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(73) Proprietor: **THE PROCTER & GAMBLE COMPANY**

One Procter & Gamble Plaza
Cincinnati Ohio 45202(US)

(72) Inventor: **Cook, Calvin Small**
754 E. Grandview Blvd.

Erie Pennsylvania 16504(US)

Inventor: **Johnson, Robert Calvin**
6930 Alert New London Rd.

Okeana Ohio 45053(US)

Inventor: **Long, Daniel R.**

412 McClennand av.

Cincinnati Ohio 45217(US)

(74) Representative: **Suslic, Lydia et al**
Procter & Gamble

European Technical Center N.V.

Temselaan 100

B-1853 Strombeek-Bever (BE)

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Description

This invention relates to swivel-up type dispensing packages and, more particularly, to swivel-up type packages used to apply cream type deodorants or antiperspirants to the underarm.

Swivel-up dispensing packages have been used to dispense cosmetic cream products to the axillae of the user. Typically, the product is moved to the outer end by manually turning a hand wheel, which drives a feed screw and, in turn, an elevator. Moving the elevator into the product pressurizes it, causing the product to be extruded through the orifice onto the applying surface.

An undesirable side effect of this type of dispensing package which occurs when cream products are used, is that after the product has been dispensed, residual pressure within the product in the dispenser causes the product to weep onto the applying surface for a period of time after the user has ceased dispensing. Depending upon the material properties of the cream product contained in the dispensing package, separation may occur and individual components of the cream product could spread onto the applying surface. Either occurrence results in a soiled and undesirable appearance of the applying surface. Furthermore, after the product, or its components, has weeped onto the applying surface, the product, or its components, may spread to the container body and soil the hands of the user.

One approach to relieving the residual pressure on the product is to use a spring which urges the elevator away from the product. For example, in US-A-4,356,938 issued to Kayser on November 2, 1982, and US-A-4,461,407, issued to Finnegan on July 24, 1984 show caulking guns where a spring is used to push the ratchet bar away from the dispensed product. In US-A-3,756,730 issued to Spatz on September 4, 1973, this concept is applied to a dispenser having a feed screw, where a spring retracts the follower by reversing the rotation of the feed screw. One problem inherent with this approach is the unpredictability of the amount of retraction which will occur. Variations in the amount of product dispensed, system friction, extension of the spring, etc. will cause the variations in the amount of residual pressure remaining on the product. This dispensing package provides no assurance as to how much the driven member will be retracted, or whether the amount of retraction which does occur will be enough, or too much, for a given cream product.

Furthermore, dispensers presently used normally extrude cosmetic cream products at a uniform rate as the consumer turns the hand wheel to advance the elevator. When the product is dispensed at a uniform rate, the user may not be able

to visually judge the proper amount of deodorant or antiperspirant which should be applied to each underarm, much less dispense this amount on an ephemeral basis with any degree of precision. Applying too much deodorant results in product waste and staining of clothes, while applying too little deodorant prevents efficacious results from being obtained. Furthermore, when too much product is used at one time, excess product will remain on the applying surface creating a soiled and messy appearance.

It is an object of the invention to obviate the aforementioned problems related to weeping of the product contained by the dispensing package, or components of this product, onto the applying surface and the problems related to improper dosing of the product upon application.

It is also an object of this invention to provide a dispensing package which is easy to use while applying generally consistent amounts of a cream deodorant product on a ephemeral basis.

According to the present invention there is provided a dispensing package for cream products, said dispensing package comprising:

- (a) a container body having an interior chamber of generally uniform cross section to contain said product and a lengthwise-extending central axis, said container body further comprising a base at the bottom of said container body and having a hole therein;
- (b) an elevator having a cross section congruent to and mounted for axial movement within said chamber;
- (c) a feed screw and a nut coaxial of said central axis and threadably engaged, one of said feed screw and said nut being non-rotatable and associated with said elevator, the other being rotatable;
- (d) a plurality of cantilevered fingers affixed to one of said base and said container body and radially extending towards said central axis, said fingers terminating in a free end having a plurality of one of cams and followers thereon; a plurality of one of cams and followers which are complementary to the one of cams and followers on said fingers being associated with the one of said feed screw and said nut which is rotatable; and
- (e) an axially rotatable hand wheel disposed below said base and non-rotatably affixed to the said one of said feed screw and said nut which is rotatable, said feed screw extending through said hole in said base, whereby rotation of said feed screw or said nut advances said elevator while axially reciprocating said elevator one cycle for each predetermined increment of forward axial movement.

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed that the same will be better understood from the following description taken in conjunction with the accompanying drawings wherein like parts will be given the same reference number in the different figures.

Figure 1 is a partial vertical sectional view of an embodiment of the invention having the elevator in the distal position;

Figure 2 is a fragmentary perspective view of the hand wheel and feed screw assembly of Figure 1;

Figure 3 is a partial fragmentary vertical view of the drive and reciprocation mechanism of the embodiment of Figure 1 with the mechanism at the forward end of the cycle, immediately prior to retraction;

Figure 4 is a partial fragmentary vertical view, similar to that of Figure 3, with the mechanism retracted;

Figure 5 is a graphical representation of the operation of a dispenser having both pressure relief and discrete dosing characteristics;

Figure 6 is a graphical representation of the operation of a dispenser having exaggerated discrete dosing characteristics; and

Figure 7 is a graphical representation of the operation of a dispenser having pressure relief characteristics but not discrete dosing characteristics.

The swivel-up dispensing package, illustrated in Figure 1, utilizes a rotatable hand wheel 33' located at the base of the container body 21". At the top of the body 21" is applying surface 22" with one or more orifices 23". The applying surface 22" may be a separate element and retained in position, as shown, by a snap bead or other means known to one skilled in the art. The interior wall of the body 21" forms the product chamber, which holds the cream product, obviating the need for a separate cavity within the body 21".

