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(54) Stick-shaped product container provided with cylindrical aelix rod without slider

(57) stick shaped product container, eventually with added fluid product, comprising an outer tubular body (1, 101, 201), a closed bottom provided with an opening (13), on which is snap coupled a rotation body (16, 116) comprising a rotation knob (17, 117) provided with outer projections (22) axially engaged, free to rotate, with said opening (13) and a closes surface (21, 121) from which a coaxial, axial helix raises for a roto-translatory engagement with a axial helix shaped cavity (26, 126), obtained with the solidified liquefied stick product in touch with said axial helix (18) acting as a mold.

To a mutual rotation between the rotation knob and the outer body, a rotation of the axial helix (18) is obtained, said helix (18) by a thrusting action on the axial helix shaped cavity (26, 126), determines an axial movement of said stick, the latter being prevented to rotate by the axial guide of the inner wall.

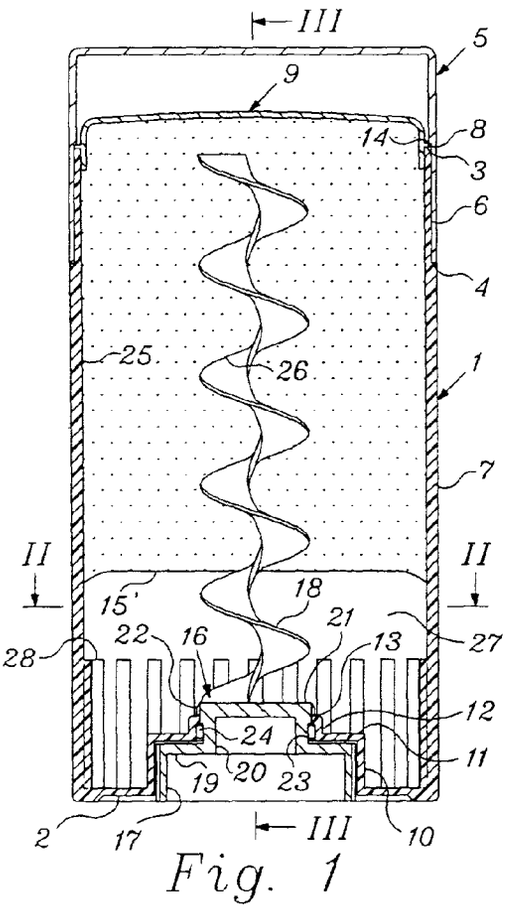

Fig. 1

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Description

The present invention refers to a container for solidified products, such as deodorants, lipsticks, stationary glue and like.

Containers having a stick holder slider are known, said slider being driven along the inner longitudinal axis by an outer tubular body operated by a situated below knob. axially coupled with, but freely rotating with respect to, the bottom of said outer body.

Following to a rotation of the knob, provided with an inside projecting threaded central rod, engaged by screwing with the central hole of the stick holder slider, the stick product moves axially, being the peripheral wall of said stick holder slider prevented to rotate:

- in view of its slidable not cylindrical section of a not cylindrical inner wall of the outer cylindrical body, for example in the oval-shaped deodorant containers;
- in view of the engagement of the axial groove provided with axial rib along the inner wall of the outer tubular body, for example in the cylindrical deodorants.

The containers proposed according to the known art, particularly for the mass market, such as those having an oval-shaped section and like, filling the product from the bottom of the container, are described in the US patents:

- 4,664,547, issued on 12.05.87, application N° 750,582, filed on 01.07.85, inventor W. Rosenwinkel, assigned to W. Braun Company;
- 4,702,399, issued on 27.10.87, application N° 788,143, filed on 16.10.85, inventor John Davis, assigned to Metal Box p.l.c., England;
- 5,007,755, application N° 417,260, filed on 05.10.89, inventor Harold R. Thompson, assigned to The Gillette Company, Mass. USA;
- 5,137,185, issued on 11.08.92, application N° 654,220, filed on 12.02.91 inventor Paul B. Mitchell, New Zealand;
- 5,181,790, issued on 26.01.93, application N° 796,446, filed on 22.11.91, inventor Marthe Lucas, France.

The above mentioned containers comprise at least 2 bodies for the closure system and at least 4 bodies for the container mechanism, all employing a stick holder screwing engaged with a screwed rod.

Furthermore, all the containers have at least a body with a detachable body;

the outer body, in the US patents nos. 4,664,547 and 5,007,755;
the stick holder in the container of US patent n° 4,702,399;
the knob, provided with a threaded rod, in the containers of the US patents nos. 5,181,790 and 5,137,185.

The mechanism according to the present invention, as described in the following, not providing any body with a detachable part, and particularly not providing any stick holder body, allows to remarkably cost reduction since provides, in function of the kind of product filling from the above or from the bottom, respectively one or two body for the closure system and only two bodies, instead of at least four, for the container mechanism.

In order to obtain the above mentioned features, the mechanism of the container according to the present invention is substantially comprised of:

- an outer tubular body, on the upper end of which abuts the cover, eventually provided with a cap for the formation of the upper end stick, and on the lower end of which is snap inserted for an axial engagement free to rotate,
- a rotation knob having an axial helix on its top surface, projecting within the container, co-acting with,
- a helicoidal complementary cavity coined from the realisation of the stick; in order to reach such a result, the liquid product is:
- filled in from the bottom of the container and then the knob with the relevant axial helix is snap-in fitted, or
- filled in from the above of the container, the knob and the relevant axial helix being already assembled,

to be subsequently let solidifying until reaching the stick shape, in an upset or upright position.

The axial helix rotates following a rotation of the knob, said helix being engaged with the relevant complementary helix axial cavity coined within the stick, said stick, being prevented to rotate by the not cylindrical section of the inner wall of the outer body, axially slides along said wall.

An important feature of this structure is that of replacing the screwed rod with an axial helix and the central thread of the stick holder with a threading of an axial helicoidal cavity obtained within the stick body.

This solution, not known in the prior art technique, has the advantage of using only two plastic bodies for the mechanism, as third body being used the same stick shaped solidified body.

