

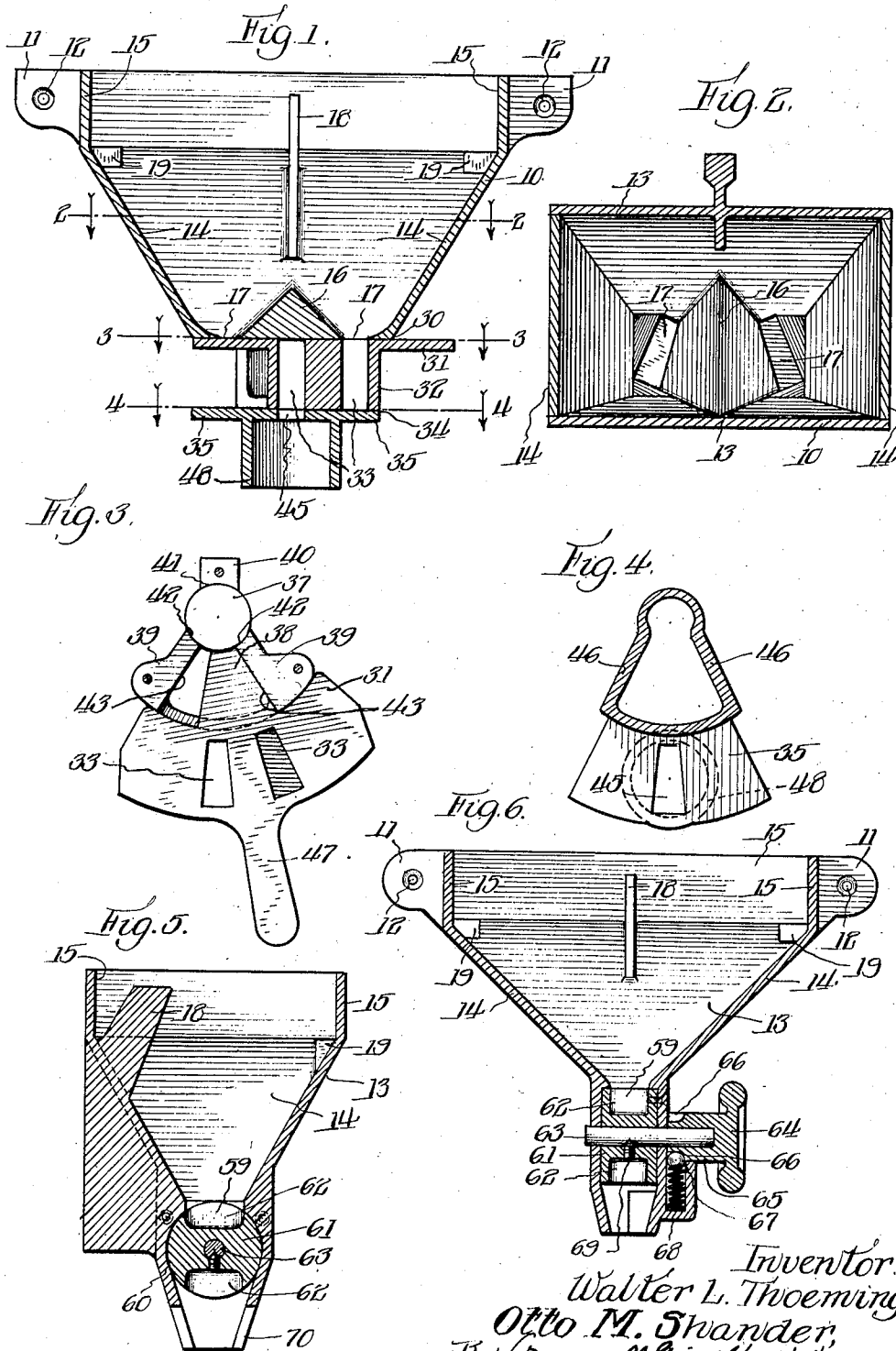
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W. L. THOEMING ET AL

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DISPENSING DEVICE

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Inventor:
Walter L. Thoenig,
Otto M. Shander,
By Cromack, Gust & Ward Attys.

