

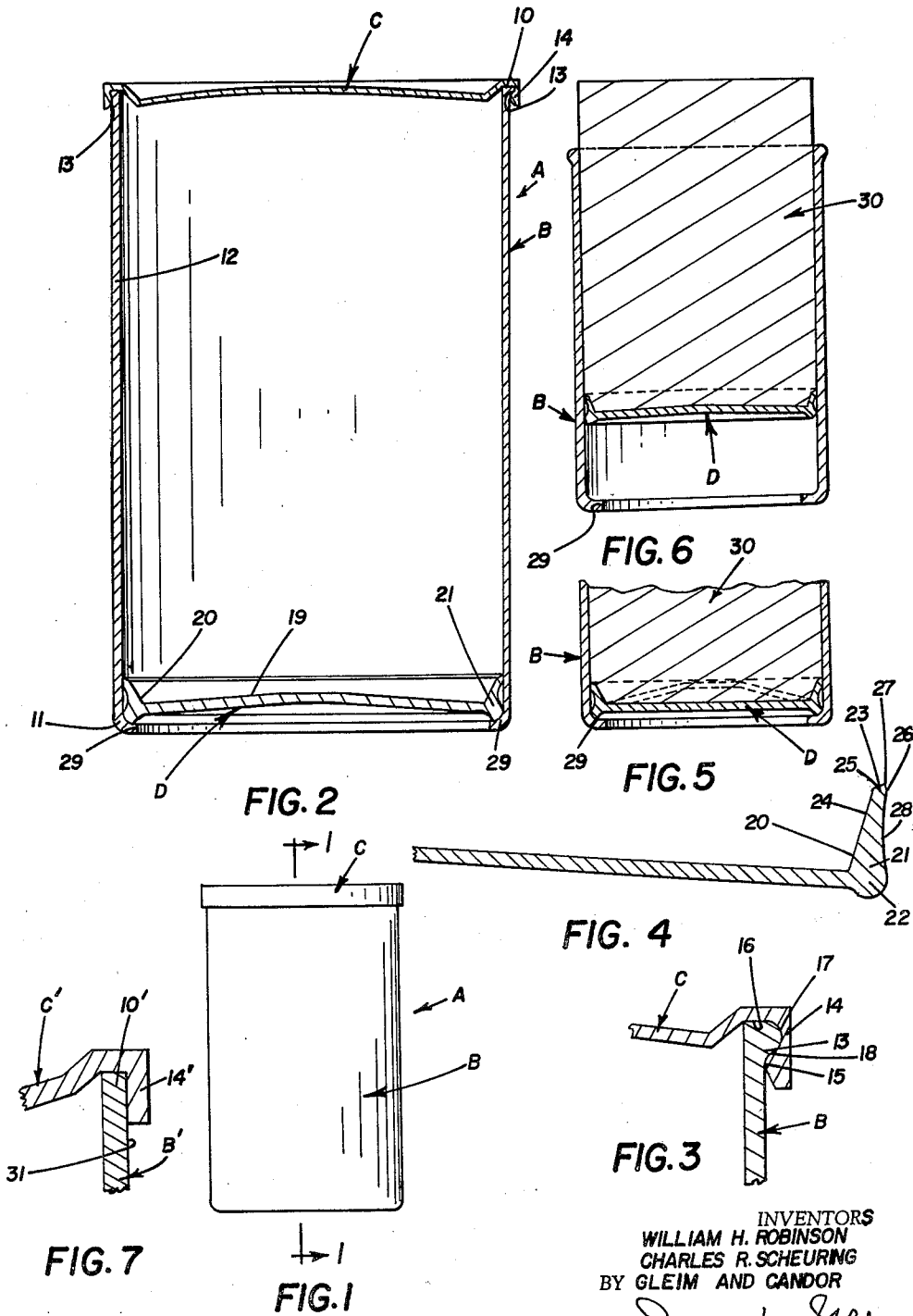
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DISPENSING DEVICE

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DISPENSING DEVICE

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This invention relates to an improved dispensing device, and, in particular, this invention relates to an improved dispensing container having a hollow container body and an axially movable bottom disposed in the container body for forcing the contents of the container out through an open end thereof, the bottom effectively sealing against the internal surface of the container body.

Heretofore, many different types of dispensing containers have been provided, each of which includes a hollow cylindrical container body having a pair of opposed open ends and an axially movable disc-like bottom member disposed within the container body to close one of the open ends thereof. An edible product, such as cheese, ice cream, and the like, or a non-edible product, such as camphor ice, lubricant, and the like, is inserted in the container body through the other open end thereof and the other open end is closed by a suitable closure member. In this manner, when it is desired to dispense at least a part of the product from the container, the closure member is removed and the axially movable bottom is manually forced toward the other open end of the container body whereby the product is forced out of the other open end thereof.

