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(54) **Dispenser for granular or powdered food products, for example grated cheese, and corresponding manufacturing process**

(57) The present invention relates to a dispenser (1) of granular or powdered food products (19), e.g. grated cheese and similar loose food products. The dispenser (1) is a bi-valve holder (20), comprising a first valve (4) and a second valve (5) closed on themselves, with each valve (4, 5) moulded in one piece out of a single sheet of plastic synthetic material, said valves being joined along an edge line (6). At least one valve is equipped with a dispensing hole (14) and a label (16), removable by tearing, to cover the hole (14). Said valves (4, 5), before the sealing step, have heat-sealed side edges (9, 10) and approached top edges (11, 12).

Advantageously, an automatic process is provided to manufacture said dispenser comprising the following steps:

- opening of the dispenser upper end by pressing on said side edges (9, 10) with subsequent expansion due to the fact that said top edges (11, 12) move away from each other;
- filling with the loose food product (19) through said opening;
- heat-sealing of said top edges (11, 12).

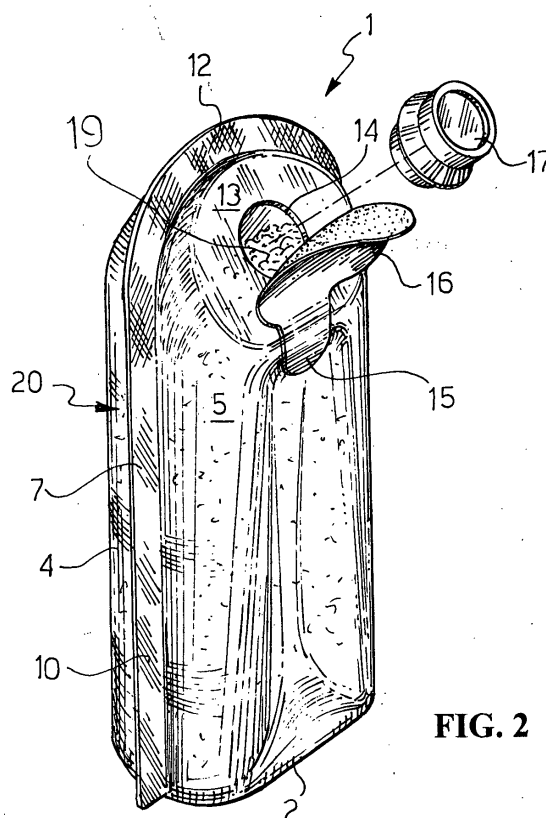


FIG. 2

Description

Field of the Invention

[0001] The present invention relates, particularly but not exclusively, to a dispenser of granular or powdered food products such as grated cheese and similar loose food products.

[0002] The invention relates also to a process for automatically manufacturing said dispenser.

[0003] The invention relates, particularly but not exclusively, to the packaging, long-term preservation and dispensing of dairy products, such as grated cheese, and the following description is made with reference to this application field, for convenience of illustration only.

Prior Art

[0004] For some years consumers have been showing an increasing liking for some perishable food products available in food stores such as fresh products, due to inert atmosphere packaging and/or low temperature preservation techniques, e.g. at +4C°.

[0005] A typical example is fresh "pasta", considered by now as a medium-term preservation product sold in food store cooled counters.

[0006] In course of time some packaging techniques have established, which contribute to preserve the food organoleptic characteristics unchanged, depending on the perishable products typology or the use the consumer makes of it. With reference, for example, to dairy products such as aged cheese, for a long time a packaging technique has established which provides for the cheese cuts a vacuum preservation by means of a transparent film wrapped around the product and heat-sealed during vacuumizing.

[0007] Always referring to aged cheese, consumers also like to buy grated cheese that is generally sold in soft bags.

[0008] Another way of preserving grated cheese is provided by using tray-shaped holders made out of thermoformed plastic synthetic material and sealed at the top by a sheet heat-sealed to the holder edges. Although advantageous from various points of view, these holders are of limited use since, once they are opened they cannot be resealed, ensuring a good preservation of the product, which must therefore be consumed within a relatively short period.

[0009] In this context, it has recently been noticed a growing consumer demand of holders that can also serve as dispensers of the loose product packed therein.

[0010] The prior art provides rigid holders, generally of cylindrical shape, equipped with a complex and sophisticated resealing and dispensing structure effective to preserve the food organoleptic characteristics almost unchanged, at the same time ensuring the product convenient dispensing.

[0011] The main limitation of this type of holders is that they are expensive because of the complex dispenser structure, and of the fact that they are not disposable packages, which are liked by both consumers and food store operators.

[0012] A much cheaper alternative is disclosed in the Italian utility model no. RE95U000016 which relates to a glass-shaped holder, closed at the top by a sheet heat-sealed to the glass edges and equipped with a bottom food dispensing opening.

[0013] This solution is particularly inexpensive, but it has not attracted commercial interests because of a major drawback. The glass funnel shape and the weight of the loose product packed therein cause the granular particles composing the loose product to be crammed towards the glass bottom. Said particles, aggregated and compacted, make their dispensing through the bottom opening almost impossible. This aspect is still enhanced for products having high moisture content, as in the case of grated cheese.

[0014] Moreover, known holders are moulded and thermoformed out of a sheet of plastic synthetic material for food applications. Generally, said sheet is a multilayer sheet comprising an intermediate barrier layer, e.g. ethylvinyl alcohol, which is substantially air-proof, effective to repel oxygen molecules and, thanks to its anti-ageing function, favouring the convenient and long-term food product preservation.

[0015] Unfortunately the plies undergone by the synthetic material sheet during the holder thermoforming make the barrier layer so thin and weak that the oxygen molecule repellent action thereof is endangered. At present, it is therefore impossible to find low cost holders equipped with an effective barrier layer and adapted to serve also as granulated product dispensers.

[0016] The technical problem underlying this invention is to provide a dispenser for loose food products, in particular granular or powdered products such as grated cheese, with such structural and functional features to enable the long-term preservation of the food products packed therein and an easy and precise dispensing thereof, overcoming the prior drawbacks.

Summary of the Invention

[0017] The solutive idea on which this invention stands is to provide a dispenser by means of a bi-valve holder formed by moulding each valve in one piece and out of a single sheet, the valves being connected along an edge line which is substantially an hinge line around which the valves are closed on themselves after moulding.

