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(54) **CONTAINER WITH INLINER BAG AND ONE-WAY DISPENSER VALVE**

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(57) **ABSTRACT**

An inliner bag having a plastic bag produced by injection blow molding and having a delivery nozzle, and in the shape of a bottle, preferably of a low-density polyethylene (LDPE). The bottle has in the shoulder region of the delivery nozzle or in the lower region thereof, an external radially projecting rim which is intended to act as a disc valve against the inside of the outer container. The one-way valve has a plug fitting into the delivery nozzle and has a delivery channel with a conically widening mouth. A cannula having a tension spring and a cone valve which are integral with it fits into the delivery channel. The cone valve cooperates with the widening mouth. The inliner bottle is squeezed prior to filling and is pushed through the bottle nozzle into the outer bottle and is then filled and the plug with the already inserted one-way valve is then inserted.

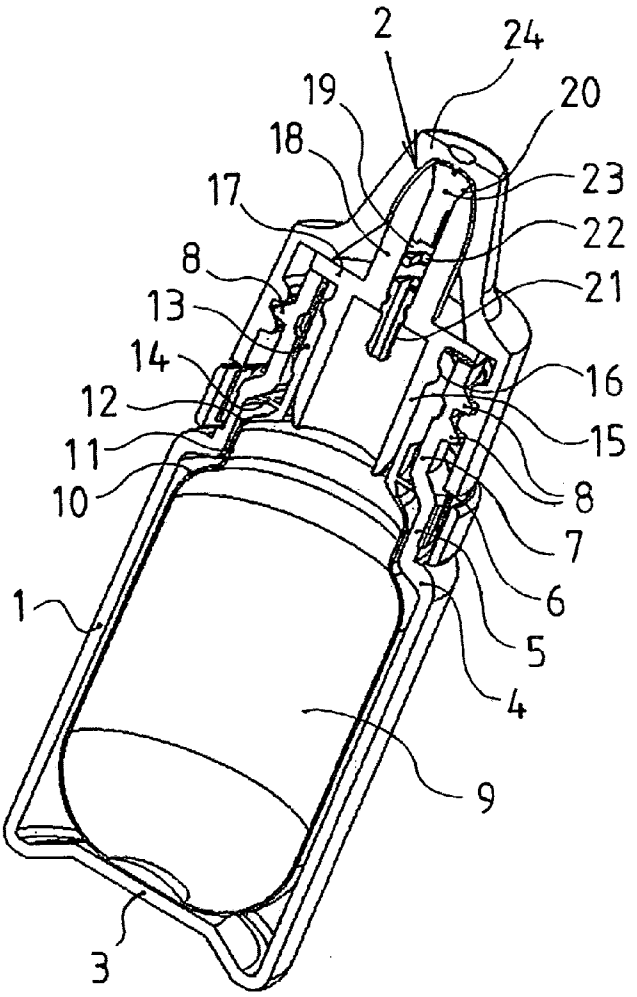


FIG. 1

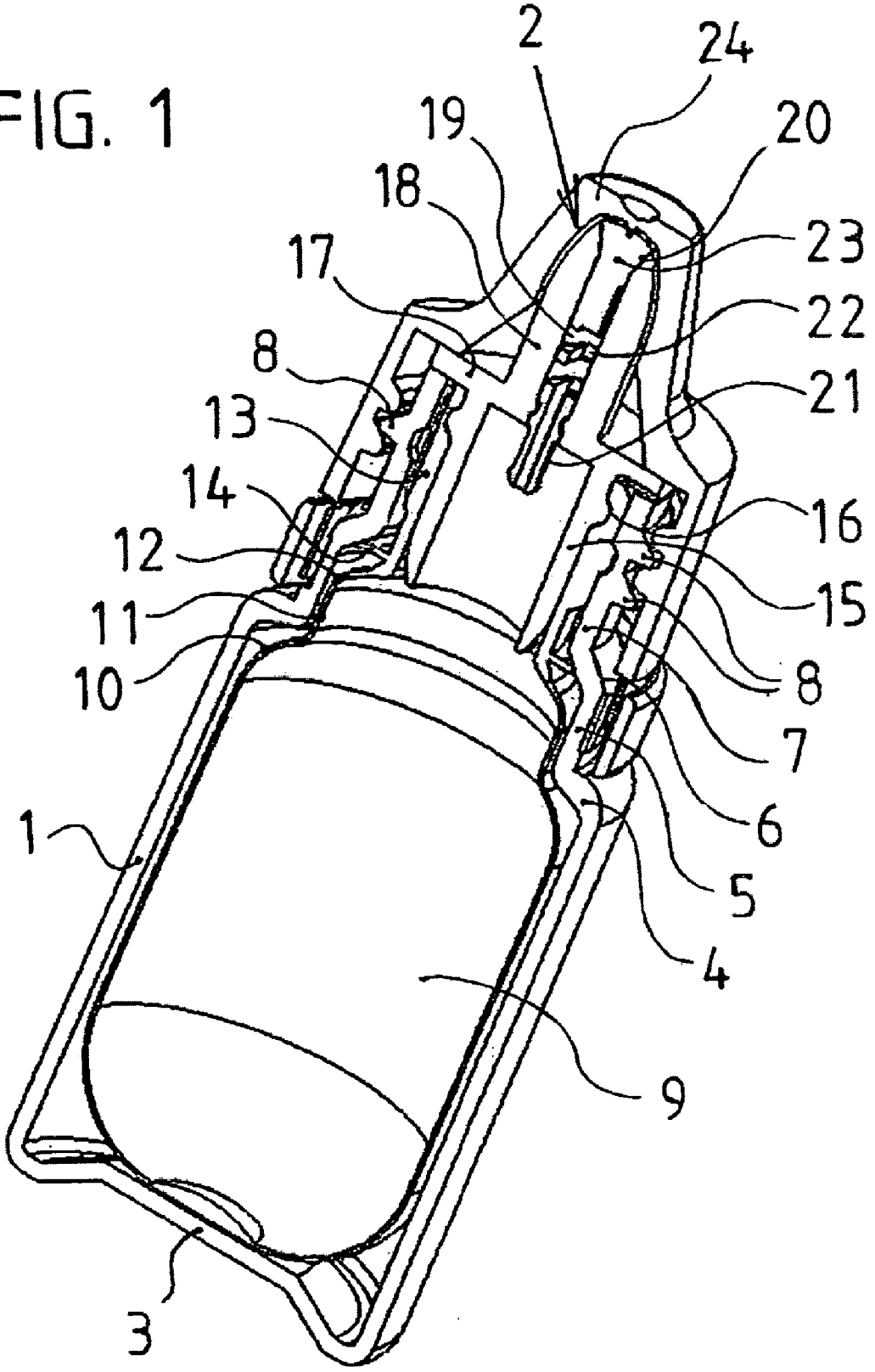


FIG. 3

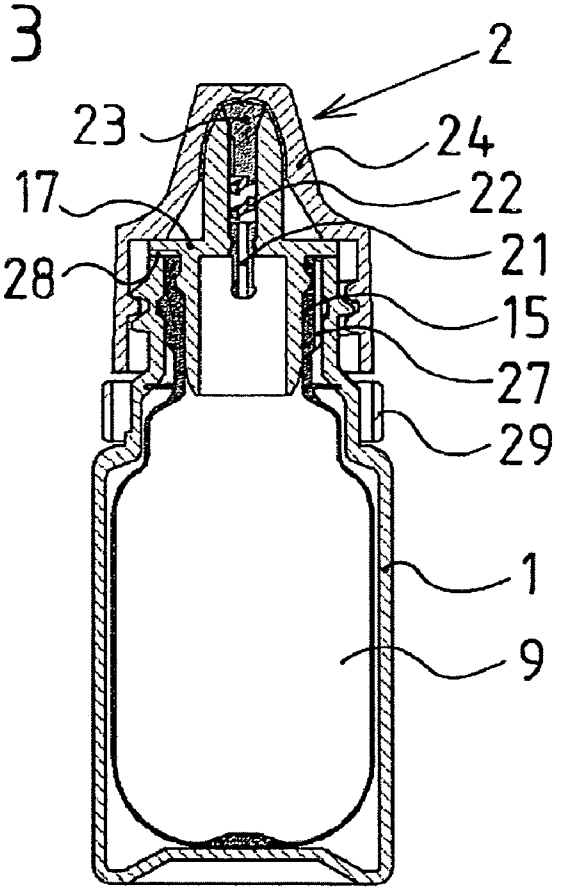


FIG. 4

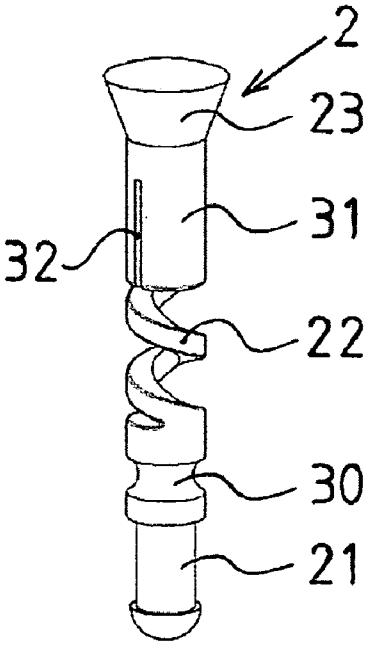


FIG. 2

