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(54) **DEVICE AND METHOD FOR FILLING OF A CONTAINER**

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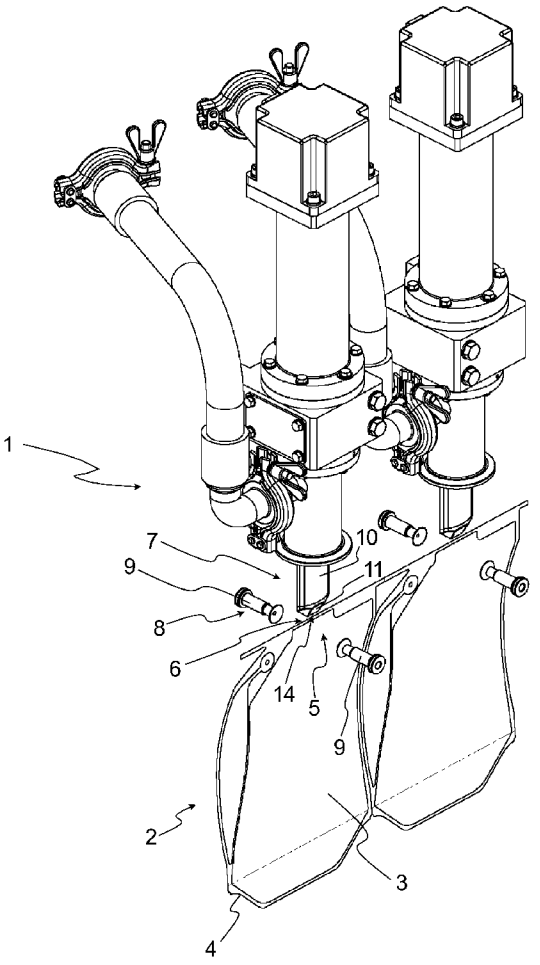
(57) **ABSTRACT**

A device for filling a container of a collapsible type with a liquid product, said container having two opposite side walls which abut flatly against each other in the state of the container before filling and which comprise opposite inlet portions, which are to be separated to open an inlet. The device comprises an opening for opening said inlet by separating said opposite inlet portions, and a filling nozzle, which is to be inserted in said inlet for supplying said product to said container. The device also comprises a nozzle for supplying a protective atmosphere to a volume defined by the open inlet. The invention also concerns methods of filling a container of a collapsible type.



