(No Model.)

V. J. LONG, Jr.

MEASURING DEVICE FOR CANISTERS.

No. 509,320. Patented Nov. 21, 1893.

Fig. 1.

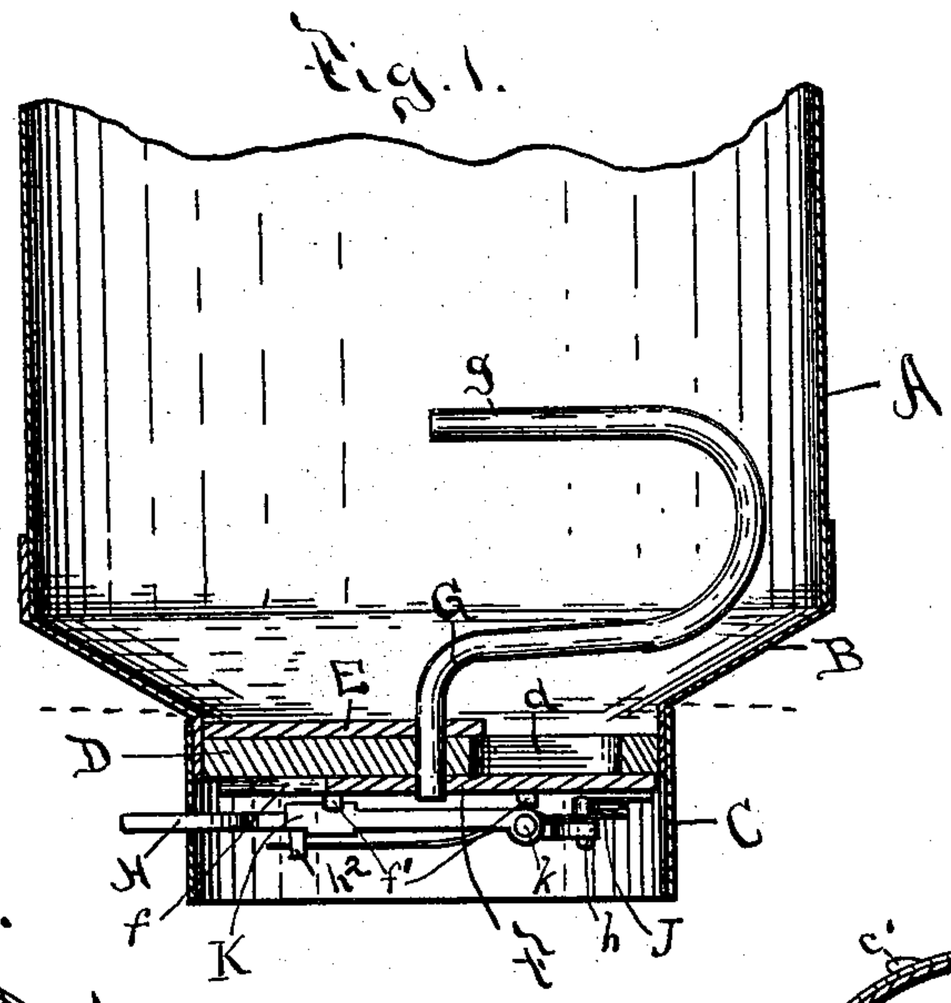


Fig. 2.

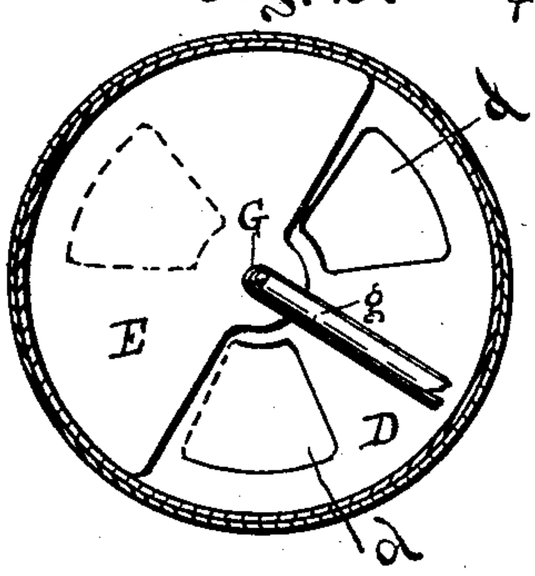


Fig. 3.

