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(54) **DISPENSER CLOSURE FOR A CONTAINER THAT CONTAINS A FLOWABLE PRODUCT**

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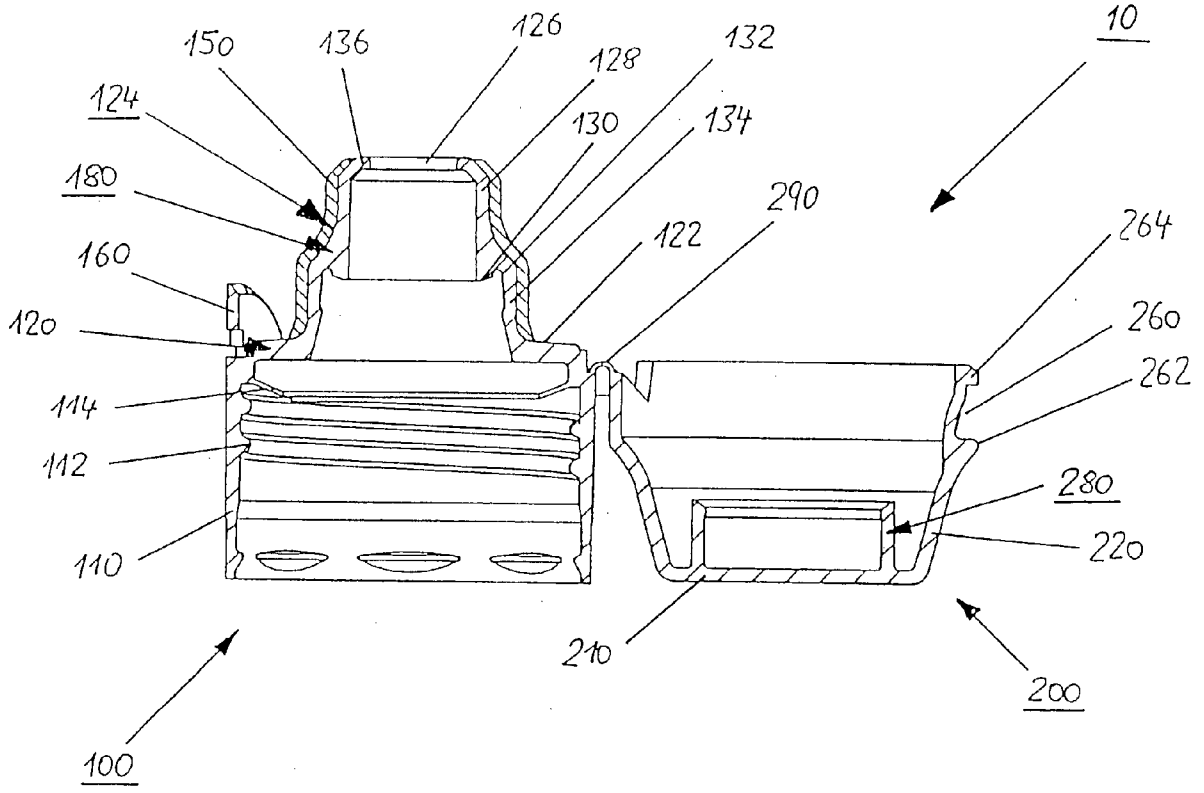
(57) **ABSTRACT**

The invention relates to a dispenser closure (**10**) for a container that contains a flowable product, especially for a beverage container. Said dispenser closure comprises: a closing body (**100**) with a cover (**120**) from whose outer rim a jacket (**110**) extends downward that can be fastened via an opening of the container on the same, an outlet opening (**126**) in an upper face of the closing body (**100**), which communicates with the opening of the container, and a closure element (**200**) for opening or closing the outlet opening (**126**) of the closing body (**100**), and a dome-shaped raised section (**124**) of the closing body (**100**), which is disposed around the outlet opening (**126**) of the closing body (**100**). The closing body (**100**) is provided with a covering element (**150**) that covers at least partially an outer area of the dome-shaped raised section (**124**), the material of the covering element (**150**) being softer than the material of the dome-shaped raised section (**124**) and/or the cover (**120**) and/or the material of the closing body (**100**). The invention allows for an increased tightness of the dispenser closure and a pleasant feel when the user comes into direct contact with the dispenser closure.