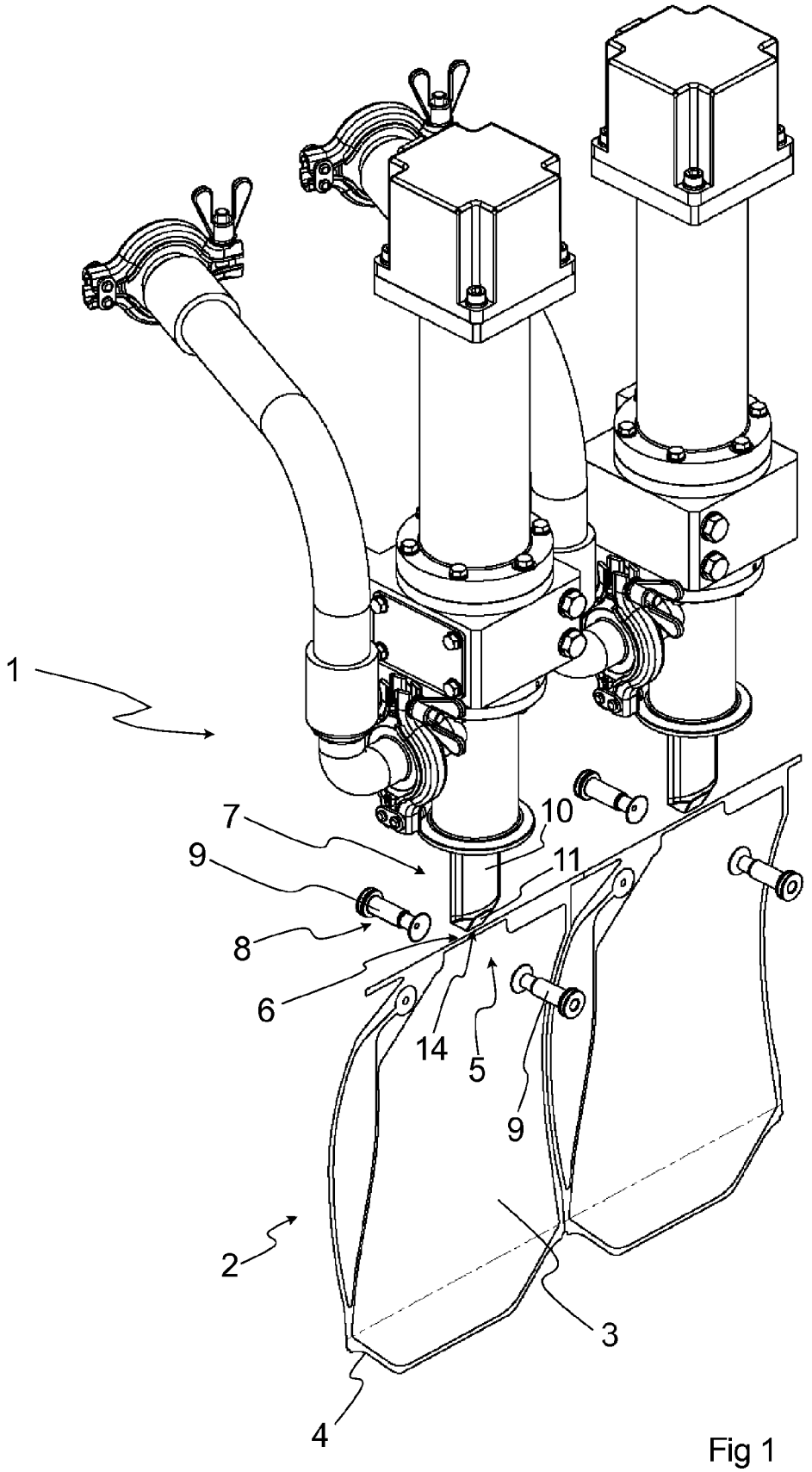


Fig 1

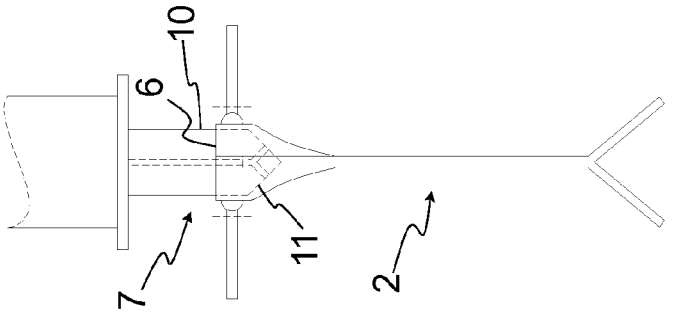


Fig 2d

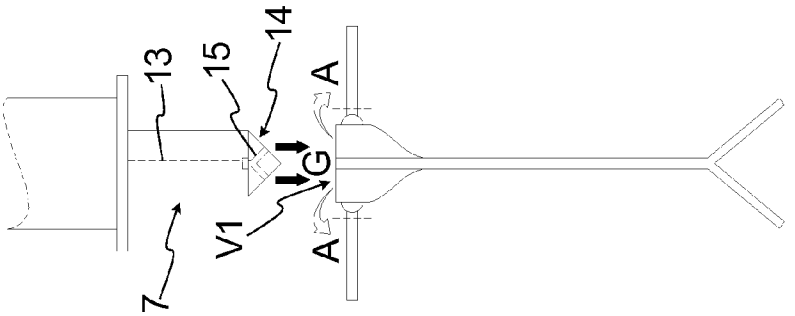


Fig 2c

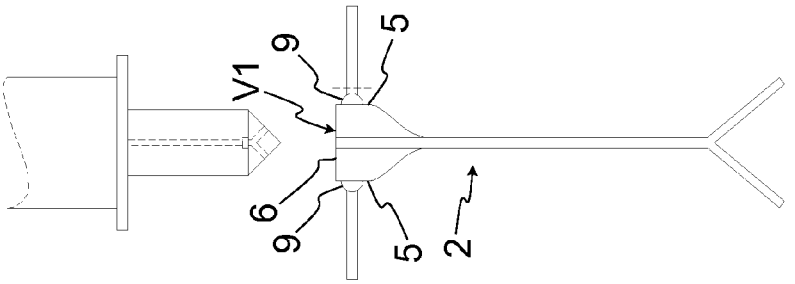


Fig 2b

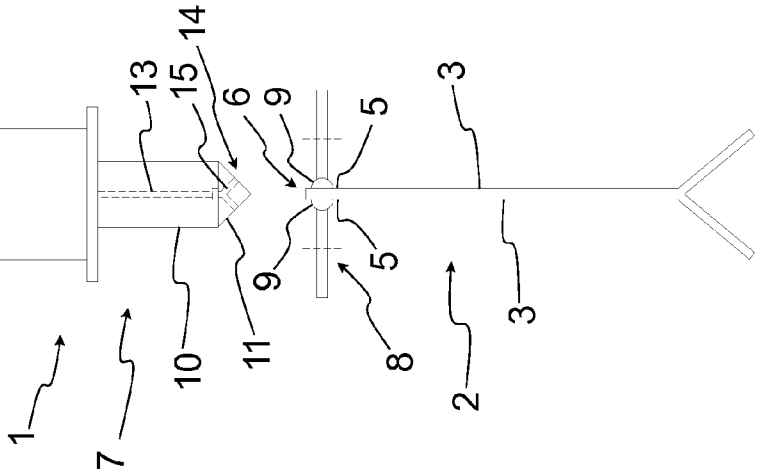


Fig 2a

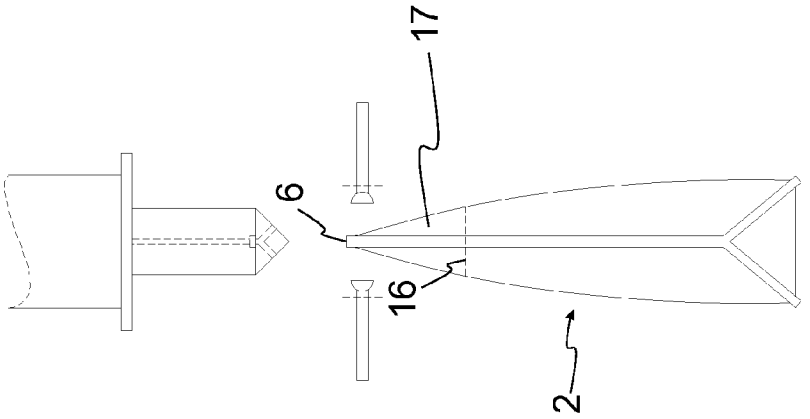


Fig 2h

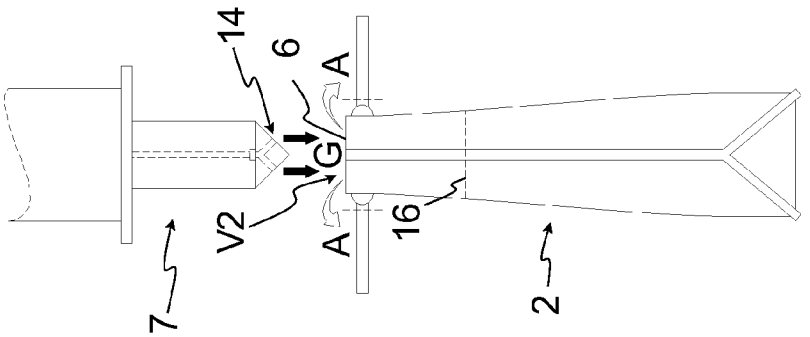


Fig 2g

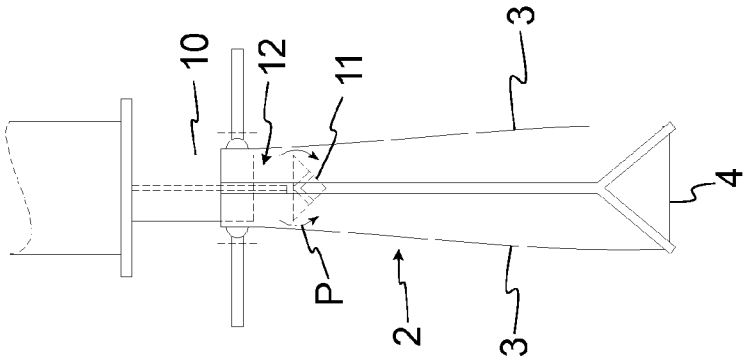


Fig 2f

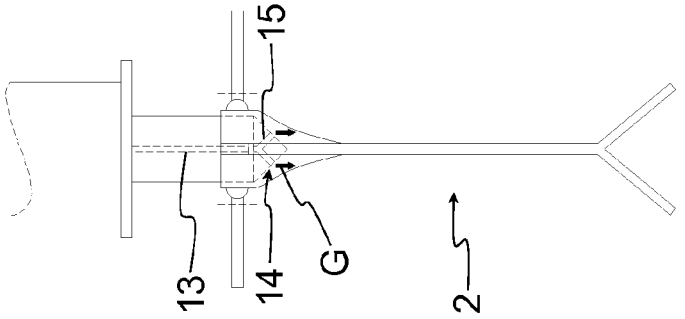


Fig 2e

DEVICE AND METHOD FOR FILLING OF A CONTAINER

FIELD OF THE INVENTION

[0001] The present invention relates to a method and a device for filling a container with a liquid product, said container being of a collapsible type and having a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls, said walls comprising two opposite side walls which, in the state of the container before filling, flatly abut against each other.

BACKGROUND ART

[0002] In the food industry, it is becoming increasingly important for the packaged foods to have a long shelf life. This has conventionally been achieved by, for example, aseptic packaging.

[0003] It has recently become increasingly common to package foods in containers with a modified atmosphere, by which is meant that the air in the container has been replaced by a protective atmosphere.

[0004] The composition of the protective atmosphere is such as to inhibit growth of bacteria, which results in the shelf life of the packaged foods being extended.

[0005] The protective atmosphere can act to prevent growth of aerobic or anaerobic microorganisms.

[0006] To prevent growth of aerobic microorganisms, the protective atmosphere is not allowed to contain oxygen (O_2). Nitrogen (N_2) has been found to be a suitable gas for preventing growth of aerobic microorganisms in foods.

