Oct. 21, 1958 N. D. STUTZMAN 2,856,807

POWDER MEASURING DISPENSER

Filed April 13, 1954 2 Sheets-Sheet 1

Fig. 4.

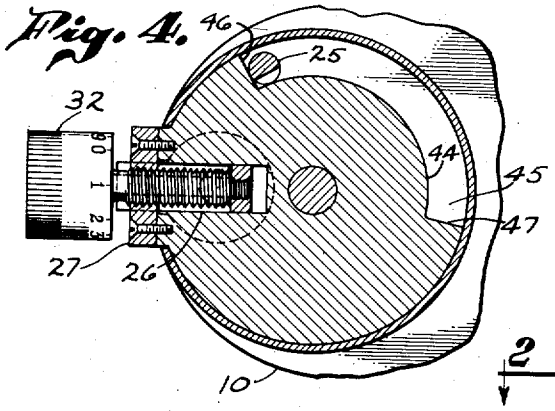


Fig. 1.

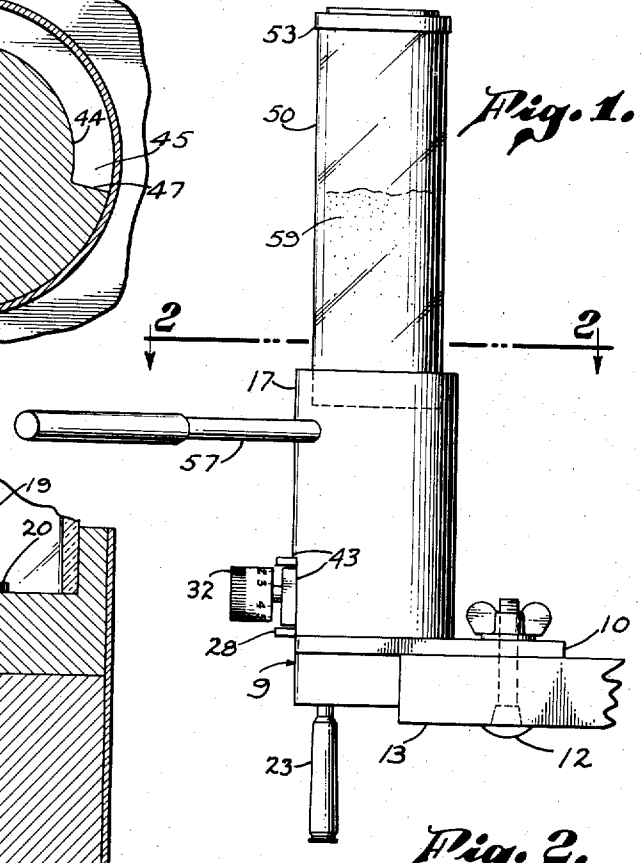


Fig. 3.

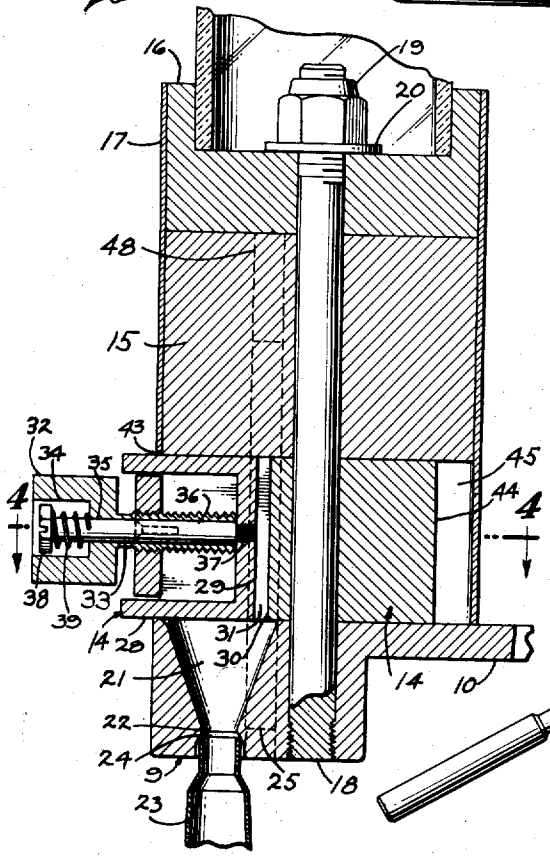
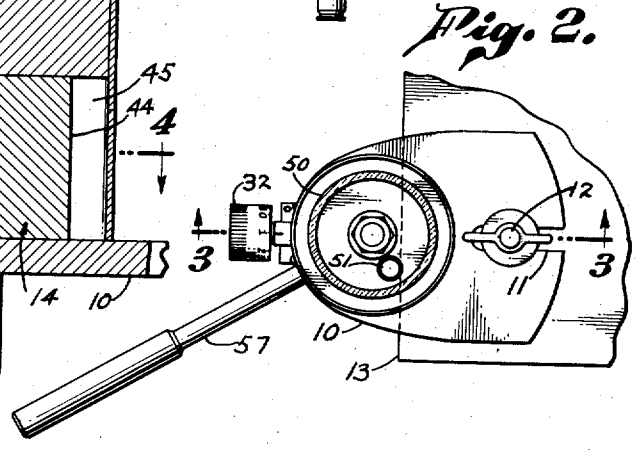