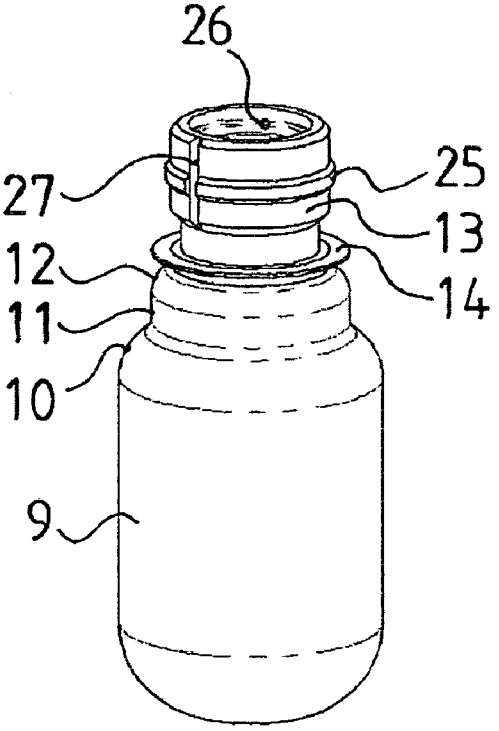
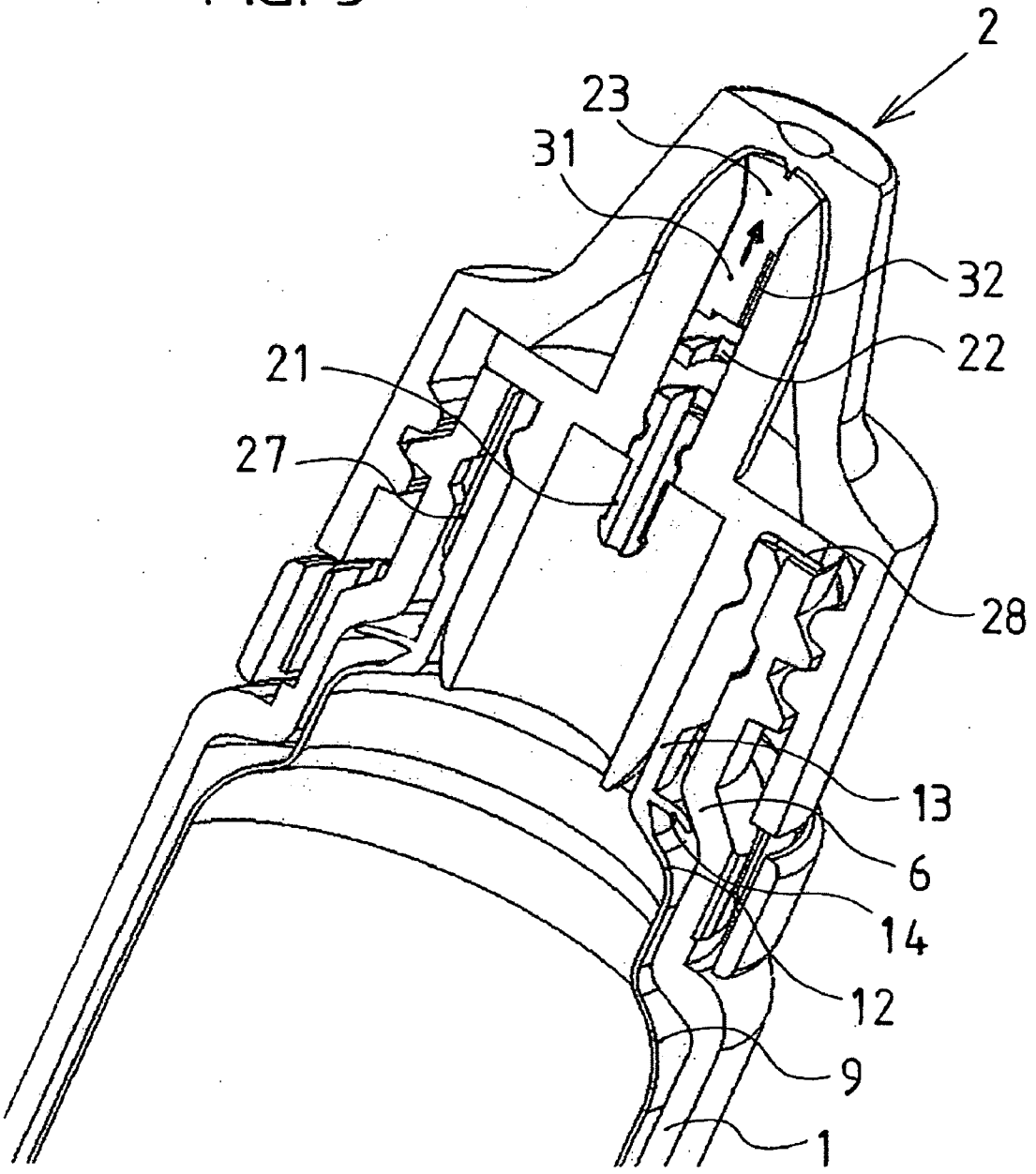


FIG. 5



CONTAINER WITH INLINER BAG AND ONE-WAY DISPENSER VALVE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a container with an inliner bag arranged in an interior and a one-way dispenser valve.

[0003] 2. Discussion of Related Art

[0004] When packing a fluid, viscous or pasty substance air-tight and subsequently metering it from a container, various technical problems arise which have to be solved. With solutions, the associated costs also play a role. Also, simple operation of the container for metered withdrawal of the content is important.