[0007] The protective atmosphere may also contain carbon dioxide (CO_2). CO_2 has, like N_2, the property of inhibiting aerobic growth. It has further been found that CO_2 can inhibit anaerobic growth. The reason for this is not fully elucidated, but in one explanatory model this is caused by carbon dioxide reducing the pH, thus providing an environment which inhibits the growth of the anaerobic microorganisms.

[0008] However, liquid products have up to now only to a limited extent been packaged in containers with a modified atmosphere. The reason is that it has been found difficult to be rationally and economically capable of providing the containers with said modified atmosphere.

[0009] WO2006/021839 discloses a process for aseptic packaging of a sterile liquid. According to the process described therein, containers are formed from a strip of material around a filling tube which is arranged, not only for supply of the sterile liquid, but also for supply of an inert gas. The inert gas is used to form a barrier that prevents penetration of air.

[0010] There is thus a need for a method and a device for filling a container with a liquid product, which method and device in a rational manner allow the provision of an extended shelf life of the product contained in the container.

SUMMARY OF THE INVENTION

[0011] In the light of that stated above, it is an object of the present invention to provide a method and a device for achieving an extended shelf life of a liquid product which is contained in a container.

[0012] It is also an object of the invention to provide a container which enables an extended shelf life of a liquid product contained in the container.

[0013] To achieve these objects, and also other objects that will be evident from the following description, a method is suggested according to the present invention for filling a container of a collapsible type with a liquid product having the features as defined in claim **1** or **3**. Embodiments of the methods are stated in the dependent claims **2** and **4-11**. Furthermore the invention concerns a device for filling a container of a collapsible type with a liquid product having the features as defined in claim **12**. Embodiments of the device are stated in the dependent claims **13-15**.

[0014] More specifically, according to the present invention a method is suggested for filling a container of a collapsible type with a liquid product. The container has a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls, said walls comprising two opposite side walls which, in the state of the container before filling, flatly abut against each other. The method comprises the steps of opening an inlet by separating opposite inlet portions of said side walls, supplying a protective atmosphere to a volume defined by the open inlet, relative to the container inserting a filling nozzle in the inlet, supplying said product to the compartment of the container through said filling nozzle, relative to the container withdrawing said filling nozzle from the inlet, and sealing said inlet.

[0015] As a result, a method is provided, which in a rational way allows the provision of an extended shelf life of the product contained in the container. This is achieved by producing a modified atmosphere in the container of a collapsible type. By a protective atmosphere in one step being supplied to a volume which is formed by opening the inlet of the container, it is ensured that no air enters the container in the subsequent step when the filling nozzle is being inserted in the inlet. Instead, an amount of protective atmosphere is pressed into the container, which protective atmosphere is mixed with the product during the subsequent filling operation.

[0016] If the protective atmosphere contains carbon dioxide, a long-term admixture to the product can be provided which acts to reduce the pH so as to counteract the growth of anaerobic microorganisms.

[0017] If the protective atmosphere contains, for instance, nitrogen, it is possible to provide, after completion of the filling process, an expulsion of air that has entered the container. The nitrogen is supplied in a pressurised and compressed state and will thus expand in the container. This expansion can be made to continue after completion of the filling process, whereby the nitrogen released from the product thus acts to expel any air that has entered the container. By the subsequent sealing of the container, it will consequently be possible to ensure that the headspace of the container does not contain any air, which has a positive effect on the shelf life of the product. It will thus be possible to ensure that a protective atmosphere forms a modified atmosphere in the later sealed container.

[0018] The step of, relative to the container, withdrawing the filling nozzle from the inlet can be followed by the step of supplying a protective atmosphere to a volume which is defined by the inlet above the surface level of the product. This ensures that there is no air left in the current volume after withdrawal of the filling nozzle.

[0019] The invention also suggests a method of filling a container of a collapsible type with a liquid product. The container has a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls, said walls comprising two opposite side walls

which, in the state of the container before filling, flatly abut against each other. The method comprises the steps of opening an inlet by separating opposite inlet portions of said side walls, relative to the container inserting a filling nozzle in the inlet, supplying said product to the compartment of the container through said filling nozzle, relative to the container withdrawing said filling nozzle from the inlet, supplying a protective atmosphere to a volume which is defined by the inlet above the surface level of the product, and sealing said inlet.

[0020] This results in a method which in a rational way allows the provision of an extended shelf life of the packaged product by producing a modified atmosphere in a container of a collapsible type. Since a protective atmosphere is supplied to the volume defined by the inlet above the surface level of the product when the filling tube has been withdrawn from said inlet, it is ensured that the volume is emptied of air. It will thus be possible to ensure that a protective atmosphere forms a modified atmosphere in the later sealed container.

[0021] Then a number of embodiments that can be applied to the above described methods will be stated.

[0022] The step of, relative to the container, inserting a filling nozzle in the inlet can be followed by the step of supplying a protective atmosphere to the container.