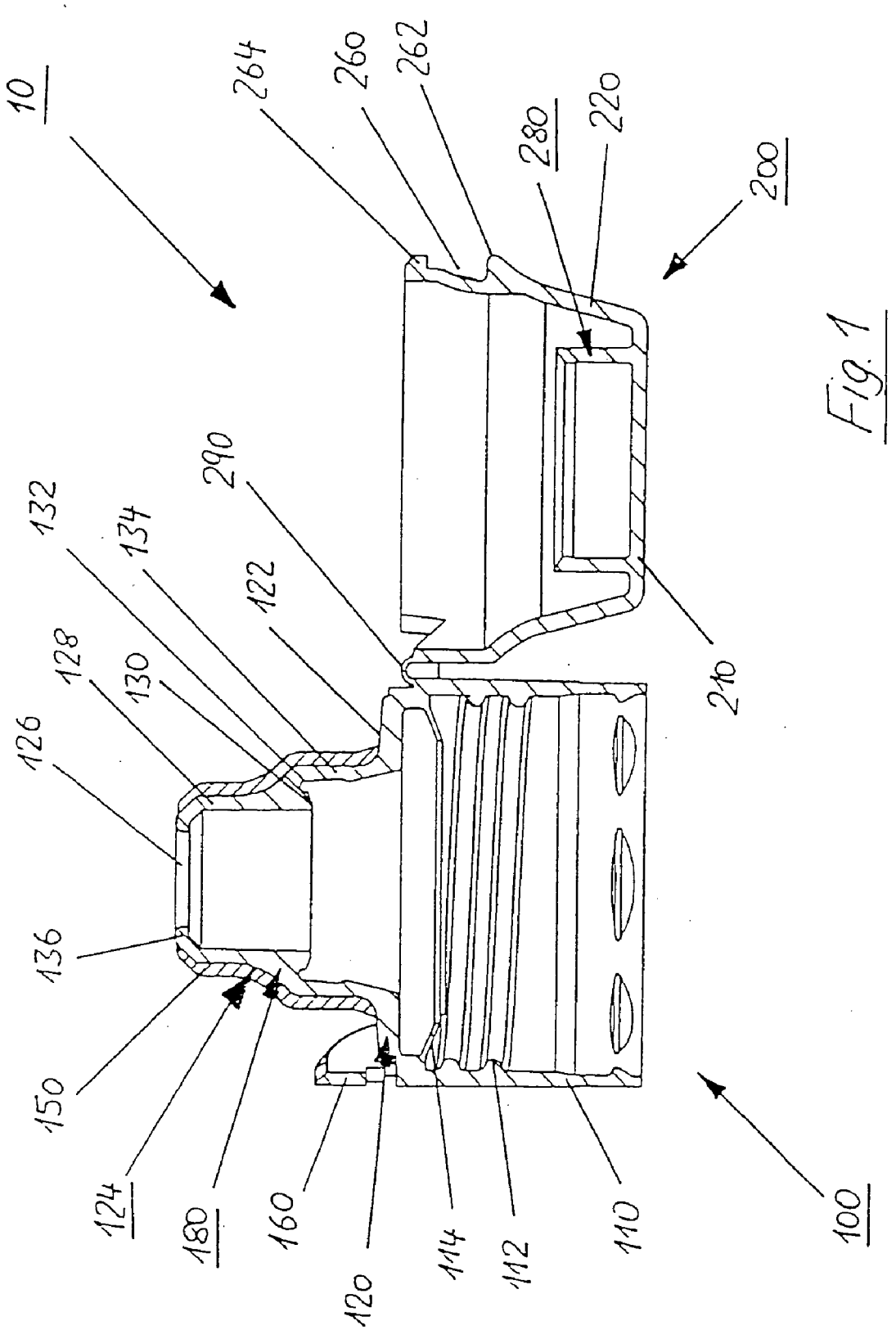

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Fig. 1

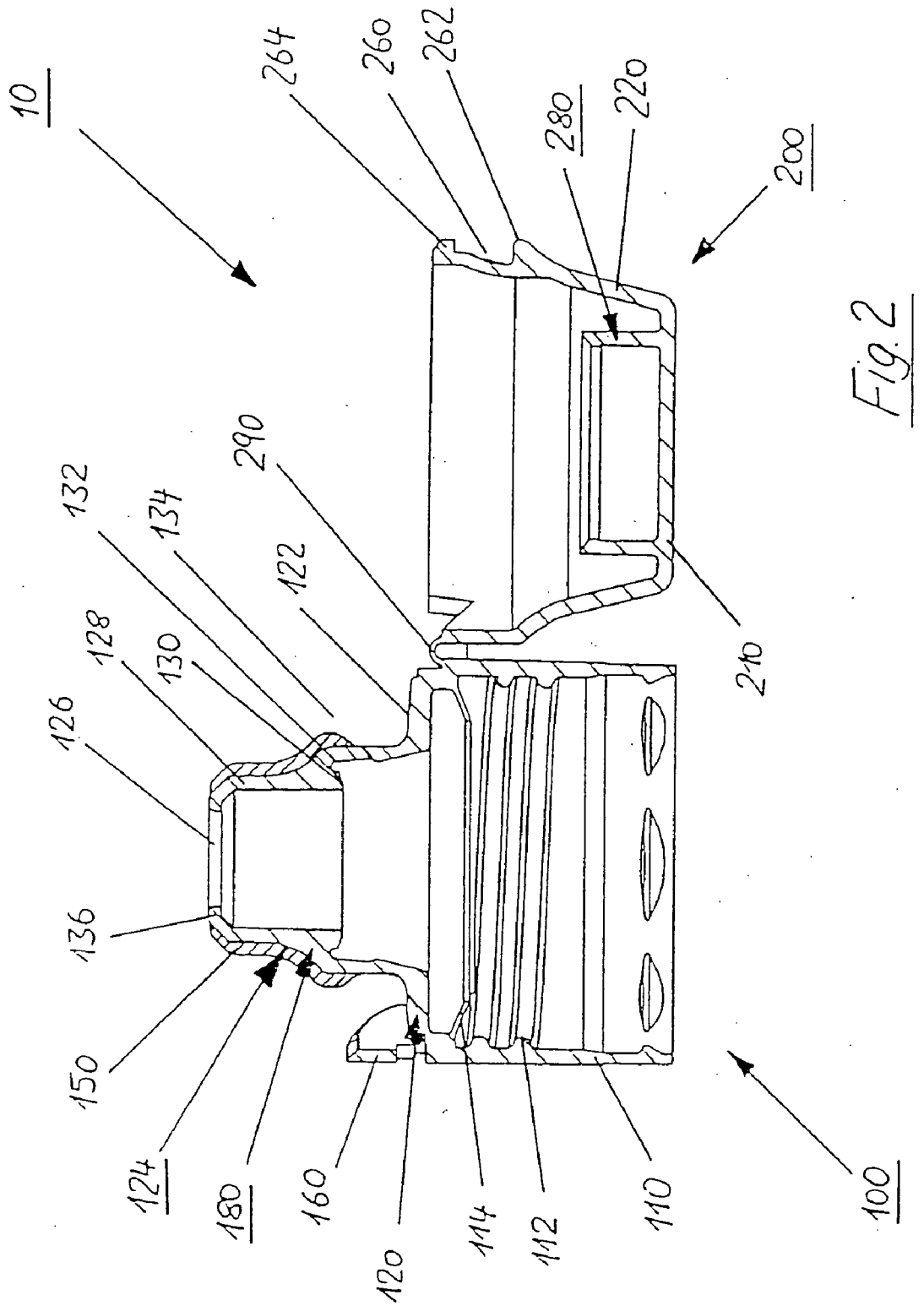
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Fig. 2

