

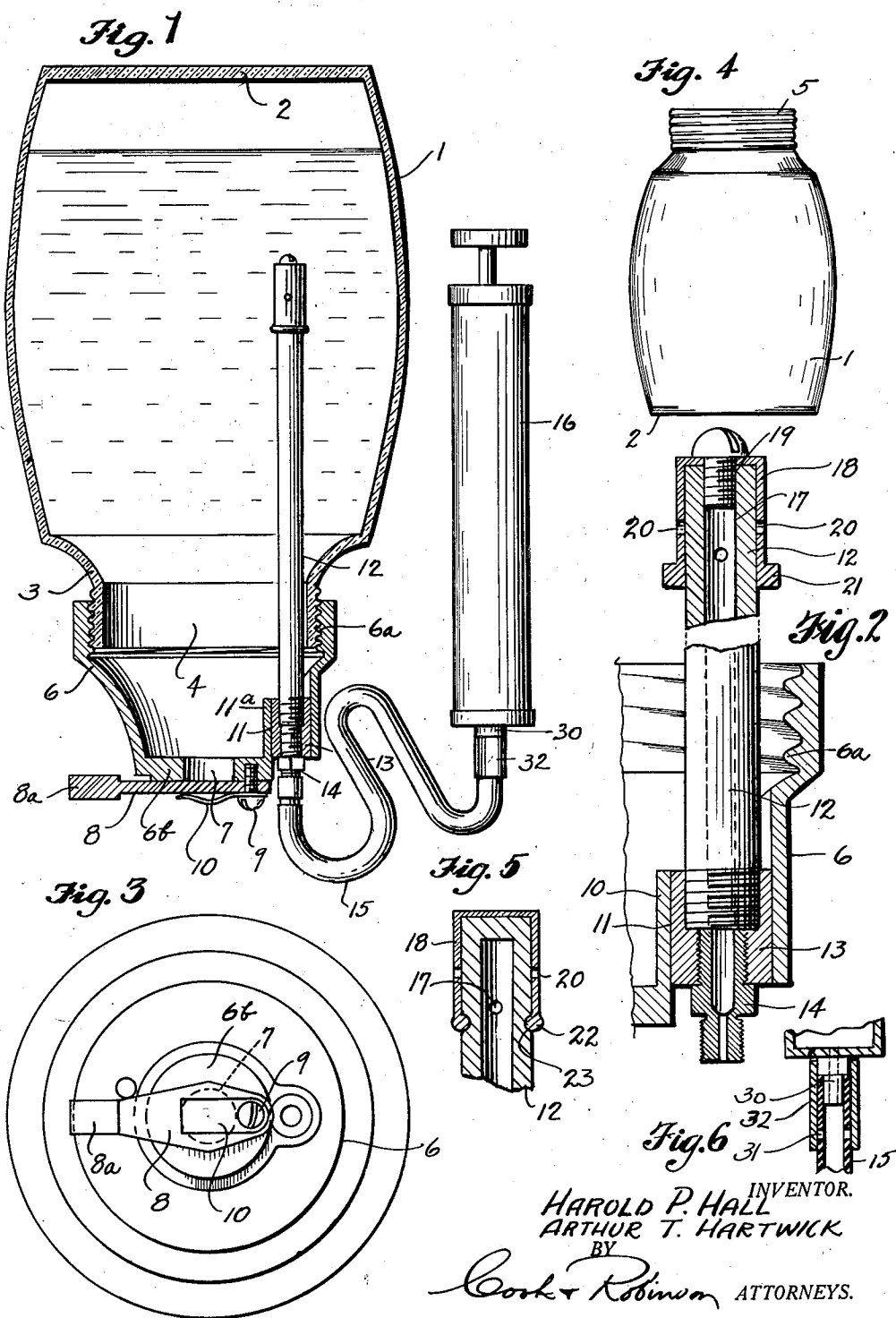
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BULK FOOD DISPENSER

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BULK FOOD DISPENSER

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6 Claims. (Cl. 221-77)

This invention relates to improvements in dispensing devices as employed for semi-fluid materials, such as peanut butter, mayonnaise, and similar substances. More particularly the present invention is in the nature of an improvement over the device of my co-pending application, filed on February 27, 1934, under Serial No. 713,098.

The device of the copending application, above mentioned, comprises a closed container terminating at its lower end in a neck portion providing an outlet to which a cap, formed with a valved outlet, is applied and having a shaft extending lengthwise within the container and through an opening in its upper end wall, with a crank arm at its upper end and a propeller disk at its lower end located within the cap, whereby the contents of the container may be forcibly ejected when the discharge opening is uncovered and the shaft is rotated.