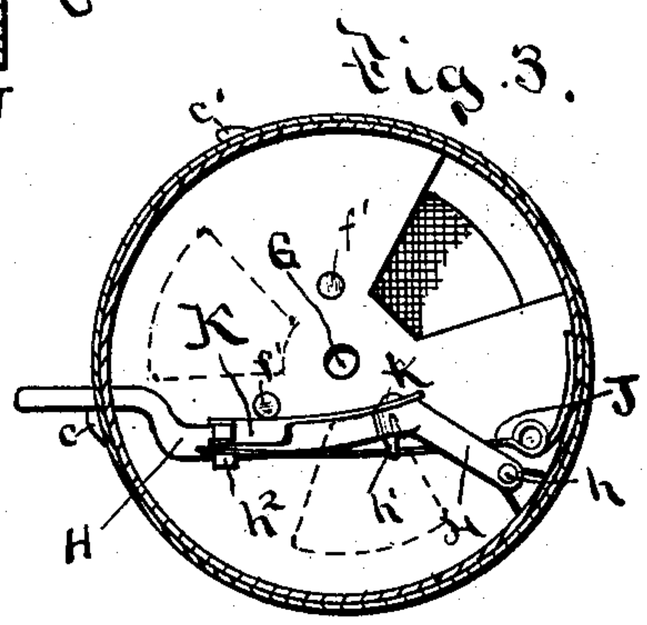


Fig. 4.

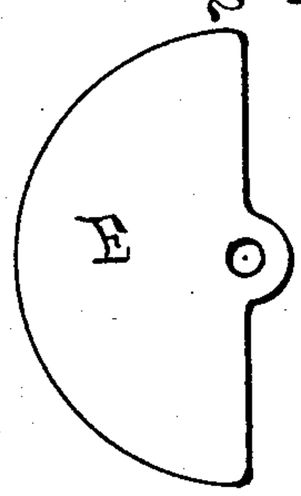


Fig. 5

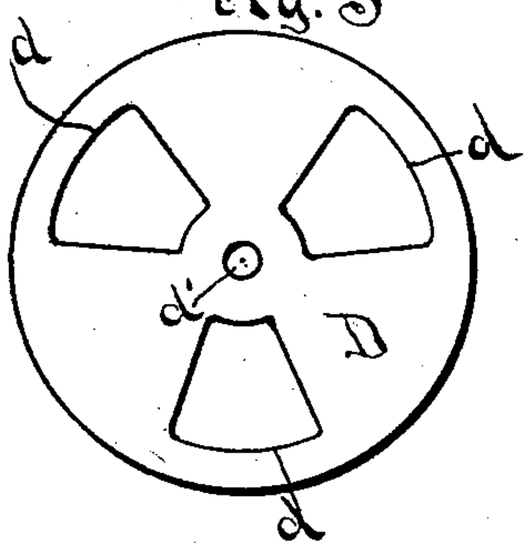
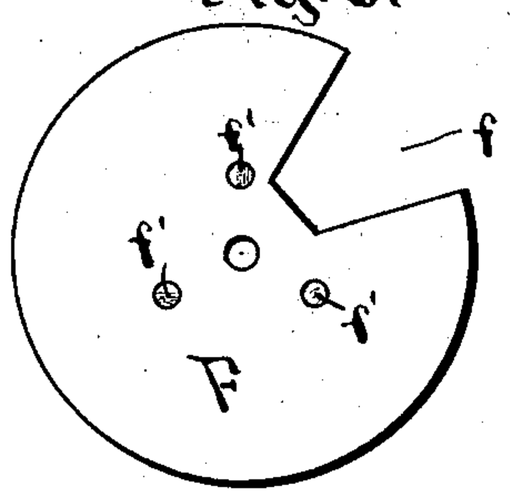


Fig. 6.



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MEASURING DEVICE FOR CANISTERS.

SPECIFICATION forming part of Letters Patent No. 509,320, dated November 21, 1893.