It has been found according to the teachings of this invention, that an improved bottom for dispensing containers of the above described type can be made that effectively seals the contents of the container from the exterior thereof in order to prevent leakage, spoilage, and the like. It has further been found that means can be provided for effectively scraping the product from the internal peripheral surface of the container body as the bottom is axially moved in the dispensing direction in order to prevent exposure of particles of the product on the internal peripheral surface of the container body which would provide a source of contamination and/or an objectionable source of particles that would be free to fall and thus require excess cleaning. Accordingly, it is an object of the present invention to provide an improved closure member for a dispensing container.

It is another object of the present invention to provide an improved dispensing container having an axially movable bottom adapted to effectively seal against the internal surface of the container body.

It is a further object of the present invention to provide an improved dispensing container having an axially movable bottom which effectively removes the contents of the container from the internal surface of the container body when the bottom is axially moved in the dispensing direction.

Other and more particular objects, uses, and advantages of this invention will become apparent upon a reading of the following specification taken in conjunction with the accompanying drawing wherein:

FIGURE 1 is a side elevation view of a dispensing container formed in accordance with the teachings of this invention;

FIGURE 2 is an axial cross-sectional view of the dispensing container illustrated in FIGURE 1 and is taken on line 1-1 thereof;

FIGURE 3 is an enlarged fragmentary cross-sectional view of a portion of the dispensing container illustrated in FIGURE 2;

FIGURE 4 is an enlarged fragmentary view of a por-

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tion of the bottom of the dispensing container illustrated in FIGURE 2;

FIGURE 5 is a fragmentary axial cross-sectional view similar to FIGURE 2 and illustrates the dispensing container of FIGURE 1 after the same has been initially filled with a product;

FIGURE 6 is an axial cross-sectional view similar to FIGURE 2 and illustrates the dispensing container in its dispensing position; and,

FIGURE 7 is an enlarged fragmentary cross-sectional view similar to FIGURE 3 and illustrates a modification of this invention.

Reference is now made to the accompanying drawing wherein like reference numerals and letters are used throughout the various figures thereof to designate like parts where appropriate, and particular reference is made to FIGURES 1 and 2 illustrating a dispensing container generally indicated by the reference letter A and comprising a hollow cylindrical container body B, a detachable flexible closure member C, and an axially movable flexible bottom or closure member D. In the embodiment of the invention illustrated, the container body B is formed from polystyrene and the closure members C and D are formed from polyethylene. However, it is to be understood that the various parts B, C and D could be formed of any suitable material or in any combination thereof. It is also to be understood that although the container body B is illustrated as being cylindrical, the container body B may be formed in any suitable geometrical configuration and the closure C and bottom D formed with a complimentary shape to cooperate with the container body B in the manner later to be described. For example, the axial cross-sectional sectional configuration of the container body B may be circular, rectangular, elliptical, or the like.

As shown in FIGURE 2, the container body B has a pair of opposed open ends 10 and 11 and a cylindrical internal peripheral surface 12. An annular bead or lip 13 extends radially outwardly from the open end 10 of the container body B and is adapted to cooperate with an annular skirt 14 depending from the outer periphery of the closure member C as shown in FIGURES 2 and 3.

In particular, a radially inwardly directed annular bead 15 is formed on the inner surface of the skirt 14 of the closure member C and is disposed a shorter distance from a flat top inner annular surface 16 of the closure member C than the distance between a top surface 17 of the lip 13 and an under portion 18 thereof. Further, the inside diameter of the skirt 14 is slightly smaller than the outside diameter of the lip 13. In this manner, the closure member C is adapted to be snapped on the open end 10 of the container body B and the annular bead 15 of the skirt 14 tends to draw the flat top annular surface 16 of the closure member C into sealing engagement with the top surface 17 of the lip 13 whereby the closure member C seals against the upper surface 17 and the lower portion 18 of the lip 13 to effectively seal the open end 10 of the container body B.

It is to be understood that the closure member C could also be detachably secured to the open end 10 of the container body B in any other suitable manner as desired. For example, the closure member C could be secured to the open end 10 of the container body B by a threaded arrangement, tang and lug arrangement, and the like, as well as by frictional engagement such as is illustrated in FIGURE 7 and hereinafter described.

It is also to be understood that the closure C may be formed with an outwardly directed central portion as shown in FIGURE 2, a flat central portion, or an inwardly directed central portion as shown in FIGURE 7. Regardless of the particular configuration being utilized,

each type of closure performs the desired function of this invention in the manner later to be described.