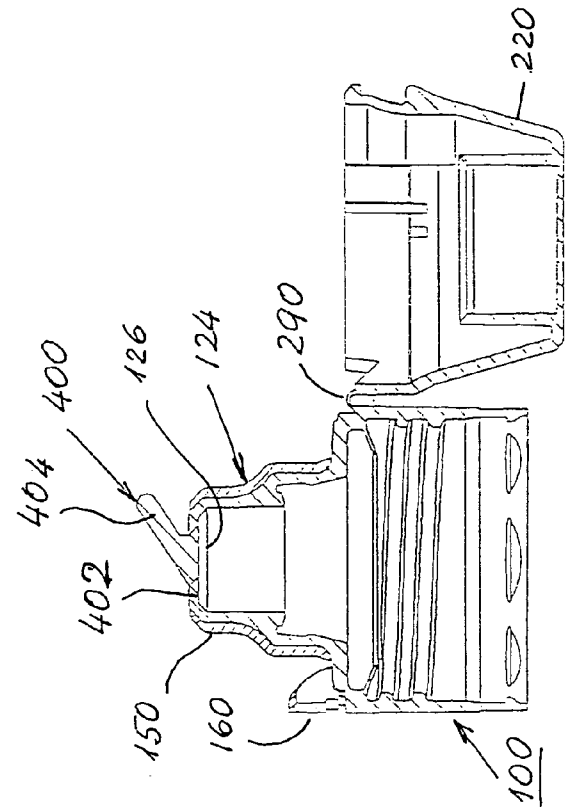

Fig. 4

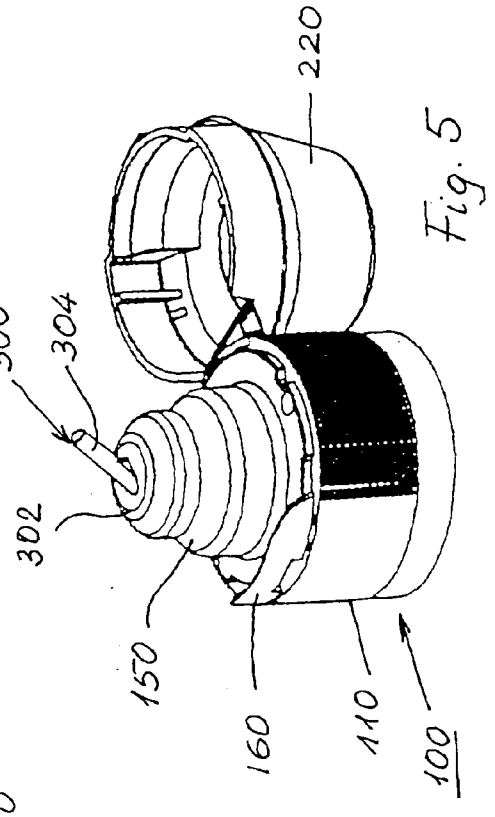

Fig. 5

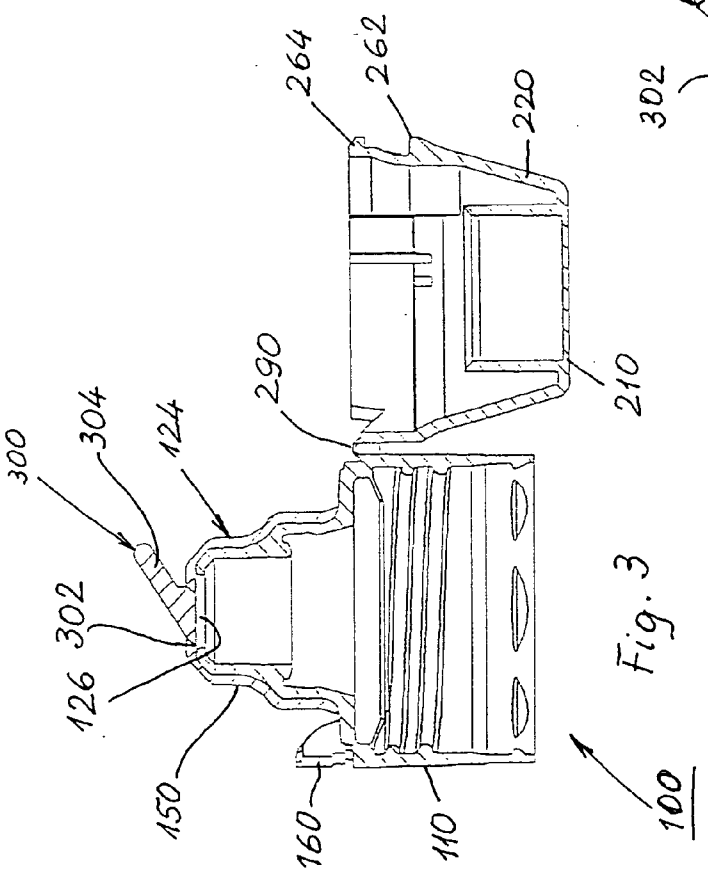

Fig. 3

DISPENSER CLOSURE FOR A CONTAINER THAT CONTAINS A FLOWABLE PRODUCT

[0001] The invention relates to a dispensing closure for containers which contain free-flowing substances, in particular for drinks containers.

[0002] Numerous designs of dispensing closures of this type are known from the prior art, and the closures are used for drinks containers made from various materials, in particular from glass and plastic.

[0003] In particular in recent years, increased demands have been imposed on drinks containers of this type and associated dispensing closures for various intended uses and applications, in which context on the one hand reliable sealing of the dispensing closure even under high levels of loads, as occur for example when the drinks containers are carried along during sporting activity, causes problems, and on the other hand it is desirable for the user of the containers to have as pleasant an experience as possible during removal of the substances, in particular when drinking, when the user's mouth generally comes into direct contact with the dispensing closure.

[0004] Therefore, it is an object of the present invention to provide an improved dispensing closure for containers which contain free-flowing substances, in particular for the abovementioned drinks containers, which on the one hand ensures an improved sealing of the dispensing closure and on the other hand allows a pleasant sensation to be felt in the event of direct contact with the dispensing closure.

[0005] This object is achieved by a dispensing closure for containers which contain free-flowing substances, in particular for drinks containers, the dispensing closure comprising: a closure body having a cover, from the outer edge of which projects a casing which can be secured to the container over an opening in the container, an outlet opening in a top side of the closure body, which is in communication with the opening in the container, and a closure element for opening and closing the outlet