

Feb. 10, 1925.

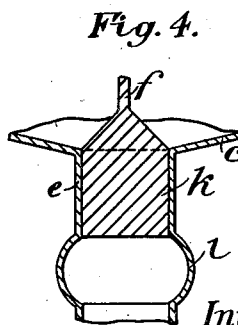
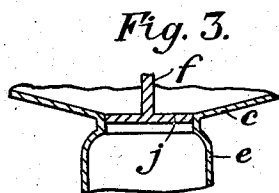
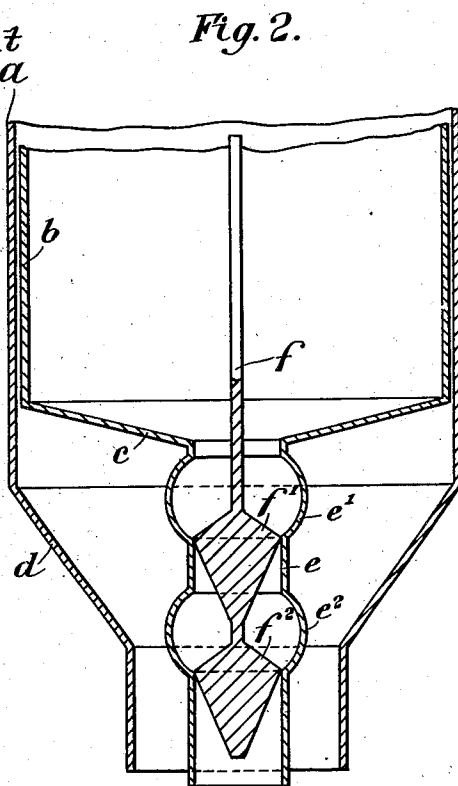
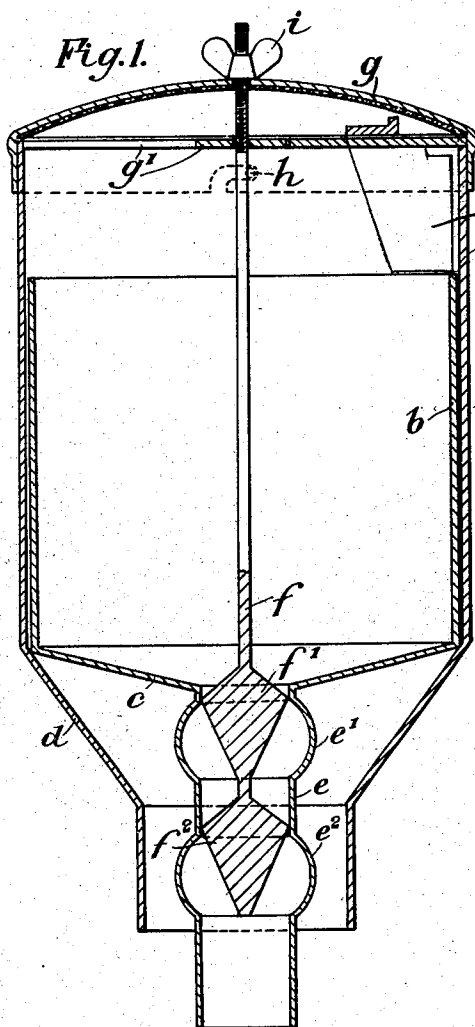
1,525,828