Fig. 2.



INVENTOR.

Noble D. Stutzman

Oct. 21, 1958 N. D. STUTZMAN 2,856,807

POWDER MEASURING DISPENSER

Filed April 13, 1954 2 Sheets-Sheet 2

Fig. 7.

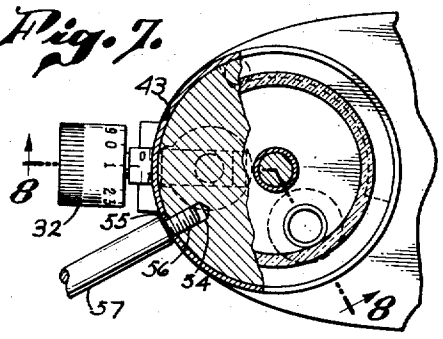


Fig. 5.

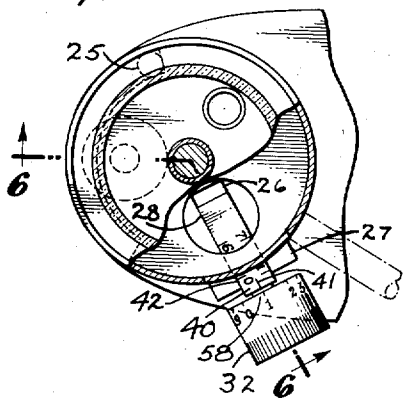


Fig. 8.

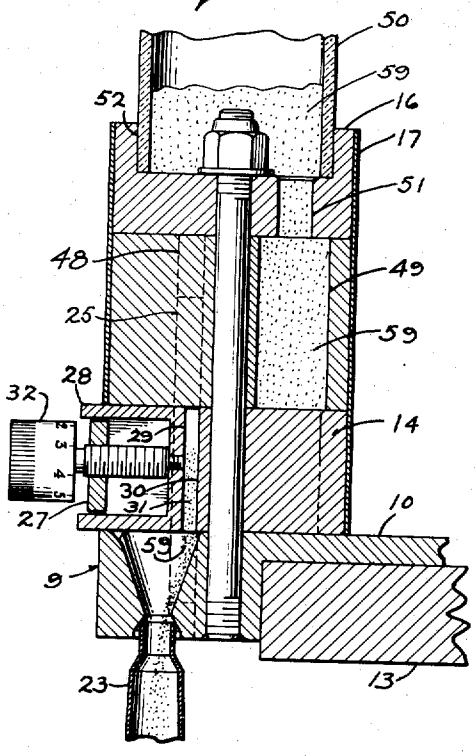
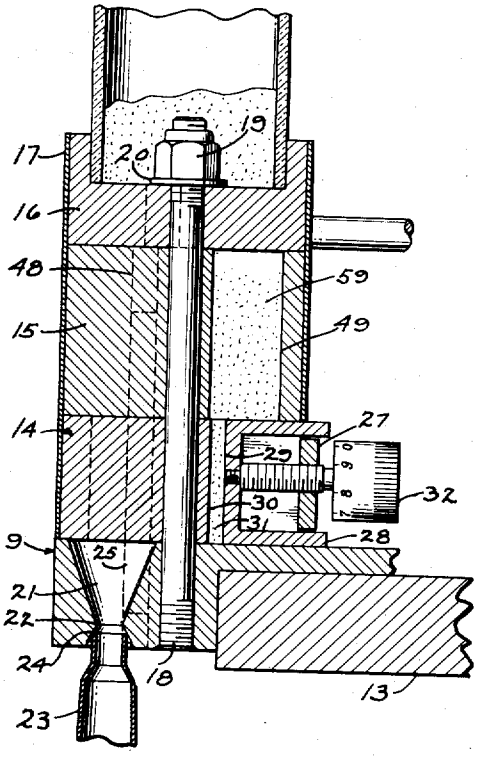