Preferred embodiments and other features and advantages of the present invention will be described in the following for illustrative purposes, making reference to the enclosed drawings, wherein:

- figure 1 is a section view along the axial plane of a first example of stick shaped product container having a not circular shape, e.g. an oval shape;
- figure 2 is a section taken along the plane II-II of

figure 1;

- figure 3 is a section view along the axial plane rotated of 90° with respect to figure 1, according to the plane III-III of figure 1;
- figure 4 is a section view along the axial plane of the container of figure 1 upset showing the liquefied product filling step, before the assembling step;
- figure 5 is a particular of figure 1 showing the stick in its use final position;
- figures 6 and 7 are variations of stick containers having a not circular shape, e.g. an oval shape, with different filling systems from the above;
- figures 8 and 9 are a variation of stick container suitable for lip-stick, stationery, with altemative filling system having a double product, one thicker than the other;
- figures 10,11 are variations of figures 8, 9;
- figure 12 is a variation of a container, e.g. having an oval shape, with filling system having a double product, one of which stick shaped thrusting the other viscous fluid such as cream, gel, paste and like, through openings realised of the delivering top surface;
- figures 13, 14 are a variation of a container having a cylindrical stick, with axial helix integral with a support axial rod;
- figures 15, 16, 17 are variations of a container having cylindrical stick, provided with lower and upper rotation stops for the axial helix.

Making reference to figures 1, 2, 3, the container according to the present invention, shown as embodiment suitable for not cylindrical stick shaped products, such as oval shape and like, comprises an outer tubular body 1, a bottom surface 2 and an open top edged end 3.

Said outer tubular body 1 provides close to the top a peripheral shoulder 4, upon which the lower end of the cover 5 abuts, dividing the outer surface into two parts, the superior one 6 of which having a lower thickness with respect to the lower one 7.

On the open top edged end 3 a peripheral edge 8 outward projecting from the outer surface of a hollow body, named cap 9, abuts, conforming like a mold by its inner surface the upper end of the stick during the solidification process.

From the central limitation of the oval cross-sectioned bottom surface 2, a cylindrical wall portion raises axially toward the inside of the container, said surface 10 being provided with a flat top surface 11, from the inner diameter of which a second short cylindrical wall axially inside raises, said second wall having a lower diameter, on the upper end of which an annular edge projecting toward the centre with an opening 13 is obtained, suitable to determine first snap engagement means.

The three above described bodies are assembled in such a way that the cover 5 pushes by a step of the inner surface 14 on the peripheral outward projecting edge 8 of the cap 9 closing by a tight seal with the liquid product, the edge 3 of the upper end of the outer tubular body 1.

The above mentioned assembling, shown in figure 4, is upset and filled with product until the liquefied product level 15, through the opening 13 obtained on the bottom of the outer tubular body 1.

Within the opening 13 and the portion of the cylindrical wall 10, a rotation body 16 is telescopically inserted in an upset position.

Said rotation body 16 comprises a rotation knob 17 and an axial helix 18. The rotation knob 17 is made up of a tubular body provided with a flat top surface, from the inner diameter of which a second short peripheral cylindrical wall raises, having a lower diameter and provided with closed top surface 21 having projections 22 along the annular edge faced outward, in order to determine the second respective snap fitting means.

When the rotation knob 17 is completely inserted within the cylindrical wall 10, projections 22 faced outward passes over the opening 13, by a snap coupling, in order to close the bottom of the outer tubular body 1 and to axially engage, free to rotate, said rotation knob 17 with said bottom of the outer tubular body 1.

On the outer surface of the second short cylindrical wall 20 a little thickness reduction 23 is realised suitable to create an annular seal "O-ring" 24.

When the knob is completely inserted within the bottom of the outer tubular body 1, said annular seal "O-ring" 24 elastically bears on the inner surface of the second short cylindrical wall 12 to make by its rotational movement an annular hermetic seal against volatile substances eventually present in the contained product.

From the closed top surface 21 of the rotation knob 17 an axial helix raises, having constant radius and pitch, axially projecting within the container, substantially all along its length, close to the level of its upper end, when said knob is completely inserted within the bottom of the outer tubular body.

The axial helix 18 preferably has an outer cylindrical profile just a little lower than the diameter of the closed top surface 21, an inner cylindrical profile with a diameter reduced as more as it is possible and a very long pitch so as to determine a fast screwing.

Depending on the material employed, the axial helix 18 could be more or less retractable along its length.

As shown in figure 4, from the bottom surface 2 of the outer tubular body 1, upset and beforehand provided on its upper end with cap 9 and cover 5, the product is poured up to reach the liquefied product level 15.

After the snap introduction within the opening 13 of the rotation body 16, provided with knob 17, projections 22 faced outward and cylindrical axial helix 18, said axial helix 18 is immersed within the liquefied product and remains in this upset position until the complete solidification of the stick product.

When the stick product is solidified, the container is again upset to ready to use.

The stick takes the shape shown in figures 1 and 3

with the following limitations:

- a lateral surface conformed to the inner wall 25 of the outer body 1,
- a top end conformed to the inner surface of the cap 9,
- a bottom surface conformed to the solidification level 15', after that the axial helix 18 inserted and immersed within the product has modified by its volume the preceding level of the liquefied product 15,
- a cavity 26 having the shape of an axial helix, starting from the solidification level 15' having shape complementary to the axial helix 18, acting as a mold.

An important feature of the present invention is that the axial helix shaped cavity 26, complementary to the axial helix 1, obtained within the stick mass, allows that said stick is a body making part of the roto-translation mechanical system.

In fact, following to a rotation of the knob, a rotation of the axial helix 18 is obtained, i.e. the first rotation mechanical means, which by the thrusting action along its helical generated inclined plane along the relevant inclined plane of the axial helix shaped cavity 26 of the stick, i.e. the second roto-translation means, determines an axial movement downward or upward, of the stick, depending on the rotation direction, being the latter prevented to rotate by its not circular section:

- in the example of figures 1 - 7 and 12, with an oval cross-section within a relevant inner oval wall 25,
- in the example of figures 8 -11 and 13 - 17, with a circular cross-section and an annular groove 35, 135 within an inner circular wall 125, 225 provided with at least a relevant axial rib 34.

In the known containers, the stick is supported by a stick holder; lacking this body in the solution according to the present invention, the support of the stick is due to the axial helix shaped cavity 26 resting on the surface of the axial helix 18.

When the stick is used, also the resting surface of the axial helix shaped cavity 26 diminishes.

As it is shown in figure 5, when the stick is substantially completely consumed, the surface of the axial helix shaped cavity 26 is remarkably reduced, so as to determine the minimum resting surface of the stick when it is subjected to a pressure during its use directed from the up to the bottom.

When the stick is directed toward its bottom, corresponding to the solidification level 15', it is displaced downward and it can be damaged if a pushing action is exerted on the bottom of the container.

In order to avoid this opportunity, an empty zone 27 has been provided under the solidification level 15', so as to allow a stroke without damaging in the bottom of the stick.