UNITED STATES PATENT OFFICE

WALTER L. THOEMING AND OTTO M. SHANDER, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNORS TO Z-RO SPECIALTIES COMPANY, OF CHICAGO HEIGHTS, ILLINOIS, A CORPORATION OF ILLINOIS

DISPENSING DEVICE

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This invention relates to a dispensing device. It more particularly relates to a device which is adapted to dispense small quantities of a readily flowable material intermittently upon manual operation.

An object of this invention is to provide a dispensing device which is adapted to cooperate with the containers of the material to be dispensed so as to open the containers automatically when such containers are to be emptied into the dispensing device.

A further object of this invention is to provide a dispensing device which is adapted to hold the container for the materials to be dispensed in such a position that such container will act as a reservoir for the material.

Other objects will appear during the course of the following description.

In a preferred form of the dispensing device, an upper chamber is provided which is adapted to hold the container. This chamber is preferably designed to hold the container in upright position in which position the material therein will readily flow into the dispensing chamber of the device. The dispensing chamber of the device is positioned below the chamber adapted to hold the container and is preferably of decreasing diameter downward. It may take the form of either a downwardly pointing truncated cone or pyramid. Attached to the wall of one of the chambers is a projection or finger which is adapted to open the bottom or top of the container when it is positioned in the upper chamber of the dispensing device. This finger is ordinarily adapted to cooperate with a scored or weakened portion in the bottom or top of the container which is usually of paper. The projection or finger is of such construction that it will make a sufficiently large opening in the container to permit the necessary amount of material to flow out into the dispensing chamber of the device. Positioned below the dispensing chamber is a manually operated device which is adapted to remove a small portion of the material in the dispensing chamber and then conduct it to a discharge spout where it may be utilized.

The drawing shows one embodiment of the invention to which the invention is by no means restricted.

Figure 1 represents a vertical sectional view of one form of the dispensing device;

Figures 2, 3 and 4 represent longitudinal sectional views upon the lines 2-2, 3-3 and 4-4 of Figure 1; and

Figures 5 and 6 represent vertical sectional views of a form of the dispensing device with a modified manually operated device.

In Figure 1 the dispensing device is shown with a downwardly pointed truncated pyramidal chamber 10 which is rectangular in horizontal cross section. This chamber is the dispensing chamber. The chamber is provided on its longest sides with downwardly and inwardly sloping walls 13 and on its shorter sides with downwardly and inwardly sloping walls 14. Connected with the top and the widest portion of the dispensing chamber 10 is a rectangular prismatic chamber 15 provided with vertical walls. This chamber is adapted to hold in upright position a prismatic container of substantially rectangular horizontal cross-section. Projecting from the outside walls of this container holder chamber are the ears 11 which are provided with openings 12 by means of which the dispensing device may be attached to a suitable wall or other means of support.

Attached to the back wall 13 of the dispensing chamber is the projection or upwardly extending finger 18 which extends up into the container-holding chamber. The finger 18 is adapted to penetrate the bottom or top of the container, according to which side is placed in the container-holding compartment, either by tearing the same or by cooperating with a scored portion therein. In the embodiment shown the projection or finger 18 preferably cooperates with a scored portion in the top or bottom of the container. It will be noted that the finger 18 is long and narrow and is of decreasing dimension upwardly. Due to its shape and position, it is adapted to assist the side walls of the holding portion and the stops in holding the material container in position and preventing its

displacement. Due to the fact that it extends both inwardly and upwardly, it will not close up or block the opening which it causes in the dispensing side of the material container. The stops 19 are positioned on the walls of the dispensing chamber 10 at the point where it joins with the container-holding chamber 15 and they are adapted to limit the downward movement of the container. The retaining and dispensing chambers are shown as being rectangular in horizontal cross-section, but it is obvious, of course, that they can take other shapes such as that of a hexagon, square, circle, ellipse, etc. depending upon the type of container which it is desired to position in the chamber 15.

