 in the valve members so that these members may come together in the fully compressed condition of the spring.

The pusher rod is guidably constrained to endwise movement in approved manner. In the present arrangement this is achieved by the provision of a bearing 27 carried by the spider arms 27' which are integral with or secured to the upper portion of the body 8 within the chamber 9. A pair of spaced collars 28 and 29 are supplied on the pusher rod to provide shoulders or abutment faces for the valve members. One of the collars is located above the valve members and the other is disposed below these members. A helical compression spring 30 encircles the pusher rod under compression with one end seated against the upper collar 29 and the other end seat-

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ed against the bearing 27. The tension of spring 30 is greater than spring 25. Consequently the stronger spring 30 normally holds the valve member 17 in open condition by reason of the pressure applied on collar 28 and the abutment of this collar with the valve member 17 (Fig. 2). In the initial stage of the depression of rod 18 the collar 28 recedes from the measuring chamber which allows the spring 25 to press T valve member 17 to its seat thus isolating the measuring chamber from the funnelling chamber (Fig. 3). As the pusher rod is caused to continue its inward movement the collar 29 abuts the valve member 22 and unseats it. The measuring chamber is thus opened and the material therein drops by gravity through the discharge passage 24 into the receptacle 21 (Fig. 4). On freeing the pusher rod as by raising the container the spring 30 returns the pusher rod to normal position. Since the measuring chamber is first completely filled and then emptied in a dispensing operation there is a predetermined amount of material dispensed in each operation.

It is desirable to provide a measuring chamber which can be adjusted to vary its capacity. One way of doing this is to construct the chamber in two parts with one of them formed as an element rigid with the body 8 and the other interfitted and capable of being moved axially of the rod 18 to increase or decrease the size of the measuring chamber. The movable part is shown at 31 and has a screw connection 32 by which adjustment is made. The adjustable part 31 is pierced to provide the discharge orifice 24 and the seat 23 is formed on an inner face. The protruding end 33 may be knurled or otherwise fashioned to facilitate its being readily turned by hand.

In the modification illustrated in Figs. 5, 6 and 7, there is only a slight variation in the construction. The collar 28 is dispensed with in this structure and a coil spring 34 is employed to act directly on the valve member 17. Spring 34 encircles rod 18 and is shouldered at its upper end against the bearing 27 similar to the mounting of spring 30 previously dealt with. Spring 34 is, however, of less strength than spring 35 which is interposed between valve members 17 and 22. Spring 35 is comparatively short and in its normal position (Fig. 5) is substantially relaxed. In the normal position valve member 22 is lightly held against its seat 36 which is disposed at the lower end of the discharge orifice 37. Seat 36 is formed by counterboring the orifice 37. The counterboring accommodates the valve member 22.

A collar 38 is provided on the pusher rod below valve member 22 to abut this valve member. When the pusher rod is depressed the valve members 17 and 22 are moved upwardly along with spring 35. In this way valve member 17 is brought into engagement with its seat 16 to close the throat passage (Fig. 6). In the continued upward movement of the rod the spring 35 is compressed by the collar 38 acting on the valve member 22 and accordingly the discharge orifice is opened (Fig. 7) to discharge the material in the measuring chamber. The movable parts assume their normal attitude when the pusher rod is allowed to return.

From the preceding description it will be manifest that the invention provides a new and useful dispensing device which is cheap to manufacture. It will be under-

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stood that changes and variations may be resorted to as come within the scope of the subjoined claims.

What I claim is:

1. A dispensing device for a container, comprising a hollow body having an upper funnelling chamber supplied with walls sloping downwardly to a throat passage including an encircling valve seat, a measuring chamber immediately below said funnelling chamber and in communication therewith by means of said throat passage, said measuring chamber having a lower discharge orifice axially aligned with said throat passage and supplied with an encircling valve seat, said valve seats being arranged to face each other, a co-axial pusher rod supported for endwise movement and extending through said funnelling chamber and measuring chamber, said pusher rod projecting through said discharge orifice, lower and upper coacting valve members slidably mounted upon said pusher rod to move endwise thereon and spaced for independent operation, a compression coil spring encircling said pusher rod between said valve members and pressing them apart to engage said upper valve member with the valve seat of said throat passage and to engage said lower valve member with the valve seat of said discharge orifice, an abutment face on said pusher rod below said lower valve member for unseating this valve member when said pusher rod is moved upwardly, and spring means capable of unseating said upper valve member when the lower valve member is seated.

2. A dispensing device for a container, comprising a hollow body having an upper funnelling chamber supplied with walls sloping downwardly to a throat passage including an encircling valve seat, a measuring chamber immediately below said funnelling chamber and in communication therewith by means of said throat passage, said measuring chamber having a lower discharge orifice axially aligned with said throat passage and supplied with an encircling valve seat, said valve seats being arranged to face each other, a co-axial pusher rod supported for endwise movement and extending through said funnelling chamber and measuring chamber, said pusher rod projecting through said discharge orifice, lower and upper coacting valve members slidably mounted upon said pusher rod to move endwise thereon and spaced for independent operation, a compression coil spring encircling said pusher rod between said valve members and pressing them apart to engage said upper valve member with the valve seat of said throat passage and to engage said lower valve member with the valve seat of said discharge orifice, an abutment face on said pusher rod below said lower valve member for unseating this valve member when said pusher rod is moved upwardly, an abutment face on said pusher rod and spaced above said upper valve member when both valve members are seated, and a compression spring encircling said pusher rod and bearing on said last mentioned abutment face to press said pusher rod downwardly, the stress of said last mentioned spring being greater than said first mentioned spring.

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