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W. W. PRICKETT ET AL

2,966,285

FEED VALVE OR GATE FOR A DISPENSER SHOE

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2 Sheets-Sheet 1

Fig. 1

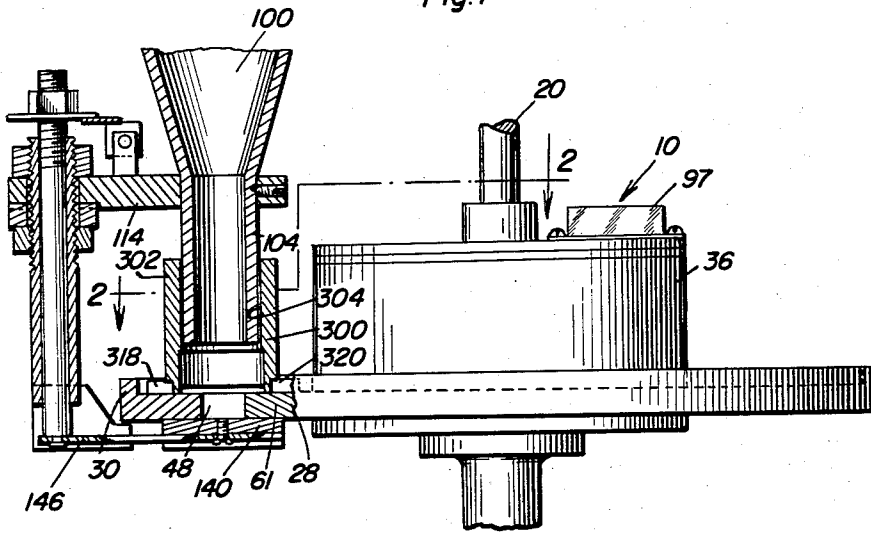


Fig. 4

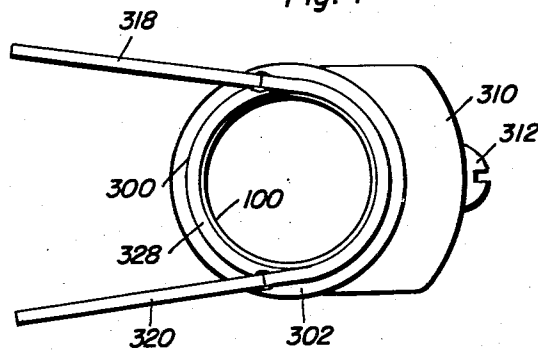
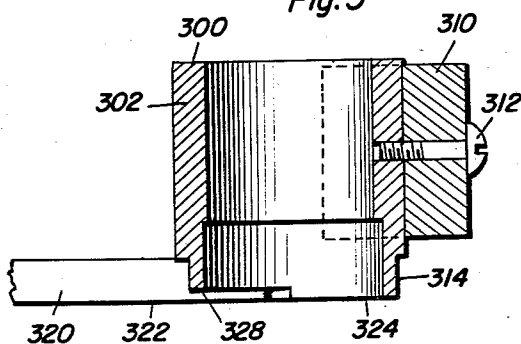


Fig. 5



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2 Sheets-Sheet 2

Fig. 2

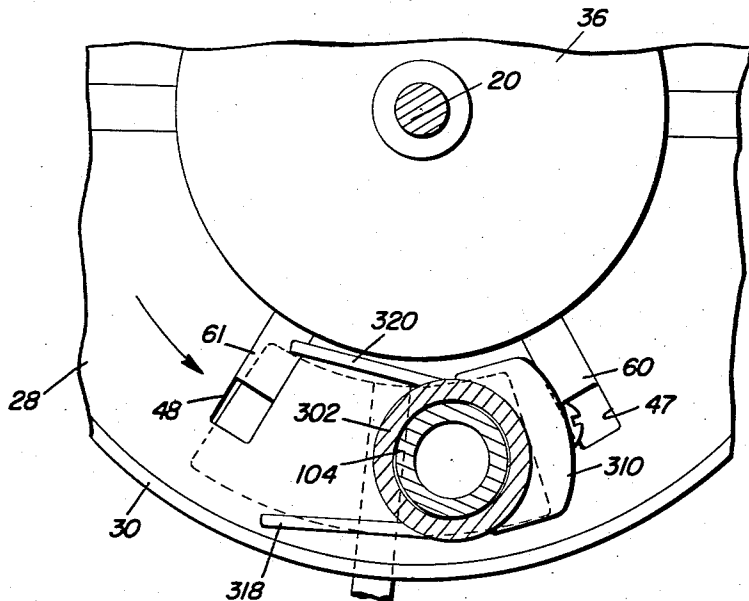
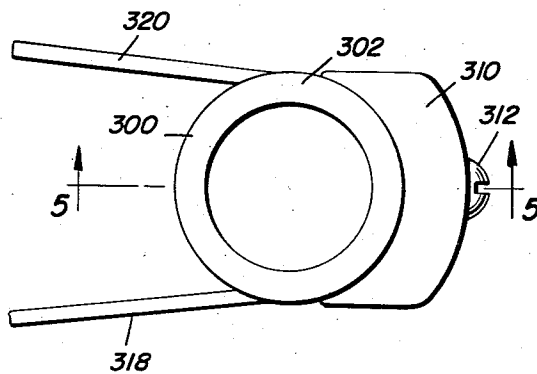