Disposed within the body 21" is axially movable elevator 27" congruent to the inside of the body 21". Rigidly and nonrotatably associated with the bottom of the elevator 27" is internally threaded nut 32". The nut 32" should have an axial length approximately equal to the internal diameter of the nut 32" to help provide stability to the elevator 27" during its travel.

The base of the body 21" is arcuate, having a recess which is convex towards the applying surface 22". The base recess is disposed above the hand wheel 33' and has a centrally located axially tapered hole 50 therein. The lowest elevation of hole 50 is at the base recess. The hole 50 is centered between a plurality of cantilevered fingers 51, typically four. Each finger 51 has one end

affixed to the container body 21" base and extends upwardly towards the applying surface 22" and radially inwardly towards the central axis, terminating in a free end. The free ends of the fingers 51 are disposed at an elevation above the base and define the circumference of the top of hole 50, which circumference is smaller than that of hole 50 at the elevation of the base. The free ends of fingers 51 also define the highest axial position of hole 50. Each finger 51 is separated from the adjacent fingers 51 by slots, allowing each finger 51 to deflect independently of the other fingers 51.

Fingers 51 having fixed ends disposed about the circumference of base hole 50 and which form an angle of about 70° relative to the horizontal are suitable. It will be apparent to one skilled in the art that the fingers 51 could also be cantilevered from other positions on the base or from the inside wall of the container body 21", so long as the fingers 51 do not interfere with the movement of elevator 27". It will be further apparent that the fingers 51 could be oriented at other angles, including parallel to the horizontal.

Disposed on the free end of each finger 51, is a plurality of cams 34". The cams 34" may be shaped like saw tooth ratchet teeth, as shown, may be V-shaped, or any other profile judged to be advantageous by the user may be employed. For the embodiment shown herein, cams 34" having a forward face 37" ramped from about 20° to about 50°, preferably about 40° relative to the horizontal and an abrupt secondary face 38" having an axial dimension ranging from 0.25 mm to 1.40 mm (0.010 to 0.055 inches), preferably from 0.51 mm to 0.89 mm, are generally suitable. The free end of finger 51 will accommodate five to seven cams 34" thereon. If desired, a space or land (not shown) may be interposed between adjacent cams 34" to provide for a desired number of cams 34" on a finger 51 at a specified diameter and having a specified forward face 37" ramp angle.

A polypropylene body 21" having an integral base with a hole 50 of approximately 17.0 mm (.657 inches) diameter and four fingers 51 extending approximately 7.8 mm (.310 inches) in the axial direction, with free ends disposed on a diameter of approximately 11.9 mm (.470 inches), a circumferential dimension, or width, of approximately 6.4 mm (0.250 inches) and a radial dimension of not less than 1.9 mm (0.075 inches) has been found to work well. It is important that the radial dimension be large enough to provide sufficient contact area on the cam face to prevent excessive contact stress levels from occurring.

Referring to Figure 2, an axially rotatable hand wheel 33' is disposed beneath the arcuate base of the body 21" in the recess of the base. The hand wheel 33' should have a exterior profile generally

conforming to the recess of the base and extending outwardly from the sides of the body 21" so that the hand wheel 33' may be easily grasped by the user.

Nonrotatably associated with the hand wheel 33', preferably integral, is coaxial feed screw 31". Disposed about the periphery of the feed screw 31" is a plurality of ratchet teeth, or followers 35", adapted to coact with the cams 34" disposed on the free ends of the fingers 51 and preferably equal in number to the number cams 34" on the fingers 51. However, as shown, a minimum of about four teeth 35" are necessary to provide stability for the mechanism and prevent erratic movement of the elevator 27". The ratchet teeth, or followers 35", of the feed screw 31" may depend from a circumferential collar 52, as shown, or otherwise protrude laterally from the circumference of the feed screw 31".

Either the cams 34" or followers 35" should not be equally spaced about the central axis, such that any point in time, not all of the followers 35" are in an azimuthal position corresponding to the slots between the fingers 51. This can be accomplished by having each of the four fingers 51 subtend an arc not equal to 90°. The slots are no wider than three-fourths of a tooth 37", to provide stability to the followers 35". Preferentially, at least four followers 35", spaced approximately 90° apart, are engaged with the cams 34" at all times.

The hand wheel 33 and feed screw 31" assembly has a return spring 53 associated therewith. The return spring 53 is preferentially incorporated into the hand wheel 33', as shown, to prevent accidental dispensing of product should the hand wheel 33' be bumped, as for example, during packing of the dispensing containers. One manner in which the return spring 53 can be incorporated into the hand wheel 33' is to provide a plurality of spokes extending from the central portion of the hand wheel 33' to the periphery of the hand wheel 33' and radiating in a spiral pattern as shown. The spokes flex, allowing relative axial displacement between feed screw 31" and hand wheel 33'. The spiral pattern of the spokes should be such that the spokes are tensioned as the hand wheel 33' is rotated. Alternatively, it will be apparent to one skilled in the art, that the return spring 53 may be external the hand wheel 33', such as a leaf spring (not shown) cantilevered from the interior of the container body 21".

For the embodiment described herein, an acetal hand wheel 33' having a diameter at the lowermost portion of approximately 37.3 mm (1.47 inches) and a thickness of approximately 1.4 to 1.5 mm (.055 to .060 inches) is suitable. The plurality of followers 35" may be disposed approximately 9.0 mm (.355 inches) above the top of the hand

wheel 33'. Approximately 14.3 mm (.562 inches) above the top of the hand wheel 33' is a suitable elevation for the axial position of the collar 52. A collar 52 having a diameter of about 7.5 mm (.297 inches) is sufficiently narrow to push through the hole 50 between the free ends of the fingers 51. The proximal end of the feed screw 31" is preferentially disposed immediately above the collar 52. A spring 53 having a rate of approximately 3600 gm/cm (20 pounds per inch) is suitable. Such a spring rate can be approximated by a triskelion shaped spring 53 having spokes approximately 0.8 to 0.9 mm (.030 to .035 inches) in thickness, approximately 4.6 mm wide (.180 inches) and separated by slots approximately 1.0 mm (.040 inches) wide.