Application filed January 11, 1893. Serial No. 458,063. (No model.)

To all whom it may concern:

Be it known that I, VALENTINE J. LONG, Jr., a citizen of the United States, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Measuring Devices for Canisters, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical central section of the lower part of a canister having one of my devices applied thereto. Fig. 2 is a top plan view of the bottom of a canister having one of my devices applied thereto. Fig. 3 is a bottom plan view of the same. Fig. 4 is a plan view of the upper movable diaphragm of my device. Fig. 5 is a plan view of the central stationary disk thereof. Fig. 6 is a bottom plan view of the lower or outside movable diaphragm of my device.

The object of my invention is to provide a device for delivering powder or granulated material in measured quantities from a canister, and the same consists in the devices hereinafter described and claimed.

In the drawings, A represents the body of the canister.

B is the contracted bottom portion thereof.

C is a cylindrical portion extending from the contracted portion B.

In the bottom of the canister is a disk D fixed stationary in said bottom and either of the same diameter as the canister and fitted directly in the bottom of the body A or the said disk may be smaller and fitted in a contracted hopper, as C. The disk D has perforations *d d* through the same, of such area that with any selected thickness of the disk, the perforation shall contain the exact amount of powder or material taken from the canister, which it is desired to deliver in separate quantities. On the upper side of the disk D is placed a partial disk or perforated diaphragm E. On the under side of the disk D is another partial disk or perforated diaphragm F. In the form which I prefer, and which is shown in the drawings, the upper diaphragm E is substantially semicircular. The middle or stationary disk has three perforations therethrough, arranged at equal distances from each other and the lower diaphragm F has one perforation which is of the same area and can register with each of the perforations *d d* of the stationary disk, successively. The two diaphragms E and F are fixed upon a central shaft G which passes freely through the disk D and whereby the diaphragms E and F are made to fit tightly upon the two sides of the disk D, and can be turned with the shaft. The two diaphragms E and F are so arranged that when the opening or perforation in the diaphragm F registers with and uncovers the lower end of one of the perforations *d d* of the disk D, then the diaphragm E covers the upper end of the perforation so opened, but uncovers the other two perforations in said disk. Thus the powder in the canister A falls into the two perforations *d d* (see Fig. 2) which are opened upwardly by being uncovered by the diaphragm E and at the same time the third perforation in the disk D is opened downwardly, so that the powder may fall out through the perforation in the diaphragm F. It is not essential in my invention that the disk D should have more than one perforation. If it has one perforation only, then the diaphragms E and F must have perforations therethrough, which will alternately but at no time simultaneously, uncover the upper and lower ends of the perforation in said disk D. The diaphragms E and F are fastened upon said shaft (which last is not fastened to the disk D) and may be turned together, the shaft turning in a central perforation *d'* in the disk D.

A stirring device *g* of any suitable form, to prevent the powder in the canister A from caking or lodging, may be attached most conveniently to the shaft G, and I prefer to make it of wire, substantially as shown in the drawings, in continuation of the shaft G. The diaphragm F has three pins extending from the lower surface thereof, which have beveled ends and are in effect separated ratchet teeth. Underneath the diaphragm F there is pivoted to the side of the cylindrical part C of the canister a lever H by a pivot *h*. The lever H extends from the pivotal point *h* underneath and across the diaphragm F through a slot in the opposite side of the cylinder C.

The portion extending outward from the cylinder constitutes the handle proper. To the side of the case and close to the pivotal point is fastened, as by soldering, a spring J. This spring extends under a lug h' on the lever H and thence to and between the sides of a slot in a lug h^2 on said lever. The end of this spring presses against a pawl K which is pivoted to the lever H at k. The pawl pressed outward by the end of the spring J, catches against the successive teeth f' on the diaphragm F and when the lever H is vibrated between its stops c c' or between the ends of the slot in which the same vibrates, the pawl K will, on the return motion of the lever, snap over the beveled ends of the teeth f', but, when the lever H is moved in the opposite direction, the pawl will catch against a tooth f' and will revolve the diaphragm as far as the limits of motion of the lever H permit. In the device shown in the drawings, the motion of the lever is such as to permit revolution of the diaphragms E and F through one-third of a circle. More or less revolution of the diaphragm is provided for, according to the number of perforations in the disk D. The spring J, after the handle of the lever H has moved the diaphragms E and F through one-third of a circle, is returned to its position against the stop c, or to the end of the slot through which the handle projects, by means of the spring J.