The closure member or bottom D includes a circular body portion 19 and an outer peripheral portion 20. The central portion 19 of the bottom D is formed in such a manner that the same projects outwardly from a flat plane passing through the bottom D, the projecting portion 19 being substantially dome-shaped or having a cross section that is substantially conically shaped.

The outer peripheral portion 20 of the closure D includes an annular skirt 21 having a rounded continuous bead 22 formed at one end thereof and an outwardly projecting tapering continuous flange 23 at the other end thereof. As shown in FIGURE 4, the tapering flange 23 of the bottom D includes a first inner angularly disposed annular flat surface 24 interconnecting the central portion 19 at one end thereof and a second inner annularly disposed flat surface 25 at the other end thereof. The flat surface 25, in turn, intersects a flat annular outer surface 26 and defines an annular edge 27 with the flat surface 26. The outer annular surface 26 of the flange 23 is interconnected to the bead 22 by an arcuate outer annular surface 23.

The open end 11 of the container body B has a radially inwardly directed annular flange 29, the flange 29 being utilized to limit axial movement of the bottom D toward the open end 11 of the container body B in a manner hereinafter described.

The outer diameter of the bottom D may be made slightly smaller, the same as, or slightly larger than the inside diameter of the container body B whereby the outer peripheral portion 20 of the bottom D is disposed closely adjacent the internal peripheral surface 12 of the container body B when the bottom D is inserted therein. In the embodiment illustrated, the outer diameter of the bottom D is made slightly smaller than the inside diameter of the container body B. For example, it has been found in practice that when the inside diameter of the container body B is 1.591 inches and the outside diameter of the bottom D is 1.590 inches, the bottom D satisfactorily performs the desired functions of this invention in the manner hereinafter set forth. The closure member or bottom D is inserted into the container body B through the open end 10 thereof whereby the outer peripheral portion 20 of the bottom D is disposed closely adjacent the internal peripheral surface 12 of the container body B. Initially, the bottom D is disposed against the inwardly directed annular flange 29 of the container body B in the manner illustrated in FIGURE 2.

The product to be dispensed from the container A is then inserted through the open end 10 thereof and may be formed into a cylinder which closely engages the internal peripheral wall 12 of the container body B. As the product, generally indicated by the reference numeral 30, is progressively inserted into the container body B, the air trapped between the product 30 and the bottom D is expelled out through the open end 10 thereof by passing between the product 30 and the internal peripheral wall 12 of the container body B as well as out through the open end 11 by passing between the outer peripheral portion 20 of the bottom D and the internal peripheral surface 12 of the container body B. As the product 30 is forced into the container body B, the end of the product 30 engages the outwardly extending portion 19 of the bottom D and forces the same downwardly toward a flat plane passing through the bottom D whereby the bottom D assumes the shape illustrated in FIGURE 5. Since the outwardly projecting portion 19 of the bottom D has been urged toward a flat plane by the product 30, the outer peripheral portion 20 of the bottom D is forced radially outwardly whereby the bead 22 thereof is forced into sealing engagement with the internal peripheral surface 12 of the container body B. As the product 30 is packed under pressure into the container body B, the same engages the angularly disposed inner surfaces 24 and 25

of the tapering flange 23 of the bottom D and forces the outer flat surface 26 thereof outwardly into sealing engagement with the internal peripheral surface 12 of the container body B.

Since the bead 22 and the tapering flange 23 of the bottom D are urged into sealing engagement with the internal peripheral surface 12 of the container body B, the bottom D effectively seals the interior of the container body B from the open end 11 thereof. After the product 30 has been disposed within the container A in the above manner, the closure or cover member C is secured to the open end 10 thereof in the manner previously described whereby the inner surface of the closure C makes contact with the product 30 before the closure C is fully secured to the container body B.

In this manner, the closure C is flexed outwardly by the product 30 whereby the outwardly flexed and stressed portions of the closure C and bottom D compactly compress the product therebetween and thus cause the product 30 to completely fill any voids in the container body B.

Further, any environmental changes causing shrinkage or expansion of the container A during storage of the product therein is compensated for by the closure C and bottom D. In particular, when the internal volume of the container A would increase because of subsequent expansion of the container A, the flexed portions of the closure C and bottom D compress the product therebetween in such a manner that the volume of the container A remains the same, i.e., the volume of the container A remains the same and is equal to the volume displaced by the product stored therein. Similarly, when the internal volume of the container A would decrease because of subsequent shrinkage of the container A, the product forces the flexed portions of the closure C and bottom D further away from each other whereby the volume of the container A remains the same.

Accordingly, the product 30 within the container A is continuously placed under pressure by the flexed and prestressed portions of the closure C and bottom D regardless of the environment of the container A whereby air is prevented from reaching the product 30. This feature is particularly important when the product is an edible product, such as cheese and the like, as exposure to air accelerates spoilage thereof.

