March 5, 1963 J. WOROBLE 3,080,095

CONTAINER PIERCING AND POWDER MEASURING DISPENSER

Filed Dec. 27, 1961 2 Sheets-Sheet 1

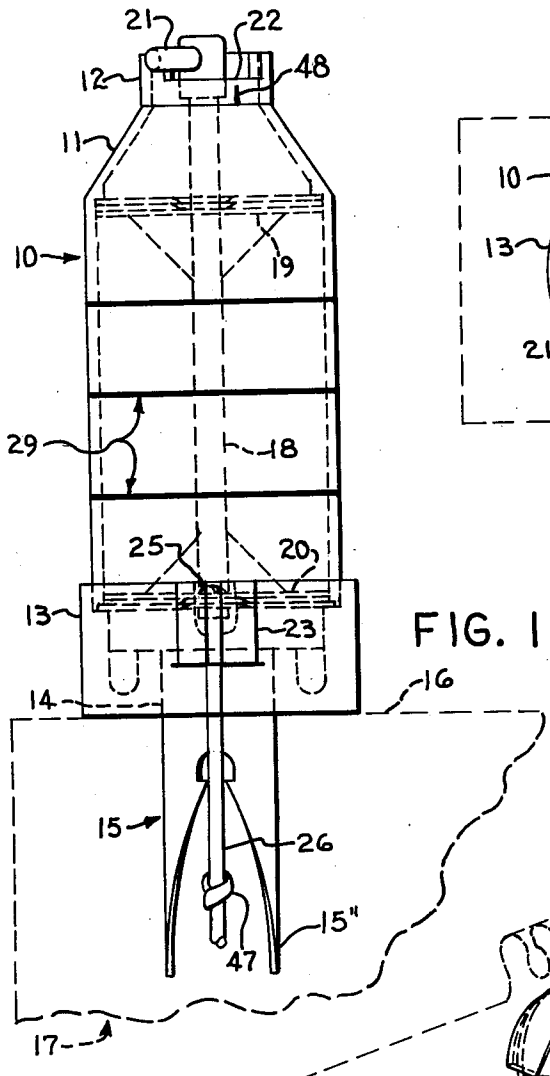


FIG. 1

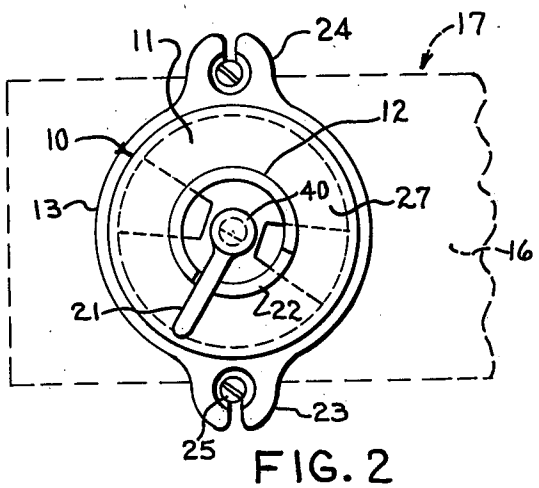


FIG. 2

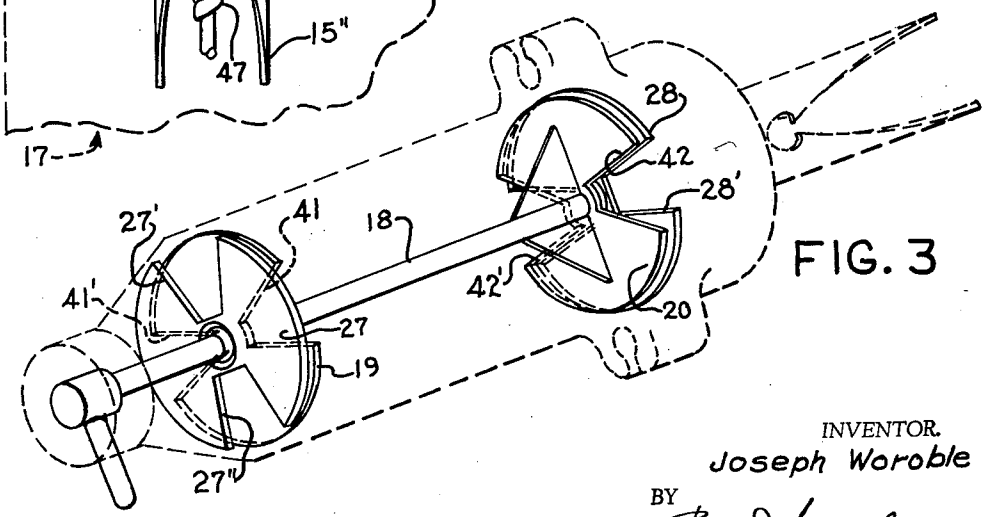


FIG. 3

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CONTAINER PIERCING AND POWDER MEASURING DISPENSER

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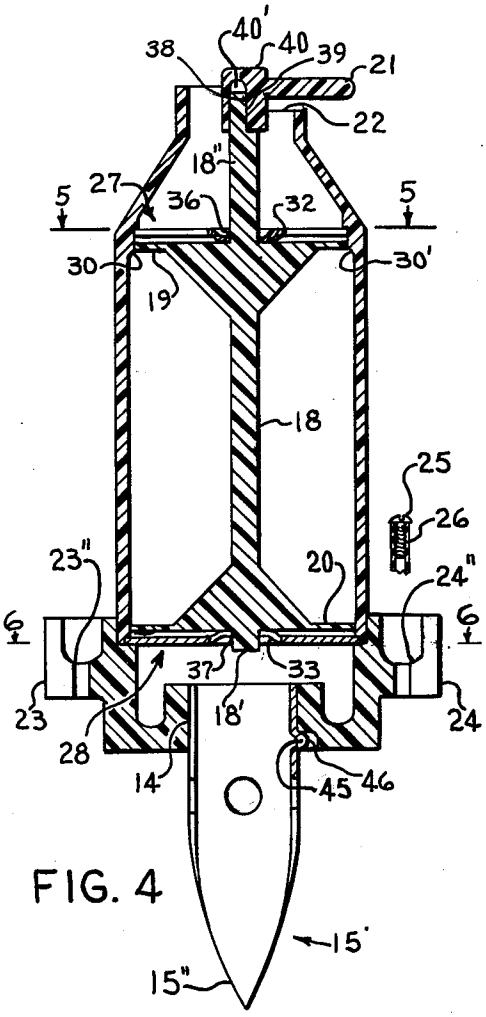


FIG. 4

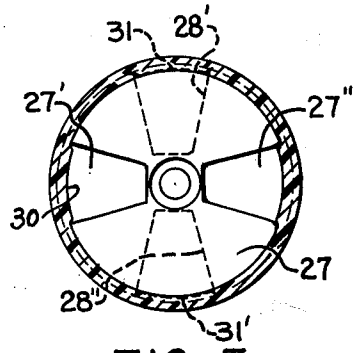


FIG. 5

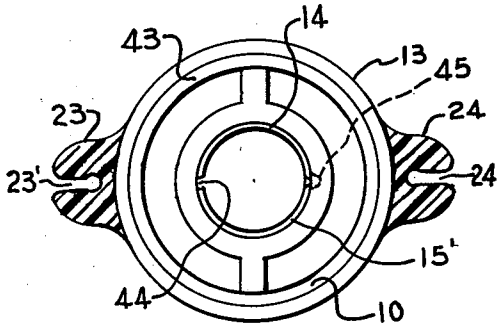


FIG. 6

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CONTAINER PIERCING AND POWDER MEASURING DISPENSER

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2 Claims. (Cl. 222—89)

This invention relates to a measuring powder dispenser having a cutting spear for piercing into the side of a paper or cardboard container for dispensing soap powder, and the like, in measured amounts. More specifically, it deals with a cylindrical dispenser having two sets of disk valve-gate combinations, and a cutting spear mounted in the bottom for entry into the package or container.

In the household wares field, there has been need for a relatively inexpensive dispenser for powders, such as soap powders, and the like, which unit could be inserted readily into the package, and where its use would not involve complications. At present, there is no suitable device of this kind available.

According to the present invention, an inexpensive and easily-operated unit is produced by employing a hollow cylindrical vessel, open at the top and provided with two sets of disk valve-gate combinations for controlling entry and discharge of the powder therein, said valves and gates being mounted or placed around a centrally-disposed control rod. This vessel also has a bottom portion connected with a hollow cutting spear for piercing into the package. An elastic holding means is provided for holding the dispenser onto the package.