One suitable drive means has an elevator 27" of approximately 11 square centimeters (1.7 square inches) and a feed screw 31" of approximately 5.6mm (.220 inches) diameter. The feed screw 31" is centered between approximately 28 cams 34" on a diameter of about 13.8mm (.540 inches). The cams 34" have a forward face 37" inclined at approximately 40° relative to the horizontal and an axial dimension of about 0.51mm (.020 inches). A feed screw 31" which axially advances about 1.3mm (.05 inches) per rotation will dispense approximately .045 cubic centimeters of the cream product described above each time a cam 34 is traced. If the feed screw 31" is made to advance about 5.1mm (.20 inches) per rotation, approximately .18 cubic centimeters of the product is dispensed each time a cam 34" is traced.

The package is assembled by inserting the elevator 27" in the top of the product chamber and pushing the elevator 27" downwardly until the nut 32" protrudes through the hole 50 in the base. The feed screw 31" is then threadably engaged with the nut 32", and the hand wheel 33', feed screw 31" and elevator 27" are pushed upwardly towards the top of the container body 21", until the collar 52 snaps into place above the plurality of fingers 51. The fingers 51 will spring outwardly until admitting the collar 52, but will be compressed and engage the collar 52 should one attempt to retract or pull the hand wheel 33' back out of the bottom of the dispensing package. The feedscrew 31" is rotated via hand wheel 33', drawing the elevator 27" assembly to its proximal, or lowermost, position.

In operation, as the user rotates the hand wheel 33', the followers 35" ride up the ramped forward cam faces 37", causing an axial displacement of the feed screw 31" and hence elevator 27" assembly, as shown in Figure 12. After reaching the crest 39" of the cams 34", the feed screw 31" and elevator 27" retract to the proximal position shown in Figure 4. As the feed screw 31" is turned

relative to the nut 32" which is associated with the elevator 27", a separate axial advance is caused thereby. The superposition of the displacements resulting from the interaction of the cams 34" and followers 35" and advance of the elevator 27" due to relative rotation with the feedscrew, causes the elevator 27" to advance enough to extrude product through the orifices 23", then retract to relieve residual pressure on the product.

As the user turns the hand wheel 33', it is restrained from axial movement by bearing against the base of the body 21". However, as the feed screw 31" rides up on the forward cam faces 37" the spokes of spring 53 are axially tensioned and provide the return force necessary to cause retraction of the feed screw 31" and elevator 27" assembly. After the feed screw 31" assembly reaches the crest 39" of the cam 34" faces, the tension in the spokes of the return spring 53 retracts the feed screw 31" and elevator 27" assembly to the proximal position of Figure 4.

The dispenser of the invention described in Figures 1-4, are equipped to provide both discrete dosing and pressure relief of the cream product. Either characteristic can be amplified or reduced, as necessary to accommodate a specific combination of dispensing package and cream product. How these characteristics are related, and can be tuned, to provide the desired operation of the dispensing package, is best illustrated by referring to the graphical illustrations shown in Figures 5 through 7.

For a product of a given yield pressure, the graphs illustrate that when less force is applied to expel the product through orifices 23", less residual pressure will remain on the product. The amount of force applied to expel the product is related to the axial advance caused by rotation of the feedscrew and the cross-sectional area, and to a lesser extent distribution, of orifices 23". As the yield pressure remaining within the product after dispensation increases, the amount of axial retraction caused by cams 34" must be proportionally increased. This will prevent the product or its components from weeping onto the applying surface 22". Furthermore, the container body 21" is not perfectly rigid and may be placed in tension by high residual yield pressures.

The elevator displacement is graphically illustrated by Figure 5, which shows the relationships between elevator displacement and product dispensed on the vertical axis and hand wheel 33' rotation on the horizontal axis. A line 61 drawn from the first origin represents the elevator 27" displacement due to advance of the feed screw 31" caused by rotation relative to nut 32", without riding on the cams 34". Lines 62-63-62 of the same graph represent the axial advance of elevator 27" due to the

follower 35" tracing the profile of the saw tooth shaped cams 34".

Since the displacement component of lines 62-63 is oriented in the same sense as the advance of the feed screw 31" caused by rotation of the hand wheel 33' relative to nut 32", the displacement will be constructively superimposed, causing the follower 35" to undergo greater forward advance than if acted upon by either displacement alone. The displacements along lines 63-62 represents the retraction of the elevator 27" and follower 35", which is equal to and detracted from the forward axial displacement components, causing the follower 35" to stop in an axial position governed by the advance of feed screw 31".

The two curves shown on the first horizontal axis of Figure 5, can be superimposed, as shown by the resultant curve on the second horizontal axis, to give the axial displacement of the elevator 27". This superposition is shown by points 62 and 63 of the first graph shifting to points 62' and 63' in the second graph. The displacement of the follower 35" as it rides on cams 34" is superimposed with the axial displacement of the feed screw 31" to give the resultant cycle shown by lines 62'-63'-62'. If the feed screw displacement line 61 is superimposed on the resultant cycle 62'-63'-62', line 61 will intersect at points 62'.

The retraction of the elevator 27" occurs along the vertical line 63'-62' in Figure 5 after the product has been dispensed. When the elevator 27" retracts, pressure on the product is relieved. This results in a deadband, shown as line segment 63'-65 in Figure 5. The deadband 63'-65 is the portion of the cycle in which no dispensing of product occurs during the initial phase of forwards axial movement. As shown on the third horizontal axis of Figure 5, product is not dispensed until the elevator 27" is near point 65, the furthest axial position attained during the preceding cycle.