Fig. 6.



INVENTOR.

Noble D. Stutzman

United States Patent Office

2,856,807

Patented Oct. 21, 1958

2,856,807

POWDER MEASURING DISPENSER

Noble D. Stutzman, Bakersfield, Calif.

Application April 13, 1954, Serial No. 422,836

3 Claims. (Cl. 86—31)

My invention relates in general to a measuring dispenser with the primary object of measuring powdered or granular materials such as gun powder and then discharging such certain measured quantity of the comminuted material into a cartridge or other suitable container.

An important object of my invention is to provide a measuring dispenser with an inbuilt micrometer-type volume indicator.

A further object of my invention is provide a measuring dispenser in which the volume indicator is readily adjusted and the scale markings quickly and accurately read.

Another object of my invention is to provide a measuring dispenser which delivers a substantially uniform volume of powder regardless of the changing and variable quantities of the supply powder in the main storage hopper.

An important object of my invention is the provision of a measuring dispenser in which horizontal rotation of the several component sections provide vertically superimposed chamber ports and valves through which the powder flows downward.

A further object of my invention is the provision in a measuring dispenser of a large primary material storage hopper, a final calibrating measuring unit and an intermediate powder holding and transfer chamber operable alternately in connection with the primary material storage hopper and then the calibrating measuring unit.

An important object of my invention is the provision of a measuring dispenser in which, because the calibrating unit is capable of substantially accurate and minute quantitive operation, no additional weighing on powder scale is required and thus it is possible to obtain not only a high rate of production but also increased safety because the cartridge is not overloaded with an excessive charge of powder.

Another purpose of my invention is the provision of a measuring dispenser in which the small number and simplicity of operating movements reduces the cost and cuts the time required for an individual cartridge filling operation.

Another object of my invention is to provide a powder measuring dispenser which is of sturdy construction and pleasing appearance and in which the parts are readily interchangeable or replaceable without necessitating close fitting or delicate machine work but which requires only the removal and replacement of the locking device to secure the reassembled parts.

Additional objects and advantages will be apparent from the following description considered in conjunction with the accompanying sheets of drawings or from both as supplements of each other, wherein are set forth certain novel features of construction, combination and arrangement of parts and functions.

In the accompanying sheets of drawings forming a part of these specifications, and in which like numerals are employed to designate like parts:

Figure 1 is a side elevation of my assembled invention illustrating the operating position in which the powdered material is being discharged into a cartridge or when desired some other suitable container.

Figure 2 is a horizontal sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a substantially sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a horizontal sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a view partly in plan and partly in section illustrating the relative position of the parts during the filling of the measuring chamber.

Figure 6 is a vertical partially sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a view partly in plan and partly in section illustrating the relative position of the parts during the filling of both the intermediate charging chamber and the cartridge.

Figure 8 is a vertical partially sectional view taken on the line 8—8 of Figure 7.

Referring now in detail to Figures 1, 2, 3, 4, 5, 6, 7 and 8 wherein for purposes of illustration are shown preferred embodiments of my invention the numeral 9 indicates the base or bottom section of my device which is used not only as a stationary support but also as an assembly guide for attachment of the superimposed parts and a suitable container. Stationary base 9 is provided with an extended wing 10 having a slot 11 for insertion of a suitable means for securing to a table or shelf 13 such as bolt 12.