In the embodiment of the invention shown in Figures 1, 2, 3, and 4, the bottom of the dispensing chamber 10 is provided with two openings 17 which are separated by the upwardly projecting ridge 16 which is adapted to direct the flow of the downwardly flowing material toward either one of the openings 17. The exit faces of these openings 17 are flattened so that the upper surface of the contact strip 31 of the manually operated dispensing element may cooperate therewith. The manually operated dispensing element is provided with a central portion 32. Through the upper portion 31 and central portion 32 penetrate the conduits or openings 33. These openings 33 are adapted to cooperate with the openings 17 but are positioned a much shorter distance apart. The openings 33 are separated by about half the distance as are the openings 17. The bottom of the lower portion 32 of the manually operated dispensing element is also flat so that it will cooperate with the upper flattened surface or piece 35 of the spout member. This spout member is provided with a central opening 45 which extends through the contact piece 35 and which communicates with the spout 48 from which the dispensed material may be collected for utilization.

The reciprocating dispensing element is provided with a radial arm 38 (see Figure 3) which is attached to a cylindrical piece 37. The piece 37 is held between the lateral stops 39 and the rear piece 40. These two pieces 39 and 40 are provided with arcuate surfaces 41 and 42 which are adapted to contact with pivot element 37 of the reciprocating dispensing device. The radial arm 38 is stopped in its reciprocating motion by the surfaces 43 of the lateral pieces 39. To the rear of the spout element 45 is attached the frame element 46 (see Figure 4) to which are attached the lateral pieces 39 and the rear piece 40. The dispensing element may be reciprocated by the handle 47.

It is apparent that when one of the openings 33 is below one of the openings 17, the other opening 33 is above the opening 45 and

is discharging its contents. These openings 33 are made of sufficient size to contain the desired amount of flowable material which is to be dispensed intermittently. As the handle 47 is moved back and forth reciprocating the dispensing device, the pockets 33 will alternately be below an opening 17 and above an opening 45, at the end of each stroke. The stops 43 are so placed and the distance between the buckets 33 is so proportioned that when one pocket 33 is under the opening 17 the other pocket 33 will be above the opening 45 and positioned centrally below the separating member 16.

In the embodiment shown in Figures 5 and 6, the bottom of the dispensing chamber 10 is shown provided with an opening 59 which is adapted to cooperate with the dispensing element. This dispensing element is positioned, and rotates within, a hollow cylindrical portion 60 above the spout 70 of the dispensing device. The dispensing element in this embodiment of the invention is circular and is provided in its central portion with two opposite pockets 62. These pockets 62 are adapted to cooperate with the opening 59 and with the open spout 70 alternately. When one pocket 62 is filled or being filled from the opening 59, the other is empty or emptying into the spout 70. The dispensing device is attached to a central shaft 63 which is provided with handle 64. The handle 64 is provided with a sleeve 65 which is attached to the shaft 63 and which is also provided with two radially opposite notches 66. The ball 67 is forced into these notches at each half turn of the handle 64 by means of the spring 68. This affords a means of causing the dispensing device to operate intermittently upon manual operation. The shaft 63 is attached to the rotatable pocket-containing member 61 by the set screw 69.

In the embodiments of the invention shown, the container of the material to be dispensed is adapted to be placed in inverted position in the chamber 15. When placed in inverted position in this chamber, the finger 18 will perforate what is ordinarily the inverted top of the box and will allow the material to be dispensed to flow out of the dispensing chamber 10. When one of the pockets 33 is placed below an opening 17 in the embodiment shown in Figures 1 to 4 or when one of the pockets 62 is placed beneath the opening 59 in the embodiment shown in Figures 5 and 6, such bucket will be filled with the material contained in the dispensing chamber 10. Then the manually operated element may be moved so that the pocket 33 or 62, now filled with the material to be dispensed, will be moved over to a position where it will empty into the discharge spouts 48 or 70 and allow the material to fall out of the pocket into the hand

or into another container positioned below such spout. When this is done, the other pocket 33 or 62 is moved into position below the other opening 17, in Figures 1 to 4, or below the same opening 59 in Figures 5 and 6 permitting a flow of the material in the dispensing chamber 10 into such pocket. The first pocket after it has emptied may be moved back to the opening 59 to be refilled while the second pocket 33 which was being filled while the first pocket was being emptied is now moved to a position where it will discharge its contents into the discharge spout 48 or 70.