[0023] The protective atmosphere can be supplied through the filling nozzle or alternatively through a nozzle arranged separately from the filling nozzle.

[0024] The protective atmosphere may contain carbon dioxide or nitrogen. By letting the protective atmosphere contain carbon dioxide, optionally in combination with some other gas such as nitrogen, a protective atmosphere is produced, which inhibits growth of anaerobic microorganisms.

[0025] The protective atmosphere may have a density that is higher than the density of air. This means that it will be easier to ensure that the protective atmosphere remains in the volume defined by the inlet.

[0026] In one embodiment, a container is used, which is made of a laminated container material containing a core layer of mineral-filled polyolefin. Containers made of such a container material have been found to have a high permeability to gas. The container can also be made of a laminated container material containing a gas barrier layer.

[0027] In a further embodiment, the protective atmosphere contains a gas component which is supplied in a compressed and pressurised state, said gas component, after completion of the filling of the container, being allowed to expand in the container, the step of sealing the inlet of the container being performed before said gas component has finished expanding. This results in an overpressure in the sealed container that counteracts formation of wrinkles. An aesthetically pleasing and reliable container is thus provided.

[0028] According to the present invention, also a device for filling a container of a collapsible type with a liquid product is suggested. The container has two opposite side walls, which flatly abut against each other in the state of the container before filling and which comprise opposite inlet portions, which are to be separated to open an inlet. The device comprises an opening means for opening said inlet by separating said opposite inlet portions, and a filling nozzle, which is to be inserted into said inlet to supply said product to the container. The device further comprises a nozzle for supplying a protective atmosphere to a volume defined by the open inlet.

[0029] As a result, a device for filling a container of a collapsible type with a liquid product is provided, which device makes it possible to achieve an extended shelf life of the packaged product by producing a modified atmosphere in the filled container. By the device comprising a nozzle for supplying a protective atmosphere to the volume defined by the open inlet, it will be possible to ensure that no air is pressed into the container when inserting the filling nozzle in the open inlet. Correspondingly, it will be possible to make protective atmosphere push away air contained in the volume defined by the inlet above the surface level of the product after withdrawal of the filling nozzle. The container can then be sealed, whereby the protective atmosphere forms a confined modified atmosphere which extends the shelf life of the product.

[0030] In one embodiment, the nozzle is integrated in said filling nozzle. Alternatively, the nozzle can be separately arranged to said filling nozzle.

[0031] In another embodiment, the opening means comprises a pair of suction cups for engaging said inlet portions by suction. This results in simple separation of said inlet portions to open the inlet of the container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings.

[0033] FIG. **1** is a perspective view of an inventive device for filling a container of a collapsible type.

[0034] FIGS. **2***a*-**2***h* are schematic top plan views of steps that may be included in an inventive method for filling a container of a collapsible type.

DESCRIPTION OF EMBODIMENTS

[0035] FIG. **1**, to which reference is now made, illustrates an inventive device **1** for filling a container **2** of a collapsible type with a liquid product.

[0036] By a liquid product is meant products such as water, milk, juice, wine or yoghurt.

[0037] By a container of a collapsible type is meant a container having a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls.

[0038] The container **2** comprises two opposite side walls **3** and a bottom wall **4**. In the state of the container **2** before filling, the side walls **3** abut flatly against each other and the bottom wall **4** is folded to form a double wall.

[0039] The container **2** further comprises opposite inlet portions **5** of the side walls **3**. An inlet **6** of the container **1** is to be opened by separation of said inlet portions **5**.

[0040] The container **2** can be made of a laminated container material and can then contain a core layer of mineral-filled polyolefin. Chalk, talk and mica can be mentioned as examples of mineral materials.

[0041] The container laminate may also contain a gas barrier layer of, for instance, EVOH, EVA or PET.

[0042] The embodiment of an inventive device **1** as shown in FIG. **1** for filling a container **2** of a collapsible type with liquid contents comprises as main components a filling nozzle **7** and an opening means **8**.

[0043] In the embodiment illustrated in FIG. **1**, the inventive device **1** comprises two filling nozzles **7** and associated opening means **8**.

[0044] The opening means **8** comprises a pair of movably arranged suction cups **9** (which for reasons of clarity are

shown in an uncovered state). Each suction cup **9** is to be mounted to engage, by suction, an associated engaging portion **5** of the side walls **3**.

[0045] The filling nozzle **7** is arranged to supply a liquid product to the container **2** and is, for this purpose, connected to a product source (not shown).

[0046] In the embodiment illustrated, the filling nozzle **7** comprises a nozzle **14** for supplying a protective atmosphere to the container and is, for this purpose, connected to a protective atmosphere source (not shown).

[0047] The protective atmosphere and the liquid product can be supplied independently of each other.

[0048] FIGS. **2***a*-**2***h*, to which reference is now made, illustrate different steps that can be included in an inventive method for filling a container **2** of a collapsible type with a liquid product.