This phenomenon allows one skilled in the art to enhance the discrete incremental dosing of a dispensing package which accomplishes pressure relief. By having the deadband 63'-65 control a large percentage of the dispensing cycle and dispensation occur during only a small part of the cycle, as shown by the third axis of Figure 5, the user is discouraged from trying to extrude a partial dose by rotating the hand wheel 33' to an intermediate position between the cams 34". The amount of deadband 63'-65 in the cycle can be increased by reducing the lead angle of the feed screw 31".

By reducing the height of the secondary cam faces 38" to a point below which the amount of retraction does not relieve enough residual pressure to prevent weeping of the cream product onto the applying surface, the pressure relief char-

acteristic of the dispensing package can be reduced. However, if the lead angle of the feed screw 31" is adjusted, as described above, to provide a small advance of the elevator 27", relative to the advance due to the cams 34", the dosing feature described above is maintained.

This dosing effect is characterized by dispensing product only during a short part of each cycle. Typically, when approximately one quarter or less of the rotation between "clicks" dispenses product, and the remaining rotation advances the elevator 27" a distance which is insufficient to dispense product, the dosing effect defined by this invention is maintained. Dispensing, at a non-uniform rate, which gives discrete dosing can be maintained with a deadband 63'-65 of less than one-half the dispensing cycle, but a deadband of three-fourths cycle or greater is preferred.

This dosing effect can be amplified, as graphically illustrated in Figure 6, by adding spaces or lands between the cams 34" which cause the follower 35" to dwell in the axial direction. There is negligible, if any, product dispensed in the large part of the cycle 62"-65' that is characterized only by the advance of the feed screw 31" and by riding up the cam to the maximum forward displacement of the previous cycle. As shown on the second horizontal axis of Figure 6, the dispensation of the product will be effectively limited to that portion of the cycle 65'-63", which includes both the axial advance of the cam 34" and feed screw 31" beyond the furthest axial position of the previous cycle.

In a contrary fashion, the invention can be adapted to a dispensing package which emphasizes pressure relief but not the dosing effect. If the lead angle of the feed screw 31" is increased, and the height of cams 34" retracts the elevator 27" a distance which is sufficient to relieve the residual pressure to a degree which prevents weeping onto surface 22", as graphically illustrated by the increased slope of line 61" of Figure 7, the invention increases the pressure relief without increasing the dosing effect. The height of the cams 34" will provide enough pressure relief to prevent weeping and the increased lead angle of the thread of the feed screw 31", will cause an exaggerated part of the cycle 65"-63'" to dispense product, as shown on the second horizontal axis of Figure 7. Thus, by selectively incorporating the proper cam height, feed screw lead angle, interior chamber cross section and properties of the cream product, the dispenser can be designed to amplify either the dosing characteristic, pressure relief characteristic, or both.

It will be apparent to one skilled in the art that a variety of alternative drive means are known to advance a feed screw. For example, the proximal

end of feed screw 31" could be fitted with gear teeth. These gear teeth could then be engaged with the teeth of a mating gear which extends outside of the container body to be rotated by the user and in turn drive the feed screw 31". Such a device is closely related to the embodiment as described above, differing only in that the rotatable hand wheel 33' is a gear which drives feed screw 31".

A variety of related drive means are known to advance the elevator 27" of the swivel-up dispensing package described above. These rely on relative motion between a feed screw 31" and a nut 32" in the package. Either can be rotated to provide the movement of the elevator 27" depending on the arrangement. A family of mechanisms could be constructed having a non-rotating nut 32" and rotating feed screw 31". For example, the nut 32" can be attached to the elevator 27" and an axially affixed feed screw 31" rotated, or the nut 32" could be mounted in fixed relationship with the package body 21" and a feed screw 31", rotatably affixed to the elevator 27", turned to effect dispensing. Alternatively, a family of other mechanisms can be constructed having a rotating nut 32" and a non-rotating feed screw 31". So long as this relative rotation between the nut 32" and feed screw 31" is maintained, either family of mechanisms would be a feasible drive means for the dispensing package.

There is also a variety of closely related and feasible alternative embodiments for the cam 34" and follower 35" system. The embodiment illustrated by the figures show a plurality of stationary cams 34" and followers 35" which are associated with the elevator 27" through a rotating hand wheel 33'. The illustrated followers 35" are specifically adapted to the saw tooth shaped profile of cams 34". Obviously, a generic follower having one or more axial tines, equally suited to tracing a variety of cam 34" profiles could be utilized. The designer may additionally wish to interchange the positions of the cam 34" and follower 35", such that the follower 35" is stationary, and the cam 34" is associated with the rotating component and elevator. This is easily accomplished since the elevator 27" and follower 35" can be associated with and driven either by riding on the axial motion of a follower 35" or a cam 34". Many other changes can be made without departure from the spirit and scope of the present invention.

Claims

1. A dispensing package for cream products, said dispensing package comprising:
 - (a) a container body (21") having an interior chamber of generally uniform cross section to contain said product and a lengthwise-

extending central axis, said container body (21'') further comprising a base at the bottom of said container body (21'') and having a hole (50) therein;

(b) an elevator (27'') having a cross section congruent to and mounted for axial movement within said chamber; and

(c) a feed screw (31'') and a nut (32'') coaxial of said central axis and threadably engaged, one of said feed screw (31'') and said nut (32'') being non-rotatable and associated with said elevator (27''), the other being rotatable;

characterized in that said dispensing package additionally comprises:

(d) a plurality of cantilevered fingers (51) affixed to one of said base and said container body (21'') and radially extending towards said central axis, said fingers (51) terminating in a free end having a plurality of one of cams (34'') and followers (35'') thereon; a plurality of one of cams (34'') and followers (35'') which are complementary to the one of cams (34'') and followers (35'') on said fingers (51) being associated with the one of said feed screw (31'') and said nut (32'') which is rotatable; and

(e) an axially rotatable hand wheel (33') disposed below said base and non-rotatably affixed to the said one of said feed screw (31'') and said nut (32'') which is rotatable, said feed screw (31'') extending through said hole (50) in said base, whereby rotation of said feed screw (31'') or said nut (32'') advances said elevator (27'') while axially reciprocating said elevator (27'') one cycle for each predetermined increment of forward axial movement.

