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PORTABLE FILLING DEVICE

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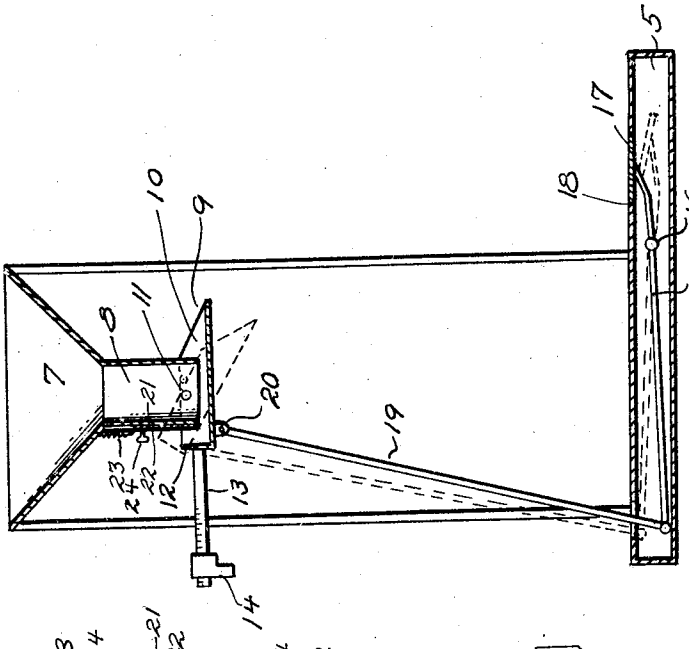

Fig. 2.

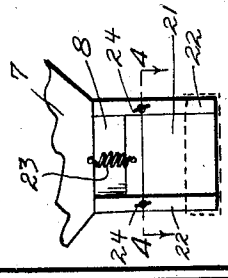

Fig. 3.

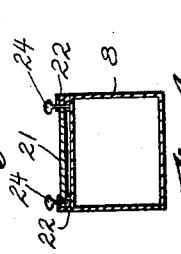

Fig. 4.

Fig. 1.

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UNITED STATES PATENT OFFICE

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PORTABLE FILLING DEVICE

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This invention relates to improvements in portable devices for filling receptacles with fluent material, of that type in which a hopper is supported in an elevated position on a movable base and in which an adjustable chute is provided to control the discharge of the material from the spout of the hopper. It has for its object the provision of a pedal-controlled mechanism for actuating the chute so that the hands of the operator are free to hold the receptacle to receive the discharge of the material from the spout.

The invention consists in the novel construction, combination and arrangement of parts hereinafter described, pointed out in the appended claims and illustrated by the accompanying drawings.

In the drawings, in which similar reference characters designate corresponding parts,

Figure 1 is a perspective view of a filling device embodying the invention,

Figure 2 is a longitudinal sectional view of the device,

Figure 3 is a detail view, showing the spring-pressed slide mounted on the hopper spout, and

Figure 4 is a transverse section on the line 4—4 of Fig. 3.

Referring to the drawings in detail, 5 designates the base on which the device is mounted. This base is adapted to be moved along the floor and is of considerable weight to maintain the device in an upright position. Secured on the base are the four uprights 6 in quadrilateral arrangement. Seated between these uprights is the hopper 7, rectangular in cross-area, with the corners of its rim secured to the upper ends of the uprights. The hopper has a downwardly discharging spout 8, to which is pivoted the chute 9 normally closing the outlet of the spout. This chute comprises a flat bottom and side walls 10 overlapping the side walls of the spout; pivots 11 extend through the adjacent walls to provide a horizontal tilting axis for the chute, there being sufficient space between the lower end of the spout and the bottom of the chute to permit tilting movement of the latter. The width of the chute is such as to provide a close fit between its side walls and the opposite sides of the spout, but the length of the chute is considerably greater than the corresponding dimension of the spout so that the ends of the chute project beyond the front and rear sides of the spout with the chute in a horizontal position. The front end of the chute is open and its rear end is closed by the wall 12. Projecting from the rear end of the chute is the notched arm 13 in longitudinal extension of the chute. Slidable on this arm is the weight 14 provided with a lip to engage the notches of the arm to hold the weight against accidental displacement on the bar. The weight is adjusted on the bar so that it normally tends to tilt the chute on its axis so that the forward part of the bottom of the chute contacts with the lower edge of the front wall of the spout.

The pedal mechanism for actuating the chute comprises the lever 15 pivoted at 16 in the base 5, which is suitably recessed to receive the lever and to permit the required play of the same. On one end of the lever is the foot plate 17 registering with an opening 18 in the top of the base. In its normal position the foot-plate is approximately flush with the top of the base. The other end of the lever is connected by the link 19 with the lug 20 projecting from the under side of the chute to the rear of pivotal axis 11 of the chute. When the pedal is depressed, the lever and link are actuated to elevate the rear end of the chute against the load of the weight 14, as indicated by dotted lines in Fig. 2. The elevation of the rear end of the chute declines the front end thereof to open the mouth of the spout 8 and to provide a discharge trough leading downwardly and outwardly from the mouth of the spout. When the pedal is released, the weight returns the chute to its normal position to close the spout.