In addition to the stationary base 9 my device consists mainly of a rotatable measuring unit 14, stationary intermediate charging block 15 and rotatable hopper retainer or feed plate 16 all enclosed within or attached to rotatable telescoping sleeve 17.

In order to provide a pivot for the rotating parts and a method of fastening together the components an assembly post 18 is secured to base 9 and at the end extending through the bottom of hopper retainer 16 may be properly tightened by adjusting nut 19 and locking washer 20. In base 9 there is also provided a discharge chamber 21, into which the measuring unit 14 empties and from which the powder flows through discharge port 22 into the cartridge 23 which is held securely in the centering guide 24. A stop pin 25 is secured in base 9 and extends a distance above for use in limiting the rotary movement of the measuring unit 14, and for holding the intermediate charging block 15 in a stationary position.

Extending inwardly from the surface of measuring unit 14 is provided a vertical slot 26 which is closed at the circumferential opening by a removable cover plate 27. Slidably positioned in vertical slot 26 is the movable U-shaped gauge block 28.

The inner surface 29 of gauge block 28, by its relative distance from the end surface 30 of vertical slot 26 defines the actual size of the powder measuring volume 31. To increase or decrease the volumetric size of powder measuring volume 31 a micrometer control knob 32 is provided with a threaded pin 33 rotatably secured in and through cover plate 27. In micrometer control knob 32 is formed a large counterbore 34 connecting with a smaller counterbore 35 in pin 33 through which extends in a loose fit bolt 36 tightly secured to U-shaped gauge block 28 by threaded section 37. Between the

head 38 of bolt 36 and the inner surface of the large counterbore 34 is located a compression spring 39 which forces the end of threaded pin 33 into continuous contact with the surface of the U-shaped gauge block 28 so that when the micrometer control knob 32 is moved in or out by manually activated rotation the U-shaped gauge block 28 likewise moves in and out in the same proportion thus controlling the volumetric size of the powder measuring volume 31.

The top surface 40 of the top arm of U-shaped gauge block 28 is provided with a central guide mark 41 and numbered markings 42 at distances equal to one complete revolution of the micrometer control knob 32. Micrometer control knob 32 is also provided with numbered marking 58 which in conjunction with numbered markings 42 permit single or repeated gauging and selection of an identical powder measuring volume 31 or such varied volumetrically sized volumes as may be desired.

In the telescoping sleeve 17 a slot 13 is cut out shaped to surround and contact the sides of cover plate 27 and the top surface of both cover plate 27 and the U-shaped gauge block 28 so that any rotary movements of sleeve 17 are transmitted to the measuring unit 14 wherein a curved recess 44 in conjunction with the inner surface of telescoping sleeve 17 forms an annular slot 45 which rotates around stop pin 25 until shoulders 46 and 47 contact the sides of pin 25 thus limiting the rotational movement of measuring unit 14, sleeve 17 and the parts unitarily connected with it.

Superimposed on measuring unit 14 is intermediate charging block 15 which is held stationary in a fixed relative position with base 9 by means of stop pin 25 extending up into bore 48 of charging block 15. The secondary hopper or intermediate charging chamber 49 in charging block 15 performs dual functions in that when in position shown in Figure 8 it has been filled by the powdered material 59 flowing from transparent primary hopper 50 through the discharge port 51 in hopper retainer 16, while in the position shown in Figure 6 the powder 59 has discharged into the powder measuring volume 31. Also in the position shown in Figure 8 the powder 59 is discharging from powder measuring volume 31 through the discharge chamber 21 and port 22 into cartridge 23.

Hopper retainer 16 is provided with a counter bore 52 to tightly secure transparent primary hopper 50 with its cover 53 which contains the powdered material 59.

At a suitable location in hopper retainer 16 is provided a threaded bore 54. Through an aperture 55 in the telescoping sleeve 17 the threaded stud 56 of operating handle 57 is securely fastened in threaded bore 54 thus tying primary hopper 50, hopper retainer 16, telescoping sleeve 17 and measuring unit 14 into a unitary combination which oscillates, on manual operation of the handle 57, from the discharging position of the primary hopper 50 and the measuring unit 14, as shown in Figure 8, to the discharging position of the secondary hopper 49 and the charging position of the measuring unit 14, as shown in Figure 6.