opening of the closure body, a dome-like elevation of the closure body, which is arranged around the outlet opening in the closure body, which is provided with a sleeve element which at least partially covers an outer region of the dome-like elevation, the material of the sleeve element being softer than the material of the dome-like elevation and/or of the cover and/or of the material of the closure body.

[0006] This dispensing closure of the invention has a very positive influence on the contact sensation of the user who, for example during drinking, comes into contact substantially or exclusively with the sleeve element, which consists of the softer material. Furthermore, the sealing of the dispensing closure is improved by the softer material used for the sleeve element, since the closure element which closes off the outlet opening preferably seals off the outlet opening by direct contact with the sleeve element. Furthermore, the fact that the softer material is highly compressible means that it is possible to select the dimensions of the components in such a way that while a reliable seal is obtained, it is not necessary to impose excessively high demands on the accuracy of the manufacturing tolerances. If necessary, it is additionally possible to provide a tamperproofing means in the form of a closure for the outlet opening of the closure body. In this way, in order to maintain the quality of the contents of the pouch, any possibility of air or oxygen reaching the interior of the container is ruled out until the container is opened for the first time. This tamperproofing means may consist of the same material as the sleeve element and/or of the material of the closure body. In addition to in this way achieving a high level of quality assurance for the contents of the container, it is thereby possible to significantly simplify and reduce the costs of mass production of the dispensing closure. Therefore, the invention is based on the surprising discovery that the provision of the sleeve element consisting of softer material makes it possible to achieve or solve both the abovementioned objects or problems.