While the prior device is satisfactory insofar as its general purpose and use is concerned, it is not satisfactorily economical to manufacture due to the requirement of providing the containers or glass jars with top end openings for the shaft and with suitable bushings for mounting the shaft. Furthermore, it is quite an item of expense to equip the jars with the propeller disks, shafts, and crank arm, and difficulty is sometimes experienced in packing for shipment or transportation.

In view of the various items of expense in manufacturing and difficulties of handling the device as heretofore manufactured, it has been the principal object of the present invention to provide a dispensing device of a similar kind but eliminating therefrom the undesirable features that are incident to use of the shaft and propeller, and substituting in their stead devices for applying air under pressure into the container as the means for effecting a forcible ejection of material, thus making possible the use of glass jar containers of standard construction, and materially reducing the cost of construction and the difficulties of shipping heretofore experienced.

More specifically stated, the present invention resides in the provision of a dispensing device comprising a closed container terminating in a downwardly opening neck portion to which a cap with a valved discharge opening is applied, also including an air pump that is connected to deliver air through a flexible connection to a tube extending upwardly through the cap and into the container, so that a pneumatic pressure

may be built up to aid or cause a ready dispensing of the contents from the container when the discharge opening is uncovered.

Another object of the invention resides in the specific details of construction of a check valve to be used at the upper end of the air delivery tube within the container whereby material from the container is prevented from being drawn into the pump. Also in the provision of a pressure relief valve to prevent a detrimental, over pressure in the container.

Other objects of the invention reside in the details of construction and combination of parts, and in their mode of operation, as will hereinafter be described.

In accomplishing these and other objects of the invention, we have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawing, wherein—

Fig. 1 is a central, vertical section of a dispensing device constructed in accordance with the present invention.

Fig. 2 is an enlarged, sectional detail of the air tube mounting.

Fig. 3 is a lower end view of the device.

Fig. 4 is a view of the container as filled, and closed for shipment or storage.

Fig. 5 is a sectional detail illustrating a modified form of valve.

Fig. 6 is a sectional detail of pressure relief valve.

Referring more in detail to the drawing—

1 designates the container for the material to be dispensed. It is most desirable that the container be of glass, but it might be of any other suitable material, and preferably transparent so that it will satisfactorily disclose its contents to view. In the present instance, the container is a standard form of glass jar, supported, when in use, in an inverted position, as shown in Fig. 1. It has a flat upper end wall 2 and at its lower end has a neck portion 3 providing a restricted discharge opening 4. The neck portion is exteriorly threaded and during transportation and storage may be closed by the application thereto of any of the ordinary types of screw caps, as at 5 in Fig. 4, but when in use has a novel form of dispensing cap 6, as shown in Figs. 2 and 3, threaded thereto.

This cap 6 is cup-shaped and is interiorly threaded about its upper end as at 6a and tapers slightly in a downward direction to a lower end wall 6b formed centrally with a discharge opening 7 over which opening a closure plate 8 is

located. The plate 8 is held in place against the under side of wall 6b by an attaching screw 9 through one end thereof and threaded into the wall. The plate may be swung about the screw 5 by means of an extended handle portion 8a, thus to cover or to uncover the opening 7. A leaf spring 10 is also mounted by the screw 9 to press upwardly against the plate to hold it tightly against the wall 6a and thus prevent leakage 10 from the container.

Integral with a side wall of the cap is a boss 11a through which a vertical bore 11 is formed. An air tube 12, which is extended upwardly within the container a substantial distance, as seen in Fig. 1, is threaded at its lower end into this bore 11.

A tubular metallic sleeve 13 is embedded in the cap coaxial of the bore 11 and a nipple 14 is threaded into the lower end of the sleeve. Within the container is an air tube 12, which has its lower end threaded into the nipple as seen in Fig. 2, and its upper end terminates approximately midway of the height of the container. A flexible tube 15 is connected with the lower end of the nipple 14 and this leads to a hand pump 16 whereby air may be injected into the container through the parts 15, 14, and 12.

One feature of the present invention resides in the back check valve that is provided at the upper end of the tube 12 to prevent contents of the container from flowing back into the pump tube. The construction of the valve is best illustrated in Fig. 2, wherein the upper end of the tube 12 is shown to be open and provided near its upper end with lateral air ports 17. Fitted over the end of the tube and extended down along its side walls beyond, or below the air ports is a flexible rubber sleeve 18 provided at its upper end with a central opening through which the shank of a screw 19 is passed. This shank is threaded into the channel of the tube 12 with the head of the screw overlying the upper end of the sleeve to hold the latter against displacement. The sleeve is provided with air ports 20 offset from the air ports 17 of the tube. About the lower end of the sleeve is an enlarged collar portion 21 which maintains this part of the sleeve drawn tightly about the tube. With this arrangement, the rubber sleeve normally tightly overlies and closes the air ports 17 opening from the tube 12. However, when air is injected under pressure by manipulation of the pump, it enters the container through the air ports 17, forcing the rubber sleeve outwardly from its tight contact with the tube 12 and permitting the air to escape into the container through the ports 20. Just as soon as air pressure is relieved within the pump, the sleeve closes the ports 17 to hold the air pressure within the container and to prevent any flow of material 60 into the tube 12.

