July 27, 1965 J. J. KUSTER 3,197,071

MULTIPLE COMPARTMENT DISPENSER

Filed Dec. 3, 1962

Fig. 1

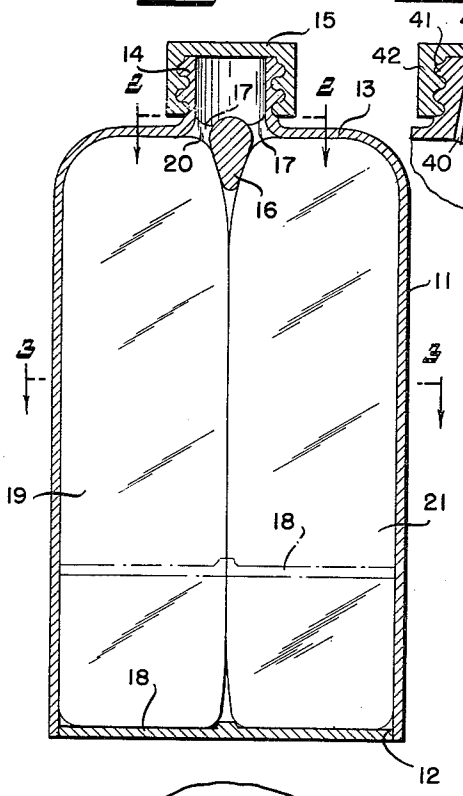


Fig. 2

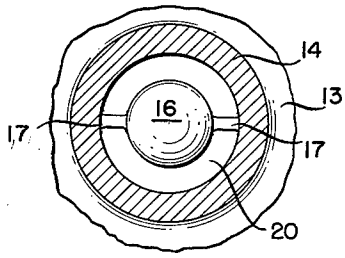


Fig. 3

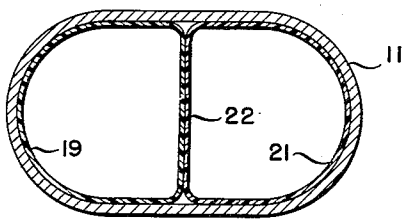


Fig. 7

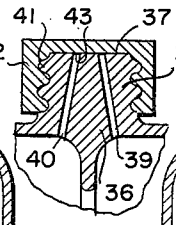


Fig. 4

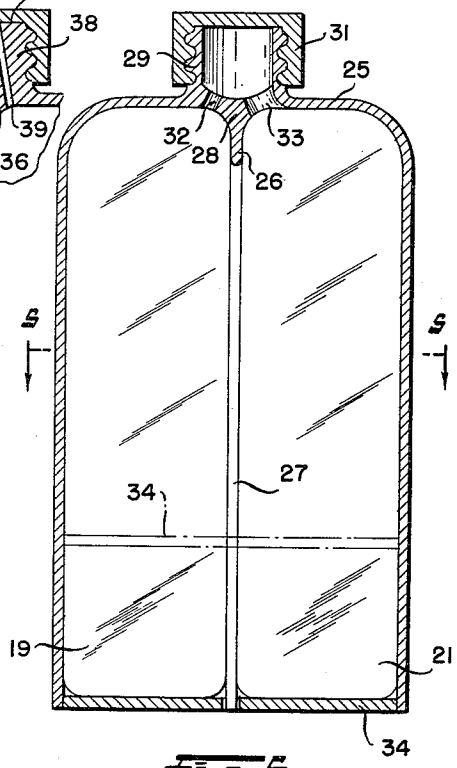


Fig. 5

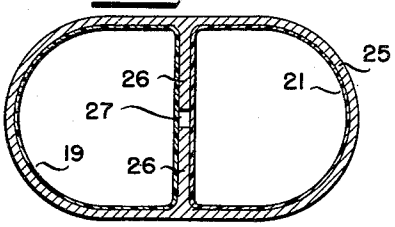
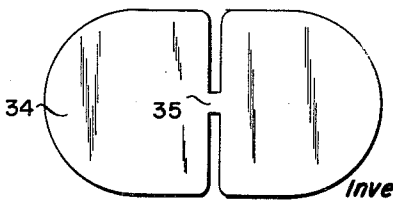