J. T. REEVE

APPLIANCE FOR DELIVERING SUBSTANCES IN POWDER FORM

Filed July 12, 1923

4 Sheets-Sheet 1



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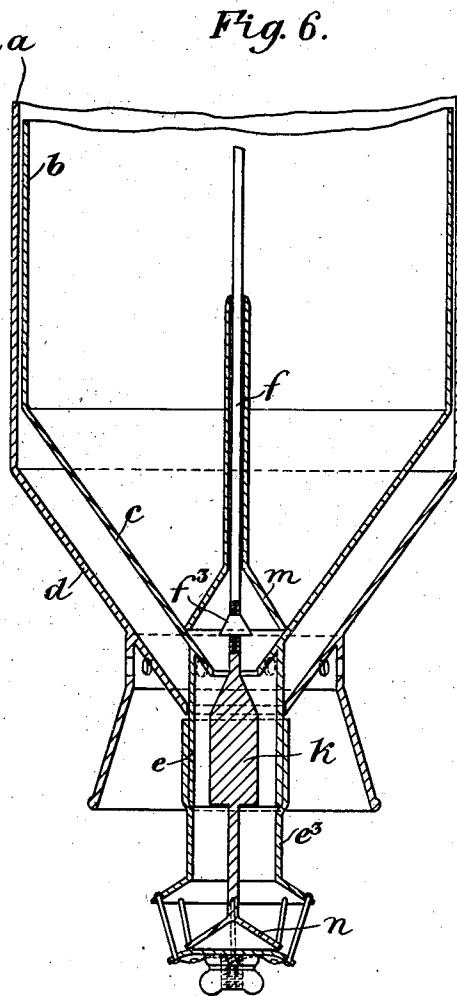
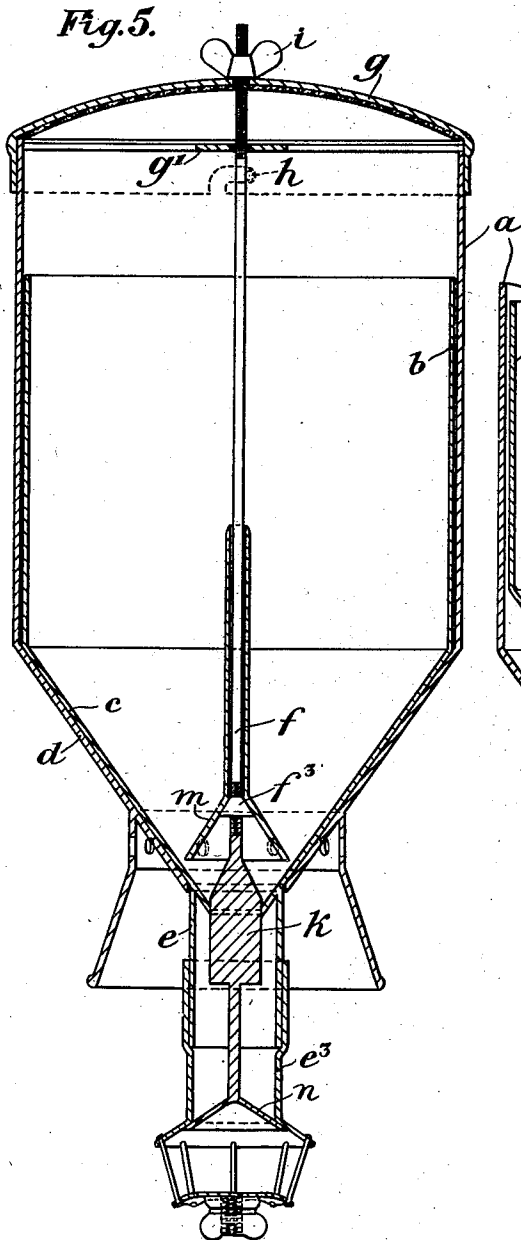
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APPLIANCE FOR DELIVERING SUBSTANCES IN POWDER FORM

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4 Sheets-Sheet 2



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APPLIANCE FOR DELIVERING SUBSTANCES IN POWDER FORM

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4 Sheets-Sheet 3

Fig. 7.