To *obtain* a *better protection, it is possible to provide lower stops so that the bottom of the stick is prevented to further descend under a level established beforehand, said stops comprising* a *series of thin axial ribs* 28 *provided on the lower portion of the inner* wall 22 *of the outer tubular body 1.*

The thickness of these ribs determines a scraping action of the outer surface of the bottom of the stick, so as to induce the user to avoid to further move the stick downward beyond the pre-established lower stop, to avoid that the axial helix 18 forced to rotate cuts the axial helix shaped cavity 26 of the stick, being this surface a means determining the roto-translation motion.

Making reference to figures 6 and 7, the container according to the present invention is shown according to an altemative embodiment, suitable for cheaper containers since it is not provided with the cap 9.

The rotation body 16, comprising the rotation knob 17 ad the axial helix 18, is assembled by a snap coupling within the container before the product filling step. The liquefied product is poured from the above within the container up to reaching the upper level 29 under the edge 3 and left cooling until the complete solidification of the stick product.

The stick takes the shape shown in figures 6 and 7, with the following limitations:

- a lateral surface conformed to the inner wall 25 of the outer body 1,
- a top end conformed to the inner surface of the solidification surface of the upper level 29,
- a bottom surface conformed to a solidification level 30,
- a cavity 26 having the shape of an axial helix, starting from the solidification surface 30 of the upper level 29, having a shape complementary to the axial helix 18, acting as a mold.

The solidification surface 30 of the stick is complementary to:

- an oval transversal surface 31, positioned on the inner wall 25 at a height higher than the closed top surface 21, from which the inner annular edge axially descends,
- a tubular wall 32 joining with
- the flat top surface 11, from the inner diameter of which, in a inward axial direction, raises
- the second short cylindrical wall, having a lower diameter, in the upper edge of which it is realised
- the annular edge projecting toward the centre with the opening 13, snap coupled with the projections 22 faced outward, provided along the annular edge of the
- closed top surface 21, from which the axial helix 18 raises.

If the product has a sufficient consistency to with-

stand to fracture due to wrong operations against the bottom, as already described, the stick takes the shape of figure 6.

Instead, if the product has not a sufficient consistency, the stick after its solidification is raised, acting on the rotation knob 17, at a certain level so as to restore, as in case of figure 1 and already described, an empty zone 27, to allow a predetermined stroke without bottom damaging.

The upper end of the stick can thus remain with its solidification surface of the upper level 29, or, in case it is enough raised so that said upper level 29 is above the edge 3, it can be tapered by a spatula to have the upper flat end 33 of the stick on the same plane of the edge 3 of the container, as shown in figure 7.

Making reference to figures 8 and 9, the container according to the present invention is shown according to an altemative embodiment suitable for lip-stick, stationery glues and like cylindrical containers.

For a better explanation, the same elements already indicated with reference to the preceding claims, which have been structurally modified will be indicated by the same references with the add of 100.

As it is illustrated in figure 8 and figure 9, which is a section along the plane IX-IX of figure 8, the outer profile of the axial helix 18 can also generally speaking extend with any diameter up to the inner wall 125. Therefore, even if it is not shown in the drawings, the inner cylindrical profile can be, generally speaking and if it is preferred, with a bigger diameter.

In the containers shown in figures 8 and 9, the inner tubular wall 125 of the outer tubular body 101 has a circular cross-section and is provided with at least a guide axial rib 34 co-acting with a relevant guide axial groove 35 of the stick in order to prevent the rotation of said stick during the rotation movement of the axial helix 18.

In this container, the rotation knob 17 is under the bottom surface 102, lacking the container portion corresponding to the cylindrical wall portion 10 of the container shown in the preceding figures 1 - 7.

The filling according to an altemative variation is carried out with two different products, in different steps, said products once solidified realising a stick having two different consistencies along its height, divided by a separation line 36 between the products, in correspondence of said line the stick, faced toward the bottom has a short height 37, sufficient to define a slider function, is much more consistency with respect to the product faced toward the end, to better withstand to fracture, when it pushes against the bottom, and to the pressure directed toward the bottom, when the product is almost completely finished, see for example figure 5.

The short stick 37, being it also possible that is different with respect to the product to be used, is provided with a tubular outer wall having the guide axial groove 135 co-acting with the relevant guide axial rib 34 and an axial helix shaped central cavity 126.

In figure 10, according to a section similar to the plane IX-IX of figure 8 and wherein the parts corresponding to parts already illustrated in the preceding figures, but modified, are indicated by the same references adding 200, the container is illustrated according to an altemative variation having a heart - shaped section of the inner wall 225.

In the altemative embodiment of figure 11, the container has the upper end with a sloped edge 203, lying for example along a 30° oblique plane and provided with a corresponding cap 109 with relevant bottom plane 38 sloped of 30°, for the conformation of the upper end of the stick during the solidification process, with a filling from the bottom in an upset position.

Making reference to the figure 12, the container of the present invention, shown with an oval cross-section, is illustrated according to an alternative embodiment suitable for viscous fluid products, such as gel, cream, paste and like.

In this embodiment, the outer tubular body 201 has the upper end provided with a closed surface 39 having at least a delivery opening, preferably with many delivery openings, from which the fluid viscous product is delivered following to the control of the rotation knob 17.

A cap 209, inserted within the cover 5, closes by its bottom surface 41, complementary with respect to the closed surface 39, the delivery openings 40.

Said outer tubular body 201 has the lower end opened provided, at a certain height of the inner wall 25, with a little annular shoulder 42 determining a reduced thickness wall 43, where it is obtained on the inner wall at least a perimetrical groove 44, in order to determine a first engagement snap perimetrical means.

Inner part of the container is filled with a first viscous fluid product.

After the closure of the lower end of the outer tubular body 201 a bottom body 45 is introduced, part detached with respect to the bottom of the outer tubular body 1 shown in figures 1 - 7, provided with an oval cross-section bottom surface 202, centrally limited by:

- a coaxial portion of cylindrical wall 10, inwardly faced, provided with
- a flat top surface 11 from the lower diameter of which, in an axial direction toward the inside, it raises
- a second short cylindrical wall 12, having a lower diameter, on the upper end of which it is obtained
- an annular body projecting toward the centre with opening 13, suitable to determine a circular snap engagement with the projections 22 faced outward with respect to the rotation body 16.

From the periphery of the oval cross-sectioned bottom surface 202, it raises

- an oval tubular outer wall 46, with its open end abutted against the little annular shoulder 42, on the outer surface of which it is obtained

- at least a perimetrical edge 47 projecting outward, integrally coupled with the relevant perimetrical groove 44 of the outer tubular body 201.

When the rotation body 16 has been assembled in the container, in such a way that the outward facing projections 22 are snap circular engaged with and free to rotate with respect to the opening 13 of the bottom body 45, from the opening 48, obtained on the closed top surface 21, the second liquefied product is poured, said product not containing volatile substances that could evaporate through said opening 48.

