Sept. 24, 1940. F. H. MALONEY 2,215,882

DISPENSING CONTAINER

Filed April 1, 1938

Fig. 1.

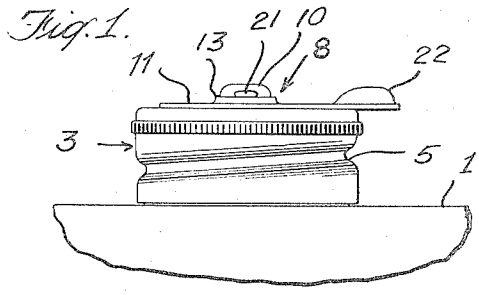


Fig. 2.

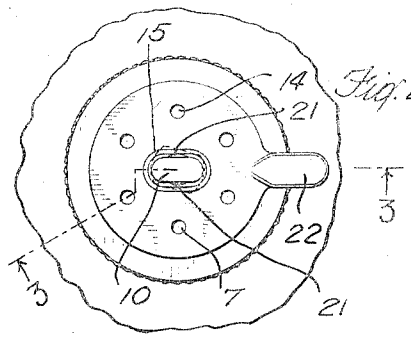


Fig. 3.

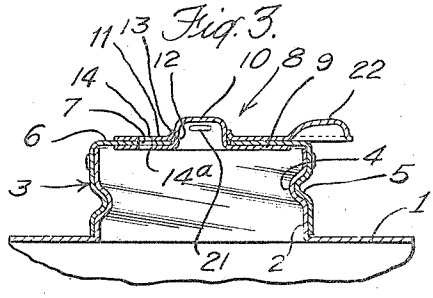


Fig. 4.

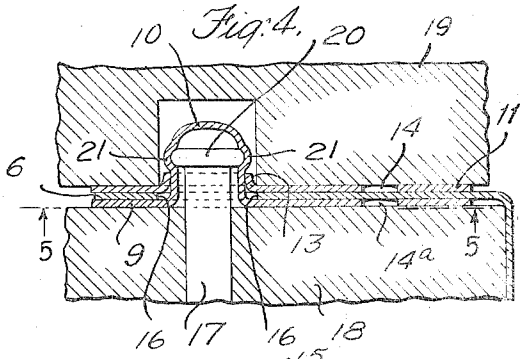


Fig. 6.

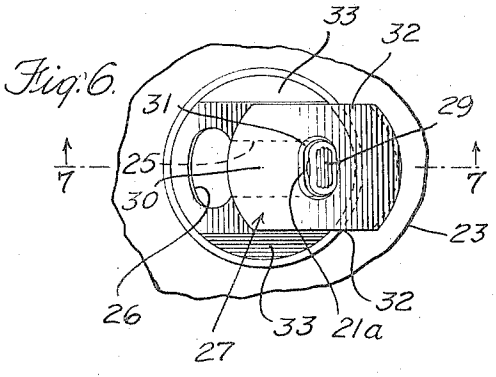
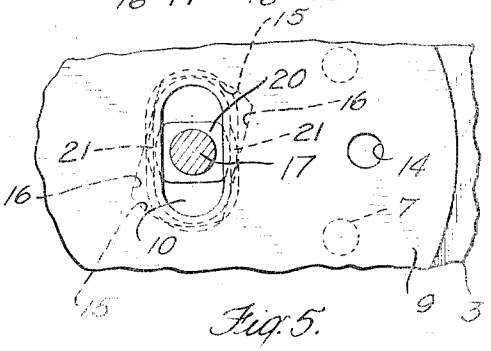


Fig. 5.



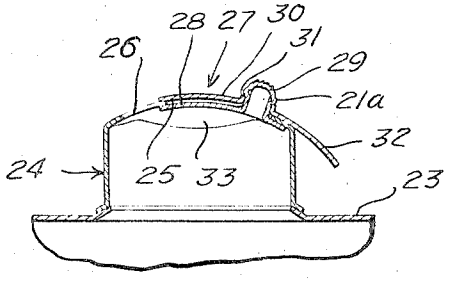


Fig. 7.

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DISPENSING CONTAINER

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Application April 1, 1938, Serial No. 199,327

11 Claims. (Cl. 221—62)

This invention relates to dispensing heads for powder containers and to a method which is useful in making such dispensing heads.

An important object of the invention is to provide a powder container or can including a dispensing plate fixed across the mouth of the can, together with a closure device comprising a pair of closure plates permanently associated in sliding engagement with the dispensing plate and directly interlocked with one another.

The invention, as broadly outlined above, comprehends either a construction in which the closure device formed by the interlocked plates is rotatably mounted with relation to the dispensing plate, or one in which the closure device is mounted for bodily sliding movement with reference to the dispensing plate.

The invention also has to do with the method of securing the interlocking of the closure plates. In accordance with one economical and rapid way of securing this interlock, one of the plates is formed with a hollow, elongated boss and the other with an aperture shaped to fit the boss. The boss is passed successively through the dispensing plate and the apertured plate and is then laterally expanded from within to form shoulders which overlie marginal areas of the apertured plate and which serve to draw the embossed and apertured plates together into gripping relation to the dispensing plate.