The operation of my device is as follows:—The canister A contains the powder or other granular material. At all times in the device of the construction shown, at least one of the perforations d is uncovered by the diaphragm E. The powder, stirred and kept loose by the stirring device g, falls into said perforation, but is prevented from falling through the same by the diaphragm F, which covers the lower end of said perforation. The handle H at its normal position of rest, is against the stop c and with the pawl K engaging one of the pins or teeth f' upon the diaphragm F. The handle of the lever is now moved to its limit of motion against the stop c' thereby compressing the spring J. The pawl K pressing against the tooth f' causes the diaphragms E and F to revolve through one-third of a circle and brings the perforation f in the diaphragm F to register with one of the perforations d in the disk D, thereby permitting the powder in said perforation d to fall out therefrom, but the diaphragm E has revolved with the diaphragm F, so as to cover the upper side of the same perforation, which is opened by the perforation f. The other two perforations in the disk D are uncovered, however, by the revolution of the diaphragm E and are filled with powder from the canister A. The spring J being compressed, forces the lever H back to its position against the stop c. The pawl K slips over the next tooth or pin f' and the operation may be repeated. The openings in the diaphragms E and F do not register, but the openings in each may be turned to register with a perforation in the disk D.

In my device, the diaphragms E and F fit tightly on the inner and outer sides of the disk D and the powder in the canister A is prevented from flowing out therefrom. The use of the vibrating lever, operating by a ratchet and pawl, the two diaphragms between properly placed stops, prevents any of the perforations in the disk D from being left open by the edges of the opening f of the lower diaphragm F only partly closing the lower end of the perforation d in the disk and thus permitting the powder therein to escape slowly and not all at one time.

What I claim is—

1. A measuring device consisting of a canister, a stationary perforated disk fixed in the bottom thereof, a central shaft passing freely through said disk, two movable diaphragms fixed on said shaft, one above and one below said disk, and each provided with an aperture, said two apertures registering alternately and not simultaneously with the ends of a perforation in said disk when said shaft is turned.

2. A measuring device, consisting of a canister, a stationary perforated measuring disk fixed in the bottom thereof, a central shaft passing freely through said disk, two movable diaphragms fixed on said shaft, one above and one beneath said disk, covering and uncovering alternately the upper and lower ends of a perforation in said disk, ratchet teeth on one of said movable diaphragms, and a pawl to engage said teeth, provided with means of moving said pawl to turn said diaphragm.

3. A measuring device, consisting of a canister, a stationary perforated disk fixed in the bottom thereof, a central shaft passing freely through said disk, two movable diaphragms fixed on said shaft, one above and one beneath said disk, the perforation in the upper diaphragm uncovering one or more of the perforations in the stationary disk and covering the rest of the perforations therein, when the perforation in the lower diaphragm uncovers the lower end of the perforation or perforations covered by the upper diaphragm.

4. A measuring device, consisting of a canister, a stationary measuring disk fixed in the bottom thereof, having a series of perforations therethrough, a central shaft passing freely through said disk, two movable diaphragms fixed on said shaft and turning therewith, one above and one beneath said disk, and having perforations registering with the perforations in said disk, but not registering with the perforations in each other, whereby the upper diaphragm uncovers all but one of the perforations in said disk, when the lower diaphragm uncovers the lower end of the remaining perforation.

5. A measuring device, consisting of a canister, a stationary perforated measuring disk fixed in the bottom thereof, a central shaft passing freely through said disk, two movable

diaphragms fixed on said shaft, one above and one beneath said disk, having perforations adapted to cover and uncover alternately the upper and lower ends of each perforation in said stationary disk, ratchet teeth on one of said movable diaphragms, a vibrating lever, a spring pressed pawl pivoted to said lever and adapted to engage successively with said ratchet teeth to turn said diaphragm in one direction and a spring to return said lever after turning said diaphragm.

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Witnesses:
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