[0005] Eye drops, for example, are packed in tubes which are welded air-tight, and the content must not contact air or it will be contaminated with germs. Eye drops are therefore filled into a plastic tube and welded at both ends and can be dispensed from the plastic tube only in a single application. The term single-use container is used for a single applied portion of content. Once opened, the plastic tube cannot be closed again and a residual content therefore cannot be withdrawn at a later time. If a liquid or pasty material which is sensitive to air is packed in a container, for example in a plastic container or in a bottle for multiple applications (multi-use), one problem is that the volume taken during withdrawal must be replaced by air in the interior of the container if the container is to retain its shape; otherwise, withdrawal is not possible. One solution to this is conventionally offered by those containers which have, in their interior, a deformable tubular bag which holds the actual air-sensitive content. The opening of the tubular bag is connected to the container mouth in the interior thereof and may contain a one-way valve. This one-way valve is produced from injection-molded plastic and must be sealed separately with the tubular bag, for example welded to it. Between the tubular bag opening or the welded-in one-way valve and the container mouth, air can flow into the container through specially provided channels and then occupy the space between the tubular bag and the interior of the container. Without such inflow of air into the container, the tubular bag could not be emptied. On withdrawal of content, an empty space is formed. Such tubular bags arranged in containers or bottles are referred to as inliner bags.

[0006] This solution with a conventional inliner bag is, however, complicated in assembly and is also correspondingly expensive. The tubular bag and its one-way valves must be produced separately and by different methods and then welded to one another to provide a seal. The tubular bags must then be rolled or folded to be able to introduce them through the container or bottle mouth into the interior of the container or of the bottle. In general, it would be desirable to have a container or a bottle in the interior of which it would be possible to store in an air-tight manner a liquid or a more or less viscous or pasty material, which would be simple to produce, and from which arbitrary doses could then be withdrawn as required, without the content remaining in the bottle or the container contacting with air. Such a bottle or a container would be particularly in demand for contents to be stored in a germ-free manner. Because of the problem of storage and of metered delivery, many contents require preservatives because introduction of air cannot be completely suppressed. An elegant technical solution which would permit the hermetically sealed, air-tight storage and metered delivery for multi-use could make the use of preservatives superfluous and would thus have major advantages. However, even if there were no question of freedom from preservatives, a container or an economically producible bottle would have major advantages for the air-tight storage and/or the metered withdrawal of the content with or without introduction of air.

SUMMARY OF THE INVENTION

[0007] It is one object of this invention to provide a container having an inliner bag arranged in its interior and which can be more economically produced and installed.

[0008] It is a further object to provide a container having an inliner bag which permits safe air-tight storage and simple metered delivery of a liquid or pasty substance and which has a minimum number of individual parts, that can be economically produced and that is easy to install.

[0009] A further object of this invention is to provide a one-way valve having only two parts and which is suitable for such a container having an inliner bag.

[0010] The above and other objects are achieved by a container having an inliner bag arranged in an interior and a one-way dispenser valve where the inliner bag is an inliner bottle produced by injection blow molding from low-density polyethylene (LDPE) and having a delivery nozzle, and the one-way valve having a plug fitting into the delivery nozzle and having a delivery channel and a conically widening mouth. A cannula can be inserted from the outside into the delivery channel and has an integral tension spring and cone valve. The cone valve cooperates with the widening mouth of the delivery channel, while the cannula can be snapped into the delivery channel under the initial tension of the tension spring. These objects are also achieved by a one-way valve suitable for installation as a one-way dispenser valve in the delivery nozzle of an inliner bottle injection blow molded from low-density polyethylene (LDPE), which one-way valve has a plug fitting into the delivery nozzle and has a delivery channel and a conically widening mouth. A cannula can be inserted from the outside into the delivery channel and has a tension spring and cone valve which are integral with it. The cone valve cooperates with the widening mouth of the delivery channel, while the cannula can be snapped into the delivery channel under the initial tension of the tension spring.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The drawings show an embodiment of a container in the form of a bottle having a one-way dispenser valve and the container with its inliner bag arranged in the interior is described and the one-way dispenser valve which is suitable for the delivery nozzle of such an inliner bag is also described, and the function of the entire container with all its parts is explained in view of the drawings, wherein:

[0012] **FIG. 1** shows a container with an inliner bag, a plug and a cannula in a longitudinal section and slightly perspective view, with a mounted cap;

[0013] **FIG. 2** shows the inliner bag separately in an overall perspective view;

[0014] **FIG. 3** shows the container with the cap and the inliner bottle and the one-way valve, in a longitudinal section;

[0015] **FIG. 4** shows the cannula with the tension spring and the cone valve which are integral with it, separately in an overall perspective view; and

[0016] **FIG. 5** shows the upper part of the container with the one-way valve on a larger scale, in a longitudinal section.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] **FIG. 1** shows a container in the form of a plastic bottle **1**, with a delivery valve **2** in a longitudinal section, the representation chosen being slightly perspective in order to give a three-dimensional impression. The outer bottle **1** preferably is of a low-density polyethylene (LDPE) and can be produced by injection blow molding. At the bottom, the outer bottle **1** has a slightly raised base **3**, forming an annular surface which ensures better stability of the bottle. At its top, there is initially a first shoulder **4**, from which the bottle **1** is slightly narrower. This narrower section **5** is followed by an oblique shoulder **6** which is skewed with respect to the longitudinal axis of the bottle and is followed by the bottle nozzle **7** which, in the example shown, has an external thread **8**.