[0018] Advantageously, each valve has a substantially tray-type, elongate and flat shape and the edge line coincides with a short side edge of the tray shape so that, when the valves are closed on themselves, the dispenser has a flat supporting bottom.

[0019] Based on this solutive idea, the technical prob-

lem is solved by a dispenser as previously indicated and defined in the characterising part of claim 1 and following.

[0020] The invention relates also to an automatic process for automatic manufacturing the dispenser as defined in claims 11 and following.

[0021] The features and advantages of the dispenser according to the invention will be apparent from the following description of an embodiment thereof, given by way of non-limiting example with reference to the accompanying drawings.

Brief Description of the Drawings

[0022] In the drawings:

Figure 1 shows a perspective view of a dispenser of loose food products according to the invention;

Figure 2 shows a further perspective view of the dispenser according to the invention;

Figure 3 shows a schematic perspective view of an embodiment of the invention for implementing the manufacturing process of the dispenser shown in Figure 1;

Figure 4 shows a schematic perspective view of a detail of the embodiment shown in Figure 3;

Figure 5 shows a schematic perspective view of a further detail of the embodiment shown in Figure 3;

Figure 6 shows a partial section schematic perspective view of a further detail of the embodiment shown in Figure 3;

Figures 7 and 8 show vertical elevation schematic side and front views, respectively, of the dispenser shown in Figure 1.

Detailed Description

[0023] With reference to the drawings, a dispenser of granular or powdered food products, such as grated cheese and similar loose food products, embodying the invention and effective for the long-term preservation of said food products, is generally shown at 1 in schematic form.

[0024] The dispenser 1 also serves as holder 20 of the food product and the granular food products packed therein are generally shown at 19. Said dispenser is also suitable for the long-term storage of the products 19 in the cooled counters of food stores.

[0025] Advantageously in the invention, the dispenser 1 is substantially bi-valve and is moulded out of a single sheet 3 of plastic synthetic material. The dispenser 1 is preferably made out of thermoformed plastic synthetic

material for food application. The products 19 are packed and stored in the dispenser 1 in an inert atmosphere, preferably nitrogen.

[0026] In a preferred embodiment, sheet 3 is a multilayer sheet of transparent synthetic material. More particularly, the multilayer sheet comprises an outer layer, i.e. environment-side, of polystyrene, polyolefine or polyester resins; an intermediate barrier layer, e.g. ethylvinyl alcohol, and an inner layer, i.e. product-side, of heat-sealable polymers. The sheet 3 is preferably only 0,4 mm thick and the intermediate layer only few tens of microns.

[0027] The intermediate layer is substantially air-proof and effective to repel the oxygen molecules; therefore, thanks to its anti-ageing function, said intermediate layer favours the convenient and long-term food product preservation.

[0028] In detail, the bi-valve dispenser 1 comprises a first valve 4 and a second valve 5, wherein each valve 4, 5 is moulded in one piece, the valves being joined along an edge line 6.

[0029] Each valve 4 and 5 has substantially a tray-type elongate flat shape, with the length L greater than the width N and a limited depth H, for example comprised between 20% and 40% of the length L. Moreover, the tray width N is preferably less than half of the length L.

[0030] By way of non-limiting example, a dispenser 1 adapted for storing about 165 cc of loose product has a length L of 112 mm, a width N of 52 mm and a depth H of 19 mm.

[0031] The edge line 6, effective to keep the valves joined, is an hinge line around which the valves are closed on themselves after moulding. The edge line 6 coincides with a short side edge N of the tray shape so that, with the valves closed on themselves, - the dispenser has a flat supporting bottom 2, the edge line 6 centrally extending to said bottom 2.

[0032] When the valves 4, 5 are closed on themselves, they are joined by juxtaposed edges. More precisely, said valves have coincident edges 6, heat-sealed side edges 9, 10, but simply approached top edges 11, 12. The edges protrude sidewise and peripherally from the holder 20 of about 5 mm, thus providing side ribbings 7 and 8 effective to serve as barrier, thanks to the appropriate side thickness. Said ribbings also play a relevant role in the manufacturing process of the dispenser 1, as will be apparent in the following description.

[0033] In correspondence with each valve, the dispenser 1 advantageously has a top portion 13 sloping to the longitudinal axis. Said portion 13 is flat and substantially weathered with an inclination angle of about 60°.

[0034] Said flat portion 13 comprises a dispensing hole 14. Said hole 14 is circular, with a diameter comprised between 14 and 22 mm, preferably 16 or 20 mm.

[0035] The granulated loose product can flow out through said hole 14 while the consumer is using the

dispenser. In fact, due to the sloping portion 13, the product is not cramped against the dosing hole 14: it is thus possible to avoid the product to be crowded and stuck, and, indeed, the grated cheese can be easily dispensed.

[0036] In the dispenser according to the invention, the dispenser top defines a funnel-shaped section, but the dispensing hole 14 is formed sidewise in said funnel-shaped section, i.e. in correspondence with the sloping side wall 13. In this way, it is avoided for the product to crowd and stuck, which made its dispensing practically impossible.

[0037] In the dispenser according to the invention the hole 14 in the side wall 13 has proved to be effective to favour the smooth dispensing of the product according to necessity.

[0038] A label 16, removable by tearing by the consumer, is applied to cover the hole 14 during the holder filling and the shelf life of the dispenser 1. The label 16 also comprises a barrier layer identical to that provided in the structure of the thermoformed sheet 3.

[0039] The label 16 is preferably, but not exclusively, self-adhesive with an adhesive-free grip 15 essentially used for label tearing. Alternatively, the label may be heat-sealed, as described hereinafter.

[0040] The dispenser 1 is also provided with a closing plug 17 for quick application to said hole 14. The plug 17 is made out of plastic material for food applications.

[0041] For sale in food stores, the dispenser 1 is provided with a cellophane protective cover wrapping also the plug 17, as shown in Figure 1.

[0042] The operative step sequence of an automatic process for filling and sealing the dispenser 1 according to the invention will now be described in greater detail, with particular reference to the example shown in Figure 3. At this purpose, an apparatus 30, suitably structured for completing the filling and assembling the dispenser 1, is provided.

[0043] Said apparatus 30 comprises a plurality of workstations 45, 55, 60, 70 and 75 and a turntable 31 with a circular rotating plate 32, equipped with a plurality of slots 33 for corresponding holders 20.