If a square container is to be used instead of a rectangular one, then chamber 15 will be made square in horizontal cross-section. If the container is circular or elliptical in cross-section, the chamber 15 may be constructed so as to be of similar shape in horizontal cross-section. The device of the present invention is adapted to dispense material such as soap flakes or powder, salt, sugar, chemicals, etc. It is especially valuable in connection with the dispensing of a powder or flakey material in which there is a strong tendency toward waste. The dispenser is preferably used in connection with a vertical paper container, one end of which has a weakened or scored portion which will be broken by the inwardly projecting finger 18 when the container is placed in the top of the dispenser.

What is claimed is:

1. In a dispensing device for flowable solid material, a vertical chamber having side walls arranged to engage and hold the top of an inverted container for flowing material, stop means adapted to limit the downward movement of the container within the vertical chamber, another chamber of downwardly decreasing cross sectional area communicating with said first mentioned chamber, means at the bottom of said second mentioned chamber for permitting the passage of predetermined quantities of material out of the chamber, and a projection attached to the wall of said second chamber and extending upwardly into the first chamber and being adapted to penetrate the dispensing side of the container and allow the material to flow into the second chamber, said projection being long and narrow, of upwardly decreasing cross section, and being positioned at an angle to the dispensing side of the container so that it will not block the opening which it causes in the side of the container and so that it will assist in holding the container in position in the vertical chamber.

2. In a dispensing device for flowable solid material, a holder portion with vertical walls for containing when in upright position one end of a container for the material to be dispensed, stop means adapted to limit the

downward movement of the container within the holder, a downwardly pointing frusto-pyramidal chamber communicating with said holder portion and a finger rigidly attached to the structure projecting upwardly above the stop means so as to perforate the container when placed in the holder portion and allow the material to flow into the pyramidal chamber.

3. In a dispensing device for flowable solid material, a holder having a horizontal top and provided with vertical walls defining a container holding chamber, a dispensing chamber communicating with the holding chamber and provided with inwardly and downwardly sloping walls, stops at the junction of the holding chamber and the dispensing chamber to uprightly position above the dispensing chamber a container for material dispensed so dimensioned as to contact closely the walls of the holding chamber while resting on said stops, and a finger rigidly mounted on the side of the dispensing chamber, projecting upwardly and inwardly into the holding chamber to cause perforation of the dispensing side of the container when the container is positioned within the holder so that material may readily flow therefrom into the dispensing chamber.

4. In a dispensing device for flowable solid material, a holder portion with vertical walls for containing one end of a container for the material to be dispensed, a dispensing chamber communicating with the holder portion, said dispensing chamber having a downwardly decreasing cross sectional area, stop means adapted to limit the downward movement of the container within the chamber, and a finger rigidly attached to the structure and projecting upwardly above the stop means to perforate the container when placed in the holder portion.

5. In a dispensing device for flowable solid material, a holder portion with upright walls adapted to embrace the dispensing end of a container and hold it in inverted position, stop means to limit downward movement of the container within the holder, a dispensing chamber below the holder portion, a finger rigidly connected to the dispensing chamber and projecting upwardly above the stop means to open a container inserted in the holder portion, and a manually operated slide at the bottom of the dispensing chamber adapted to discharge predetermined quantities of material from the dispensing chamber.

6. In a dispensing device for flowable solid material, a holder portion with vertical walls for containing one end of a container for the material to be dispensed, a dispensing chamber communicating with the holder portion, said dispensing chamber having a downwardly decreasing cross sectional area, stop means adapted to limit the downward movement of the container within the chamber, and

a projection of upwardly decreasing cross section rigidly attached to the structure and projecting above the stop means to penetrate the dispensing side of a container, said finger
5 being angularly positioned with respect to the structure and to the dispensing side of a container positioned therein to avoid blocking the opening caused by perforation of the container in positioning the same within the
10 holder portion.

In testimony whereof we have hereunto subscribed our names.

WALTER L. THOEMING.
OTTO M. SHANDER.

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