Fig. 6



Inventor

John Jacob Kuster

BY Strauch Nolan & Neale ATTORNEYS

United States Patent Office 3,197,071 Patented July 27, 1965

3,197,071

MULTIPLE COMPARTMENT DISPENSER

John J. Kuster, Franklin Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y., a corporation of Delaware

Filed Dec. 3, 1962, Ser. No. 241,669
8 Claims. (Cl. 222—94)

This invention relates to multiple compartment dispensers of the type wherein a plurality of sealed inner containers are disposed within an outer container and arrangement is made for the individual or simultaneous discharge of the inner container contents through a neck or spout of the outer container.

In its preferred embodiment the invention will be described as including a relatively stiff walled outer container enclosing two or more highly flexible inner containers in the form of closed bags or pouches, access being had through a neck or spout of the outer container to make a discharge opening in either inner container when the time of use has arrived.

It is therefore the major object of this invention to provide a novel multicompartment dispenser package wherein an outer container, the wall of which is sufficiently stiff to be self-supporting, encloses two or more inner sealed containers that have such highly flexible thin walls as to be incapable of self-support, and access is available through a neck or spout of the outer container to puncture or otherwise provide a discharge aperture in either or both of the inner containers.

Further objects of the invention will appear as the description proceeds in connection with the annexed claims and the appended drawings wherein:

FIGURE 1 is a section through a multicompartment dispenser constructed according to a preferred embodiment of the invention;

FIGURE 2 is a fragmentary section on line 2—2 of FIGURE 1;

FIGURE 3 is a section on line 3—3 of FIGURE 1;

FIGURE 4 is a section through a multicompartment dispenser according to a further embodiment of the invention;

FIGURE 5 is a section on line 5—5 of FIGURE 4;

FIGURE 6 is a plan view of a special closure for the bottom of the dispenser of FIGURE 4; and

FIGURE 7 is a fragmentary section of a further embodiment of the neck structure of a multicompartment dispenser of the invention.

Referring to FIGURES 1–3, the dispenser comprises an outer container 11 that is open at the bottom at 12 and has a top 13 that is closed except for a tubular upstanding neck or spout 14. Neck 14 is externally threaded for mounting a closure cap 15.

Centrally disposed at the inner end of neck 14 is a diverter wall 16 that is rigidly, preferably integrally, secured to the juncture of top 13 with neck 14, as by one or more thin webs 17. This provides an annular inlet 20 to the inner end of neck 14 that is unobstructed except for the thin webs 17.

The lower end of container 11 is closed by a plate 18 which is shaped to the inside contour of the container wall and disposed to be slidably disposed within the bottom 12. The frictional engagement between plate 18 and the inner surface of container 11 is sufficient to prevent their accidental separation.

The interior of container 11 is occupied by two separate sealed bags, pouches or like inner containers 19 and 21 which when filled and introduced within the container 11 fill the entire interior and have adjacent walls abutting at 22 in FIGURE 3.

The closed inner containers 19 and 21 are made of thin walled highly flexible material of film thickness such as polyethylene foil or any composition that is strong enough to hold the liquid, cream or powder therein and inert chemically to attack by the contents. These inner containers are essentially incapable of self support, and their walls and contents are so flexible as to conform snugly to the surrounding outer container surface.

The outer container in this embodiment is preferably a relatively stiff self supporting structure, which may be of metal, fibrous material or stiff or semi-rigid polypropylene or other plastic, and plate 18 is preferably a fairly stiff member of the same material.

When it is desired to use the dispenser, the contents of pouches 19 and 21 may be dispensed in a mixture. In order to permit the contents of pouches 19 and 21 to be discharged, a sharp implement is inserted through the neck 14 and a space 20 to puncture the pouches 19 and 21. Then the plate 18 is pushed upwardly into the interior of container 11 to reduce its internal volume and thus exert such pressure on the pouches as to cause discharge of their contents through the punctured openings into the space within neck 14 where they intermix before being emitted through the neck mouth.