[0044] Said slots 33 are located perimetrically on the plate 32 at regular distance; for example, as shown in Figure 3, eight slots reciprocally angularly spaced by an angle of 45° are provided. Each slot 33 basically comprises a well housing 34 wherein the lower portion 35 of an holder 20 is inserted and held so to keep the holder standing upright or, however, with its main axis x-x perpendicular to the plane of the plate 32.

[0045] The well housing 34 is provided with shape fit to the lower portion 35 of the holder 20. At this purpose, the housing 34 is essentially rectangular with short side walls, wherein opposed grooves 36, 37 are formed for engagement with the corresponding side ribbings 7, 8 of the holder 20.

[0046] Advantageously, each slot 33 is combined with a pliers 38 having opposed jaws 40, 41 operating on the

side ribbings 7, 8 of each holder 20. The jaws 40, 41 are continually initiated to open by sprung means 39 and to close by actuator means 42, shown in figure 4, which force the pliers 38 to pinch sidewise the holder 20 in opposition to the sprung means 39.

[0047] The operation of each pliers 38, together with the corresponding slot 33, is interlocked with computerised check and control means 50.

[0048] Due to the grip of the jaws 40 and 41, each holder 20 is sidewise compressed in correspondence with the ribbings 7, 8, leading to an expansion of the upper end of the holder 20, and thus to a temporary open mouth configuration thereof caused by elastic deformation.

[0049] The different workstations, described herein-after, are located around the turntable 31, which turns, e.g. clockwise.

[0050] A first feeding station 45 supplies the turntable 31 with the holders 20. The station 45 is the free end of a belt conveyer 46 drawing the holders 20 from a warehouse, conventional and thus not shown. The conveyer 46 is operated by electric motors and equipped with limit stop sensors which allow to quit its movement when a slot 33 of the turntable 31 fits in a grip position located beneath the conveyer free end.

[0051] A following punching station 55 enables the hole 14 to be drilled in the side wall portion 13 of the holder 20.

[0052] In correspondence with said punching station 55, the holder 20 is sidewise pinched by the pliers 38, as just described, its upper end being open. A clashing element 56, essentially anvil-shaped, is inserted into the holder 20 and positioned close to the inner surface of the side wall portion 13 to oppose to the thrust of a punch 57 operated by pneumatic means. The clashing element 56 is positioned at the end of an arm 58 operated by motor means along a substantially downward trajectory.

[0053] The punch 57 is preferably a hollow cylindrical tubular element with sharp free end effective to drill a hole in the side wall portion 13 of the holder 20. Said punch 57 is operated to reciprocally approach to and move away from the side wall portion 13 of the holder 20. At the same time, this operation, referred to as punching, also allows the removal of the scrap, i.e. the circular discarded element, which is held inside the tubular punch, packed with the previous scraps and discharged at the opposed end of the tubular element.

[0054] At the end of this operation, the clashing element 56 is extracted from the holder with inverse movement to the previous positioning thereof.

[0055] A following covering or labelling station 60 enables a closing label 66 to be applied to the previously drilled hole.

[0056] Each label 66 is drawn from a tape 61 suitable for holding the labels up to their use. Alternatively, the tape 61 can be made out of a plastic synthetic material incorporating the barrier layer and labels 66 can be formed directly in the tape 61 and substantially divided

by a marked circular breaking line. The tape 61 is wound around a first reel 63 and extended in the workstation 60 along a broken line path.

[0057] The labelling station 60 comprises a first tape 61 unwinding reel 63 and a second scrap tape winding reel 64 located above the holder 20.

[0058] A presser 65, located beside the hole 14 to be closed, operates on the tape 61 to tear a label 66 from the tape and apply it to the holder 20 to close the hole 14. The presser 65 performance is equal to the action of a hand finger tip keeping on pressing to achieve an optimum bond of the label 66 and avoid any possible channels which would make the barrier layer ineffective.

[0059] A following filling station 70 comprises a funnel-shaped hopper 71 effective to load the granulated food product into the holder 20. More particularly, a pair of channels 72, 73 for main and fine feeding respectively, are provided to dispense into the hopper 71 a predetermined and weighted quantity of product according to methods known in this field.

[0060] At the end of the filling with the granulated food product, the dispenser 1 is drawn by a grip arm 75 of a shunting station 77 which alternately loads the dispenser 1 in a corresponding slot 83 of a pair of outer turntables 78, 79 associated to the turntable 31 and belonging to the welding stations 81, 82 respectively.

[0061] The shunting station 77 is located between the turntables 78 and 79, close to the turntable 31, and comprises a star-shaped rotating plate 76 equipped, at the star ends, with grip pliers 84 grasping each dispenser 1 for transferring it alternately in a slot 83 of the turntables 78 or 79. The rotating plate 76 also serves to discharge the dispensers 1 at the end of the welding step.

[0062] The welding stations 81, 82 are split with respect to the other workstations since the time required for sealing the upper end of the dispenser 1 is almost twice the time required for completing the other operative steps in the stations 45, 55, 60 and 70. In fact, stations 81 and 82 are provided for completing the welding of the dispenser upper end simultaneously to the just described operative steps.

[0063] Advantageously, each welding station 81, 82 comprises a pair of press cylinders 85, 86 operated to reciprocally move away and approach in correspondence with the dispenser 1 top.

[0064] Each cylinder 85, 86 has a heated arch-shaped operative head, its profile corresponding to the top approached edges 11, 12 of the dispenser 1.

[0065] Moreover, heating elements 87 are provided to heat the cylinder operative heads so that the heating, together with a repeated compression, enable the edges 11, 12 to be constrained to each other, thus obtaining a heat-sealing effect.

[0066] Advantageously, immediately before the welding step but with the holder 20 already positioned for the welding, the remaining air is sucked from the holder and replaced by an inert atmosphere, preferably nitrogen. The process for performing this operation is substantial-

ly known in this specific field and the relevant detailed description is thus omitted.

[0067] At the end of the welding step, a further cold pressure is provided immediately after, in order to confer a suitable stiffness to the heat-sealed edges 11 and 12.

[0068] The previous description clearly shows how the dispenser of the invention and the corresponding manufacturing process solve the technical problem and afford several advantages, foremost among which is that the dispenser, formed as just described, has a double function, serving both as holder for inert atmosphere long-term preservation of food products and uniquely practical and functional dispenser.