The invention will be more readily understood by reference to the accompanying drawings in which a preferred embodiment is described, and in which FIGURE 1 depicts a side elevational view of the dispenser of the invention as it is attached to the side of a cardboard soap powder box. A top or plan view thereof is presented in FIGURE 2, while FIGURE 3 illustrates a perspective side view of the valve arrangement and control therefor, as schematically mounted into the measuring cylinder. A cross-sectional side elevation of the unit, with the central portion cut away, is shown in FIGURE 4. FIGURE 5 presents a top view taken along line 5—5 of FIGURE 4, while FIGURE 6 depicts a top view taken along line 6—6 of FIGURE 4. Similar numerals refer to similar parts in the various figures.

Referring again to the drawings, numeral 10 represents generally a cylindrical container preferably made of rigid transparent plastic and having a frusto-conical upper neck portion 11, to which is attached hollow cylindrical top 12. Container 10 is cemented into wider cylindrical base portion 13, also preferably made of rigid transparent plastic, and having central opening 14 into which is tightly fitted a piercing spear 15 used to penetrate side 16 of container 17 which is filled with soap or detergent powder, for example. Centrally and axially mounted within container 10 is control rod 18 on which are affixed flat radial disk gate valves 19 and 20. These valves are mounted in spaced parallel relation to each other and they rotate with rod 18, which latter is provided, at its upper end, with handle 21 for hand manipulation. Handle 21 projects through cutout portion 22 in cylindrical top 12.

Base portion 13 is provided with engaging bosses or knobs 23 and 24 into which are held and widened ends 25 of elastic cord 26 used to stretch around box 17, and thus hold dispenser 10 tightly onto said box. Stationary flat plates 27 and 28 are provided with oppositely-disposed butterfly-shaped flow openings 27'—27'' and 28'—28'', respectively. These plates are held in place (so as not to rotate) in container 10 by projections 30—30' and 31—31' projecting inwardly from the inner side wall of cylindrical container 10, the projections being of somewhat shorter length than and fitting closely into oppositely-disposed radial openings 27'—27'' and 28'—28'', respectively, of plates 27 and 28. The centers of plates (around rod 18) 27 and 28 are pressed out in circular fashion to provide spacers 32 and 33, respectively, which serve similarly as washers to keep the plates 27 and 28 separated from the rotatable valve gate disks 19 and 20, respectively, and designed to prevent grinding of the powder dispensed, as will be outlined further. Centrally-disposed openings 36 and 37 permit penetration of valve rod 18 through plates 27 and 28, respectively. Bottom end 18' of rod 18 penetrating plate 28 serves as a lower pivot for rotation of the rod. The upper end 18'' of the rod is provided with a notch 38 serving to engage flattened portion 39 in opening 40' of knob 40 of handle 21.

Valve gate disks 19 and 20 are provided with oppositely-disposed radial butterfly-shaped openings 41—41' and 42—42', respectively. It will be noted that these double openings in both valves are disposed in line with each other, whereas the similar openings in plates 27 and 28 are disposed at right angles to each other so that, when valve gate 19 covers openings 27'—27'' in plate 27 as in FIGURE 3, the openings 42—42' in gate valve 20 are in juxtaposition with openings 28'—28'' of plate 28. And conversely, when valve gate 20 covers openings 28'—28'' of plate 28, openings 27'—27'' of plate 27 are in juxtaposition with corresponding openings 41—41' of valve gate 19.

Bottom or base portion 13, which is cemented to container 10, is provided with inner shoulder 43 which abuts the bottom of container 10 and projects somewhat inwardly thereunder to act as a support for plate 28. Base 13 also is provided with shouldered central opening 14 into which is inserted tightly the upper end 15' of piercing spear 15. Spear 15 is flexible and is split vertically at 44 for facilitating insertion thereof into opening 14. Outwardly-protruding dimple 45 is provided on spear 15 to serve as a stop when it enters groove 46 in opening 14. Tips 15'' of spear 15 are jabbed into side 16 of box 17, and the sharp edges of the spear readily produce an opening in the box from which powder may flow into the dispenser.

Oppositely-disposed protruding hanger bosses 23 and 24 on the side of base 13 are provided with central grooves 23' and 24', respectively, for accommodating elastic member 26. Seats 23'' and 24'' serve to hold knobs 25 or knot 47 on elastic 26 while it is under tension.

