July 12, 1966 W. E. FILLMORE ETAL 3,260,423

SHAKER OR SIFTER-TYPE DISPENSERS

Filed July 27, 1964

FIG 1

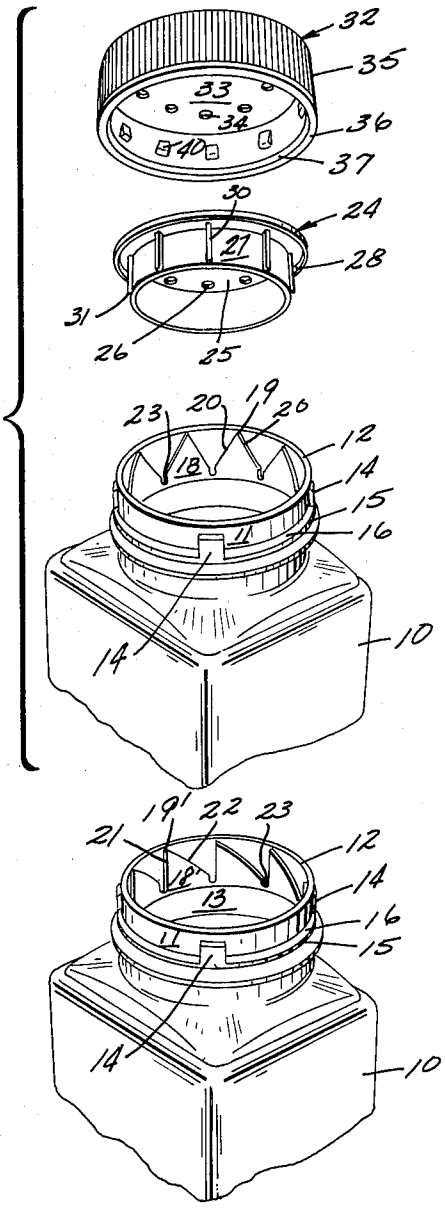


FIG. 5

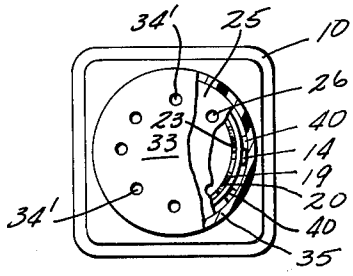


FIG. 3

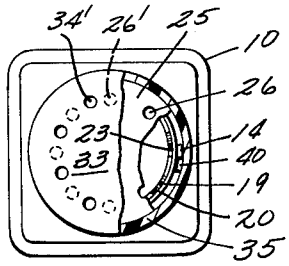


FIG. 4

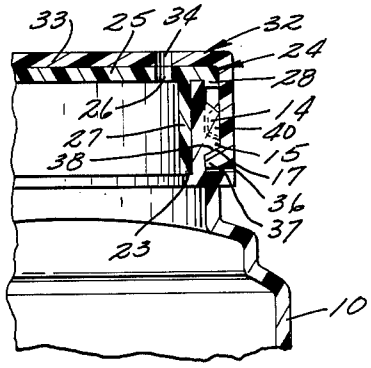


FIG. 2

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SHAKER OR SIFTER-TYPE DISPENSERS

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5 Claims. (Cl. 222—485)

This invention relates generally to a shaker or sifter-type assembly and more particularly to a shaker or sifter-type dispenser which is readily attachable to and removable from containers and capable, not only of dispensing powder or pelletized products, but also functioning effectively as a closure cap for the container.

An object of our invention is the provision of a novel dispensing assembly comprising a container, a sifter-type fitment, and a closure therefor.

A further object of our invention is the provision of novel means insuring ready, accurate orientation of the assembled elements after being affixed to the container, to the end that it may function effectively both as a dispensing unit and as a container sealing means.

Another object of our invention is to provide a dispensing assembly which is simply and readily brought into and out of operating or dispensing position.

An additional object of the present invention is the provision of a container mouth, sifter-type fitment and closure which cooperates to provide a simple and effective dispensing assembly.

These and other objects of our invention will become apparent from the reading of the following detailed description taken in conjunction with the drawings in which:

FIGURE 1 is an exploded perspective view of the shaker or sifter-type dispensing assembly of our invention;

FIGURE 2 is a fragmentary elevational view, in cross-section, illustrating the assembly of the elements of FIGURE 1;

FIGURE 3 is a plan view of a shaker or sifter-type dispenser, partially in section embodying our invention and illustrated in the dispensing position;

FIGURE 4 is a plan view, partially in section, of the dispenser of FIGURE 3 in closed position; and

FIGURE 5 is a perspective view of a container illustrating a modification of the container of FIGURE 1.