When it is desired to dispense the product 30 from the container A, the cover of closure member C is removed therefrom and the bottom D is axially moved toward the open end 10 thereof by pushing against the under surface thereof, such as with a finger or suitable instrument. Since the portion 19 of the closure D has been deformed into a flat plane by the product 30 when the product 30 was initially inserted within the container A, pressure against the under surface of the bottom D causes the same to conform to its original outwardly projecting shape. As the bottom D is moved upwardly toward the open end 10 thereof, as shown in FIGURE 6, the bottom D forces the product 30 out through the open end 10 whereby the exposed portion of the product 30 can be sliced into the desired thicknesses. As the bottom D is moved axially toward the open end 10, the pressure against the under surface of the bottom D tends to flex the central portion 19 thereof to a greater extent away from the flat plane passing therethrough to a greater extent than normal whereby the tapering flange 23 of the bottom D is forced outwardly into further engagement with the internal peripheral surface 12 of the container body B. As the bottom D is axially moved toward the open end 10, the angularly disposed inner surface 25 of the tapering flange 23 effectively scrapes the product 30 from the internal peripheral surface 12 of the container body B.

Since the product 30 is cut off closely adjacent the annular open end 10 of the container body B when only a portion thereof has been dispensed, the exposed end of

the product 30 normally comprises a flat surface. When the closure C is resecured to the open end 10 of the container body B, the central portion thereof engages the product 30 before the closure C has been fully telescoped into secured engagement with the container body B. In this manner, the remaining portion of the product 30 in the container A is compressed between the closure C and bottom D in much the same manner when the container is initially filled as previously described. Therefore, portions of the closure C and the bottom D are flexed away from each other, the central portion 19 of the bottom D being forced toward the flat plane thereof whereby the annular bead 22 is forced radially outwardly into sealing engagement with the internal wall 12 of the container body B.

Accordingly, the product 30 is maintained under pressure by the flexed portions of the closure C and the bottom D at all times whereby the product 30 is effectively sealed in the container A and is free from exposure to air in the manner previously set forth regardless of whether any of the product 30 has been dispensed.

As shown in FIGURE 7, the open end 10' of the container body B' is defined by a beadless external wall 31 of the body B'. The closure C' has a depending skirt 14' formed at the outer periphery thereof which is adapted to be detachably secured to the container body B' in the following manner. The inside diameter of the skirt 14' is slightly smaller than the outside diameter of the body B' whereby the skirt 14' is flexed radially outwardly when telescoped onto the open end 10' of the container body B'. The resulting frictional engagement between the skirt 14' and the external surface 31 of the container body B' is sufficient to maintain the closure C' on the container body B', the closure C' performing the same functions as the closure C previously described.

Therefore, it can be seen that an improved dispensing container has been disclosed, the container having an axially movable bottom which not only effectively seals the product from the exterior thereof but also effectively scrapes the product from the internal peripheral surface of the container body when the bottom is axially moved in the dispensing direction.

While the foregoing present a preferred embodiment of the present invention, it is obvious that modifications and/or equivalents may be employed without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A container-dispenser for products in substantially solid form comprising a hollow cylindrical container body having upper and lower open ends and a downwardly and inwardly curved lip at its lower end defining an internal

peripheral surface, an axially movable bottom comprising a relatively thin initially upwardly bowed flexible disc disposed in the cylindrical body and having a vertically disposed peripheral annular skirt disposed closely adjacent the internal surface of the cylindrical body, said skirt having a rounded bead at the lower end thereof and extending at least partially below the lower surface of said disc and in shape-conforming engagement with the internal peripheral surface of the cylindrical body and an upwardly extending tapered flange at the other end thereof connected to said rounded bead by an arcuate flange portion whereby a double sealing engagement is effected, and a substantially solid product disposed in the cylindrical body, said product pressing the bottom toward planar shape and urging the rounded bead and the upwardly extending flange outwardly into sealing engagement with the internal surface of the cylindrical body whereby movement of the bottom toward the other end of the cylindrical body forces the product upwardly and causes the tapered flange to scrape the product from the internal surface of the cylindrical body.

2. A container-dispenser according to claim 1 wherein said annular skirt has a height of the order of a tenth of the diameter of said disc.

3. A container-dispenser according to claim 1, wherein said inwardly directed lip engageable by the bottom bead limits axial movement of the bottom toward said lower open end.

4. A container-dispenser according to claim 1 wherein said upper open end of the container body has a closure detachably secured thereto and said product is forced against the bottom whereby portions of said closure and said bottom are respectively flexed away from each other to maintain the product air-tight and under pressure, said closure having a depending skirt adapted to engage an annular bead provided on said container whereby said container is closed by said bottom and said closure.

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