Instead of providing a stiff walled outer container 11 having a displaced bottom at 18, the invention also contemplates making bottom 18 an integral part of a semi-rigid walled flexible container, blow molding the side walls of a semi-rigid plastic such as polyethylene for the usual squeeze bottle type of structure, so that lateral pressure on the outer container will discharge both pouches as described.

A further embodiment of the invention is disclosed in FIGURES 4–6 wherein the outer container 25 may be formed as was container 11 but with a stiff inner transverse partition structure 26 that effectively separates the pouches 19 and 21 and keeps them out of contact with each other.

Partition 26 is preferably integral with the container 25 and formed with a narrow slot 27 that is open at the bottom and extends up to a juncture 28 with the upper wall of container 25. Above this juncture the outer container is formed with neck 29 externally threaded to receive a cap 31.

The juncture 28 essentially blocks the lower part of the neck opening except for one or more apertures 32 disposed at one side of the partition for access to bag 19, and a second set of apertures 33 disposed at the other side of the partition for access to bag 21.

At its lower end outer conntainer 25 is open to frictionally slidably receive a plate 34 (FIGURE 6) having a reduced waist 35 to slidably interfit with partition slot 27.

The operation in this embodiment is essentially the same as for FIGURES 1–3, the pouches 19 and 21 being punctured and their contents discharged by pushing upward on plate 34.

It will be noted that the discharge through aperture or apertures 32 will be less than through aperture or apertures 33, and the relative sizes of these openings may be selected to obtain any desired proportionate mixing of the contents of the bags. This may also be applied to the FIGURES 1–3 embodiment.

In FIGURES 4–6 there is an attendant advantage of the inner partition in that the pressures exerted on the individual bags 19 and 21 are not transmitted one to the other as in FIGURES 1–3. This is particularly important where the integral bottom squeeze bottle type of outer container may be used, but in any event it results in a more accurate control of discharge of the individual pouch contents since that discharge is here a function

only of the pressure exerted directly on that inner container.

FIGURE 7 shows a container neck and closure structure that can be used in either of the embodiments of FIGURES 1 and 4.

In this construction the neck structure 38 is provided with an internal solid imperforate wall 36 which extends sufficiently to provide a flat planar end surface 37 perpendicular to the container axis. At the opposite sides of partition 36 are provided through apertures 39 and 40 which terminate inwardly adjacent the respective inner bags and outwardly in the plane of surface 37.

The neck 38 is externally formed with a thread or the like 41 to receive an internally threaded screw cap 42 having an inner flat surface 43 adapted to tightly seat upon surface 37 and thereby close both apertures 39 and 40. This arrangement absolutely prevents transfer of contents between the compartments at opposite sides of the partition, as when the container has been initially opened, part of the contents used by puncturing both flexible bags, and then reclosed by restoring the cap on the neck.

In practice the partition 36 may be an integral extension of diverter wall 16 of FIGURE 1, an integral extension of partition 26 of FIGURE 4, or a separate plug press fitted into the neck and formed with the apertures 39 and 40 in proper location.

It will be appreciated that the neck structure of FIGURE 7 may also be used in a multicompartment container where the inner ends of apertures 39 and 40 terminate in discrete liquid or powder containing compartments instead of frangible pouches.

In all forms of the invention the outer containers are refillable with new sealed bags or pouches when the originals have been exhausted.

It will be appreciated also that while two inner containers are disclosed in the preferred embodiments, more than two can be arranged within an outer container without departing from the spirit of the invention.

In the invention I may employ a relatively inexpensive outer container, while providing inner bags or pouches of such more expensive material as may be necessary to be chemically inert with respects to their contents. Moreover these sealed pouches such as at 19 and 21 with different materials may be packed into cases for shipping to an assembly point, where different combinations may be incorporated in the final assembly, The original package may be sold with refills as a sales inducement. Since the pouches are sealed their contents are fresh until the time of use. These filled inner containers are in general so limp and flexible that there is no particular need for maintaining manufacturing tolerances, as the pressure on them conforms them to the walls about them.