In the illustrated embodiment of our invention, reference numeral **10** denotes a bottle or jar formed preferably from high density polyethylene, by conventional means well known to those skilled in the art. The bottle **10** is provided with a cylindrical wall **11** defining a neck, having a circular rim **12** extending about and defining a mouth **13**. Exteriorly of this wall **11**, and in close proximity to the rim **12**, are a plurality of lugs **14** which are substantially in alignment with the axis of mouth **13**. Lugs **14** are narrow, vertical and radial projections from the plane of wall **11**. In FIGURE 1, only three lugs **14** are visible, there being another lug **14** 180° around the wall **11** from the lug shown in full view. It should be understood that additional lugs **14** may be provided on the wall **11**, as for example, six lugs could be equally spaced on the exterior of wall **11**.

In close proximity to and below lugs **14**, and preferably immediately adjacent thereto, is an abutment or annular radial projection **15** which is formed by increasing the outside diameter of wall **11** in a localized annular zone and in such fashion as to provide upwardly of this abutment, an upwardly, inwardly tapering guiding surface **16** and beneath said abutment, a downwardly, inwardly, tapering securing surface **17**; the function of this abutment will become more apparent hereinafter.

On the interior of wall **11** and immediately below the

rim **12** are a plurality of equally spaced, triangular shaped projections **18**. The projections **18** are radial projections from the plane of the interior of the wall **11** and are in substantial alignment with the axis of the mouth **13**. Preferably the projections **18** are constructed and arranged as substantially equilateral triangles as in FIGURE 1. However, substantially right angular shaped projections **18'** may be utilized as are shown in FIGURE 5. One side of each of the triangular projections is parallel to the rim **12** of the container **10** and forms the base for the other two sides **20** of the projection **18** which meet at apex **19**. In FIGURE 1 the two sides **20** form substantially equal acute angles, with the base side of each projection and extend from the base side toward the rim **12**.

In FIGURE 5, one side **21** forms a right angle with the base side and the third side **22** forms acute angles with the base side and side **21**. Both sides **21** and **22** extend from the base side toward the rim **12**. The sides **20, 21** and **22** of the projections **18** may be straight or they may be curved slightly.

A vertical notch **23** is provided at the juncture of the lower ends of sides **20** of adjacent projections **18** or as in FIGURE 5, at the juncture of side **21** with the side **22** of an adjacent projection. The number of notches **23** are thus equal to the number of projections **18** or **18'**. Each notch **23** is axially aligned with the axis of the container mouth **13** and is positioned remote from the rim **12** and in the vicinity of the base of each projection.

The sifter fitment or dispenser element **24** may be formed of rubber or other resilient, elastomeric, or plastic material, but preferably it is formed of polyethylene. It is molded in a single piece and comprises a relatively flat disk **25** of a diameter substantially as great as the exterior diameter of the rim **12** and preferably of a diameter slightly greater than the exterior diameter of the rim **12**, in order that when assembled, this disk may, to some extent, rest upon the rim **12**. The disk **25** is provided with a multiplicity of perforations **26** extending therethrough, such perforations being of a diameter dictated by the particular grain size of the condiment or other material to be dispensed.

A depending, attaching annular skirt **27** of minor axial length is provided near the outer periphery of disk **25** and has an exterior diameter slightly less than the interior diameter of the wall **11** of the container **10** and is thus adapted to be telescoped within the mouth **13**. If desired, a second skirt **28** may be provided at the outer periphery of disk **25** and of a slightly greater diameter than the exterior diameter of the wall **11** of the container **10** and thus be adapted to be telescoped over the rim **12** and wall **11**.

A plurality of equally spaced splines **30** are provided on the exterior of the skirt **27** and extend downwardly and axially from the flat disk **25**. Each spline **30** is a narrow, vertical and radial projection from the plane of the exterior of the skirt **27** and are in substantial alignment with the axis of the skirt **27**.