[0069] In fact, the dispenser-holder is so manufactured as to prevent the barrier layer, effective to repel oxygen penetration, from being stressed and weakened. Moreover, the particular dispenser shape favours the gradual dispensing of the grated product and, even with crumbs typical of products with high moisture content, a slight dispenser shaking is sufficient for the product to become again so loose and granulated as to be conveniently dispensed.

[0070] In all conditions of use, the product is always dispensed sidewise and the product weight will not crowd towards the dispensing hole, as is instead the case with conventional dispensers.

[0071] The dispenser according to the invention suits very large volume production and can be filled and sealed in a completely automated way by means of the previously described apparatus for implementing the filling and sealing process according to the invention.

[0072] The dispenser according to the invention allows thus the food product packed therein to be used for a relatively long time, at the same time ensuring its good preservation.

Claims

1. A dispenser (1) of granular or powdered food products (19), e.g. grated cheese and similar loose food products, **characterised in that** it is a bi-valve holder (20) comprising a first valve (4) and second valve (5) closed on themselves, wherein each valve (4, 5) is moulded in one piece out of a single sheet of plastic synthetic material, said valves being joined along an edge line (6), with at least one valve being equipped with a dispensing hole (14) and a label (16), removable by tearing, to cover the hole (14).
2. A dispenser according to Claim 1, **characterised in that** said valves (4, 5) are tray-shaped and said edge line (6) coincides with a short side edge of the tray shape so that, with the valves closed on themselves, the dispenser (1) has a flat supporting bottom (2).
3. A dispenser according to Claim 1, **characterised**

in that it comprises, in correspondence with at least one valve (4, 5) a flat top portion (13) sloping to the longitudinal axis, said hole (14) being drilled therein.

4. A dispenser according to Claim 1, **characterised in that** said valves (4, 5) are closed on themselves with coincident heat-sealed side (9, 10) and top (11, 12) edges. 5
5. A dispenser according to Claim 1, **characterised in that** it incorporates a barrier layer effective to repel oxygen penetration into the dispenser. 10
6. A dispenser according to Claim 5, **characterised in that** said label (16) is self-adhesive and is a multilayer and incorporating said barrier layer. 15
7. A dispenser according to Claim 5, **characterised in that** said label (16) is heat-sealed and is a multilayer and incorporating said barrier layer. 20
8. A dispenser according to Claim 1, **characterised in that** said self-adhesive label comprises an adhesive-free grip appendix (15). 25
9. A dispenser according to Claim 1, **characterised in that** it is equipped with a closing plug (17) for quick application in said hole (14). 30
10. A dispenser according to Claim 1, **characterised in that** said hole (14) is circular, and has a diameter comprised between 14 and 22 mm. 35
11. A process for manufacturing a dispenser (1) of granular or powdered food products (19), e.g. grated cheese and similar loose food products, wherein the dispenser (1) is a bi-valve holder (20) comprising a first valve (4) and a second valve (5) closed on themselves, each valve (4, 5) being moulded in one piece out of a single sheet of synthetic material which comprises a barrier layer and being joined along an edge line (6), said valves (4, 5) having heat-sealed side edges (9, 10) and simply approached top edges (11, 12), **characterised in that** it automatically provides the following steps: 40
 - opening of the dispenser upper end by pressing on said side edges (9, 10) with subsequent expansion due to the fact that said top edges (11, 12) move away from each other; 45
 - filling with the loose food product (19) through said opening; 50
 - heat-sealing of said top edges (11, 12). 55

12. A process according to claim 11, **characterised in that**, before the filling step, a preliminary step is pro-

vided, wherein a hole (14) is drilled in a top flat portion (13) of one of said valves (4, 5) by punching said flat portion (13) through an outer punch (57) and an opposed inner clashing element (56) inserted into the dispenser through said opening.

13. A process according to Claim 12, **characterised in that**, after said punching step; and before the filling, a covering step by labelling of said hole (14) is provided.
14. A process according to Claim 13, **characterised in that** said labelling step provides for the issue of a label (66) for sealing said hole (14), equipped with a barrier layer and combined with a tape (61) extended between a pair of reels (63, 64) located above the holder (20), and a pressing action on said label (66) to ensure the bond thereof.
15. A process according to Claim 11, **characterised in that** said heat-sealing step of the top edges (11, 12) is provided downstream of the filling and simultaneously to the previous operative steps.
16. A process according to Claim 11, **characterised in that** said heat-sealing step of the top edges (11, 12) is performed through the pressure exerted by a pair of heated operative heads activated to reciprocally move away from and approach to said top edges (11, 12).
17. An apparatus (30) for implementing the process according to Claim 11, **characterised in that** it comprises a plurality of workstations (45, 55, 60, 70, 77) located around a rotating turntable (31) equipped with a plurality of perimetral angularly spaced slots (33) for corresponding holders (20), each slot (33) being associated to a pliers (38) with opposed jaws (40, 41) operating on the side ribbings (7, 8) of each holder to allow said opening of the dispenser upper end.
18. An apparatus according to Claim 17, **characterised in that** each slot is provided with an housing (34) with shape fit to the lower portion of the holder (20).
19. An apparatus according to Claim 17, **characterised in that** it comprises, in operative order, a feeding station (45) of the holders (20) in said corresponding slots (33), a punching station (55) for drilling said hole (14) in a top portion (13) of the holder, a labelling station (60) for sealing said hole (14) with a covering barrier label (66), a filling station (70) for dispensing the loose food product (19) in the holder (20), a shunting station (77) of the holders (20).
20. An apparatus according to Claim 19, **characterised in that** said shunting station (77), located close to

said turntable (31), is effective to alternately shunt the holders (20) to corresponding welding stations (81, 82), operating simultaneously to said plurality of workstations (45, 55, 60, 70).

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- 21.** An apparatus according to Claim 20, **characterised in that** each welding station (81, 82) comprises a pair of press cylinders (85, 86) with arch-shaped operative head and profile corresponding to said top edges (11, 12) of the dispenser (1), said operative heads being activated to reciprocally move away from and approach to said edges (11, 12).