The constructions referred to present a very neat and attractive appearance, are sturdy and efficient in use, and can be manufactured very economically.

Other objects and advantages will hereinafter appear.

In the drawing forming part of this specification:

Fig. 1 is a fragmentary view in side elevation of a powder can embodying features of the invention;

Fig. 2 is a fragmentary plan view of the powder can illustrated in Fig. 1;

Fig. 3 is a fragmentary vertical, sectional view taken substantially on the line 3—3 of Fig. 2 looking in the direction of the arrows;

Fig. 4 is a fragmentary, vertical, sectional view illustrating a step in the assembling and uniting of the parts illustrated in Figs. 1 to 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4 looking in the direction of the arrows;

Fig. 6 is a fragmentary, plan view of another form of powder can embodying features of the invention; and

Fig. 7 is a fragmentary, sectional view taken on the line 7—7 of Fig. 6 looking in the direction of the arrows.

The powder can of Figs. 1 to 3 comprises a body 1 of any usual construction having a neck portion 2. A cap 3 is secured upon the neck 2 in any suitable manner, as for example, by forming interfitting threads 4 and 5 upon the neck and the cap respectively. The cap 3 includes a transverse top plate 6 which will be referred to as the dispensing plate since it is formed with a series of openings 7 through which the powder may be discharged.

A closure device 8 is permanently associated in sliding engagement with the dispensing plate 6. The closure device comprises an inner embossed plate 9 formed with a hollow elongated or ovate boss 10. The closure device also includes an outer apertured plate 11. The plate 11 is formed with an aperture 12 of appropriate shape to fit the boss 10, and includes a short upstanding flange 13 which extends completely around the aperture. The inner and outer plates 9 and 11 are formed with a series of openings 14 and 14a, these openings being maintained in constant registry by virtue of the interfitting relation of the boss 10 with the aperture 12. The dispensing plate is formed with a central aperture having end arcuate edges 15 which form arcs of a circle whose diameter is equal to the major dimension of the boss. The central aperture of the dispensing plate also has straight, parallel side walls 16 which are spaced from one another a lesser distance than the major dimension of the boss 10 and which serve by engagement with the boss to limit rotation of the closure device relative to the dispensing plate.

The closure device is assembled with the dispensing plate prior to the application of the cap 3 to the neck 2. As illustrated in Figs. 4 and 5, the inner embossed plate 9 is first set upon a tool 17 and a supporting block 18. The cap 3 is then set down around the block 18 with the aperture of the dispensing plate surrounding the boss 10. The outer, apertured plate 11 is then impaled upon the boss and the parts are pressed into assembled relation by a recessed plunger 19. The tool 17 is then turned to expand laterally portions of the boss 10 which project beyond the closure device 8, so as to form shoulders which overlie and press against the edge portions of the upstanding flange 13 of the outer plate 11. The tool 17 is made suitable for the described purpose by forming it with an elongated head or flange 20. The tool head is of greater length

than width, its width being such that it can be comfortably received between the side boundaries of the boss 10 but its length being greater than the transverse internal dimension of the boss 10 so that turning of the tool displaces the boss metal outwardly to form the overhanging shoulders 21.

By the described operation the inner and outer plates 9 and 11 are not only permanently interlocked with one another, but they are caused to press toward one another and, therefore, to grip the intervening dispensing plate 6.

The arcuate edges 15 of the aperture in the dispensing plate 6 cooperate to form a rotary bearing for engaging the ends of the boss 10. The side edges 16 of the aperture formed in the plate 6 serve to limit rotary movement of the closure device by engagement with the sides of the boss 10. The outer plate 11 is desirably formed with an operating handle 22 whereby the closure device may be rotated. Rotation of the closure device is effective to carry the openings 14 and 14a into and out of registry with the openings 7 of the dispensing plate 6. The fact that the inner and outer plates 9 and 11 are pressed into gripping relation with the plate 6 assures the provision of a double seal for the dispensing plate, that is to say, the seal formed between the dispensing plate and the inner plate 9, and the seal formed between the dispensing plate and the outer plate 11.

The cap 3, with the closure device 8 affixed to it in the manner described, is threaded on the neck 4 of the can.

In the form of can disclosed in Figs. 6 and 7, provision is made of a can body 23 of any usual construction to which a cap 24 is affixed. The cap comprises a dispensing plate 25 having a dispensing opening 26 formed in it. Here again a closure device 27 is permanently assembled with the cap 24 before the cap is affixed to the can body 23. In this instance, the cap is illustrated as having a flange at its lower end which may be soldered to the can body, although any other suitable means of attachment may be employed.

The closure device 27 comprises an inner imperforate plate 28 having a hollow boss 29 and an outer plate 30 which is imperforate save for the presence of a boss fitting aperture which is surrounded by a short upstanding flange 31. The relation of the boss 10 and the aperture of the plate 30, and the interlocking of the two plates, are all the same as has been described with reference to the plates 9 and 11. The closure device is slidable bodily with reference to the dispensing plate 25, and is shown in both Figs. 6 and 7 as in the open position.