[0049] FIG. **2***a* illustrates schematically how a container **2**, which in an empty state with the side walls **3** abutting flatly against each other, is positioned under a filling nozzle **7** of a filling device **1**.

[0050] In the embodiment illustrated, the filling nozzle **7** comprises a filling tube **10** and is to be inserted in an inlet **6** of the container **2**. The filling tube **10** is at a first end connected to a source of a liquid product, (not shown) and at a second end facing the container **2** provided with a valve piece **11**. With the filling nozzle **7** inserted in the inlet **6** of the container, the valve piece **11** is movable away from the filling tube **10** to provide a circumferential outlet **12** shown in FIG. **2***f*, through which the product can flow from the filling tube **10** and into the container **2**.

[0051] The filling nozzle **7** comprises a nozzle **14** for supplying protective atmosphere. The nozzle **14** consists of channels **15** which are formed in the valve piece **11**. The channels **15** open in the circumferential surface of the valve piece **11**. A gas tube **13** is arranged in the filling tube **10**, which gas tube **13** at a first end connects to a source of a protective atmosphere (not shown) and at a second end connects to the valve piece **11** and the channels **15** formed therein.

[0052] The gas tube **13** can be used as a piston for moving the valve piece **11** away from the filling tube **10** for opening of the outlet **12**.

[0053] Of course, the filling nozzle **7** can be designed in other ways, but in this embodiment the important thing is that it is arranged for supplying the liquid product independently of the supply of protective atmosphere and vice versa.

[0054] The inventive device **1** further comprises an opening means **8** in the form of a pair of movably arranged suction cups **9**. The suctions cups **9** are shown in a brought-together state and have thus been moved into engagement each with an inlet portion **5** of the side walls **3** of the container **2**.

[0055] FIG. **2***b* shows the suction cups **9** in a state brought away from each other. The suction cups **9** are now activated and thus retain their engagement with the inlet portions **5** by suction. This results in separation of the inlet portions **5** for opening the inlet **6** of the container **2**.

[0056] In FIG. **2***c*, the nozzle **14** of the filling nozzle **7** is activated for supply of protective atmosphere G. The protective atmosphere G will flow through the gas tube **13** and out of the channels **15**. The outward flow of protective atmosphere G is controlled so that it is supplied to a volume V**1** which is shown in FIG. **2***b* and which is defined by the open inlet **6** of the container **2**. The protective atmosphere G pushes away the amount of air A that was previously contained in the volume V**1**.

[0057] In FIG. **2***d* the filling nozzle **7** is inserted in the inlet **6** of the container **2**. More specifically, a lower part of the filling nozzle **7**, comprising the valve piece **11** and a connecting portion of the filling tube **10**, is inserted in said inlet **6**. Some of the protective atmosphere in the volume V**1** will be pressed into the container **2**. By the protective atmosphere replacing the air that was previously contained in said volume V**1**, it is ensured that no air is pressed into the container **2** in connection with the insertion of the filling nozzle **7** in the inlet **6** of the container **2**.

[0058] A sealing means (not shown) can be arranged to provide a seal between the filling tube **10** and the inlet **6** of the container **2**. Such a filling means may comprise a pair of jaws, which grip the inlet **6** and the filling tube **10** inserted therein.

[0059] FIG. **2***e* illustrates how protective atmosphere G is supplied to the container **2** through the gas tube **13** and, connected thereto, channels **15** in the valve piece **11**.

[0060] FIG. **2***f* shows how the liquid product P is supplied to the container **2** through an outlet **12** of the filling nozzle **7**, which outlet **12** is provided by moving the valve piece **11** away from the filling tube **10**. The supplied product causes the container **2** to swell like in inflating a balloon and thus makes the side walls **3** of the container separate and the previously folded bottom wall **4** be unfolded.

[0061] During the filling process, the supplied product will be mixed with the protective atmosphere that was previously supplied to the container **2**.

[0062] In FIG. **2***g* the filling nozzle **7** has, relative to the container **2**, been withdrawn from the inlet **6**. In addition, the nozzle **14** of the filling nozzle **7** has again been activated for supply of protective atmosphere G. The protective atmosphere G will be supplied to a volume V**2** which is defined by the inlet **6** above the surface level **16** of the product. The protective atmosphere G will push away and, thus, replace the amount of air A that was previously contained in the current volume V**2**. As will be described below, this amount of air can also be expelled by protective atmosphere supplied to the container **2** during the filling thereof.

[0063] Finally, the inlet **6** of the container **2** is closed and sealed, which is shown in FIG. **2***h*. By protective atmosphere being supplied and, thus, replacing the air that was previously contained in the volume V**2** defined by the inlet **6** above the surface level **16** of the product, it is ensured that no air is confined in the container **2** when sealing the same. The head space **17** formed after sealing of the container will thus be filled by said protective atmosphere which produces a modified atmosphere which in turn can be made to counteract both aerobic and anaerobic growth of microorganisms.