As already described with respect to figure 8, the liquefied product is solidified with a short stick shape 37 sufficient to determine a stick slider supporting the viscous fluid product to be used.

As in figures 8 - 11, in figures from 13 to 17, embodiments of containers to be filled from the bottom or from the above are shown, the filling step being followed by an upset for the upset solidification of the cylindrical stick product, provided along its outer surface with at least a guide axial groove 35 engaged with at least a relevant guide axial rib 34 on the surface of the inner wall 125 of the outer body 101.

For a higher rigidity, in a different embodiment, the axial helix 18 is provided with an axial rod 49 integral with its inner cylindrical profile.

Making reference to figure 13, the outer tubular body 101 provides on the outer surface a peripheral shoulder 104, upon which the lower end of the cover 205 abuts, dividing said outer surface into two parts, the upper one 106 having a reduced thickness and being provided with a thread 50 to be screwed with the cover 205.

On the edge 103, a relevant peripheral body 51 having an hermetic seal with respect to the liquid product abuts, said body projecting downward from a cap 309, within the cover 205, conforming by its inner surface acting like a mold the upper surface of the stick during the solidification process.

The outer tubular body 101 provides a bottom part 102 centrally delimited by a short coaxial cylindrical wall 12, on the upper end of which an annular edge centrally projecting and with an opening 13 is obtained, in order to determine a first snap means.

Within the opening 13 a rotation body 116 is telescopically introduced, comprising: a rotation knob 117, provided with a top surface 119, a short cylindrical wall 120, a closed top surface 121, with projections 22 faced outward, second relevant snap engagement means, from which an axial helix 18 provided with an axial rod 49 raises, said helix being integral with its inner cylindrical profile.

When the rotation body 116 is completely introduced within the short cylindrical wall 12, the projections 22 faced outward snap over the opening 13, to axially engage, free to rotate, said rotation knob 117 with said bottom 102 of the outer tubular body 101.

Under the cover 205, the thickness of the lower outer surface 7 of the outer tubular body 101 is uniform up to the annular notch 52, from which two different thin tubular walls 53 and 54, and therefore elastic, continue separated each other following the respective profiles of the outer wall and of the inner wall, the latter being coupled to the bottom surface 102.

The lower end of the outer tubular thin wall 53 elastically frictions, with a hermetic sealing, with the annular comer 55 inside faced on the inclined annular edge 56 placed on the periphery of the flat top surface 119 of the rotation knob 117, in order to reduce the use of an added body, such as the "O-ring" annular seal 24.

In order to avoid a wrong downward stroke, an empty zone 27 and some wedged thin sloped axial ribs 57 have been provided on the bottom of the inner portion 125, comprising some narrowing of the inner tubular thin wall 54 to determine a scraping action of the bottom of the stick in order to induce the user to avoid to operate the same beyond the lower pre-established stop level.

In the container shown in figure 13, it can happen that the cover can be introduced and screwed when the stick is not beforehand retracted but instead remains in a position raised with respect to the annular body 103.

In this case the cap 309, powerfully controlled by the screwing of the cover 205, with the thread of the stick top surface, can freely slide, with a calibrated friction resistance, sliding within the inner tubular wall of said cover 205, in such a way to avoid the fracture of the axial helix shaped cavity of the stick, being prevented to go down.

In figure 15 and in figure 16, section according to the plane XVI-XVI of figure 115, and figure 17, alternative of containers are illustrated, with a cylindrical cross-section stick as in figure 13, provided with upper and lower mechanical stops.

With reference to figure 15, the outer tubular body 101 provides a peripheral shoulder 104, upon which the lower end 58 of the cap 409 within the cover 105 abuts, dividing the outer surface into two parts, the upper one 106 having a reduced thickness.

Under said peripheral shoulder 104, the thickness of the outer tubular body 101 divides into two different tubular thin walls 153 and 154, separated by a tubular cavity 152, continuing separated each other following the relevant profiles of the outer wall and of the inner wall.

The thin tubular wall 154 joins with the bottom surface 102, the latter being provided with outer annular edge 59 on the outer periphery and inner annular edge 60 on the inner periphery, both projecting downward.

Between said annular edges a spiral labyrinth, shown with 3 - 4 tums, is obtained, comprising a spiral groove 61, with inside stop 62, outer stop 63, defined by spiral edges 64 projecting downward, wherein an upper tooth 65 obtained on the upper surface of a thin ring body 66, between said spiral labyrinth and the flat top surface 119 of the rotation knob 117.

On the lower surface of said thin ring body 66 a relevant lower tooth 67 is obtained, slidingly engaged within a radial slit 68, obtained in the flat top surface 119, with a lower stop 69, in correspondence of the inner annular edge 60 and upper stop 70 in correspondence of the outer annular edge 59.

The outer tubular body 101 can freely rotate only for 3 - 4 turns in either direction with respect to the rotation body 116 since the upper tooth 65 moves from the inner stop 62, in correspondence of the inner annular body 60, to the outer stop 63, in correspondence of the outer annular body, and vice versa, covering 3 - 4 tums along the spiral groove 61, while the relevant lower tooth 67 moves along the radial slit guide 68, between the lower stop 69 and the upper stop 70.

In this case, if the stick, as illustrated in figure 15, is preformed, when the upper tooth 65 is in the position of the inner stop 62 and the lower tooth 67 is in the position of the lower stop 69, the bottom of the stick will be not allowed to go under said level, even if operated, since the inner 62 and lower 67 mechanical stops prevent this movement.

Thus a programmed final portion of the stick cannot go completely out of the container edge 103, even if operated, since the outer 63 and upper 70 mechanical stops prevent this movement.

The upper tooth 65 can be realised, according to an alternative embodiment not shown in the drawings, on a mono-piece molded elastic arcuate strip realised on the crown top wall 119, so as to replace the thin ring separated body 66.

An alternative system for the upper and lower mechanical kind stops is illustrated in figure 17.

From the top crown wall 119 a cylindrical wall 220 raises, on the outer surface of which a thread 71 is realised, having narrow pitches substantially with an equal number of those of the cylindrical axial helix 18, screwed with a thin ring body 72, provided on the outer periphery of a series of axial grooves 73, like the millerighe kind, engaged with at least a rib 74 obtained within the short cylindrical wall 112, raising from the periphery of the bottom surface 102.

The outer tubular body 101 is free to rotate, as shown in figure 17, only for 3 - 4 turns in either direction with respect to the rotation body 116 since the threaded thin ring body 72 can only slide from the lower stop, when it is in correspondence of the flat top surface 119, to the upper stop, when it is in correspondence of the second transversal crown surface 75, the outer periphery of which is joined with the short cylindrical wall 112, raising from the periphery of the bottom surface 102.