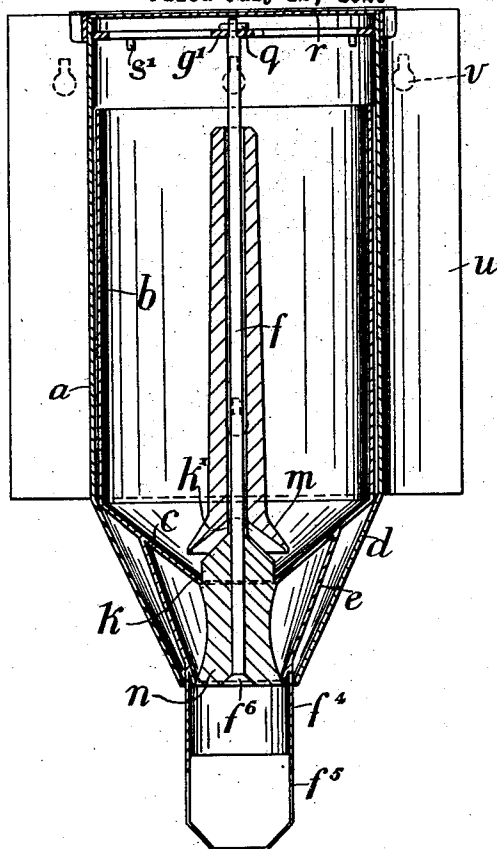
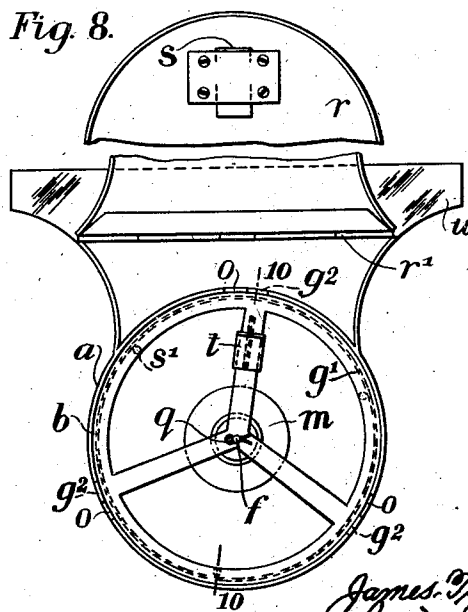


Fig. 8.



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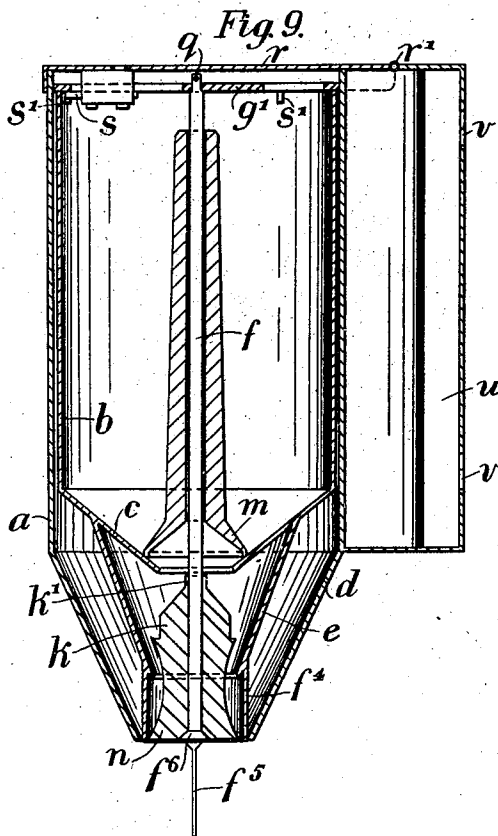
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APPLIANCE FOR DELIVERING SUBSTANCES IN POWDER FORM

Filed July 12, 1923

4 Sheets-Sheet 4



Inventor:
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Patented Feb. 10, 1925.

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UNITED STATES PATENT OFFICE.

JAMES TALBOT REEVE, OF LONDON, ENGLAND.

APPLIANCE FOR DELIVERING SUBSTANCES IN POWDER FORM.

Application filed July 12, 1923. Serial No. 651,119.

To all whom it may concern:

Be it known that I, JAMES TALBOT REEVE, a subject of the King of Great Britain, residing at 38 and 39 Half Moon Street, Piccadilly, London, England, have invented new and useful Improvements in Appliances for Delivering Substances in Powder Form, of which the following is a specification.

This invention relates to appliances for delivering substances such as soap, in powder form, of the kind wherein the receptacle for the powder has a discharge valve at its lower end designed to be manipulated to discharge the powder from the receptacle by upward pressure against a weight.

According to the invention I so construct the appliance that the weight of the powdered substance serves to close the valve, instead of employing an independent weight for the purpose.