Fig. 3



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1

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FEED VALVE OR GATE FOR A DISPENSER SHOE

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7 Claims. (Cl. 222—345)

This invention relates to the art of dispensing and the application is a continuation-in-part of our co-pending application Serial No. 648,858, filed March 22, 1957, now Patent No. 2,833,443, for as much subject matter that is common between this application and the co-pending application.

The powdered material dispenser described in the referenced pending application operates exceedingly well, especially with fine material. Larger grain material, though, has presented a problem since the original collar or shoe has a tendency to override the coarse material.

The object of this invention is to provide a new dispensing shoe that has special application with powdered material dispensers and particularly the dispenser described in our copending application. The dispenser shoe operates more satisfactory than previous dispenser or corresponding structures in that it functions very well not only with finer materials but also coarse materials. Where the prior shoes had a tendency to override coarse material, the dispenser shoe of this invention does not.

More explicitly, an object of the invention is to provide improvements in dispensing apparatus by a new dispensing shoe that has forwardly extending scrapers and/or a powdered material entrance at the front part of the shoe which receives waste material on the dispensing disk or plate and enters this waste material back into the shoe. Therefore, the shoe does not raise up and ride over small mounds of the material that is being dispensed.

Other achievements of the invention such as increasing useful productivity and output of powdered material dispensing machines, smoothness and more dependable operation necessarily flow from the invention. All other objects and features of importance falling within the purview of the invention will become apparent to those skilled in the art in following the description of the illustrated form of the dispenser shoe.

Figure 1 is a fragmentary elevational view of a machine in accordance with the disclosure of the co-pending application, this powdered material dispenser having parts broken away in section to show the dispenser shoe of this invention.

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

Figure 3 is a top view of the new dispenser shoe.

Figure 4 is a bottom view of the new dispenser shoe.

Figure 5 is a sectional view taken on the line 5—5 of Figure 3.

In the accompanying drawings there is a powdered material dispensing machine or dispenser 10 which is essentially the same as the machine in the co-pending application. The machine 10 is designed such that each container passing beneath the dispensing plate or disk 28 receives a single charge of material which issues from hopper 100. Dispensing plate 28 has a peripheral, upstanding rim 30 and is rotated from power derived from shaft 20. The shaft enters casing 36 near inspection window 97 and propels dispensing plate 28. The dispensing

2

plate has a group of openings as at 47 and 48 within which sliding fingers 60 and 61 are movable to adjust the size of openings 47 and 48. Casing 36 has means for simultaneously operating each finger 60, 61 and all others like them, and the inspection window 97 is to provide vision within the casing 36 to see an indicator. The indicator reflects the size of openings 47, 48 and the others in dispensing plate 28.

An adjustable support 114 is for a hopper 100. Valve plate 140 is located beneath the dispensing plate 28 and is carried by supporting arm 146, and the valve 140 is timed to operate in unison with the remainder of the machine.

The sliding block or shoe 300 is constructed of a sleeve 302 with an open upper end and a dispensing passage made of a part of bore 304 that loosely accommodates the dispensing tube or neck 104 of hopper 100 so that the shoe 300 can work up and down on neck 104. A weight 310 is attached, as by a bolt 312 or some other fastener, to the rear part of the sleeve 302 to hold sleeve 302 ordinarily down on the upper surface of dispensing plate 28. Two arms 318 and 320 are welded or otherwise fixed to the lower part 314 of sleeve 302. Arms 318 and 320 have their lower edges 322 coplanar with the lower surface 324 of sleeve 302 and these lower edges and surfaces are adapted to ride on the top surface of dispensing plate 28. Arms 318 and 320 diverge slightly and open forwardly to receive the plate surface as dispensing plate 28 rotates.