It will be seen that in the operation of my powder measuring dispenser the contacting surfaces of the various parts rotate and act as valves to allow or stop the vertical flow of the powder by the superimposed registration of the various ports, measuring chambers and hopper. In particular it will be evident that the secondary hopper or intermediate charging chamber is filled with substantially the same quantity of material in each cycle of operations and this results in substantially the same weight of charging load each time and that when the secondary hopper or intermediate charging chamber due to the rotation of powder measuring area 31 is in the position opening into the powder measuring area 31 this substantially uniform and similarly weighted charging load insures during each cycle of operations the depositions of the substantially same precise quantity of powdered material in the measuring area 31.

In the actual operation of my device the primary hopper is first filled with the powdered material and the handle is turned as far as possible clockwise (see Fig. 7) to fill the secondary hopper or intermediate charging chamber and then the handle is turned as far as possible counterclockwise (see Fig. 5) to fill the volumetric measuring volume. When the handle is again turned to the limit in the clockwise direction the powdered material in the measuring volume is discharged into the cartridge held in the centering port below the discharge chamber while at the same time the intermediate charging chamber is being refilled from the primary material hopper. This sequence of operations is continued until all material is used or sufficient cartridges have been filled.

It will be understood that while the form of my powdered measuring dispenser herein illustrated and described is to be considered as a preferred embodiment of my invention, I do not limit myself to the precise constructions as disclosed, but reserve the right to resort to and substitute various modifications and changes in shape, size and arrangement of parts without departing from the spirit of my invention or the scope of my claims as described and indicated above and in the drawings and the following claims.

Having thus described my invention, I claim:

1. A powder dispenser comprising; a stationary base; a discharge chamber formed in said stationary base; a cartridge centering port provided in said discharge chamber; a micrometer reading measuring unit rotatably secured above said stationary base; a vertical slot provided in said measuring unit; a movable U-shaped volume adjusting valve slidably secured in said vertical slot; a rotatable micrometer knob attached to said measuring unit; said micrometer knob provided with indices whereby the degree of volume adjustment imparted by said movable U-shaped valve is calibrated; a secondary charging block secured above said measuring unit and attached to said stationary base; an intermediate powder hopper formed in said secondary charging block; a hopper retainer rotatably secured above said secondary charging block and attached to said adjustable micrometer reading measuring unit; a powder storage hopper releasably fastened in said hopper retainer; a tubular housing rotatably attached to said stationary base; said tubular housing unitarily assembled to said rotatable micrometer reading measuring unit and said rotatable hopper retainer and said powder storage hopper releasably fastened therein; a handle attached to said unitarily assembled tubular housing whereby a measured quantity of powder from said powder storage hopper is discharged through said cartridge centering port.

2. A powder measuring dispenser comprising: a stationary base having a downwardly directed discharge port formed therein; a movable block superposed upon said base and having therein a measuring chamber communicating with the upper and lower faces of said block; means for selectively adjusting the volume of said chamber; a stationary charging block superposed upon said movable block having formed therein a charging chamber communicating with the upper and lower faces of the charging block and having a volume greater than the maximum volume of the measuring chamber; a movable feed plate superposed on said stationary block having a passageway extending therethrough; a supply hopper superposed upon said feed plate; and means for moving said movable block and feed plate in unison between a charging position wherein said feed plate blocks downward flow of flowable material from the hopper to the charging chamber, the measuring chamber is aligned beneath the charging chamber and the base closes the lower end of the measuring chamber and a discharging position

wherein the measuring chamber is in communication with said discharge port and out of communication with the upper end of the charging chamber.

3. The invention as stated in claim 2 wherein said movable block and feed plate are rotatable relative to the base and charging block and including means limiting rotational movement of the movable block and feed plate.

References Cited in the file of this patent

UNITED STATES PATENTS

2,426,898	Paldani	Sept. 2, 1947
2,657,832	Rose	Nov. 3, 1953

FOREIGN PATENTS

729,881	France	May 3, 1932