The notches **23** are constructed and arranged to receive therein the lower end **31** of the splines **30** thereby preventing rotation of the fitment **24** with respect to the mouth **13**. There are at least as many notches **23** as there are splines **30**. There may be more notches than splines but the reverse is not acceptable. The walls **20** of the projections **18** serve as guiding surfaces for the splines **30** when the fitment is applied to the container **10**. If the fitment did not exactly align with each of the notches **23**, then downward pressure on the fitment, applied during the customary and conventional capping operation will cause the fitment to rotate slightly thereby aligning the notches **23** with the lower end **31** of each of

the splines 30 and thereby preventing further rotation of the fitment with respect to the mouth 13 of the container 10.

The splines 30 are arranged on the skirt 27 in radial alignment with the perforations 26. There may be more or less perforations 26 than splines 30. In the event that the perforations outnumber the splines, there will be a perforation in radial alignment with a spline. If the splines outnumber the perforations, there will be a spline in radial alignment with each perforation. With the splines in alignment with the perforations the perforations 26 are therefore in radial alignment with the notches 23 when the fitment is applied to the container 10, and consequently in radial alignment with projections 14 because there is a notch in radial alignment with each projection, thereby positively positioning the perforations 26.

The closure cap 32 may be formed of rubber or resilient elastomeric or plastic material but preferably it is formed of polyethylene. It is molded in a single piece and comprises a relatively flat circular top panel portion 33 of a diameter slightly greater than the diameter of the flat disk 25 of the fitment 24 so that when assembled the closure 32 will cover the fitment 24. The top panel portions 33 is provided with a multiplicity of perforations 34 which are equal in number to and alignable with the perforations 26 in the fitment 24. The diameter of these perforations 34 is also dictated by the particular grain size of the condiment or other product to be dispensed.

An annular depending attaching skirt 35 is formed at the outer periphery of the circular top panel portion 33 and is adapted to be telescoped over the fitment 24 and the container mouth 13. The lower or free end 36 of the skirt 35 is provided with an annular internally projecting rib 37 having a downwardly and inwardly tapered surface 38. The rib 37 is adapted to be forced over abutment 15 when the closure cap 32 and fitment 24 are placed over the container mouth 13. This enables closure 32 to be held in snap fit relationship with the container 10 and it is held there by having the downward tapered surface 38 resting against the underside of abutment 15 or the downwardly and inwardly tapered surface 17 of the container 10.

The interior of skirt 35 of cap 32 is provided with a plurality of internally projecting lugs 40. The lugs 40 are narrow projections which are substantially aligned with the axis of the closure 32. They are positioned on the skirt 35 in relation to the perforations 34 in such fashion that rotation of the closure 32 on the container 10 will move the lugs 40 around the exterior of the wall 11 of the container 10 until they come into contact with an outwardly projecting member 14. At this point, the positioning of perforations 26 and 34, projections 14 and lugs 40, splines 30 and notches 23 brings the perforations 26 and 34 into alignment and dispensing position.

The lugs 40 are so positioned in relation to perforations 34 that the alignment of the perforations 26 and 34 is possible only by rotation of the closure 32 in one direction; thus the rotation of the closure in the opposite direction moves the perforations 26 and 34 out of alignment and thereby closes the container. Ths lugs 40 also serve to retain the fitment 24 interiorly of the closure cap 32 in order that the dispenser may be pre-assembled and hoppered without the necessity of pre-positioning the apertures as is required by some prior art fitments. The outer skirt 28 is of greater diameter than the inner diameter of the lugs 40. Also, the lugs 40 are positioned below the panel 33 a distance greater than the length of the skirt 28, thereby providing space between the lugs 40 and the panel 33 for the fitment skirt 28.

It can readily be seen from the foregoing that this dispensing assembly may be readily assembled by placing fitment 24 into closure 32 and rotating the same on the container rim 12 until the splines 30 register with the walls 20 of the projections 18 of the container whereby continued rotation and downward pressure will cause the fitment to rotate downwardly thereby positioning the lower end 31 of the splines 30 in the notches 23; continued downward pressure on the closure cap 32 will cause rib 37 to ride over projection 15 and lock into place. After the splines 30 are engaged in the notches 23, the fitment cannot be rotated and is thus in a stationary position relative to the container 10 and the closure 32. It is also possible to assemble this package by first placing the fitment on the container and thereafter placing the closure 32 over the same. After the fitment 24 is in place, the closure 32 is forced downwardly over the wall 11 of the container 10.

In the illustrated embodiment, the perforations 26' and 34' are positioned on the vertical and the remaining perforations are positioned at 45° increments around a circle. Since the splines 30, notches 23, and holes 26 are aligned, they will also be positioned at the above-described angles but around a somewhat larger circle.