2. A dispensing package according to claim 1 characterized in that one of said cam (34'') and said follower (35'') is axially rotatable, the other of said cam (34'') and said follower (35'') is non-rotatable, said cam (34'') and follower (35'') being biased towards one another and adapted to provide axial reciprocating movement to the elevator (27''), reflecting successive rises and falls when one is rotated with respect to the other.

3. A dispensing package according to claim 1 or 2 characterized in that the means to cause axial reciprocation results in a uniform retraction of the elevator (27'') for each predetermined increment of forward axial movement.

4. A dispensing package according to any one of the preceding claims characterized in that the

advance of the elevator (27'') is caused by the relative rotation between a nut (32'') and feed screw (31'') and is superimposed with axial reciprocation caused by a cam (34'') and follower (35'').

5. A dispensing package according to claim 1 characterized in that the plurality of cams (34'') have a generally saw tooth shaped profile or a generally V-shaped profile and the plurality of followers (35'') have a generally saw tooth shaped profile or a generally V-shaped profile and is adapted to engage with said cams (34'').

6. A dispensing package according to claim 5 characterized in that said cams (34'') have an axial dimension ranging from 0.25mm to 1.40mm and preferably ranging from 0.51mm to 0.89mm.

7. A dispensing package according to claim 1 characterized by further comprising a circumferential collar (52) affixed to said feed screw (31'') and adapted to prevent said feed screw (31'') from being retracted through said hole (50) in said base.

8. A dispensing package according to claim 1 characterized in that said plurality of fingers (51) is four.

9. A dispensing package according to claim 8 characterized by one of said cams (34'') and followers (35'') are not equally spaced about said axis.

10. A dispensing package according to claim 1 or 2 characterized in that said cam (34'') and said follower (35'') are biased towards one another by a spring (40) integral with said handwheel (33').

Patentansprüche

1. Spender-Verpackung für Cremeprodukte, mit:
 - (a) einem Behälterkörper (21'') mit einer Innenkammer mit allgemein gleichförmigem Querschnitt zur Aufnahme des Produktes und einer sich längserstreckenden zentralen Achse, wobei der Behälterkörper (21'') ferner eine Basis am Boden des Behälterkörpers (21'') mit einer Öffnung (50) darin aufweist;
 - (b) einem Heber (27'') mit einem der Kammer kongruenten Querschnitt, der in der Kammer axial beweglich gelagert ist; und

(c) einer Förderschraube (31'') und einer Mutter (32''), die zu der zentralen Achse koaxial sind und miteinander in Gewindeeingriff stehen, wobei entweder die Förderschraube (31'') oder die Mutter (32'') unverdrehbar und mit dem Heber (27'') verbunden ist und der jeweils andere Teil drehbar ist;

dadurch gekennzeichnet, daß die Spender-Verpackung ferner aufweist:

(d) eine Mehrzahl von frei auskragenden Fingern (51), die an der Basis oder am Behälterkörper (21'') befestigt sind und sich radial in Richtung auf die zentrale Achse erstrecken, wobei die Finger (51) in einem freien Ende enden, das eine Mehrzahl von Steuernocken (34'') oder eine Mehrzahl von Abtastern (35'') aufweist; wobei die jeweils andere Mehrzahl von Steuernocken (34'') bzw. Abtastern (35''), die zu der erstgenannten Mehrzahl von Steuernocken (34'') bzw. Abtastern (35'') auf den Fingern (51) komplementär ist, mit der genannten verdrehbaren Förderschraube (31'') bzw. Mutter (32'') verbunden ist; und

(e) ein axial verdrehbares Handrad (33'), das unterhalb der Basis angeordnet ist und unverdrehbar mit der verdrehbaren Förderschraube (31'') bzw. Mutter (32'') verbunden ist, wobei sich die Förderschraube (31'') durch die Öffnung (50) in der Basis hindurch erstreckt, wodurch eine Verdrehung der Förderschraube (31'') bzw. Mutter (32'') den Heber (27'') verschiebt und bei jedem vorgegebenen Inkrement der Vorwärtsaxialbewegung einmal axial hin- und herbewegt.

2. Spender-Verpackung nach Anspruch 1, dadurch gekennzeichnet, daß der Steuernocken (34'') oder der Abtaster (35'') axial verdrehbar ist, und entsprechend der Abtaster (35'') bzw. der Steuernocken (34'') unverdrehbar ist, wobei der Steuernocken (34'') und der Abtaster (35'') gegeneinander vorgespannt sind und dafür ausgelegt sind, dem Heber (27'') eine axial hin- und hergehende Bewegung zu erteilen, was aufeinanderfolgende Anstiege und Abfälle ergibt, wenn der eine Teil gegenüber dem anderen verdreht wird.

3. Spender-Verpackung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Mittel zum Erzeugen der axial hin- und hergehenden Bewegung zu einem gleichförmigen Zurückziehen des Hebers (27'') bei jedem vorgegebenen Inkrement der Vorwärtsaxialbewegung führen.

4. Spender-Verpackung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Vorschub des Hebers (27'') durch die Relativedrehung zwischen einer Mutter (32'') und einer Förderschraube (31'') bewirkt wird und mit der axial hin- und hergehenden Bewegung überlagert ist, die von einem Steuernocken (34'') und einem Abtaster (37'') bewirkt wird.

5. Spender-Verpackung nach Anspruch 1, dadurch gekennzeichnet, daß die Mehrzahl von Steuernocken (34'') ein allgemein sägezahnförmiges Profil oder ein allgemein V-förmiges Profil hat und die Mehrzahl von Abtastern (35'') ein allgemein sägezahnförmiges Profil oder ein allgemein V-förmiges Profil hat und dafür ausgelegt ist, mit den Steuernocken (34'') in Eingriff zu gelangen.