In a suitable arrangement for carrying out the invention the powder is carried in a container in the form of a lining movable vertically within the body of the appliance and normally resting upon the bottom of the body which bottom may be open. The container has a tubular valve at the lower part which co-acts with a central rod or stem fixed to the body to effect the discharge of the powder when the container is raised and lowered.

The valve and central stem may be so constructed that, when the powder container is lifted, an opening is established for the discharge of the powder through the valve, such discharge being maintained until the container is lowered to enable the valve to cut off communication with the said container. In this construction the central stem may have a disc thereon which fits within a hole at the bottom of the container, which hole opens into a tube of larger diameter than the said hole, the said tube extending downwardly from the container and serving for manipulating the latter. Or, the tube can be dispensed with and any other suitable downward extension employed.

Instead of the construction just described, the valve and stem may be formed so that the discharge of the powder can only take place in measured quantities. For this purpose, the central stem may be provided with a cylindrical head thereon fitting within a hole at the bottom of the container and which hole opens into a depending tube of similar diameter. Below the head, the tube

is enlarged for a distance slightly less than the depth of the said head.

In another arrangement, the central stem may have two heads, preferably of double conical, globular or ellipsoidal form and the depending tube is formed with two enlargements normally located below the part of largest diameter of the two heads, respectively.

In a further construction for delivering the powder in measured quantities I form the discharge-valve or stem enlargement and the disc or valve for normally closing the lower end of the discharge-tube, integral and separate from the supporting stem, and preferably of porcelain or other nonmetallic material. I also provide the said discharge-valve with an upward extension to form the support for the loose conical valve, which is also preferably of porcelain or other non-metallic material, and I make the discharge-tube of inverted conical form to facilitate the discharge of the powder.

I also secure the central stem to the guide therefor at the upper part of the body of the apparatus, and utilize the said guide as a stop to limit the upward movement of the container, the said guide being secured within the casing by a turning movement, and held after such movement by a stop thereon engaging with a projection on the lid which is hinged to the said casing. The projection on the lid may take the form of a lock-bolt for securing the lid in its closed position.

Means are also employed for preventing the container from being lifted when the apparatus is out of use, such means comprising a stop slidable on the guide above referred to, so that it can be interposed in the path of the said container.

The body is formed with a bracket extension to enable the apparatus to be supported by nails or the like on a wall or other upright surface.

By arranging the container for the powder to be movable, as described, it will be seen that the movement necessary to obtain the discharge of the powder will have a tendency, especially if the lowering movement takes place quickly, to shake the powder and prevent clogging.

To enable the invention to be fully understood I will describe it by reference to the accompanying drawing, in which:—

Figure 1 is a vertical section of apparatus

for delivering powdered substances, constructed in accordance with the invention and

Figure 2 is a similar view of the lower portion but showing the delivery valve in a different position.

Figures 3 and 4 are sectional views showing slight modifications of the delivery valve.

Figures 5 and 6 are, respectively, similar views to Figures 1 and 2, illustrating further modifications.

Figure 7 is a front sectional view of another modification of the apparatus.

Figure 8 is a plan view thereof.

Figure 9 is a view similar to Figure 7, but showing some of the parts in a different position.

Figure 10 is a section on the line 10—10, Figure 8, of the upper part of the apparatus.

Figures 11 and 12 are, respectively, elevations of the conical valve and discharge-valve used in this modification, and

Figure 13 is a plan of a guide-plate also used therein.

a is the body of the appliance and b is the container for the powder, the said container being in the form of an open-topped lining loose and movable vertically within the said body and with its bottom c normally resting on the bottom d of the latter, which is open. In the drawing, this bottom c extends downwardly, as indicated, as this is the preferred form, but it may terminate just below the container b . e is the depending tubular valve at the lower part of the container b and f is the central rod or stem attached to the body a and passing within the said valve to co-act therewith to effect the discharge of the powder as hereinafter described.

The upper part of the body is closed by a cap g secured by a bayonet joint h or in any other suitable manner whilst the stem f is secured to the said cap. In the drawing, the stem is adjustably carried on the cap g by the nut i screwing on the said stem, but other means of adjustment may be employed. It also passes through a guide-hole in a plate g^1 carried by the body.