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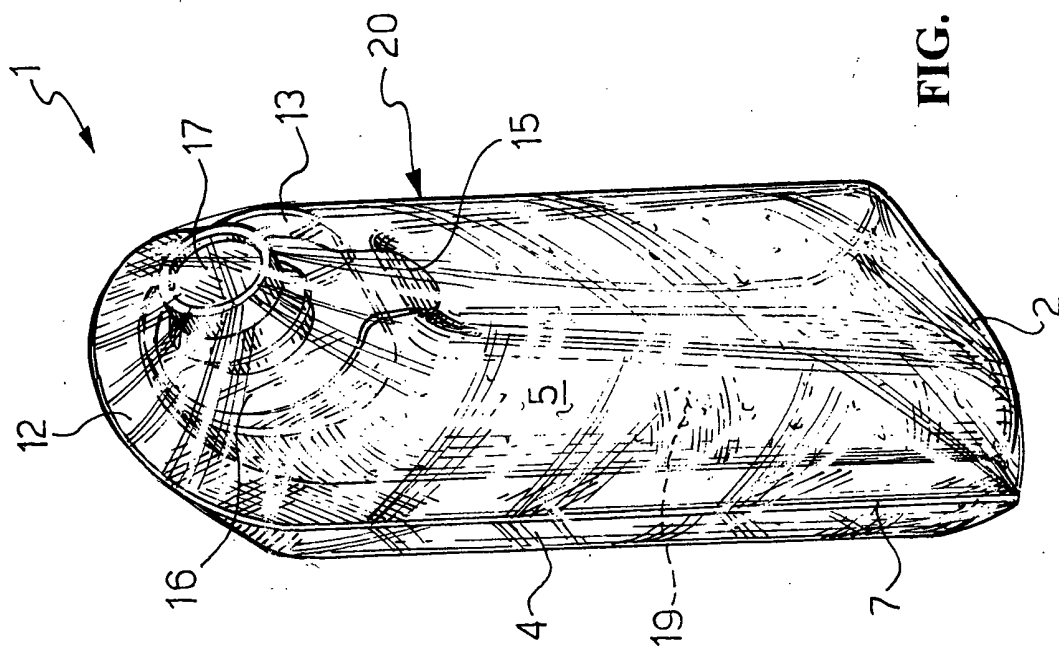
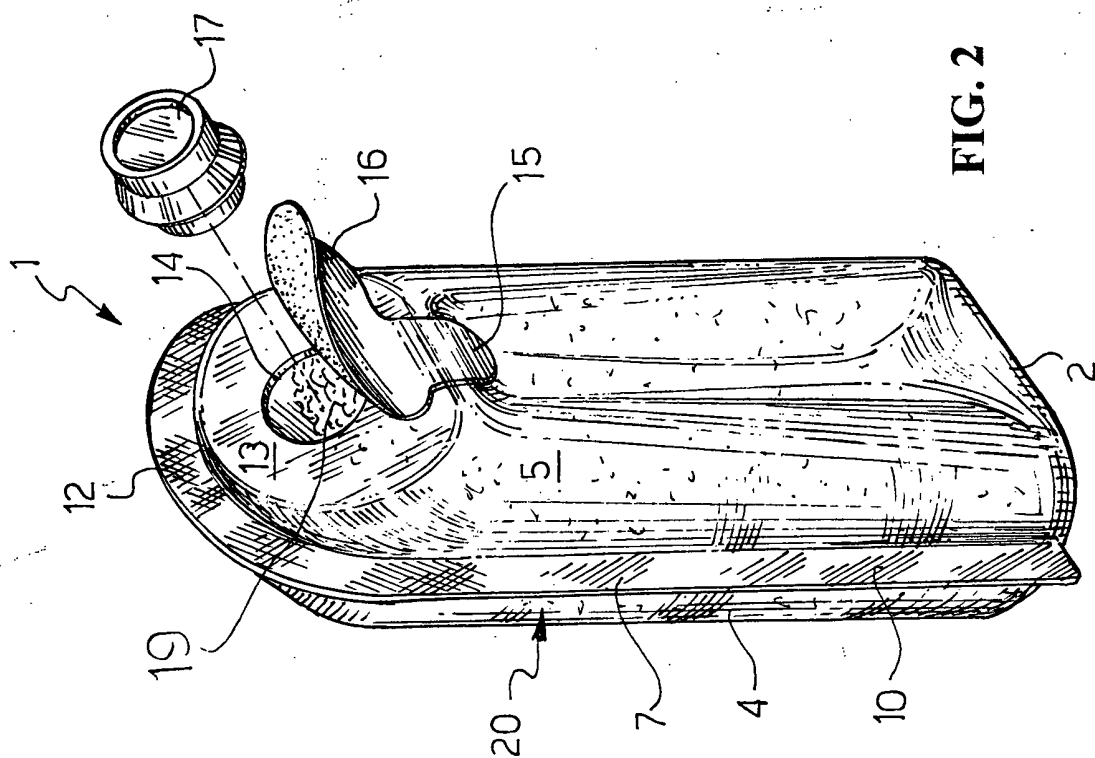
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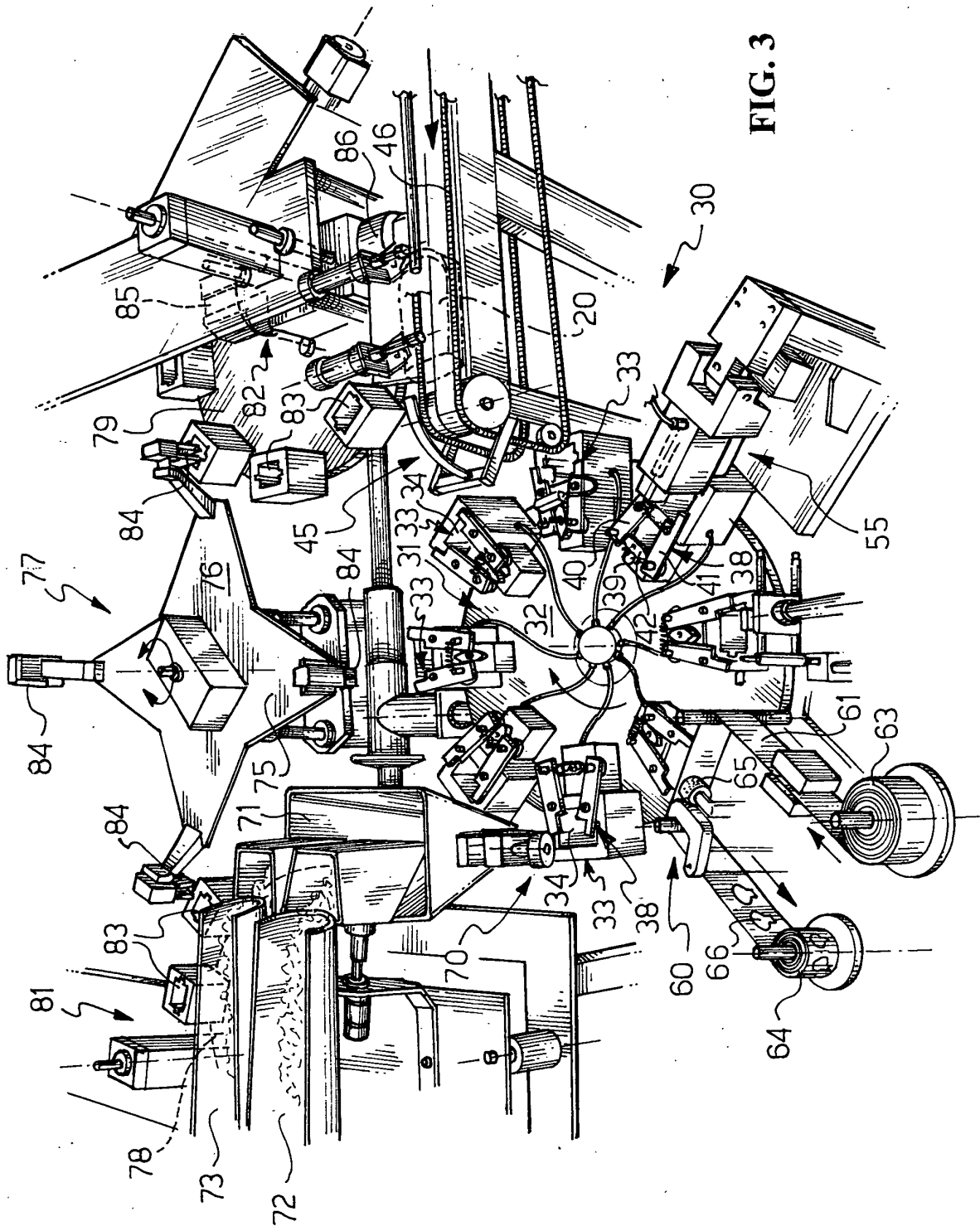