[0007] A further advantage of the dispensing closure having the sleeve element consisting of soft material is the noise insulation, since there is no disruptive noise produced when a lid, in particular a hinged lid, is opened and closed. This is advantageous in particular if, for example, a corresponding container is to be opened as unobtrusively as possible in a quiet atmosphere, for example in a library or during a lecture.

[0008] Suitable preferred materials for the sleeve element are in particular thermoplastic polymers, in particular thermoplastic polyester (TPE), high-pressure polymers (low-density polyethylene, LDPE), but also other soft plastics, rubber and/or silicone. These materials can be set to the desired softness of the sleeve element but are also stable enough to ensure a long service life of the sleeve element and therefore of the dispensing closure.

[0009] Of course, it is possible for the sleeve element to be made from a combination of two or more of the abovementioned materials without departing from the subject matter of the present invention.

[0010] It is preferable for the closure body to be formed integrally with a dome-like elevation which projects above the top side or edge of the closure body and can be used as a drinking stub for the user. Furthermore, it is preferable for the diameter of the dome-like elevation to be stepped over its height, the dome-like elevation preferably having a smaller diameter toward its outer region and having the opening at its outer end.

[0011] In one preferred embodiment, the sleeve element is designed in such a way that the dome-like elevation, in its outer region, is covered by the sleeve element substantially completely, i.e. if appropriate including the opening and/or its tamperproof closure made from the material of the closure body. This ensures that the entire area which can come into contact with the mouth of a person who is drinking is covered by the sleeve element, so that the pleasant contact sensation is fully retained. Furthermore, this allows the configuration of the closure element to be made more variable, because a mating element, provided for sealing purposes, of the closure element can engage at various locations of the sleeve element and thereby ensure a seal. For example, if the tamperproof element is designed as a tear-off tab which seals the opening, the user, for example a cyclist, can tear off the tear-off tab using his teeth, without having to use one of his hands, while cycling in order to open the container.

[0012] However, the sleeve element may extend only over certain partial regions of the dome-like elevation, in par-

ticular over an upper region of the dome-like elevation. This configuration, in particular the size of the dome-like elevation, can be appropriately adapted to the desired use by a person skilled in the art.

[0013] By contrast, the sleeve element may extend not only over the dome-like elevation and, if desired, over its opening, but rather may also cover further partial regions of the closure body.

[0014] In a preferred embodiment, the closure element is a hinged lid which is articulatedly mounted integrally on the closure body by means of a hinge. Therefore, the closure element and the closure body form a single unit which is injection-molded integrally from plastics material and in which the closure element is not lost after it has been fitted to the container.

[0015] Of course, it is also possible for separate closure elements to be provided instead of a closure element which is connected to the hinged lid. Furthermore, without departing from the scope of the invention, it is conceivable to use all possible closure options, e.g. a closure element which is secured to the closure body by a snap-action mechanism or a screw thread.

[0016] The invention is described in more detail below with reference to a diagrammatic drawing of exemplary embodiments of a dispensing closure. In the drawing:

[0017] **FIG. 1** shows an opened dispensing closure in the form of a center longitudinal section;

[0018] **FIG. 2** shows a second embodiment of a dispensing closure in the form of a center longitudinal section as in **FIG. 1**;

[0019] **FIG. 3** shows a third embodiment of a dispensing closure in the same form of illustration as in **FIGS. 1 and 2**;

[0020] **FIG. 4** shows a fourth embodiment of a dispensing closure in the same form of illustration as in **FIGS. 1-3**; and

[0021] **FIG. 5** shows a three-dimensional illustration of the dispensing closure from **FIG. 4**.

[0022] **FIG. 1** shows a dispensing closure **10** for containers which contain free-flowing substances, having a closure body **100** and a closure element **200** designed as a lid. The closure body **100** and the closure element **200** are connected to one another on one side by means of a hinge **290**, which is designed as an integral hinge, so that the closure element **200** can be pivoted through 180°, about an axis formed by the integral hinge **290**, from the position in which it opens up the closure body as shown in **FIG. 1** into the position in which it closes the closure body.

[0023] On its top side, the closure body **100** has a cover **120**, from the radially outer edge of which a casing **110** extends laterally. The casing **110** is of substantially cylindrical design and has an internal screw thread **112**, by means of which it can be screwed onto a container (not shown) having a corresponding mating screw thread and can thereby be secured in place.

[0024] As an alternative to the screw connection, it is also possible to provide other ways of securing the closure body on a container, e.g. snap-action connections. It is also possible for the dispensing closure to be formed directly integrally with a corresponding container.