When in use, the dispenser is jabbed (by means of spear 15) into side 16 of paper box 17 containing the powder. Then elastic band 26 is affixed at its ends 25 into bosses 23 and 24, and the dispenser is ready for use. Cylindrical top 12 is provided with mark 48 indicating openings between valve gate 20 and plate 28 which are small enough to allow powder to flow slowly therethrough when box 17 is tipped (i.e., when spear 15 is the uppermost part of the dispenser), and handle 21 is turned to the mark 48. When the desired amount of powder level has reached the desired one of measuring marks 29 on container 10, handle 21 is turned to close the openings in plate 28. This, at the same time, causes valve gate 19 to expose the openings in plate 27 so that, as the top of container 10 is held over the wash or other material to receive the powder, the measured amount of powder flows through openings 27'—27'' and 41—41' and through container neck 11 and top portion 12, and out into the wash.

Knot 47 permits use of the elastic 26 around a smaller package. The distance between plates 27 and 28 from corresponding gates 19 and 20 (as measured by the height of spacer portions 32 and 33) is about 0.005'' more than

the average particle size of the powder dispensed. For instance, if a soap powder of 0.015" average particle size is dispensed, the height of spacers 32 and 33 would be 0.020". This permits powder to pass between the two plates or disks of each valve without any grinding action which otherwise would make the plates stick or "freeze". Although plates 27 and 28 are preferably made of 0.020" thick aluminum, they can be made of plastic sheet as well. Plastic projections 30—30' and 31—31' project inwardly a distance of 0.010" from the wall of container 10. In order to make container 10 readily removable from its mold, its bottom is made about 0.020" wider than its top portion at its neck 11. Elastic 26 preferably is a length of small tubing into the ends of which are inserted wood screws, serving as end knobs 25.

This application is a continuation-in-part of copending application Serial No. 110,588, filed on May 16, 1961 by Joseph Woroble, now abandoned.

I claim:

1. In a powder dispenser of the class described and designed to pierce a paper box and to permit dispensing therefrom of a measured quantity of powder, and comprising a hollow cylindrical container having a body, a neck leading to an outlet, and an open bottom, said body enclosing a pair of first and second axially-spaced, flat radial disk valves which include a pair of spaced, partially open and axially-interconnected disk gates and a pair of partially open stationary plates each of which is disposed on the outside of and adjacent to its respective gate, said valves being designed, upon rotation of said gates, to permit flow of powder through the first valve and not the second and then through the second valve and not the first, the improvement comprising,

at least one projection extending from the inner wall of said body adjacent the neck and into the open portion of the plate of said second valve in a manner so as to prevent rotation of said latter plate,

a base having an open end fitting over the body bottom, and having a shoulder serving as a stop therefor, and having an opening in its outer end into which a box-piercing spear is mounted,

said plate of said first valve having a diameter large enough to enable the edges of said latter plate to fit between said body bottom and said shoulder and thus be locked thereby, and

spacer means for providing a space between each of said gates and its adjoining plate, said space being somewhat greater than the average particle size of the powder dispensed.

2. In a powder dispenser of the class described and designed to pierce a paper box and to permit dispensing therefrom of a measured quantity of powder, and comprising a hollow cylindrical container having a body, a neck leading to an outlet, and an open bottom, said body enclosing a pair of first and second axially-spaced, flat radial disk valves which include a pair of spaced, partially open and axially-interconnected disk gates and a pair of partially open stationary plates each of which is disposed on the outside of and adjacent to its respective gate, said valves being designed, upon rotation of said gates, to permit flow of powder through the first valve and not the second and then through the second valve and not the first, the improvement comprising,

at least one projection extending from the inner wall of said body adjacent the neck and into the open portion of the plate of said second valve in a manner so as to prevent rotation of said latter plate,

a base having an open end fitting over the body bottom, and having a shoulder serving as a stop therefor, and having an opening in its outer end into which a box-piercing spear is mounted,

said plate of said first valve having a diameter large enough to enable the edges of said latter plate to fit between said body bottom and said shoulder and thus be locked thereby,

spacer means for providing a space between each of said gates and its adjoining plate, said space being about 0.005" greater than the average particle size of the powder dispensed, and

a rod projecting centrally from the gate of said second valve and through said outlet and having an angularly-directed knob thereon serving as a handle and as an index for the valve opening.

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