6. Spender-Verpackung nach Anspruch 5, dadurch gekennzeichnet, daß die Steuernocken (34'') eine Axialabmessung im Bereich von 0,25 mm bis 1,40 mm und bevorzugt von 0,51 mm bis 0,89 mm haben.

7. Spender-Verpackung nach Anspruch 1, dadurch gekennzeichnet, daß sie ferner einen Umfangskragen (52) aufweist, der an der Förderschraube (31'') befestigt ist und dafür ausgelegt ist, zu verhindern, daß die Förderschraube (31'') durch die Öffnung (50) in der Basis hindurchgezogen wird.

8. Spender-Verpackung nach Anspruch 1, dadurch gekennzeichnet, daß die Anzahl der Finger (51) vier ist.

9. Spender-Verpackung nach Anspruch 8, dadurch gekennzeichnet, daß die Steuernocken (34'') oder die Abtaster (37'') nicht in gleichem Abstand um die Achse herum angeordnet sind.

10. Verpackung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Steuernocken (34'') und der Abtaster (35'') durch eine Feder (40) gegeneinander vorgespannt sind, die integral mit dem Handrad (33') ausgeführt ist.

Revendications

1. Emballage distributeur pour des produits sous forme de crème, ledit emballage distributeur comprenant :

(a) un corps formant récipient (21'') possédant une chambre intérieure ayant une section transversale de forme générale uniforme destinée à loger ledit produit et un axe

central qui s'étend dans la direction longitudinale, ledit corps formant récipient (21'') comprenant, en outre, une base à la partie inférieure dudit corps formant récipient (21'') et ayant un trou (50) ménagé dans cette base;

(b) un dispositif élévateur (27'') possédant une section transversale correspondant à celle de ladite chambre et monté de manière à avoir un mouvement axial dans ladite chambre; et

(c) une vis d'alimentation (31'') et un écrou (32'') qui sont disposés de façon coaxiale audit axe central et engrènent par vissage, l'un de ladite vis d'alimentation (31'') et dudit écrou (32'') étant non rotatif et associé audit dispositif élévateur (27''), tandis que l'autre est rotatif;

caractérisé en ce que ledit emballage distributeur comprend en outre :

(d) une pluralité de doigts en porte-à-faux (51) fixés à l'un de ladite base et dudit corps formant récipient (21'') et s'étendant radialement vers ledit axe central, lesdits doigts (51) se terminant par une extrémité libre portant une pluralité de cames (34'') et d'éléments suiveurs (35'') sur celles-ci; une pluralité de l'une des cames (34'') et des éléments suiveurs (35''), qui sont complémentaires à l'une des cames (34'') et des éléments suiveurs (35'') situés sur lesdits doigts (51), étant associée à l'un de ladite vis d'alimentation (31'') et dudit écrou (32''), qui est apte à tourner; et

(e) un volant (33') qui peut tourner axialement disposé au-dessous de ladite base et fixé, d'une manière non rotative, à l'un de ladite vis d'alimentation (31'') et dudit écrou (32'') qui est apte à tourner, ladite vis d'alimentation (31'') traversant ledit trou (50) ménagé dans ladite base, si bien qu'une rotation de ladite vis d'alimentation (31'') ou dudit écrou (32'') fait avancer ledit dispositif élévateur (27''), tout en déplaçant axialement en va-et-vient ledit dispositif élévateur (27'') sur un cycle lors de chaque incrément prédéterminé de mouvement axial vers l'avant.

2. Emballage distributeur selon la revendication 1, caractérisé en ce que l'un de ladite came (34'') et dudit élément suiveur (35'') est apte à tourner axialement, l'autre de ladite came (34'') et dudit élément suiveur (35'') étant non rotatif, ladite came (34'') et ledit élément suiveur (35'') étant sollicités l'un vers l'autre et étant aptes à imprimer un mouvement axial alternatif au dispositif élévateur (27''), se traduisant par

des soulèvements et abaissements successifs lorsqu'un élément tourne par rapport à l'autre.

3. Emballage distributeur selon la revendication 1 ou 2, caractérisé en ce que les moyens servant à produire un déplacement alternatif axial provoque un retrait uniforme du dispositif élévateur (27'') pour chaque incrément prédéterminé de mouvement axial vers l'avant.

4. Emballage distributeur selon l'une quelconque des revendications précédentes, caractérisé en ce que l'avance du dispositif élévateur (27'') est provoquée par la rotation relative entre un écrou (32'') et une vis d'alimentation (31'') et qu'à cette avance est superposé un déplacement axial alternatif provoqué par une came (34'') et un élément suiveur (35'').

5. Emballage distributeur selon la revendication 1, caractérisé en ce que plusieurs cames (34'') possèdent un profil de forme générale en dents de scie ou un profil de forme générale en V et plusieurs des éléments suiveurs (35'') possèdent un profil de forme générale en dents de scie ou un profil de forme générale en V et sont aptes à engrener avec lesdites cames (34'').

6. Élément distributeur selon la revendication 5, caractérisé en ce que lesdites cames (34'') possèdent une dimension axiale qui est comprise entre 0,25 mm et 1,40 mm et, de préférence, entre 0,51 mm et 0,89 mm.

7. Emballage distributeur selon la revendication 1, caractérisé en ce qu'il comporte, en outre, un collier périphérique (52) fixé à ladite vis d'alimentation (31'') et apte à empêcher que ladite vis d'alimentation (31'') ne soit rétractée à travers ledit trou (50) dans ladite base.

8. Emballage distributeur selon la revendication 1, caractérisé en ce que ladite pluralité de doigts (51) comprend quatre doigts.

9. Ensemble distributeur selon la revendication 8, caractérisé en ce que l'une desdites cames (34'') et desdits éléments suiveurs (35'') n'est pas également espacé autour dudit axe.

10. Emballage distributeur selon la revendication 1 ou 2, caractérisé en ce que ladite came (34'') et ledit élément suiveur (35'') sont sollicités l'un vers l'autre par un ressort (40) solidaire dudit volant (33').