FIG. 3

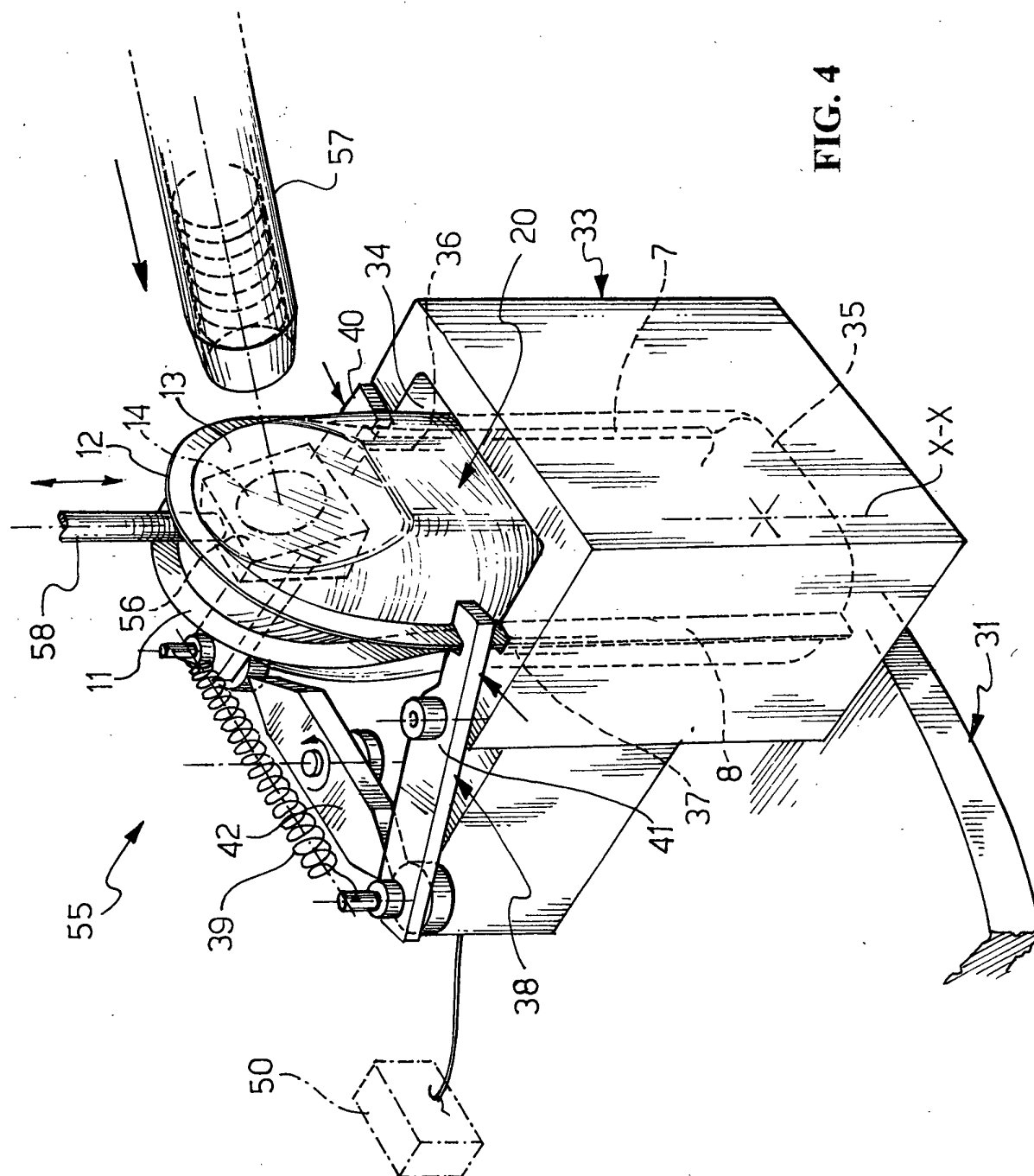


FIG. 4

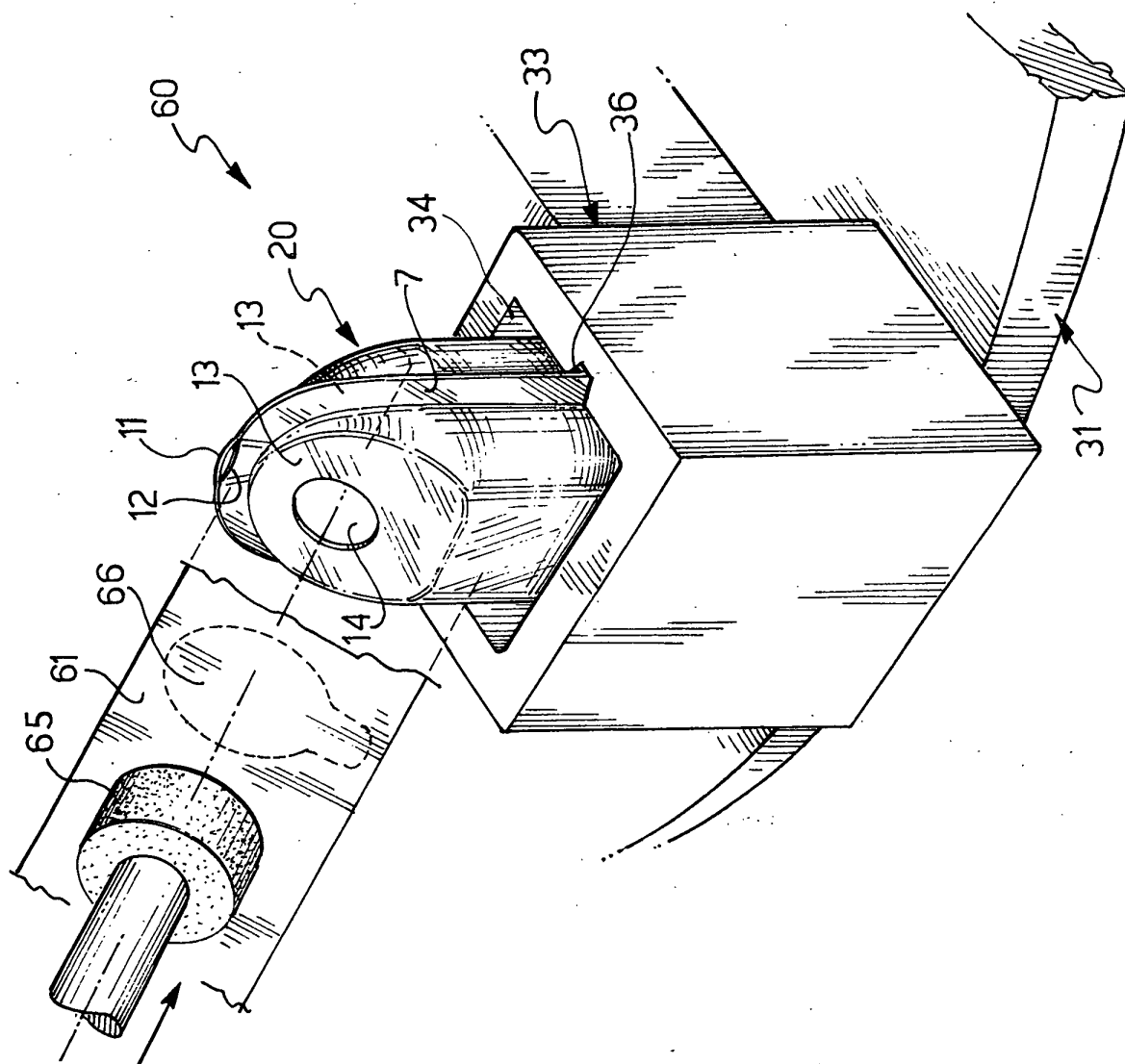


FIG. 5

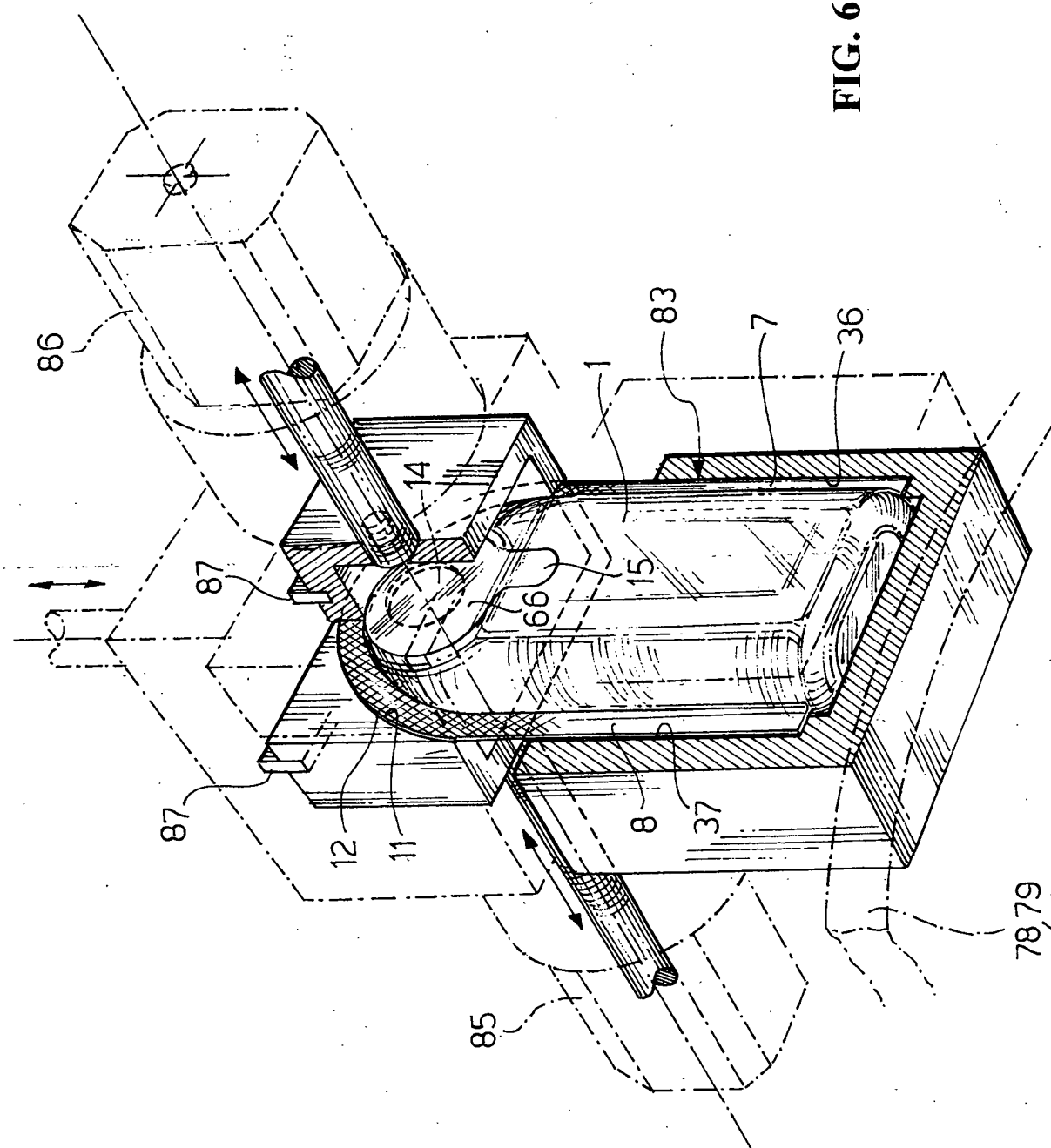


FIG. 6

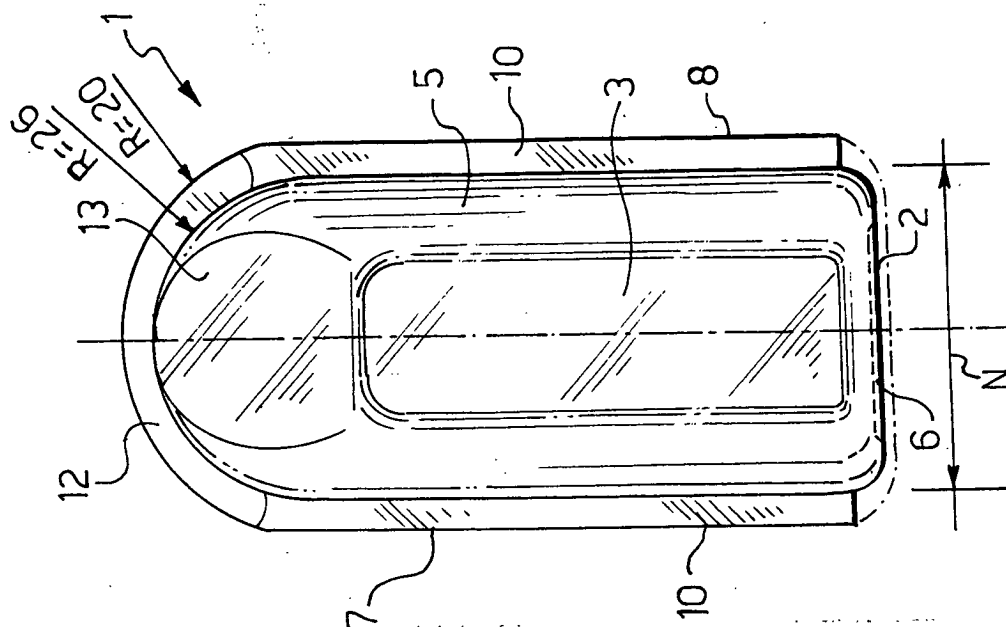


FIG. 8

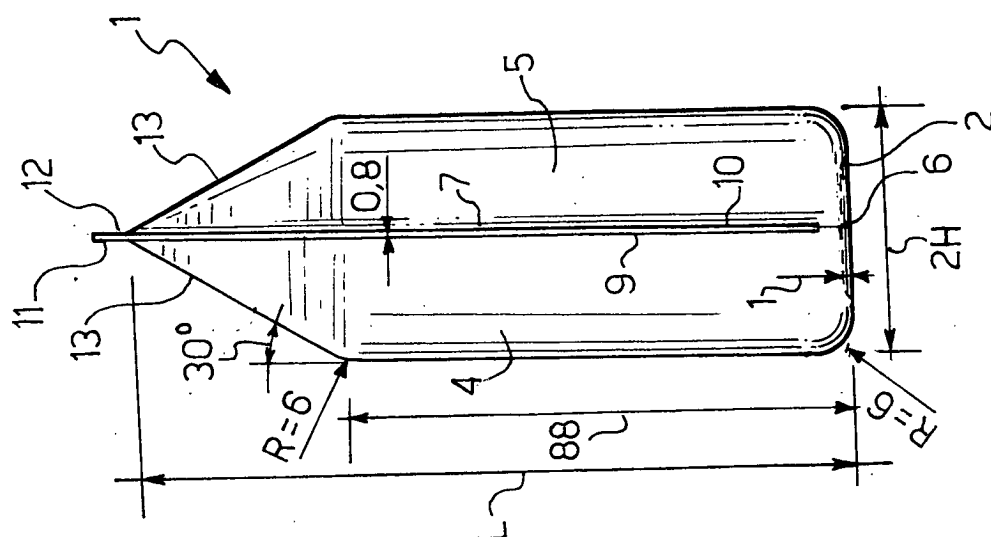


FIG. 7



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0198

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.7)
X	EP 0 642 979 A (SANDHERR PACKUNGEN AG) 15 March 1995 (1995-03-15)	1-9	B65D75/22
Y	* page 4, line 5 - line 11 * * page 5, line 45 - line 50 * * page 6, line 8 - line 19; figures 14-21 *	10	B65D77/30 B65D17/50
Y	FR 2 690 896 A (BODET) 12 November 1993 (1993-11-12)	10	
A	* page 1, line 4 - line 11 * * page 8, line 10 - page 9, line 17; figures 1-11 *	1-3,9	
A	EP 0 854 092 A (UNIFILL INTERNATIONAL A/G) 22 July 1998 (1998-07-22) * column 6, line 27 - line 34; figure 7 *	1	
A	US 3 380 608 A (MORBECK) 30 April 1968 (1968-04-30) * figures 1-4 *	1	
A	EP 0 108 353 A (KLOCKE) 16 May 1984 (1984-05-16) * page 2, line 2 - line 16; claim 1; figures 1,2 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D
A	BE 562 747 A (AVERMATE) * claim 1; figures 1-4 *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 August 2001	Examiner Berrington, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



European Patent
Office

Application Number
EP 01 83 0198

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-10



European Patent
Office

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 01 83 0198

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-10

Dispenser formed by a bi-valve holder whereby one valve comprises a dispensing hole covered by a label

2. Claims: 11-21

Method and apparatus for opening a bi-valve holder to facilitate filling of the holder

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 83 0198

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-08-2001

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82