The lugs 40 utilized to align the perforations 26 and 34 must therefore be positioned so that their centers are on the radii which are separated from the radii on which the center of any perforation 34 is located by an angle of about 15°.

It will be apparent from the foregoing that this dispensing assembly can be easily manufactured and assembled to the container thereby providing a secure closed position against accidental opening, but easily opened to its dispensing position. Various modifications will be apparent from the foregoing and may be resorted to within the spirit and scope of the following claims:

We claim:

1. In combination a container having an annular neck forming wall defining a mouth, a plurality of radially projecting lugs on said wall, an annular radial projection on said wall below said lugs for securing a closure cap to said container, a plurality of projections on the interior of said wall and aligned with the axis of said container, and a plurality of notches on the interior of said wall, a notch being positioned between adjacent projections; a sifter-type fitment comprising a relatively flat disk provided with a multiplicity of perforations therethrough, a depending attaching skirt near the periphery of said disk, said skirt having a plurality of vertical splines on the exterior thereof, said notches being adapted to receive said splines, thereby preventing rotation of said fitment; and a closure cap adapted to overlie said fitment and container mouth comprising a circular panel portion of greater diameter than said fitment, said panel portion being provided with a plurality of perforations alignable with the perforations in said fitment, a depending attaching skirt at the periphery of said panel portion, an annular internally projecting rib on the free end of said skirt cooperable with the projection on said container wall to secure said cap to said container, and means on the interior of said skirt cooperable with said radially projecting lugs on the wall of the container to limit rotative movement of said cap.

2. In combination, a container having an annular neck forming wall defining a mouth, said wall having a outer end providing an annular rim, a plurality of radially projecting lugs on said wall below said rim, an annular radial projection on said wall below said lugs, a plurality of equally spaced triangular projections on the interior of said wall immediately below said rim with the apex of said projections near the rim, and a plurality of notches on the interior of said wall, a notch being positioned between adjacent projections; a sifter-type fitment of resilient material comprising a relatively flat disk of at least as great a diameter as said container rim and provided with a multiplicity of perforations therethrough, a depending attaching skirt near the periphery of said disk, said skirt having a plurality of vertical splines on the exterior thereof which are adapted to be received by said notches, thereby preventing rotation of said fitment; and a closure cap adapted to overlie said fitment and container mouth comprising a circular

panel portion of greater diameter than said fitment, said panel portion being provided with a plurality of perforations alignable with the perforations in said fitment, a depending attaching skirt at the periphery of said panel portion, an annular internally projecting rib on the free end of said skirt cooperable with the projection on said container wall to secure said cap to said container, and means on the interior of said skirt cooperable with said radially projecting lugs on the wall of the container to limit rotative movement of said cap.

3. The combination of claim 2 wherein said projections are constructed and arranged as substantially equilateral triangles.

4. The combination of claim 2 wherein said projections are constructed and arranged as right triangles.

5. A dispensing package comprising a container having an annular wall defining a mouth, an annular rim provided at the outer end of said wall, at least four radially projecting lugs on the exterior of said wall below said rim, an annular radial projection on said wall below said lugs, said projection being of greater diameter than said rim and a plurality of vertically disposed, equally spaced, triangular projections extending radially of the interior of said wall and a plurality of vertically disposed notches on said wall equal in number to said projections, a notch being positioned between adjacent projections; a sifter-type fitment of resilient plastic material comprising a relatively flat disk of a diameter at least as great as the diameter of said rim, and provided with a multiplicity of perforations

therethrough, an annular depending attaching skirt near the periphery of said disk, the external diameter of said skirt being less than the internal diameter of said mouth, a plurality of vertically disposed, equally spaced, narrow splines on the exterior surface of said skirt, said notches being constructed and arranged to receive the lower end of said splines, thereby preventing rotation of said fitment with respect to said container; and a closure cap of resilient plastic material adapted to overlie said fitment and container mouth, comprising a relatively flat circular top panel portion of greater diameter than said fitment; said panel portion being provided with a plurality of perforations equal in number to and alignable with said perforations in said fitment, an annular depending attaching skirt at the periphery of said panel portion, an annular internally projecting rib near the free end of said skirt, cooperable with the projection on said container wall and adapted to secure said cap to said container, and a plurality of internally projecting lugs on the interior of said skirt, said lugs adapted to be positioned between adjacent lugs on said wall to limit rotative movement of said cap.

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