Fig. 1

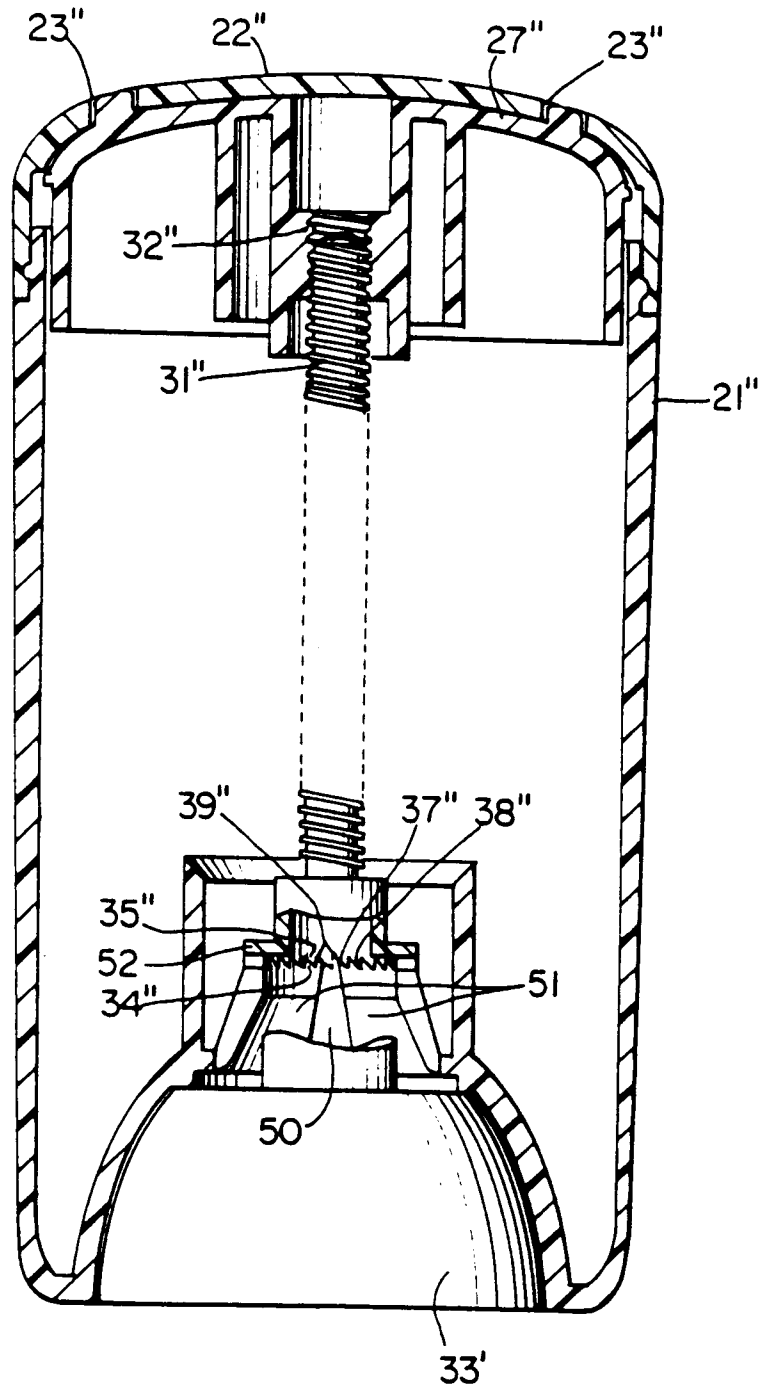


Fig. 4

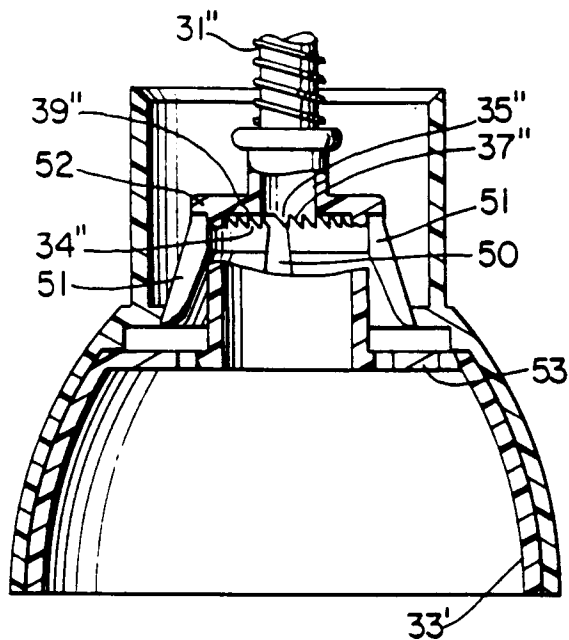


Fig. 3

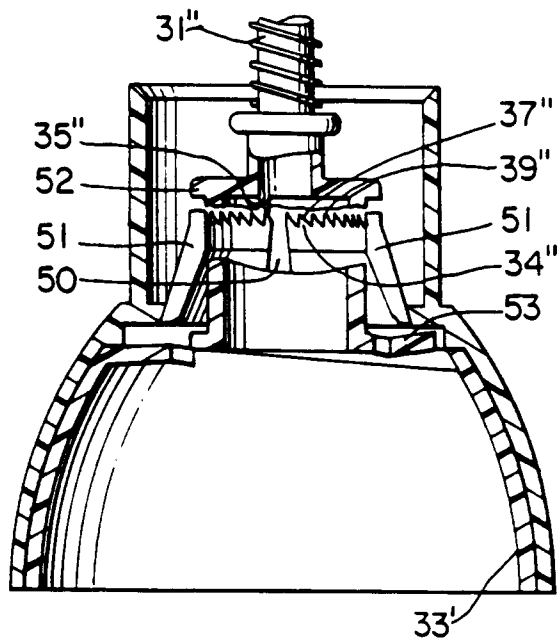