As plate 28 rotates, small accumulations of powdered material on the top surface of the dispensing plate 28 are received between the arms 318 and 320. Since they act as guides for this material they direct the powdered material toward the shoe 300. The lower front part of sleeve 302 has an opening that constitutes an entrance 328 for this powdered material. The powdered material is received back into the shoe 300 through entrance 328. Entrance 328 is arcuate, occupying about 150° of the otherwise circular bottom surface of sleeve 302, and is preferably shorter than arms 318 and 320.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a dispensing machine for powdered material that has a dispensing plate provided with a plurality of openings and wherein the dispensing plate is adapted to rotate, the improvement comprising a dispenser shoe having an open lower end disposed on said dispensing plate and fixed against movement therewith, the open end of the shoe registering with the openings in said dispenser plate as the dispenser plate is rotated, and the lower end of the shoe having a forwardly facing recess therein to receive excess of the dispensed material and to return this excess into said open end of the shoe in response to rotation of the dispensing plate, a pair of arms attached to said shoe and extending forwardly therefrom, said arms being on opposite sides of said recess to guide the excess material into said shoe.

2. The improvement of claim 1 wherein there is a weight attached to said shoe and on the side of said shoe opposite to that side wherein the excess material entrance is located.

3. In a machine for dispensing powdered material comprising a horizontally mounted, circular, rotatable dispensing plate containing a plurality of arcuately spaced

3

openings adapted to receive a measured amount of powder and to dispense the same, and a vertically disposed dispensing shoe mounted above said dispensing plate with its lower open end adjacent the top surface of said plate, and positioned to register with each of said plate openings as the plate is rotated, the improvement comprising a horizontal opening at the bottom of the dispensing shoe extending through the forward face thereof and emptying into the hollow interior of said shoe, and a pair of scraping arms extending forward in a divergent manner from opposite sides of the said dispensing shoe opening with their bottom surfaces resting on the top surface of the said dispensing plate, so that when the plate is rotated the excess powdered material resting on the top thereof is collected and guided by the scraper arms through the horizontal opening and into the hollow interior of the dispensing shoe to join the powdered material about to be dispensed into the next plate opening.

4. The apparatus of claim 3, in which the top of the horizontal opening is high enough to admit any particles of material that are riding on the plate and low enough to prevent excessive outward flow of the powdered material from the shoe onto the plate when the plate is at rest.

5. In a machine for dispensing powdered material comprising a horizontally mounted circular rotatable dispensing plate containing a plurality of arcuately spaced openings adapted to receive a measured amount of powder and to dispense the same, and a vertically disposed hollow cylindrical dispensing shoe mounted above said dispensing plate with its lower open end adjacent the top surface of said plate and positioned to register with each of said plate openings as the plate is rotated, the improvement comprising a semi-circumferential inlet to the hollow interior of the shoe positioned at the bottom end of the forward face thereof, with a height sufficient to admit any particles riding on the plate and low enough to prevent excessive outward flow of the powdered material from the shoe onto the plate when the plate is at rest, and a pair of straight scraping arms extending forward in a divergent manner from opposite ends of said inlet and with their bottom surfaces resting upon the top surface of the dispensing plate, thereby providing forward and lateral support for the dispensing shoe as well as means of collecting the excess powdered material from the top of the rotating plate and guiding this collected material back into the dispenser shoe via the inlet thereto.

4

6. A dispensing shoe for use in a machine designed to dispense powdered material, comprising: a hollow, elongated body having open upper and lower ends and adapted for upright disposition above a rotatable dispensing plate, said upper end adapted for receiving powdered material from a reservoir thereof and said open lower end adapted for dispensing this powdered material into receptacles therefor; a lateral opening into the hollow interior of the body at the bottom of the forward face thereof; and a pair of scraping arms extending forward in a substantially divergent manner from opposite sides of the said opening, with their bottom surfaces adapted to rest on the top surface of the said dispensing plate, so that when the plate is rotated, the excess powdered material resting on the top thereof is collected and guided by the scraper arms into the horizontal opening.

7. A dispensing machine shoe for use in dispensing powdered material, comprising: an elongated tubular body having open upper and lower ends and adapted for vertical disposition on top of a rotatable dispensing plate, with the said lower end adjacent the top surface of said plate, and with the said upper end adapted for receiving powdered material from a reservoir thereof and guiding this material into the hollow interior of the said body, and with the said lower end adapted for dispensing this material into containers therefor; a semi-circumferential inlet to the hollow interior of the body positioned at the bottom end of the forward face thereof, with a height sufficient to admit any particles riding on the plate and low enough to prevent excessive outward flow of the powdered material from the shoe onto the plate when the plate is at rest; and a pair of straight scraping arms extending forward in a substantially divergent manner from opposite ends of said inlet and with their bottom surfaces resting upon the top surface of the dispensing plate, thereby providing forward and lateral support for the dispensing shoe as well as means of collecting the excess powdered material from the top of the rotating plate and guiding this collected material back into the dispenser shoe via the inlet thereto.

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