[0018] With the production material and its production process, the outer bottle **1** is elastically deformable and can be compressed on its circumference with a hand or two fingers, reducing the volume of its content. An inliner bag **9** is arranged in the interior of this bottle **1**, which may also be an elastically deformable container of another design. However, in a complete departure from the conventional technique, the inliner bag **9** is not in the form of a tubular bag but is in the form of a container produced by injection blow molding or bottle produced by injection blow molding. The inliner bottle **9** produced by injection blow molding continues via a first sloping shoulder **10** to a narrower section **11** that fits into the narrower section **5** of the outer bottle **1**. It is followed by a further oblique shoulder **12** which is joined at the upper end by a delivery nozzle **13** that can be inserted from the outside into the bottle nozzle or alternatively glued or welded to it. As a special feature, the inliner bottle **1** shown here and produced by injection blow molding has, in the region of or near its upper oblique shoulder **12** or in the lower region of or near its delivery nozzle **13**, a rim **14** which projects radially outward and the outer edge of which is adjacent to the inside of the oblique shoulder **6** on the outer bottle **1** and thus forms a disc valve. As a result of the geometry, the rim **14** is curved slightly downwards so that it acts as a one-way valve. Air can flow downwards from above between the edge of the rim **14** and the inner surface of the outer bottle **1**. Conversely, if the pressure below the rim **14** increases, the rim **14** is pressed stronger against the oblique shoulder **6** of the outer bottle **1** and seals the passage between the edge of the rim **14** and the oblique shoulder **6**.

[0019] In order to close the inliner container produced by injection blow molding or the inliner bottle **9** in the form of a bottle in the present example and produced by injection blow molding, a plug **15** in the delivery nozzle **13** of this inliner bottle **9** is used. The plug **15** made of injection molded plastic forms a seal with the delivery nozzle **13** by fitting therein. If necessary, when, for example, water vapor tightness is required, it can also be welded using ultrasound. An alternative is welding by friction welding, by rapidly rotating the plug **15** briefly in the delivery nozzle **13** so that the friction surfaces heat up and a tight weld seam is achieved. Gluing of these two parts is also conceivable. The plug **15** has, on its outside, a bead **16** which promotes an intimate fit and connection with the inside of the delivery nozzle **13** and which has a corresponding groove for this purpose. The plug **15** has at the top a cover **17** having a central hole. Extending upwards therefrom is a delivery tube **18** which forms a delivery channel **19** having a mouth **20** widening at the end. The plug **15** together with an additional part forms a one-way valve. In fact, a cannula **21** having a tension spring **22** and cone valve **23** which are integral with it fits into the interior of the delivery channel **19**, which cone valve **23** cooperates with the widening mouth **20** at the plug **15**. The cannula **21** is introduced from above into the delivery channel **19** of the plug **15** and its lower end then projects out of the lower end of the delivery channel **19**. This end piece has, in its circumferential surface, a groove in it and which snaps over a corresponding bead on the inside of the delivery channel **19**. The cannula **21** is thus firmly connected to the plug **15** and snaps into the delivery channel **19**. The tension spring **22** is subjected to slight tension and is therefore under initial tension. It thus pulls the conical valve **23** downwards so that it seals the conically widening mouth **20** of the delivery channel **19**. A cap **24** is inverted over the entire upper part of the outer bottle **1** and its plug **15** with delivery tube **18**. Here, the cap **24** is in the form of a thread-bearing cap, for example equipped with an internal thread.

[0020] **FIG. 2** shows the inliner bag separately in an overall view. The bottle body **9** with the upper adjacent first shoulder **10**, the narrower section **11** and the oblique shoulder **12** adjacent thereto, and the delivery nozzle **13** adjacent to this, can be seen. Here, the outward-projecting rim **14** is molded on in the lowermost region of the delivery nozzle **13**, which rim is intended to act as a disc valve with the inside of the outer bottle **1**. A bead **25** can be on the outside of the delivery nozzle **13**. When the inliner bottle **9** is inserted into an outer bottle **1**, the bead **25** snaps into a corresponding groove in the inside of the bottle nozzle **7** of the outer bottle **1**. A groove **26** is on the inside of the delivery nozzle **13** and is the groove **26** into which the bead **16** on the outside of the plug **15** fits, as previously described in relation to **FIG. 1** and also shown there.

[0021] A groove **27** which extends in the longitudinal direction of the delivery nozzle **13** and also passes through the bead **25** can be in the outside of the delivery nozzle **13** of the inliner bottle **9**. The groove **27** can carry air during delivery of content from the inliner bottle **9**. The inliner bottle **9** is produced as a special product by injection blow molding, in particular from a suitable low-density polyethylene (LDPE) and is therefore elastically deformable. With this property, it can be squeezed to such an extent that it can be introduced with its base facing forwards through the bottle nozzle **7** of the associated outer bottle **1** and can be pushed into said outer bottle. In order to facilitate this pushing in, the inliner bottle **9** produced by injection blow molding is first inverted with a seal over a nozzle via which the bottle content is evacuated. The bottle **9** thus collapses and then has a smaller diameter overall than that of the bottle nozzle **7** of the outer bottle **1**. By deliberate dimensioning of the inliner bottle wall, for example by making it somewhat