[0025] In the embodiment shown in **FIG. 1**, in the upper region of the casing **110** of the closure body **100**, in the vicinity of the outer edge of the cover **120** of the closure body **100**, there is a sealing lip **114** which is designed in the form of a ring which slopes downward slightly with respect to the horizontal, so that this sealing lip **114**, when the closure element **100** is being screwed onto the container, presses onto and seals a top side of the container opening.

[0026] In the embodiment shown here, the sealing lip **114** is formed integrally with the closure body but consists of a soft material, in this case silicone, unlike the hard plastic from which the closure body **100** and also the closure element **200** of the dispensing closure **10** are made. However, at this point it should be noted that in another embodiment the sealing lip **114** may be made from the same material as the closure body **100**, which simplifies the production process.

[0027] The cover of the closure body **100** has a substantially horizontal annular shoulder **122**, from which a radially inner region, with respect to the longitudinal center axis, extends outward beyond the annular shoulder in the style of a dome and in stepped form, the diameter of the dome-like elevation **124** being stepped over its height, and the dome-like elevation **124** having an outlet opening **126** at its outer end.

[0028] The dome-like elevation substantially comprises a first (or upper) step **128**, which, with respect to the cover **120**, lies above a second (or lower) step **134**. Each of the steps **128**, **134** is substantially cylindrical in form, with the two steps **128**, **134** having similar heights, but the first step **128** having a smaller diameter. The transitions between the first step **128** and the second step **134** and between the second step **134** and the annular shoulder **122** on the outer side are rounded, so that there are no sharp edges. Above the first step **128** there is a termination rim **136** of the outlet opening **126** which is bent off radially inward and in its top region runs virtually horizontally.

[0029] The inner region of the dome-like elevation **124** of the cover **120** is also stepped: beneath the smallest internal diameter of the outlet opening **126** within the dome-like elevation, the internal diameter of the dome-like elevation widens out in the downward or inward direction. After a first widening of the internal diameter directly beneath the termination rim **136**, the inner region extends substantially cylindrically over the entire axial extent (in the direction of the height) of the first step and widens out further approximately at the height of the transition region between the first step **128** and the second step **134**.

[0030] The lower end of the first step **128** of the flexible tube holder **180**, in the inner region, forms an annular stop face **130**, which at the same time delimits an annular groove **132** in the upper region within the second step **134**. The inner region of the second step **134** below the annular groove **132** has a frustoconical profile and widens out downward, merging at its bottom end into the lower side of the horizontally positioned annular shoulder **122** of the cover **120**.

[0031] The closure element **200** is substantially designed in the form of a lid and comprises a head plate **210** and a side region **220** which extends from the head plate, the side

region **220** substantially being designed in such a way that, in a closed position of the closure element **200**, it is substantially flush with the casing **110** of the closure body **100**.

[**0032**] Furthermore, on its opposite side from the hinge **290**, the closure element **200** has a groove **260** for receiving a quality assurance element **160**, the groove **260** (in the lower region in the position of the closure element **200** shown in **FIG. 1**, and therefore in the upper region in the closed position) being recessed inward, so that the quality assurance element **160** can be pressed into this recessed region in order to break the seal. The groove **260** for the quality assurance element **160** is delimited by a lug **262** and a protuberance **264** in its upper and lower regions.

[**0033**] The embodiment shown in **FIG. 1** has a sleeve element **150** which consists of thermoplastic polyester (TPE), extends substantially over the entire outer region of the dome-like elevation **124** of the cover **120** and follows the contour of the dome-like elevation **124**.

[**0034**] The dimensions of the sleeve element **150** made from thermoplastic polyester and of the dome-like elevation **124** and a pinch member **280**, which is provided on the inner side of the head plate **210** of the closure element **200** and is substantially circular in design, are matched to one another in such a way that, when the closure element **200** is closed virtually without any noise, the pinch member **280** engages over the first step **128** of the dome-like elevation **124** with the sleeve element **150** arranged thereon, and in this way closes off the outlet opening **126** in a sealed manner with respect to the outside.

[**0035**] In the embodiment shown in **FIG. 1**, the external diameter of the sleeve element **150**, at the height of the first step **128**, in its uncompressed state is slightly larger than the internal diameter of the circular pinch member **280** of the closure element **200**, so that as a result of the closure element **200**, which is designed as a hinged lid, being closed, with the sleeve element **150** being slightly compressed at the same time, a press fit is produced between the pinch member **280** and sleeve element **150**, which leads to reliable sealing at this location, even if minor manufacturing tolerances in the geometry and/or dimensions of the individual elements are present, which is inevitable at least to a small extent, in particular in the case of mass production or else relatively expensive production processes will be required in order to comply with more accurate tolerance requirements.

[**0036**] Purely for the sake of completeness, it should be noted that the embodiment of the dispensing closure shown in **FIG. 1** is designed in such a way that it is additionally also possible for a flexible dispensing tube to be inserted into the inner region of the closure body **200**, which flexible dispensing tube is fixed securely in the inner region of the dome-like elevation **124**, with its outer end projecting out of the outlet opening **126**, in order if necessary to make it even easier for the free-flowing substances to be removed.