[0064] The protective atmosphere that is used according to the present invention can have various compositions and consist of, for example, nitrogen, carbon dioxide or a combination thereof.

[0065] The protective atmosphere can have a density that is higher than the density of air. This facilitates in particular the supply of protective atmosphere to said volumes V**1** and V**2**, and it is ensured that the protective atmosphere is retained in them.

[0066] The container **2** has a required impermeability to gas to ensure that the modified atmosphere produced by the protective atmosphere is retained in the container **2**. It has been found that a container material containing chalk-filled polyolefin has a good permeability to gas and therefore the inventive container **2** can be made of such a container material. The impermeability to gas can be further improved by the chalk-

filled polyolefin material, or some other mineral-filled polyolefin material, being included as a core layer in a container laminate which also contains a gas barrier layer of, for example, EVOH, EVA or PET. Also other container laminates are conceivable, for instance containing a core layer of pure polyolefin and a gas barrier layer.

[0067] In an embodiment that is not demonstrated the filling nozzle can be arranged to supply protective atmosphere during the actual filling of the container with a liquid product. The product and the protective atmosphere are supplied to the container by a method, in which a filling nozzle is inserted in an inlet of the container which in a state before filling has side walls which abut flatly against each other. During the actual filling, the supplied product and the protective atmosphere make the container swell like in inflating a balloon. After completion of the filling, the filling nozzle is withdrawn from the inlet, a volume being defined by the inlet above the surface level of the product. This volume will initially be occupied by air. However, the protective atmosphere will be released from the product and rise in the container, and thus, expel the air from said volume. Then the inlet of the container is sealed.

[0068] To provide said expulsion effect, the protective atmosphere may contain nitrogen which is supplied in a compressed and pressurised state. Once supplied to the container, the nitrogen component will thus expand. After completion of the filling, the nitrogen component can be made to continue expanding and thus be caused to be released from the product and rise in the container, whereby said expulsion of air is achieved.

[0069] If the protective atmosphere contains a gas component such as nitrogen, which is supplied in a compressed and pressurised state, the step in FIG. **2***f* of sealing the container can be carried out before said gas component has finished expanding. As a result, an overpressure is generated in the sealed container that counteracts forming of wrinkles in the container of a collapsible type which is made of flexible walls. Consequently, an aesthetically pleasing and reliable container is provided.

[0070] If the protective atmosphere contains carbon dioxide, a long-term admixture of the carbon dioxide component to the product can be achieved it the protective atmosphere is supplied before or in connection will filling. The carbon dioxide will be combined with the product and thus permanently act to reduce the pH.

[0071] It also possible to do without one or more of the steps in FIGS. **2***a*-**2***h* for filling a container **2** of a collapsible type with a liquid product.

[0072] It is thus within the scope of the invention to supply protective atmosphere

[0073] merely when the inlet portions **5** of the side walls **3** of the container **2** have been separated but before the insertion of the filling nozzle **7** in the inlet **6**, corresponding to the step shown in FIG. **2***c*,

[0074] merely when the filling nozzle **7** has been inserted in the inlet **6** of the container **2**, but before the supply of product, corresponding to the step shown in FIG. **2***g*,

[0075] merely when the filling nozzle **7** has been withdrawn from the inlet **6** of the container **2**, but before sealing of the same, corresponding to the step shown in FIG. **2***g*.

[0076] It will appreciated that the various steps of supplying protective atmosphere can be combined.

[0077] In the first two steps (FIGS. **2***c* and **2***e*) the protective atmosphere will, during the supply of product, be mixed with the same and thus expel air which is contained in the volume V**2** defined by the inlet **6** after withdrawal of the filling nozzle **7**. The expulsion of air is provided in a manner similar to that described above with reference to the embodiment in which the product and the protective atmosphere are supplied during the filling of the container. It is thus when the protective atmosphere admixed with the product is released from the same and rises in the container **2** that said expulsion occurs.

[0078] It will be appreciated that various types of protective atmosphere can be supplied on different occasions. The protective atmosphere supplied after completion of the filling process can, for example, contain merely nitrogen, while the protective atmosphere supplied before or during filling may contain, for example, merely carbon dioxide or nitrogen in combination with carbon dioxide.

[0079] According to the present invention, a method and a device are thus provided for filling a container **2** of a collapsible type. Before, during or after filling of the container **2** with a liquid product, a protective atmosphere is supplied, consisting of for instance nitrogen, carbon dioxide or a combination thereof. The protective atmosphere can be supplied admixed with the product or be supplied so as to be mixed with the product during filling. The protective atmosphere can also be supplied so that it pushes away the air contained in a volume (V**1** and V**2** respectively) defined by the inlet **6** of the container **2**, both before insertion and after withdrawal of the filling nozzle **7** relative to the inlet **6** of the container **2**.

[0080] The inventive use of protective atmosphere results in a head space with modified atmosphere in the filled and sealed container **2**. This modified atmosphere provides an extended shelf life of the product contained in the container **2**.