The inner plate 28 is formed with straight side edges 32 which serve as guiding edges cooperating with flat inclined side flanges 33 formed on the dispensing plate 25. The edges 32 and the flanges 33 cooperate to guide the closure device 27 to and fro in a straight path. The dispensing plate 25 is formed with a guide slot whose width is equal to the major dimension of the boss 29. The walls of the slot and the ends of the boss 29 cooperate in guiding the closure device in the desired path.

The outer plate 30 is made long enough to cover the dispensing plate 25 from end to end. The inner plate 28 is substantially co-terminous with the outer plate at its forward end and serves to limit the movement of the closure member to a desired closed position. The opposite end of the plate 28 terminates considerably short of the corresponding end of the plate 30 and serves to limit the movement of the closure device to a desired open position substantially as illustrated in Figs. 6 and 7.

The plates 25, 28 and 30 are all desirably of curved form and are of substantially equal curvature.

The plates 25, 28 and 30 are assembled with one another and united in the manner illustrated in Figs. 4 and 5 and described in connection with those figures. It will be understood, however, that where curved plates are employed as illustrated in Figs. 6 and 7, the plate engaging face of the block 18 and plunger 19 would be correspondingly modified in shape.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desire to cover by Letters Patent is set forth in the appended claims.

I claim:

1. A powder container, including, in combination, a dispensing plate, and a closure device permanently associated in sliding engagement therewith, comprising inner and outer plates, the outer plate having a centrally disposed ovate opening therein, and the inner plate having an ovate boss which extends outward through the dispensing plate and the ovate opening of the outer plate and which projects beyond the outer plate, the projecting portion of said boss being formed with laterally extending shoulder portions to overlie the outer plate.

2. A powder container as set forth in claim 1 in which the overhanging shoulder portions of the boss stress the closure plates toward one another and into gripping relation to the dispensing plate.

3. A powder container as set forth in claim 1 in which the outer plate is formed with a short upstanding flange for surrounding and fitting the boss and for engaging beneath the overhanging shoulder portions of the boss.

4. A powder container as set forth in claim 1 in which the dispensing plate is formed with a central opening having opposed arcuate edges whose diameter is equal to the major dimension of the boss, to provide a rotary bearing for the boss.

5. A powder container as set forth in claim 1 in which the dispensing plate is formed with a parti-circular central opening whose ends form arcs of a circle having a diameter equal to the major dimension of the boss, to provide a rotary bearing for the boss, and with a series of powder discharging openings, and in which the inner and outer closure plates are formed with like series of powder openings in constant registry with one another and adapted to be moved into and out of registry with the openings of the dispensing plate by rotation of the closure device.

6. A powder container as set forth in claim 1 in which the dispensing plate is formed with a boss engaging guide slot, and with straight faced guide flanges, the inner plate being formed with straight side edges for cooperating with said guide flanges.

7. A powder container as set forth in claim 1 in which the dispensing plate is formed with a boss engaging guide slot, and with straight faced guide flanges, and with end flanges for limiting movement of the closure device, the inner plate being formed with straight side edges for cooperating with the guide flanges of the dispensing plate, and being substantially co-terminous with the outer plate at one end but terminating short of the outer plate at the other end, the long and

short ends of the inner plate serving respectively to limit movement of the closure device in closed and open positions.

8. A powder container as set forth in claim 1 in which the dispensing plate is formed with a boss engaging guide slot, and with straight faced guide flanges, the inner plate being formed with straight side edges for cooperating with said guide flanges, the inner plate, the outer plate, and the dispensing plate being all curved lengthwise and being of substantially equal curvature.

9. A device adapted for dispensing powder comprising the combination of a dispensing plate provided with an aperture having opposed arcuate end walls, and a second aperture spaced from said first aperture, inner and outer plates having aligned openings therethrough adapted to register with said second aperture, said inner plate being provided with an integrally formed hollow boss which extends through the dispensing plate and outer plate, and said boss having curved ends arranged to slidingly engage the arcuate end walls of the aperture in the dispensing plate, and means on said outer plate engaging said boss for preventing the outer plate from rotating with reference to the inner plate.

10. A device as set forth in claim 9 in which the means on the outer plate comprises an upturned flange formed integral with the outer plate and having its inner wall in engagement with the outer periphery of the boss.

11. A device adapted for dispensing powder comprising the combination of a dispensing plate provided with an aperture and an opening spaced from said aperture, inner and outer plates engaging the opposite faces of said dispensing plate and having aligned openings therethrough adapted to register with the opening in the dispensing plate, said inner plate having an integrally formed hollow boss extending upwardly through the aperture in the dispensing plate, the cross-section of said boss in a plane parallel to the dispensing plate being non-circular, means formed on said outer plate engaging the opposite sides of said boss to prevent rotation between said outer plate and said boss and a handle secured to said outer plate.

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