[**0037**] **FIG. 2** shows a further embodiment of a dispensing closure, which is substantially identical to the embodiment shown in **FIG. 1**.

[**0038**] Unlike in the embodiment shown in **FIG. 1**, however, the sleeve element **150** is designed in such a way that it covers only an upper region of the dome-like elevation **124**, namely the first step **128** and the transition between the first step **128** and the second step **134** of the dome-like elevation **124**. Furthermore, in this embodiment the sleeve element **150** is made from a low-density polyethylene (LDPE).

[**0039**] In the embodiment shown in **FIG. 3**, a dispensing closure is designed substantially in the same way as in the embodiment shown in **FIG. 1**. However, the outlet opening **126** in the top side of the closure body **100** is provided with a tamperproof closure **300**. This tamperproof closure **300** forms an integral part of the dispensing closure **10** and for this purpose is made from the relatively soft material of the sleeve element **150**. A weakened line **302**, which follows the edge of the outlet opening **126** in the dome-like elevation **124**, connects the tamperproof closure **300** which seals off the outlet opening **126** to the sleeve element **150**. It is advantageous for a tear-off tab **304** to be connected to the tamperproof closure **300** and preferably to be formed integrally therewith. The tear-off tab **304** makes it easy to open the container by tearing off the tear-off tab **304** even if this cannot be done by hand, as is the case, for example, in cycling races or the like.

[**0040**] The tamperproof element **300** therefore ensures that air or oxygen cannot adversely affect the quality of the contents of the container until the container or bottle is opened for the first time. In this case too, the sleeve element **150** together with the tamperproof closure **300** may consist of thermoplastic polyester (TPE) and/or of low-density polyethylene (LDPE), or of rubber, silicone and/or a soft plastic or a combination of these materials.

[**0041**] The embodiment of a dispensing closure **10** shown in **FIG. 4** differs from that shown in **FIG. 3** only through the fact that a tamperproof closure **400** is made from the material of the closure body **100** and is produced together with the latter as an integral workpiece using the plastics injection-molding process. This tamperproof closure **400** is exposed at the top or outside and is connected or produced integrally with the closure body **100** by a weakened line **402** which follows the annular edge of the outlet opening **126**. A tear-off tab **404**, which as in **FIG. 3** projects obliquely from the top side of the tamperproof closure **400**, consists of the same material as the closure body **100** and is intended to facilitate opening of the container provided with the dispensing closure **10** but to ensure that the quality of the contents of the container is preserved until it is opened by hermetically sealing the outlet opening **126** of the container. The closure body **100** is produced integrally with the tear-off tab **404**, preferably from polypropylene (PP) or polyethylene (PE) using the injection-molding process.

[**0042**] Of course, if necessary it is also possible for the tamperproofing means **400**, which consists of the material of the closure body **100**, and its tear-off tab **404** additionally to be covered with the soft material of the sleeve element **150**, in particular if a container equipped therewith is to be used for a purpose in which the container cannot be opened by hand or can only be opened by hand with difficulty, as is the case in certain forms of sport, such as for example cycling etc.

[**0043**] **FIG. 5** gives a general impression of the described dispensing closure from **FIGS. 3 and 4**, with the dispensing closures shown in **FIGS. 1 and 2** also being comparable to the illustration of the dispensing closure provided in **FIG. 5** if one imagines that the tamperproof closure **400** and the

tear-off tab **404** are absent, and instead there is an open outlet opening **126** of the closure body **100**.

List of reference numerals

[0044] **10** Dispensing closure

[0045] **100** Closure body

[0046] **110** Casing

[0047] **112** Screw thread

[0048] **114** Sealing lip

[0049] **120** Cover

[0050] **122** Annular shoulder

[0051] **124** Dome-like elevation

[0052] **126** Outlet opening

[0053] **128** First step

[0054] **130** Annular stop face

[0055] **132** Annular groove

[0056] **134** Second step

[0057] **136** Termination rim

[0058] **150** Sleeve element

[0059] **160** Tamperproof element

[0060] **200** Closure element

[0061] **210** Head plate

[0062] **220** Side region

[0063] **260** Groove

[0064] **262** Lug

[0065] **264** Protuberance

[0066] **280** Pinch member

[0067] **290** Hinge

[0068] **300** Tamperproof closure

[0069] **302** Weakened line

[0070] **304** Tear-off tab

[0071] **400** Tamperproof closure

[0072] **402** Weakened line

[0073] **404** Tear-off tab

1. A dispensing closure **(10)** made from plastic for containers which contain free-flowing substances, in particular for drinks containers, the dispensing closure comprising:

a closure body **(100)** having a cover **(120)**, from the outer edge of which projects a casing **(110)** which can be secured to the container over an opening in the latter,