Production is also made less expensive because all outer containers can be made on one apparatus, and there assembled with the inner containers which have been filled and sealed in separate apparatus, so that a separate outer container line is not needed for different material packaging.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics therefor. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. A multicompartment dispensing package comprising an outer container the walls of which are sufficiently rigid to be self-supporting but which are constructed and arranged to be relatively flexed by operator pressure to reduce the internal volume of said outer container, a plurality of inner containers occupying the internal volume of said outer container, said inner containers being individually sealed and having highly flexible walls of substantially film thickness so that they conform to the internal shape of said outer container within the package, and a discharge neck in a wall of the outer container having passage means therethrough terminating inwardly at said inner containers and being located at a point where said inner containers are all accessible for puncturing by means inserted through said neck passage means whereby when said inner container walls are flexed the contents of the inner containers discharge through said neck passage means, and a removable closure member on said neck normally closing said passage means.

2. The multicompartment dispensing package defined in claim 1, wherein said outer container is of the squeeze bottle type having walls of semi-rigid plastic.

3. The multicompartment dispensing package defined in claim 1, wherein said outer container is relatively stiff walled, with one wall portion slidably displaceable to exert pressure on all of said inner containers at the same time.

4. A multicompartment dispensing package comprising an outer container the walls of which are sufficiently rigid to be self-supporting but which are constructed and arranged to be relatively flexed by operator pressure to reduce the internal volume of said outer container, a plurality of inner containers occupying the internal volume of said outer container, said inner containers being individually sealed and having highly flexible walls of substantially film thickness so that they conform to the internal shape of said outer container, within the package, said inner containers having laterally inner walls in snugfull surface contact, a neck structure on said outer container formed with means providing passages therethrough to the individual inner containers and so disposed that the respective inner containers may be punctured by means inserted through said passages, and a removable closure member on said neck structure normally closing said passenges.

5. A multicompartment dispensing package comprising an outer container the walls of which are sufficiently rigid to be self-supporting but which are constructed and arranged to be relatively flexed by operator pressure to reduce the internal volume of said outer container, a plurality of inner containers occupying the internal volume of said outer container, said inner containers being individually sealed and having highly flexible walls of substantially film thickness so that they conform to the internal shape of said outer container within the package, a transverse relatively stiff wall dividing said outer container into individual compartments for said inner containers so that pressure on one inner container is not transmitted to the other, a neck structure on said outer container formed with means providing passages therethrough to the individual inner containers and so disposed that the respective inner containers may be punctured by means inserted through said passages, and a removable closure member on said neck structure normally closing said passages.

6. A multicompartment dispensing package comprising an outer container the walls of which are sufficiently rigid to be self-supporting but which are constructed and arranged to be relatively flexed by operator pressure to reduce the internal volume of said outer container, a plurality of inner containers occupying the internal volume of said outer container, said inner containers being individually sealed and having highly flexible walls of substantially film thickness so that they conform to the internal shape of said outer container within the package, and a discharge neck in a wall of the outer container located at a point where said inner containers are all ac-

cessible for puncturing by means inserted through said neck, whereby when said inner container walls are flexed the contents of the inner containers discharge through said neck, said neck having its inner end closed except for means providing individual apertures leading to the respective inner containers and a removable closure member on said neck normally closing said apertures.

7. In the multicompartment dispensing package defined in claim 6, said apertures adjacent one inner container being larger than that for the other inner container to ratio the discharged contents in desired proportion.

8. In the multicompartment container defined in claim 6, said neck having an external end face, said apertures terminating at their outer ends in said end face, partition means in said neck longitudinally isolating said apertures, and said removable closure member having an internal face adapted to seat on said neck end face and close said apertures.

References Cited by the Examiner

UNITED STATES PATENTS

2,661,870	12/53	Huenergardt	222—129
2,661,871	12/53	Huenergardt	222—129
2,743,038	4/56	Ferries	222—215 X
2,765,958	10/56	Betts	222—215 X
2,859,901	11/58	Ardito	222—541 X
2,861,714	11/58	Glossop	220—63
2,872,081	2/59	Randall	222—183
2,944,705	7/60	Strumor	222—94
3,100,063	8/63	Henriksen	222—94

FOREIGN PATENTS

731,937	6/32	France.
597,981	9/59	Italy.

RAPHAEL M. LUPO, *Primary Examiner.*