thinner in an area, it is possible to ensure that the bottle contracts in a manner such that the rim, and thus the disc valve formed by it, rests against the bottle underneath and is thus curved in the correct direction. In the contracted state, the inliner bottle produced by injection blow molding can easily be pushed into the interior of the outer bottle **1**. When the delivery nozzle of the inliner bottle **9** is snapped into the bottle nozzle **7**, the inliner bottle **9** in the interior of the outer bottle is again filled with air and thereafter with content. It thus fits snugly against the inside of the outer bottle **1**. The delivery nozzle **13** of the inliner bottle **9** fits tightly against the inside of the bottle nozzle **7**, and the projecting rim **14** which can bend elastically downwards and upwards forms a seal with its outer edge against the opposite oblique surface **6** inside the outer bottle **1**. The bottle is now filled and with eye drops, filling is effected under sterile conditions, such as only sterile air is introduced concomitantly into the bottle. When the inliner bottle **9** has been filled, the plug **15** with the one-way valve **2** is mounted and the inliner bottle **9** is then hermetically sealed.

[**0022**] **FIG. 3** shows the container with the cap and the inliner bottle **9** and the one-way valve **2** in a longitudinal section. Here, a radial channel **28** extends from the outer edge inwards in the cover **17** of the plug **15**, and its end communicates with the groove **27**, which is shown in **FIG. 2**. An annular groove may be made in the underside of the cover **17** so that the groove **28** leads into the groove and the air can flow around the plug **15** into the groove **27**. As a variant, the delivery nozzle **13** of the inliner bottle **9** may also be chamfered on the outside of its upper edge so that such an annular groove is formed. Via the channel **28**, then the annular groove and subsequently the groove **27**, air can enter the space between the outer bottle **1** and the inliner bottle **9** so that deformation of the inliner bottle **9** with delivery of content is permitted. A tamper-evident band **29** which is connected in a known manner via a few predetermined breaking points to the lower edge of the cap **24** is shown at the bottom of the cap **24**. The cap **24** can therefore be unscrewed only by breaking these predetermined breaking points. Either the cap **24** has to be vigorously turned for this purpose or the tamper-evident band **29** is specially torn off beforehand. In any case, a guarantee of opening for the first time is thus realized. When the cap **24** is removed, the content can emerge from the inliner bottle **9** through the one-way valve **2** as soon as the pressure in the interior of the inliner bottle **9** is greater than the prevailing external pressure. In order to build up such an excess pressure, the outer bottle **1** is compressed on its sides, with the result that the inliner bottle **9**, too, is compressed. Under the resulting pressure, the wedge-shaped one-way valve **2** is forced outwards with extension of the tension spring **22** so that the valve **2** opens by raising the cone **23** and content can flow outwards through the cannula **21** and around the cone **23** of the valve **2**.

[**0023**] **FIG. 4** shows the cannula insertable into the plug **15**, with the tension spring and the cone valve which are integral with it, separately in an overall perspective view. This component, together with the plug **15**, forms a one-way valve and is injection molded as a one-part piece and is therefore very economical to produce. It is initially assembled together with the plug **15**, if not yet inserted. For this purpose, the component is pushed from the outside through the delivery channel **19** of the delivery tube **18** on the plug **15** until its lower end projects at the bottom out of the delivery tube **18**. It can then be pulled from there until its groove **30** snaps onto a corresponding annular bead in the interior of the delivery tube **18** so that the entire cannula **21** with the shaft **31** and the cone **23** is securely held as the one-way valve **2** in the delivery tube **18**. The cone **23** of the one-way valve **2** fits exactly in the conically widening mouth **20** of the delivery tube **18** and seals it reliably and air-tight because the cone **23** is continuously under a tensile force which is generated by the tension spring **22** inbetween, which, when the component is installed in this state, is lightly tensioned and thus generates an initial tension. A groove **32** is on the outside of the cone valve, such as on the shaft **31** thereof and when the cone valve is raised under the pressure of the liquid in the interior of the inliner bottle **9** on delivery of bottle content, the upper end of the groove **32** opens into the conically widening region **20** of the mouth of the delivery tube on the plug **15**, thus ensuring a connection to the outside through which the liquid can emerge.