The operation of the filling device is as follows: The weight 14 is adjusted on the arm 13 to maintain the chute 9 in a position to close the spout 8. To accomplish this purpose, the chute may be horizontally positioned or it may be inclined so that its bottom contacts with the lower edge of the front

wall of the spout. With the chute so positioned, the fluent material—grain, for instance—is fed into the hopper. The material flowing down the spout is trapped and held by the chute, some of it flowing through the narrow openings between the bottom of the chute and the lower edges of the front and rear walls of the spout when the chute is positioned horizontally. But little material escapes through these narrow openings and collects on the chute adjacent to the spout to remain there until the chute is tilted to discharge the hopper. For ordinary fluent material, the horizontal position of the chute is sufficient to trap the mouth of the spout, but with more fluent material the chute should be upwardly inclined toward its front to contact with the lower edge of the front wall of the spout. This inclination of the chute would open to a wider extent the opening between the chute and the lower edge of the rear wall of the spout, but the end wall 12 of the chute would dam the outflow of the material through the wider opening.

With the bag in position, the operator presses the pedal 17 downward with his foot and through the intervening mechanism the chute is declined at its front end to provide an open trough from the mouth of the spout into the bag. When the bag is filled, the operator removes his foot from the pedal and the weight 14 returns the chute to its normal position to close the spout. By employing the pedal mechanism to control the chute, both hands of the operator remain free to handle the bag.

In handling lumpy material, coal larger than pea size for instance, the lumps may become wedged between the lower edge of the rear wall of the spout 8 and the bottom of the chute 9 so that the chute is prevented from turning on its pivots 11. To prevent this, a slide or gate 21 (Figs. 3 and 4) is mounted on the rear wall of the spout. This slide is movable in the opposite guides 22 attached to the vertical edges of the rear wall of the spout. A spring 23 under compression normally tends to force downward the slide 21. This spring is attached at its ends respectively to the upper part of the slide and the lower part of the hopper 7. To hold the slide in an elevated position, pins 24 are inserted in transverse holes in the guides 22 to engage corresponding holes in the slide with the latter in a raised position.

When the apparatus is used in handling lumpy material, the pins 24 are withdrawn from the slide or gate 21 and the latter is forced downward by the spring 23 to contact with the chute 10. As the chute rocks on its pivots 11, the slide reciprocates in the guides 22, but is maintained in contact with the chute by the spring 23. With the slide operating in this way, it prevents the lumps from entering between the chute and the rear wall of the spout to interfere with the rocking movement of the chute. When the apparatus is used in handling finely divided material, the slide is raised to clear the chute and is held in an elevated position by the pins 24, which are adjusted for the purpose.

What I claim is:—

1. In a portable filling device, the combination with a vertical spout, of a chute pivotally mounted beneath the outlet of the spout, means normally tending to maintain the chute in a horizontal position, means operable to turn the chute to dump the same, a slide movably mounted on a side of the spout, and means normally tending to press the slide to contact with the chute during movement of the latter.

2. In a portable filling device, the combination with a vertical spout, of a chute pivotally mounted beneath the outlet of the spout, means normally tending to maintain the chute in a horizontal position, means operable to turn the chute to dump the same, a slide movably mounted on a side of the spout, a spring normally tending to press the slide to contact with the chute during movement of the latter, and means operable to hold the slide in a raised position against the action of the spring.

3. In a portable filling device, the combination with a movable base, of a hopper provided with a downwardly extending spout, means for supporting the hopper in an elevated position on the base, a chute comprising an elongated flat bottom and longitudinal sides overlapping opposite sides of the spout, alined pivots respectively connecting the mutually overlapping sides of the chute and spout, said pivots providing a transverse axial support for the chute beneath the mouth of the spout with the ends of the chute respectively projecting beyond the front and rear of the spout, the rear end of the chute being closed by an end wall and the front end of the chute being open to provide a discharge outlet, an arm extending from the rear of the chute in longitudinal extension thereof, a weight slidable on the arm to maintain the chute in a position to close the spout, a lever pivoted in the base and carrying a pedal at one end, and a link connecting the other end of the lever with the chute, the depression of the pedal operating through the lever and link to actuate the chute against the action of the weight to open the spout to discharge the hopper.

4. In a portable filling device, the combination with a movable base, of a hopper provided with a downwardly extending spout; a chute comprising an elongated flat bottom and longitudinal sides overlapping opposite exterior sides of the spout, alined pivots connecting the mutually overlapping sides of the chute and spout to provide an axial support for the chute beneath the mouth of the spout

with the bottom of the chute spaced below the end of the spout and with the ends of the chute respectively projecting beyond the front and rear of the spout to retain part of the discharged material to close the space between the lower end of the spout and the bottom of the chute when the latter is in a horizontal position, the rear end of the chute being closed by an end wall to provide a pocket to the rear and below the spout to trap discharged material to close the spout when the chute is depressed at its rear end, the front end of the chute being open to provide a discharge outlet when the forward end of the chute is depressed, and adjustable loading means normally tending to maintain the chute in a position to close the spout; and mechanism including a pedal mounted in the base and connected with the chute, said mechanism being operable by the pedal to actuate the chute against the action of the loading means to open the spout to discharge the hopper.

5. In a portable filling device, the combination with a movable base having a longitudinal recess, of a hopper provided with a downwardly extending spout, means for supporting the hopper in an elevated position on the base to admit a receptacle on the base beneath the hopper, a chute pivoted to the spout to control the outlet thereof, means loading the chute to maintain normally the chute in position to close the spout, a lever pivoted to the base within the longitudinal recess therein, a link connecting one end of the lever to the chute, and a pedal on the other end of the lever normally positioned flush with the top of the base, the depression of the pedal operating through the lever and link to actuate the chute to open the spout to discharge the hopper into the receptacle positioned on the base.

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