In this case, as shown in figure 17, if the stick is preformed when the threaded ring 72 is in the position of the lower stop, in correspondence of the flat top surface 119, the bottom of the stick will never go down this level, even if operated, since the mechanical kind stop prevents it.

Therefore, a programmed final portion of the stick will not be allowed to completely go out of the container edge 103, even if operated, since the upper mechanical stop, in correspondence of the second crown transversal surface 75, prevents it.

Claims

1. Delivery container containing a solidified stick shaped product, comprising:

   - (a) a cover (5, 105, 205),
   - (b) an outer tubular body (1, 101, 201) with an upper end for the delivery of the product, an inner wall (25, 125, 225), able to determine an axial guide, a closed bottom having an opening (13), upon which is coupled,
   - (c) a rotation body (16, 116) comprising

     - (c1) a rotation knob (17,117) coupable with said opening,
     - (c2) an axial helix (18) raising from said closed top surface (21, 121), inside coaxial with respect to the outer tubular body, substantially all along its height,

   - (d9 at least a stick solidified product, having an axial helix shaped cavity, roto-traslatory engaged with and supporting the stick with said helix (18),

   so that to a mutual rotation between the rotation knob and the outer tubular body, a rotation of the axial helix (18) is obtained, said helix (18) by the thrusting action of its inclined plane on the relevant inclined plane of the axial helix shaped cavity (26, 126), determines an axial upward or downward movement of said stick, depending on the rotation direction, the latter being prevented to rotate.

2. Container according to claim 1, characterised in that said outer tubular body (1, 101, 201) provides an upper portion of outer surface (6, 106) with reduced thickness, upon which the cover abuts.

3. Container according to claim 1, characterised in that said introduction of the rotation body (16, 116) within the opening (13) of the closed bottom is a snap introduction.

4. Container according to claim 1, characterised in that said rotation knob provides on the periphery of its outer wall (20, 120, 220) at least a projection (22) faced outward able to determine an axial freely rotating means, for engagement with said opening (13) and closed top surface (21,121).

5. Container according to claim 1, characterised in

that said axial helix (18) has constant radius and pitch.

6. Container according to claim 1, characterised in that said axial helix shaped cavity (26, 126) is obtained by filling said outer tubular body (1, 101, 201) with the stick solidified product contacting said axial helix (18) acting as a mold.

7. Container according to claim 1, characterised in that the rotation of the stick with respect to the tubular body is prevented by the axial guide of the inner wall or by at least a suitable rib realised within said tubular body.

8. Container according to claim 1, characterised in that the generation of the axial helix shaped cavity (26, 126), acting as a support, that can be reduced consuming the stick product, resting on the generation of the axial helix (18) of the rotation body (16, 116) has a long roto-translation pitch for a fast motion, at least with a thread comprising between one and six pitches.

9. Container according to claim 1, characterised in that the axial helix (18) has an inner profile having a radius between a zero value and a value lower than the outer profile and respectively an outer profile having a radius lower than the closed top surface (21) and in any case included between a value bigger than the one of the inner profile and a value corresponding to the innermost point of the inner wall (25, 125, 225).

10. Container according to claim 1, characterised in that the axial helix (18) is provided on its inner profile with an axial rod (49) able to make it non deformable, independently of the material by which it is realised.

11. Container according to claim 1, characterised in that on the periphery of the outer wall (20, 120, 220), within a little thickness reduction (23), under the projections (22) faced outward, a seat for a "O-ring" annular seal (24) is realised, said seal elastically pressing on the inner surface of a short cylindrical wall (12, 112) provided on the bottom of the outer body, determines by its rotation motion an annular hermetic sealing against the volatile substances eventually present in the contained product.

12. Container according to claim 1, characterised in that between the top surface (21, 121) and the bottom of the stick (15') an empty zone (27) without product and bodies is realised.

13. Container according to claim 1, characterised in that on the bottom of the inner wall (25, 125, 225), between the top surface (21, 121) and the bottom of the stick (15'), lower stops are realised, determining a continuous scraping action on the bottom in case said stops are made up of some axial thin ribs (28), or a progressive scraping action in case they are made up of some wedged, sloped, thin axial ribs (57).

14. Container according to claim 1, characterised in that the rotation between the outer tubular body (101) and the rotation body (116) is limited to few tums, a spiral groove (61) downward projecting being realised on the bottom surface (102), wherein the upper tooth (65) movably engaged along a radial guide (68) of the flat top surface slides, so that said upper tooth (65) in engaged to cover only few tums along the spiral groove (61), from the inner stop (62), in correspondence of the inner annular edge (60), when the bottom of the stick in the position corresponding to the solidification level (15'), to the outer stop (63), in correspondence of the outer annular body (59), when the bottom of the stick is in its final pre-programmed use position, under the container edge (103).

15. Container according to claim 1, characterised in that the rotation of the outer tubular body (101) with respect to the rotation body (116) is limited to some tums, on the cylindrical wall (220) being obtained a thread (71) having short pitches substantially in the same number of those of the axial helix (18), screwed with a ring thin body /72), provided on the outer periphery of a series of axial grooves (73), like the ribbed piqué kind, which are axially engaged with at least a groove (74), realised within the short cylindrical wall (112), so that said thin ring body (72) is engaged to cover only some tums along the thread /71), from the lower stop, in correspondence of the flat top surface (119), when the bottom of the stick in the position corresponding to the solidification level (15'), to the upper stop, in correspondence of the second crown transverse surface (75), when the bottom of the stick is in its final pre-programmed use position, under the container edge (103).

16. Container according to claim 1, characterised in that when the cap (309), following the screwing of the cover (205) on the thread (50) is operated to powerfully press on the top surface of the stick, beside a friction calibrated resistance, can freely slide within the inner tubular wall of said cover (205), said stick being prevented to descend.

17. Container according to claim 1, characterised in that the thickness of the lower outer surface (7) of the outer tubular body (1, 101, 201) divides into two separated thin tubular walls (53, 153) and (54, 154), separated by a tubular cavity (52, 152), prosecuting

separated each other following the relevant profiles of the outer wall and of the inner wall, where the annular comer (55) faced inwardly of said outer tubular wall (53, 153) is in elastic hermetic sealing friction with the inclined annular body (56) provided on the flat top surface (119) of the rotation knob (117), while said inner tubular wall (54, 154) is coupled to the bottom surface (102).

18. Container according to claim 1, characterised in that the upper end of the outer tubular body (1, 101, 201) has a sloped edge (203), substantially lying along a 30° oblique plane.