[**0024**] **FIG. 5** shows the upper part of the container with the one-way valve on a larger scale in a longitudinal section. The arrow indicates the direction in which the one-way valve moves as soon as the pressure from below is greater than the pressure from the outside. The liquid passes through the cannula **21** and the tension spring **22** and then through the groove **32** in the shaft of the one-way valve **2** and thereafter flows around the cone **23** and emerges on the outside when the outer bottle **1** is compressed. When the pressure on the bottle **1** is reduced again, it returns to its initial shape under elastic deformation. A reduced pressure relative to the atmosphere is thus generated between the outer bottle **1** and the inliner bottle **9** produced by injection blow molding. Air is therefore subsequently sucked in via the radial channel **28** and the connecting annular groove and thereafter through the channel **27** and passes into the space between the inliner bottle **9** and the outer bottle **1**. The inliner bottle **9** remains in its state of being slightly further compressed with each delivery of liquid or paste, because in fact no liquid, air or paste can flow back from outside into it. It is thus always completely filled with liquid or paste. The air specially introduced from outside therefore fills the space between the inliner bottle **9** and the outer bottle **1** when the outer bottle **1** expands back to its original shape. The air flowing in through the channels **28** and **27** opens the disc valve further below, which is formed by the radially projecting rim **14** on the outside of the nozzle **13** of the inliner bottle **9**. The rim **14** is curved slightly downwards and, as soon as air no longer flows downwards over its edge, the edge of this rim **14** once again rests against the inside of the outer bottle **1** or against its oblique shoulder **6** there and forms an air-tight seal. When the outer bottle **1** is next compressed, the inliner bottle **9** produced by injection blow molding is therefore also further compressed, with the result that the pressure in its interior increases and is thus able to open the one-way valve **2** against the prevailing atmospheric pressure. When the outer bottle **1** is released, air once again flows inwards, in particular exactly the volume which corresponds to the volume of the content delivered.

[**0025**] The inliner bag, in the form of actual inliner bottle **9** here, is produced as a special product by injection blow molding and is thus not a tubular bag. This makes it possible to realize the disc valve **14** which, if required, is important and which, by opening, ensures the subsequent flow of air and thereafter closes again and permits further compression of this inliner bottle **9**. The entire container or the entire

bottle makes it possible to keep the content completely hermetically sealed so that air and thus any germs cannot enter the interior of the inliner bottle **9** in any phase, even during the delivery of the content. With this hermetic seal, which nevertheless permits multiple metered delivery of portions of content, it is possible to dispense with a preservative in many cases. Such a container bottle having an inliner bottle **9** produced by injection blow molding is therefore very suitable for the packing and delivery of, for example, eye drop substances, and is also suitable for many further substances of other types.

[**0026**] The container with the inliner bottle **9** and the one-way valve **2** in this form can be specially designed for such different contents, such as the volume and the shape of the bottle **9** can be adapted. The necessary pressure for opening the one-way valve **2** can be varied by changing the tension of the valve spring **22**. Also, the rigidity of the outer bottle **1** and also of the inliner bottle **9** can be specially designed for various applications. Altogether, the entire container with one-way valve has only four integrally produced injection molded parts or parts produced by injection blow molding and the associated cap **24**, and the assembly of the few parts is simple. The one-way valve itself has only of two parts. All of this helps to reduce the costs of the mass production of such containers. At the same time, the handling of the container or of the bottle for delivery of certain portions is facilitated.

[**0027**] It may also make sense to insert an inliner bottle produced by injection blow molding without the one-way valve and also without the disc valve into an outer bottle. For example, the inliner bottle may be produced from a soft barrier material, for example from a soft polyamide, in order to be inserted into a suitable bottle, regardless of the manner in which this is produced beforehand. The one-way valve which has only two components is also suitable for other applications of any kind.

[**0028**] Swiss Patent Reference 00824/04 the priority document corresponding to this invention, and its teachings are incorporated, by reference, into this specification.

We claim:

1. A container having an inliner bag arranged in an interior of the container and a one-way dispenser valve, the container comprising: the inliner bag being an inliner bottle (**9**) produced from a low-density polyethylene (LDPE) by injection blow molding and having a delivery nozzle (**13**), the one-way valve having a plug (**15**) fitting into the delivery nozzle (**13**) and having a delivery channel (**19**) and a conically widening mouth (**20**), a cannula (**21**) insertable from an outside into the delivery channel (**19**) and having an integral tension spring (**22**) and cone valve (**23**), and the cone valve (**23**) cooperating with the widening mouth (**20**) of the delivery channel (**19**) while the cannula (**21**) is snappable into the delivery channel (**19**) under an initial tension of the tension spring (**22**).

2. A one-way valve suitable for installation as a one-way dispenser valve in a delivery nozzle of an inliner bottle (**9**) produced from a low-density polyethylene (LDPE) by injection blow molding, the one-way valve comprising: a plug (**15**) fitting into the delivery nozzle (**13**) and having a delivery channel (**19**) and a conically widening mouth (**20**), a cannula (**21**) insertable from an outside into the delivery channel (**19**) and having an integral tension spring (**22**) and a cone valve (**23**), and the cone valve (**23**) cooperating with the widening mouth (**20**) of the delivery channel (**19**) while the cannula (**21**) is snappable into the delivery channel (**19**) under initial tension of the tension spring (**22**).

3. The container according to claim 1, wherein the inliner bottle (**9**) has in one of a shoulder region (**12**) of the delivery nozzle (**13**) and in a lower region of the delivery nozzle (**13**) an external radially projecting rim (**14**) acting as a disc valve against an inside of the outer container (**1**).

4. The container according to claim 3, wherein the inliner bottle (**9**) has in the lower region of the delivery nozzle (**13**) the external radially projecting rim (**14**) acting as a disc valve against an inside of an oblique shoulder (**6**) of the bottle (**1**).

5. The container according to claim 4, wherein the inliner bottle (**9**) has in a shoulder region (**12**) of the delivery nozzle (**13**) the external radially projecting rim (**14**) acting as a disc valve against an inside of an oblique shoulder (**6**) of the bottle (**1**).