As an alternative construction, as seen in Fig. 5, the sleeve may be closed at its upper end and held securely in place by an enlarged internal bead 22 at its lower end which seats within an annular channel 23 encircling the tube 12 near its upper end.

In order that an excessive pressure may not be built up in the container to the detriment of the container, or an undesirable outflow when the valve plate 8 is open, a pressure relief valve is provided in the hose connection between the pump and the tube 12. Such a relief valve is illustrated in Fig. 6, wherein the air tube 15 connects with a short nipple 30 on the end of the 75 pump cylinder. This hose connection has air

ports 31 and a rubber sleeve 32 is fitted about the ported part of the tube 15 and about the base of the nipple 30. The tension of the sleeve 32 is such that it will withhold pressure within the tube 15 up to a predetermined amount; for instance, up to four pounds pressure. Therefore, after a four pound pressure has been built up inside of the container 1, any additional air forced into the tube 15 by the action of the pump will be exhausted through the ports 31 by an outward displacement of the sleeve 32. The operation of this valve is the same as that described in connection with the upper end of the tube 12 except that it is made to relieve internal air pressure from the tube 15, while the valve sleeve on the tube 12 is designed to operate as a check valve to withhold pressure inside the container.

Assuming the device to be so constructed, and assuming the container to be filled with a material to be dispensed, such as mayonnaise, the device is placed in use by applying the dispensing cap 6 and then inverting the container so that it will assume the position of Fig. 1. Then when it is desired to dispense contents from the container, the plate 8 is adjusted to uncover the opening 7 and air is delivered under pressure into the container by actuation of the pump. This air pressure against the contents of the container will effect a positive flow thereof through the discharge opening, but the flow may be cut off at any time by moving the plate 8 to closed position.

A very desirable feature resides in the fact that the cap 6 mounts the tube 12 since removal of the cap also removes the tube from the container.

When a container is emptied, the dispensing cap 6 may be removed and the container cleaned and refilled. The cap 6 may be interchangeably applied to containers and it is not required that individual dispensing caps be provided for each.

The present device is economical, sanitary, and easily handled, easily cleaned and is practical and entirely satisfactory in use. Furthermore, the container may be made in various sizes and designs without departing from the spirit of the invention.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent is:—

1. In a dispensing device of the character described, a container having a discharge opening, a closure means for said opening, an air tube entering the container having a lateral discharge port, and an elastic sleeve fitted to said tube and overlying said port to close the latter against outflow of air from the container.

2. In a pneumatic dispensing container, an air tube extended into the container in an air tight connection, and having a connection at its outer end with a source of air pressure; said tube having a lateral discharge port from which air may be discharged therefrom into the container, and an elastic sleeve fitted about the tube and overlying said port as a back check valve to prevent escape of air pressure through the port and adapted to be lifted from the port by pressure of air in charging the container.

3. In a pneumatic dispensing container, an air tube extended into the container in an air tight fitting and connected at its end outside the container with a source of air pressure; said tube being provided with lateral discharge ports opening therefrom at points inside and outside the

container, an elastic sleeve fitted to said tube and overlying the port on the inside of the container as a back check closure means, and an elastic sleeve fitted to the tube and overlying the port that is outside the container and operable as a pressure regulating valve and adapted to allow escape of air after the container has been charged to a predetermined pressure.

4. In a pneumatic dispensing container having an air charging tube extended thereto and provided at its inner end with a lateral port, an elastic sleeve fitted to the tube and overlying said port and having a port therein that is offset from registration with the tube port.

5. In a pneumatic dispensing container having an air charging tube extended thereto and provided at its inner end with a lateral port, an

elastic closure cap fitted over the end of the tube and extended to overlap the port therein and having a port out of registration from the tube port and having an encircling collar at its end less elastic than the body portion of the cap to maintain a tight connection with the tube.

6. In a pneumatic dispensing container, an air charging tube extended thereto and provided at its inner end portion with an encircling groove and a lateral discharge port, a tubular elastic cap fitted over the tube end and across the port and having a reinforcing bead at its open end tightly seated in said groove to hold the cap against displacement; said cap having a port therein out of registration with the tube port.

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