19. Container according to claim 1, characterised in that the inner wall (125) of the outer tubular body (101) has a circular section provided with at least a guide axial rib (34).

20. Container according to claim 1, characterised in that the inner wall (225) of the outer tubular body (101) has a heart-shaped guide axial section.

21. Container according to claim 1, characterised in that a first solidified product to be used is supported by a second short stick solidified product (37), having a higher consistency and solidity, sufficient to define a slider function.

22. Container according to claim 1, characterised in that the outer tubular body (1, 101), having the edge (3, 103, 203) closed by a cap (9, 109, 209, 309, 409), for the top shaping of the stick, and eventually by a cover (5, 105, 205), is upset to be filled with liquefied product through the opening (13) and then assembled by closure with the rotation body (16) remaining in such upset position until the complete solidification of the stick product.

23. Container according to claim 1, characterised in that the container, with rotation body (116) already assembled in the tubular outer body (1, 101) is filled with liquefied product from its edge (3, 103, 203) and is left in this position to cool until the complete solidification of the stick, to be then lifted by the rotation knob to create an empty zone (27) without product and tapered on its upper end according to the plane corresponding to the edge (3, 103, 203) of the upper end of the container.

24. Delivery container containing a viscous fluid and stick shaped product, comprising:

- (a) a cover (5),
- (b) an outer tubular body (201) provided with
  - (b1) an upper end with closed surface (39) provided with at least a delivery opening (40) of the product wherefrom it is delivered viscous fluid product, and
  - (b2) an open lower end on the inner wall of which at least a perimetrical groove (44) is obtained,
- (c) a cap (209), within the cover (5) that, by its bottom surface (41) completely closes the closed complementary surface (39) provided with at least a delivery opening (40),
- (d) a bottom body (45), closing the open lower end of the outer tubular body (201), having a bottom surface (202),
  - (d1) centrally limited by at least a short, coaxial and inwardly faced, cylindrical wall (12), having an upper annular body faced toward the centre with opening (13),
  - (d2) peripheral delimited by a tubular outer wall (46) provided with at least an outward projecting perimetrical edge (47), snap engaged with the relevant perimetrical groove (44)
- (e) a rotation body (16, 116) comprising
  - (e1) a rotation knob (17, 117) provided on an outer wall (20, 120) with at least a projection (22) outward faced, able to determine, free to rotate, axial engagement means with said opening (13), and a top closed surface (21, 121) from which it raises
  - (e2) an axial helix (18), inside the outer tubular body, substantially all along its height, engaged with
- (f) at least a short stick solidified product (37), sufficient to define a slider function, having an axial helix shaped cavity (126), roto-traslatory engaged with and supporting the stick with said helix (18), to support the fluid product to be used, said axial helix shaped cavity (126) being obtained by filling said outer tubular body (201) with solidified liquefied stick product in touch with said axial helix (18) acting as a mold,

so that to a mutual rotation between the rotation knob and the outer tubular body, a rotation of the axial helix (18) is obtained, said helix (18) by the thrusting action of its inclined plane on the relevant inclined plane of the axial helix shaped cavity (26, 126), determines an axial upward or downward movement of said stick, depending on the rotation direction, the latter being prevented to rotate by the axial guide of the inner wall, to deliver the fluid product contained through said at least delivery opening (40).

25. Container according to claim 24, wherein the outer tubular body (201), upset, provided with cap (209) within the cover (5), which by its bottom (41) closes the delivery opening (40) on the closed complementary surface (39), then is filled with viscous fluid product, from its opened lower end to be subsequently closed by a bottom body (45), already assembled with the rotation body (16), where through an opening (48), obtained on the closed top surface (21) is poured a second liquefied product, not containing volatile substances that could evaporate from said opening (48), above said viscous fluid product, thus remaining in an upset position until the complete solidification of the product occurs.