In the construction illustrated in Figure 1, the valve is constructed to deliver the powder in measured quantities and is of the form wherein the stem f is formed with two heads f^1 , f^2 of double conical form loosely fitting within the tube e and the latter is formed with two enlargements, e^1 , e^2 which are normally located below the part of largest diameter of the said heads f^1 , f^2 , respectively. By this arrangement when the powder container is lifted by pressure applied to the lower part of the tube e to the position shown in Figure 2, the uppermost enlargement e^1 registers with the space

around the central stem f to receive a charge of powder, which, when the container is again lowered to the normal position in Figure 1, falls into the space between the two heads f^1 , f^2 and is only discharged on the next up and down movements of the container, the lower enlargement e^2 registering with the said space and receiving the charge on the upward movement, which charge on the next downward movement of the container, is brought below the part of the largest diameter of the lower head f^2 and so is free to fall out of the tube e .

The heads f^1 and f^2 , instead of being of the double conical form illustrated, may be globular or ellipsoidal.

Figure 3 illustrates the construction where the stem f is provided with a disc j fitting within the hole in the bottom c of the container, which hole opens into the tube e which is of larger diameter than the said hole so that directly the said tube and container are lifted, the powder will be allowed to escape below the disc j . Or the tube e can be dispensed with and other downward extensions employed for manipulative purposes.

Figure 4 shows the arrangement for delivering a measured quantity wherein the stem f is furnished with a cylindrical head k loosely fitting within the hole in the bottom c of the container and beneath which hole is the tube e of similar diameter. Below the head k the tube is enlarged as at l for a distance slightly less than the depth of the head. By this construction, when the tube e and container b are moved upwardly, the said enlargement l is brought into communication with the space within the container around the stem containing powder, which latter therefore falls into and fills the said enlargement and which, when the latter again arrives below the head k , will fall therefrom and through the lower end of the tube e .

Figures 5 and 6 show another construction of appliance for delivering a measured quantity of powder, somewhat similar to that shown in Figure 4, that is to say, with a cylindrical head k on the stem f normally loosely fitting within the hole in the bottom c of the container but with the tube e of equal diameter throughout its length, but of larger diameter than the said head k . Above the head k on a collar f^3 adjustable on the stem f is supported a loose hollow conical valve m so placed as to provide, when in the normal position indicated in Figure 5, an annular space between it and the bottom c of the container to allow a quantity of the powder in the latter to pass into the space beneath the said valve, which quantity, on the raising of the tube e into the position shown in Figure 6, will fall past the head k and out of the bottom of

the said tube, the bottom of the container making contact with the valve *m* to prevent any powder passing beneath the valve while the said tube *e* and container are in the raised position. To facilitate the distribution of the powder from the said tube *e* the stem *f* is provided at the lower end with the coned disc *n* which also serves to close the opening at the lower end of the said tube when in the normal position shown in Figure 5, and prevent access of moisture to the inside of the tube *e* of the container, and serves to spread powder on the hand. The tube *e* is advantageously made with the lower part *e*³ removable, as shown, to allow the stem *f* to be easily placed in position and withdrawn, the said part *e*³ being fixed to the upper part *e* in any suitable way.

The construction illustrated in Figures 7 to 13 is similar to that illustrated in Figures 5 and 6, but the discharge-valve or stem enlargement *k* and disc or valve *n* are formed integral and separate from the stem *f* which is provided with a head or shoulder *f*⁶ upon which the said combined valves are supported, the said valves being secured to the stem by cement or otherwise. *k*¹ is the extension on the valve *k* for supporting the loose valve *m* in its normal position on the stem *f*. As hereinbefore stated, the integral valves *k* and *n* and the loose valve *m* are preferably made of porcelain or other non-metallic material. The discharge-tube *e* is of inverted conical form to facilitate the discharge of the powder, and is provided with a cylindrical prolongation *f*⁴ below the valve *n* and a wire loop *f*⁵ depending therefrom, the latter serving for actuating the container by the hand of the user but preventing it coming into contact with the lower end of the said prolongation which contact would interfere with the distribution of the powder thereon. *g*¹ is the guide for the upper end of the stem *f*, which guide is in the form of a circular or wheel-frame having projections *g*² on its periphery for engagement with bayonet slots *o* in the body *a* by a turning movement, the centre of the frame having a hole *p* for the reception of the upper end of the stem *f* which is secured thereto by a split pin or collar *q*. This guide *g*¹ also serves as a stop to limit the upward movement of the container *b* when in use.