6. The container according to claim 5, wherein the plug (**15**) with the delivery channel (**19**) has on the outside a bead (**16**) intimately fitting and connecting with an inside of the delivery nozzle (**13**) having a corresponding groove.

7. The container according to claim 6, wherein the plug (**15**) has at a top a cover (**17**) having a central hole from which extends in an upward direction a delivery tube (**18**) which forms the delivery channel (**19**) with the mouth (**20**) widening at an end.

8. The container according to claim 7, wherein in the cover (**17**) of the plug (**15**) a radial channel (**28**) extends inwards from an outer edge and has an end that communicates via an annular groove by one of in the cover and formed by a chamfer of the outer edge of the delivery nozzle (**13**) of the inliner bottle (**9**), with a groove (**27**) which extends downwards on the outside of the plug (**15**) and opens into a space between the outer bottle (**1**) and the inliner bottle (**9**).

9. The container according to claim 8, wherein a groove (**32**) running in a longitudinal direction of a shaft (**31**) of the cone valve opens at a bottom into the space of the tension spring (**22**) and at a top opens into a cone of the cone valve (**23**), and the cannula (**21**) inserted into the delivery tube (**18**) of the plug has on the outside an all-round groove (**30**) which on insertion into the delivery tube (**18**) snaps onto a corresponding bead on an inside in which state of the cannula (**21**) the tension spring (**22**) connected to the cone valve (**23**) is under initial tension.

10. The container according to claim 1, wherein the inliner bottle (**9**) has in a lower region of the delivery nozzle (**13**) an external radially projecting rim (**14**) acting as a disc valve against an inside of an oblique shoulder (**6**) of the bottle (**1**).

11. The container according to claim 1, wherein the inliner bottle (**9**) has in a shoulder region (**12**) of the delivery nozzle (**13**) an external radially projecting rim (**14**) acting as a disc valve against an inside of an oblique shoulder (**6**) of the bottle (**1**).

12. The container according to claim 1, wherein the plug (**15**) with the delivery channel (**19**) has on the outside a bead (**16**) intimately fitting and connecting with an inside of the delivery nozzle (**13**) having a corresponding groove.

13. The container according to claim 1, wherein the plug (**15**) has at a top a cover (**17**) having a central hole from

which extends in an upward direction a delivery tube **(18)** which forms the delivery channel **(19)** with the mouth **(20)** widening at an end.

14. The container according to claim 1, wherein in a cover **(17)** of the plug **(15)** a radial channel **(28)** extends inwards from an outer edge and has an end that communicates via an annular groove by one of in the cover and formed by a chamfer of the outer edge of the delivery nozzle **(13)** of the inliner bottle **(9)**, with a groove **(27)** which extends downwards on the outside of the plug **(15)** and opens into a space between the outer bottle **(1)** and the inliner bottle **(9)**.

15. The container according to claim 1, wherein a groove **(32)** running in a longitudinal direction of a shaft **(31)** of the cone valve opens at a bottom into the space of the tension spring **(22)** and at a top opens into a cone of the cone valve **(23)**, and the cannula **(21)** inserted into the delivery tube **(18)** of the plug has on the outside an all-round groove **(30)** which on insertion into the delivery tube **(18)** snaps onto a corresponding bead on an inside in which state of the cannula **(21)** the tension spring **(22)** connected to the cone valve **(23)** is under initial tension.

16. The container according to claim 3, wherein the inliner bottle **(9)** has in a shoulder region **(12)** of the delivery nozzle **(13)** the external radially projecting rim **(14)** acting as a disc valve against an inside of an oblique shoulder **(6)** of the bottle **(1)**.

17. The container according to claim 3, wherein the plug **(15)** with the delivery channel **(19)** has on the outside a bead **(16)** intimately fitting and connecting with an inside of the delivery nozzle **(13)** having a corresponding groove.

18. The container according to claim 3, wherein the plug **(15)** has at a top a cover **(17)** having a central hole from which extends in an upward direction a delivery tube **(18)** which forms the delivery channel **(19)** with the mouth **(20)** widening at an end.

19. The container according to claim 3, wherein in a cover **(17)** of the plug **(15)** a radial channel **(28)** extends inwards from an outer edge and has an end that communicates via an annular groove by one of in the cover and formed by a chamfer of the outer edge of the delivery nozzle **(13)** of the inliner bottle **(9)**, with a groove **(27)** which extends downwards on the outside of the plug **(15)** and opens into a space between the outer bottle **(1)** and the inliner bottle **(9)**.

20. The container according to claim 3, wherein a groove **(32)** running in a longitudinal direction of a shaft **(31)** of the cone valve opens at a bottom into the space of the tension spring **(22)** and at a top opens into a cone of the cone valve **(23)**, and the cannula **(21)** inserted into the delivery tube **(18)** of the plug has on the outside an all-round groove **(30)** which on insertion into the delivery tube **(18)** snaps onto a corresponding bead on an inside in which state of the cannula **(21)** the tension spring **(22)** connected to the cone valve **(23)** is under initial tension.

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