a substantially horizontal annular shoulder **(122)** of the cover **(120)**, from the radially inner region, with respect to the longitudinal center axis, of which a dome-like elevation extends outward, with an outlet opening **(126)**, which is in communication with the opening in the container, at its outer end,

a sleeve element **(150)**, which at least partially covers an outer region of the dome-like elevation and the material of which is softer than the material of the dome-like elevation, and

a closure element **(200)** for the outlet opening **(126)**, characterized in that

the dome-like elevation forms a drinking stub **(124)**, the outlet opening **(126)** of which has a termination edge **(136)** which is bent off radially inward and in its top region runs virtually horizontally, the dimensions of the sleeve element **(150)** made from thermoplastic polyester and of the drinking stub **(124)**, and also of a cylindrical pinch member **(280)** provided on the inner side of a head plate **(210)** of the closure element **(200)**, being matched to one another in such a way that, in the closed position of the closure element **(200)**, the pinch member **(280)** engages over the drinking stub **(124)** with the sleeve element **(150)** arranged thereon virtually without any noise.

2. The dispensing closure as claimed in claim 1, characterized in that the diameter of the drinking stub **(124)** is stepped over its height.

3. The dispensing closure as claimed in one of the preceding claims, characterized in that a first, upper step **(128)** of the drinking stub **(124)**, with respect to the cover **(120)**, is arranged above a second, lower step **(134)**.

4. The dispensing closure as claimed in one of the preceding claims, characterized in that each of the steps **(128, 134)** of the drinking stub **(124)** is of substantially cylindrical design.

5. The dispensing closure as claimed in one of the preceding claims, characterized in that the two steps **(128, 134)** of the drinking stub **(124)** have similar heights, but the first step **(128)** has a smaller diameter.

6. The dispensing closure as claimed in one of the preceding claims, characterized in that the outer-side transitions between the first step **(128)** and the second step **(134)** of the drinking stub **(124)** and between the second step **(134)** of the drinking stub and the annular shoulder **(122)** are rounded.

7. The dispensing closure as claimed in claim 1, characterized in that the sleeve element **(150)** covers only the first step **(128)** and the transition between the first step **(128)** and the second step **(134)** of the drinking stub **(124)**.

8. The dispensing closure as claimed in claim 1, characterized in that the sleeve element **(150)** extends substantially over the entire outer region of the drinking stub **(124)** and follows the contour of the latter.

9. The dispensing closure as claimed in claim 1, characterized in that the inner region of the drinking stub **(124)** is likewise stepped, with the internal diameter of the drinking stub **(124)** increasing in the inward direction below the smallest internal diameter of the outlet opening **(126)**.

10. The dispensing closure as claimed in claim 9, characterized in that the inner region of the drinking stub **(124)**, after the first widening of its internal diameter below the termination edge **(136)** of the outlet opening **(126)**, extends substantially cylindrically over the entire axial extent of the first step **(128)** and widens out approximately at the height of the transition region between the first step **(128)** and the second step **(134)**.

11. The dispensing closure as claimed in one of the preceding claims, characterized in that the inner region of

the second step (**134**) is frustoconical below the annular groove (**132**) and widens out in the downward direction, before merging at its lower end into the horizontal annular shoulder (**122**) of the cover. (**120**).

12. The dispensing closure as claimed in one of the preceding claims, characterized in that the lower end of the first step (**128**) of a flexible tube holder (**180**), in the inner region of the drinking stub (**124**), forms an annular stop face (**130**), which at the same time delimits an annular groove (**132**) in the upper region of the second step (**134**)

13. The dispensing closure as claimed in one of the preceding claims, characterized in that a flexible dispensing tube can be inserted into the inner region of the closure body (**200**), which flexible dispensing tube is securely fixed in the inner region of the drinking stub (**124**), with its outer end projecting out of the outlet opening (**126**) to facilitate removal of the free-flowing substances.

14. The dispensing closure as claimed in claim 1, characterized in that the closure body (**200**) is designed substantially in the form of a lid and comprises a head plate (**210**) and a side region (**220**) which extends from the head plate and, in a closed position of the closure element (**200**), is substantially flush with the casing (**110**) of the closure body (**100**).

15. The dispensing closure as claimed in claim 14, characterized in that a hinged lid, as the closure element (**200**) for opening and closing the outlet opening (**126**) of the closure body (**100**), is articulatedly mounted integrally and pivotably on the closure body (**100**) by means of an integral hinge (**290**).

16. The dispensing closure as claimed in claim 15, characterized in that the closure element (**200**), on its opposite side from the hinge (**290**), has a groove (**260**) for receiving a quality assurance element (**160**), the groove (**260**), in the closed position of the closure element (**200**), being recessed inward in the upper region, so that the quality assurance element (**160**) can be pressed into this recessed region in order to break the seal.

17. The dispensing closure as claimed in claim 16, characterized in that the groove (**260**) for the quality assurance element (**160**) is delimited by a lug (**262**) and a protuberance (**264**) in its upper and lower regions.

* * * * *