r is the lid which is hinged at *r*¹ to the body *a* and serves, by means of a projection *s* thereon, (in the drawing, shown as a lock-bolt) engaging any one of a series of stops *s*¹ on the guide *g*¹ to prevent the latter from turning in the body *a* when the said lid is closed down, the said lock-bolt then being shot to prevent access being obtained to the interior of the apparatus by unauthorized persons.

t is the stop, slidable on one of the arms of the wheel-shaped guide *g*¹, which stop,

when adjusted thereon can be interposed in the path of the container *b*, as indicated clearly in full lines in Figure 10. When the said stop is moved to the position indicated by the dot and dash lines in the said figure, the container can be lifted to discharge the powder.

u is the bracket extension on the body *a* provided with inverted key-hole shaped slots *v* to enable it to be engaged with the heads of nails or the like on a wall or other upright surface.

I am aware that it is known in appliances in which the discharge valve is operated by hand to deliver powdered substances in measured quantities, but to such delivery I make no claim per se.

Claims:

1. A device for delivering substances comprising among its members a vertically movable container for holding the material to be delivered, provided with a delivery orifice at its lower end and a valve normally closing said orifice and supported stationarily and independently of said container, said orifice being adapted to be opened by the upward movement of the container with respect to said valve, whereby the weight of the container and the material therein is utilized to assist in closing the delivery orifice and maintaining it closed.

2. A device for delivering substances comprising among its members, a vertically movable container for holding the material to be delivered, provided with a delivery orifice at its lower end, means for supporting said container in its lowest position, a normally closed valve for said orifice, supported stationarily and independently of said container and means for raising said container with respect to the valve, to open said orifice whereby the weight of the container and the material therein normally maintains the delivery orifice closed and assists in closing the same by gravity.

3. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered located within and movable vertically with respect to the main body and provided with a delivery orifice at its lower end, means for supporting said container in its lowest position, and holding it against further downward movement, a normally closed valve for said delivery orifice and means for connecting said valve rigidly to the main body, whereby the upward movement of the container with respect to said valve and the main body will open the said delivery orifice, and the weight of the container and its contents will tend to move the container to its lowest position and maintain said valve in closed position.

4. A device for delivering substances com-

prising among its members a hollow main body, a container for the substance to be delivered located within and movable vertically with respect to the main body and provided with a delivery orifice at its lower end, means for supporting said container in its lowest position, and holding it against further downward movement, a stem rigidly secured to the main body and extending through said container and an enlargement rigidly secured to said stem and forming a valve for controlling said delivery orifice, said enlargement being supported by said stem in position to close said delivery orifice when the container is in its lowest position but permitting the upward movement of the container with respect to said valve and the main body to open said delivery orifice.

5. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a valve normally closing said aperture, said aperture being adapted to be opened by the upward movement of the container, and means within the container for separating a predetermined quantity of material and delivering the same through the said aperture when the container is moved upwardly.

6. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a valve normally closing said aperture and rigidly secured to said body, a normally open valve within said container and supported independently thereof for effecting the delivery of a predetermined quantity of material, by the upward movement of the container.

7. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a stem rigidly secured to the main body and extending through the container, an enlargement rigidly secured to said stem and normally closing said delivery aperture, and auxiliary valve within said container loosely mounted with respect to said stem and supported thereby in normally open position.

8. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body

and provided at its lower end with a delivery aperture, a delivery tube secured to said container and communicating with said aperture, a stem rigidly secured to said body and extending through the container and said delivery tube, an enlargement rigidly secured to said stem and normally closing the delivery aperture, and a conical disk rigidly secured to said stem and normally closing the discharge tube below said delivery aperture.

9. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a delivery tube secured to said container and communicating with said orifice, a stem rigidly secured to said body and extending through the container and said delivery tube, an enlargement rigidly secured to said stem and normally closing the delivery aperture, an auxiliary valve within the container supported by said stem in normally open position, and capable of vertical movement with the container with respect to said rod, and a cone shaped member rigidly secured to said stem for normally closing the lower end of the discharge tube.

10. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a delivery tube secured to said container and communicating with said orifice, a stem rigidly secured to said body and extending through the container and said delivery tube, an enlargement rigidly secured to said stem and normally closing the delivery aperture, an auxiliary valve within the container supported by said stem in normally open position, and capable of vertical movement with the container with respect to said stem, and a cone shaped member rigidly secured to said stem for normally closing the lower end of the discharge tube, said enlargement and said disk being formed integral with each other, and supported from said stem.

11. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, located within and movable vertically with respect to the main body and provided at its lower end with a delivery aperture, a delivery tube secured to said container and communicating with said aperture, a stem rigidly secured to said body and extending through the container and said delivery tube, an enlargement rigidly secured to said stem and normally closing

the delivery aperture, an auxiliary valve within the container, movable vertically with respect to said stem and a laterally projecting part carried by said stem for supporting said auxiliary valve in normally open position, when the container is in its lowest position.

12. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, supported within said main body and movable upwardly with respect thereto, said container having a downwardly extending conical portion, provided with a delivery aperture, a stem rigidly secured to said main body, and extending through the container and the delivery aperture thereof, a main valve rigidly secured to said stem and normally closing said delivery aperture, a conical auxiliary valve located within the lower conical portion of the container above said delivery aperture, and adapted to co-operate therewith to effect the delivery of a predetermined quantity of material, said auxiliary valve loosely engaging said stem and being movable vertically, with respect to said stem and a part carried by said stem for normally holding said auxiliary valve in open position.

13. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, supported within said main body and movable upwardly with respect thereto, said container having a downwardly extending conical portion, provided with a delivery aperture, a stem rigidly secured to said main body, and extending through the container and the delivery aperture thereof, a main valve rigidly secured to said stem and normally closing said delivery aperture, a conical auxiliary valve located within the lower conical portion of the container above said delivery aperture, and adapted to co-operate therewith to effect the delivery of a predetermined quantity of material, said auxiliary valve loosely engaging said stem and being movable vertically, with respect to said stem and a part carried by said stem for normally holding said auxiliary valve in open position, said container being provided with a delivery tube below said delivery aperture, and said stem being provided with a valve below said main valve for normally closing said tube.

14. A device for delivering substances

comprising among its members a hollow main body, a container for the substance to be delivered, supported within said main body and movable upwardly with respect thereto, said container having a downwardly extending conical portion, provided with a delivery aperture, a stem rigidly secured to said main body, and extending through the container and the delivery aperture thereof, a main valve rigidly secured to said stem and normally closing said delivery aperture, a conical auxiliary valve located within the lower conical portion of the container above said delivery aperture, and adapted to co-operate therewith to effect the delivery of a predetermined quantity of material, said auxiliary valve loosely engaging said stem and being movable vertically, with respect to said stem and a part carried by said stem for normally holding said auxiliary valve in open position, a guide for supporting the upper end of said stem, detachably secured in the upper end of the main body, a lid hinged to the main body for closing the upper end thereof, and a locking device on said lid for engaging said guide, when the lid is closed down, to lock said guide in respect to the main body.

15. A device for delivering substances comprising among its members a hollow main body, a container for the substance to be delivered, supported within said main body and movable upwardly with respect thereto, said container having a downwardly extending conical portion, provided with a delivery aperture, a stem rigidly secured to said main body, and extending through the container and the delivery aperture thereof, a main valve rigidly secured to said stem and normally closing said delivery aperture, a conical auxiliary valve located within the lower conical portion of the container above said delivery aperture, and adapted to co-operate therewith to effect the delivery of a predetermined quantity of material, said auxiliary valve loosely engaging said stem and being movable vertically, with respect to said stem and a part carried by said stem for normally holding said auxiliary valve in open position, a guide for supporting the said stem detachably secured in the upper end of the main body, and a movable stop on said guide adapted to be interposed in the path of the container to limit the vertical movement thereof.

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