Fig. 2

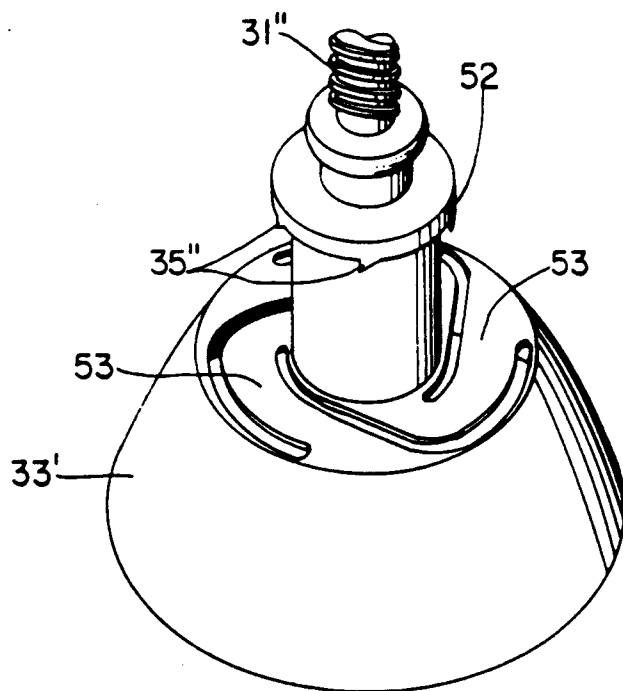


Fig. 5

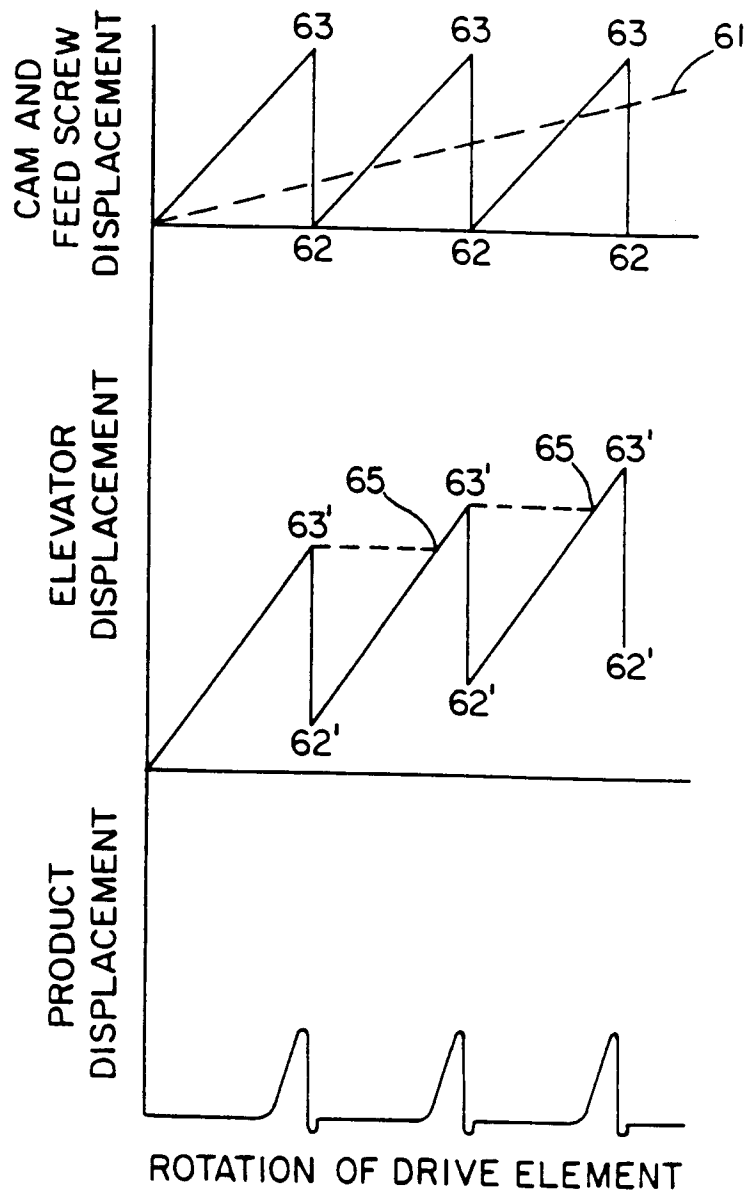


Fig. 6

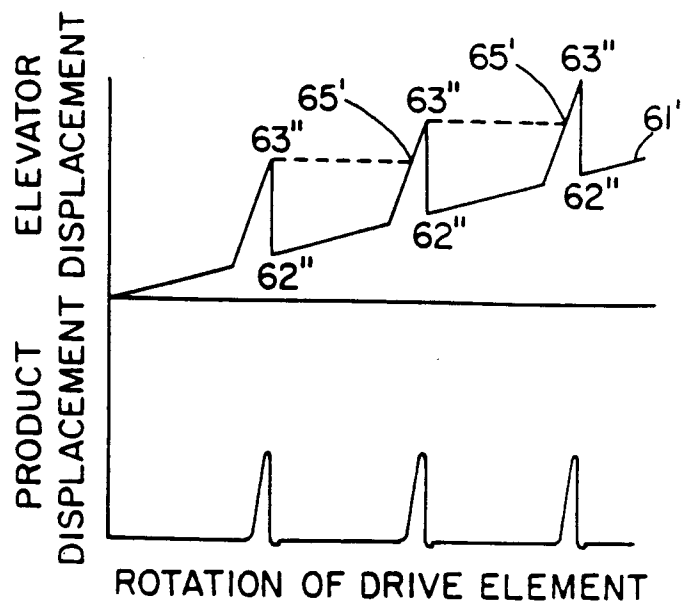


Fig. 7