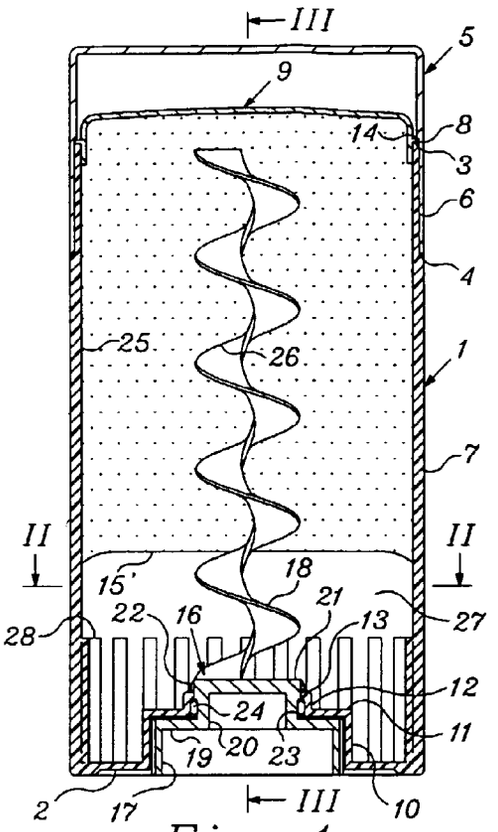

Fig. 1

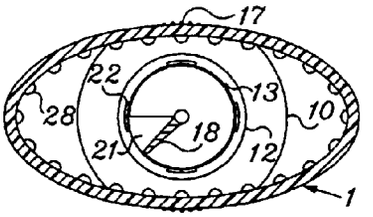

Fig. 2

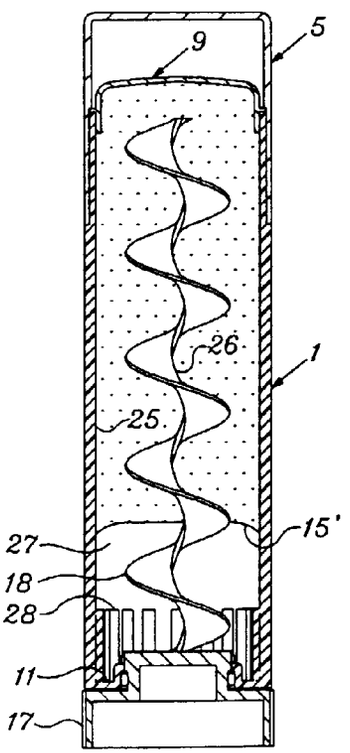

Fig.3

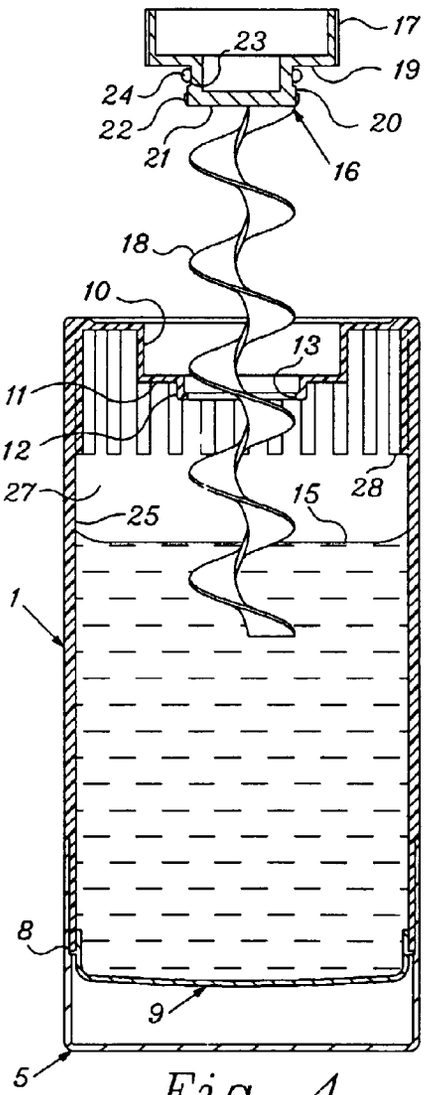

Fig. 4

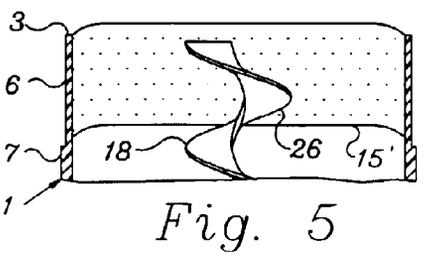

Fig. 5

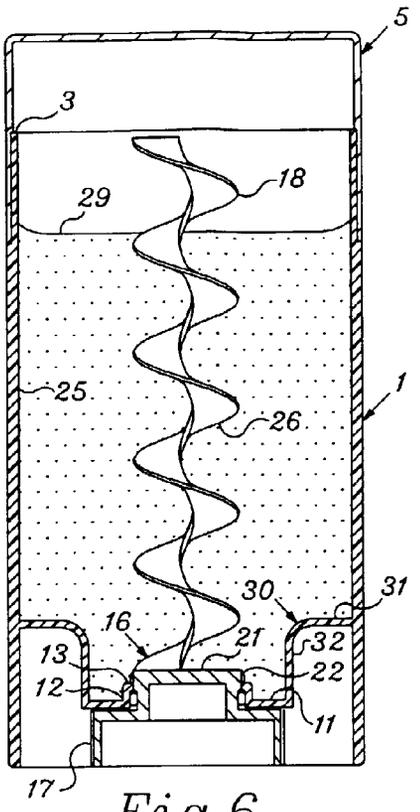

Fig.6

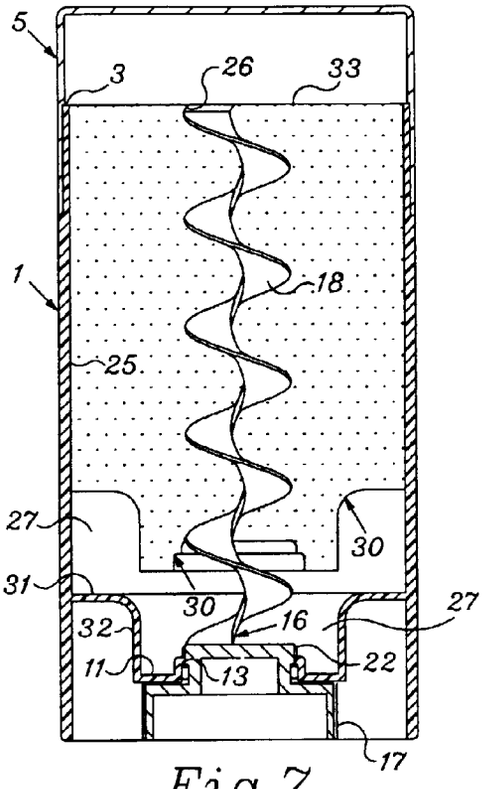

Fig.7

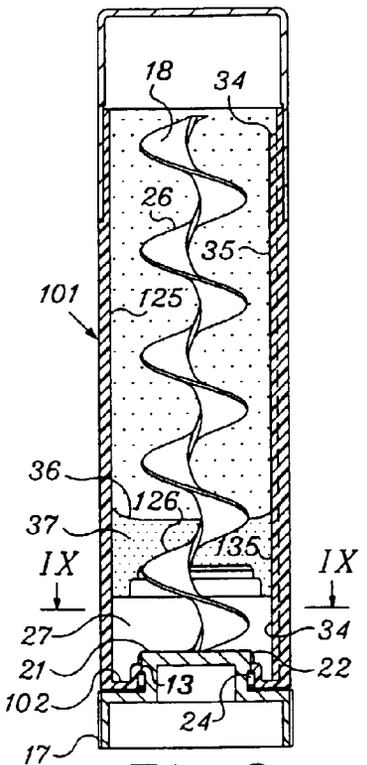

Fig.8

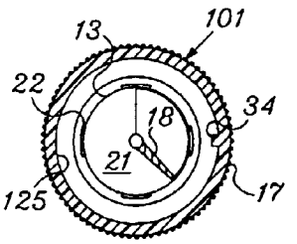

Fig. 9

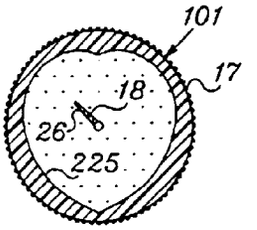

Fig. 10

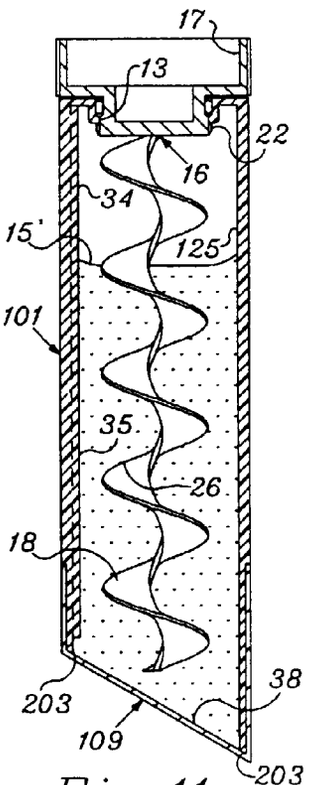

Fig.11

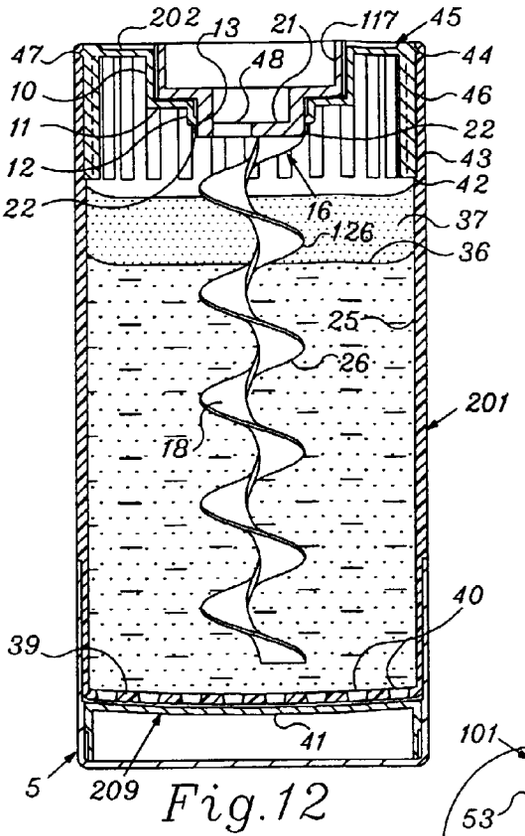

Fig.12

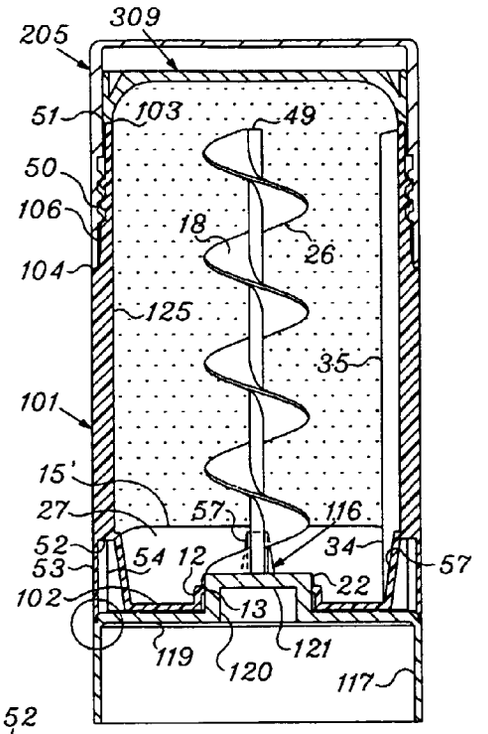

Fig.13

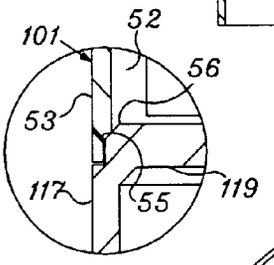

Fig.14

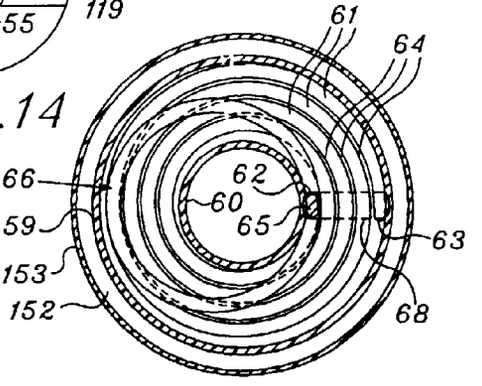

Fig.16

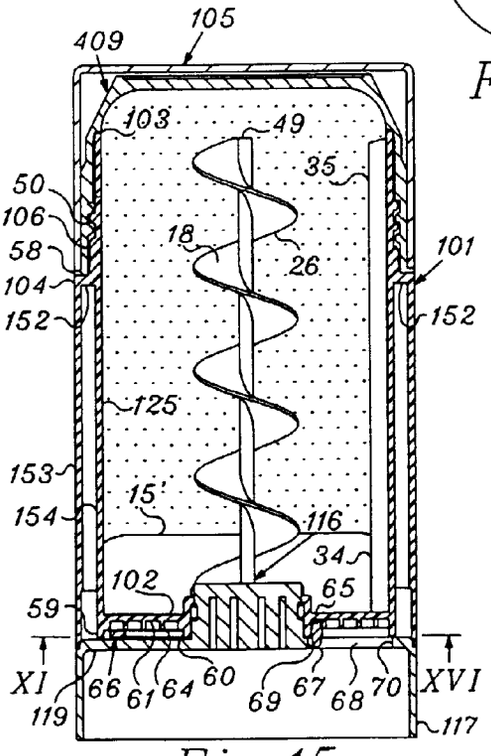

Fig.15

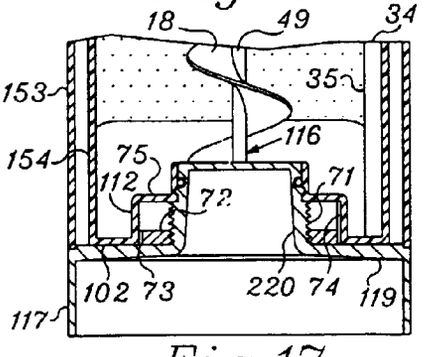

Fig.17

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0187 .7

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 3 917 417 A (LANG)	1-10,19, 22,23	B65D83/00 A45D40/04
A	* the whole document *	24	
X	US 3 612 704 A (MARCHANT) * the whole document *	1-10,19, 23	
A	DE 500 183 C (BAQUEY) * page 2, line 51 - line 64; figure 4 *	1,24	
A	FR 2 559 135 A (BESSINS ISCOVESCO) * page 4, line 16 - line 18; figure 1 *	11	
A	EP 0 135 861 A (AMERICAN CYANAMID CO.) * figure 2 *	12	
A	US 2 344 060 A (RAY) * figures 7-9 *	18	
A	US 3 585 265 A (MOTSAVAGE) * the whole document *	21	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	DE 90 16 231 U (WECKERLE) * claim 1; figures 1-3 *	21	A45D B65D
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D,A	US 4 664 547 A (ROSENWINKEL)		
A	DE 42 27 387 A (SCHUKMANN)		
A	EP 0 250 373 A (CITTERIO)		

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 August 1997	Sigwalt, C

CATEGORY OF CITED DOCUMENTS

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EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0187

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	FR 1 283 961 A (KOURBATOFF)		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 August 1997	Sigwalt, C

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