[0081] In a practical experiment, a protective atmosphere in the form of nitrogen was supplied after insertion of a filling nozzle in an inlet of a container of a collapsible type, corresponding to the step shown in FIG. **2***e*. Subsequently the container was filled with pasteurised milk. Finally the container was sealed. The modified atmosphere produced by the nitrogen gas resulted in doubling of the shelf life of the milk under refrigerated conditions from **10** to **20** days.

[0082] It will be appreciated that the present invention is not limited to the embodiments described above.

[0083] For example, it is possible to design the filling nozzle in a different way.

[0084] It will also be appreciated that the arrangement for supplying protective atmosphere need not be integrated in the filling nozzle. One or more nozzles for supplying protective atmosphere can thus be arranged separately from the filling nozzle.

[0085] It will further be appreciated that the filling tube can be stationarily arranged and that the container then is moved to insert the filling tube in the filling duct of the container.

[0086] Several variations and modifications are thus conceivable and therefore the scope of the present invention is thus exclusively defined by the appended claims.

1. A method of filling a container of a collapsible type with a liquid product,

said container having a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls,

said walls comprising two opposite side walls which in the state of the container before filling flatly abut against each other, said method comprising the steps of:

opening an inlet by separating opposite inlet portions of said side walls,

supplying a protective atmosphere to a volume defined by the open inlet,

relative to the container, inserting a filling nozzle in the inlet,

supplying said product to the compartment of the container through said filling nozzle,

relative to the container, withdrawing said filling nozzle from the inlet, and

sealing said inlet.

2. A method as claimed in claim **1**, in which the step of, relative to the container, withdrawing said filling nozzle from the inlet is followed by the step of supplying a protective atmosphere to a volume which is defined by the inlet above the surface level of the product.

3. A method of filling a container of a collapsible type with a liquid product,

said container having a compartment which is defined by flexible walls and whose volume is dependent on the relative position of the walls,

said walls comprising two opposite side walls which in the state of the container before filling flatly abut against each other, said method comprising the steps of:

opening an inlet by separating opposite inlet portions of said side walls,

relative to the container, inserting a filling nozzle in the inlet,

supplying said product to the compartment of the container through said filling nozzle,

relative to the container, withdrawing said filling nozzle from the inlet,

supplying a protective atmosphere to a volume which is defined by the inlet above the surface level of the product,

sealing said inlet.

4. A method as claimed in claim **1**, in which the step of, relative to the container, inserting a filling nozzle in the inlet is followed by the step of supplying a protective atmosphere to the container.

5. A method as claimed in claim **1**, in which the protective atmosphere is supplied through the filling nozzle.

6. A method as claimed in claim **1**, in which the protective atmosphere is supplied through a nozzle arranged separately from the filling nozzle.

7. A method as claimed in claim **1**, in which the protective atmosphere contains carbon dioxide or nitrogen gas.

8. A method as claimed in claim **1**, in which the protective atmosphere has a density that is higher than the density of air.

9. A method as claimed in claim **1**, in which the container is made of a laminated container material containing a core layer of mineral-filled polyolefin.

10. A method as claimed in claim **1**, in which the container is made of a laminated container material containing a gas barrier layer.

11. A method as claimed in claim **1**, in which the protective atmosphere contains a gas component which is supplied in a compressed and pressurised state, said gas component, after completion of the filling of the container, being allowed to expand in the container, the step of sealing the inlet of the container being performed before said gas component has finished expanding.

12. A device for filling a container of a collapsible type with a liquid product, said container having two opposite side walls, which abut flatly against each other in the state of the container before filling and which comprise opposite inlet portions, which are to be separated to open an inlet, said device comprising:

an opening for opening said inlet by separating said opposite inlet portions,

a filling nozzle, which is to be inserted in said inlet for supplying said product to said container, and

a nozzle for supplying a protective atmosphere to a volume defined by the open inlet.

13. A device as claimed in claim **12**, in which said nozzle is integrated in said filling nozzle.

14. A method as claimed in claim **12**, in which said nozzle is separately arranged to said filling nozzle.

15. A device as claimed in claim **12**, in which said opening comprises a pair of suction cups for engaging said inlet portions by suction.

16. A method as claimed in claim **2**, in which the step of, relative to the container, inserting a filling nozzle in the inlet is followed by the step of supplying a protective atmosphere to the container.

17. A method as claimed in claim **3**, in which the step of, relative to the container, inserting a filling nozzle in the inlet is followed by the step of supplying a protective atmosphere to the container.

18. A method as claimed in claim **2**, in which the protective atmosphere is supplied through the filling nozzle.

19. A method as claimed in claim **3**, in which the protective atmosphere is supplied through the filling nozzle.

20. A method as claimed in claim **2**, in which the protective atmosphere is supplied through a nozzle arranged separately from the filling nozzle.

21. A method as claimed in claim **3**, in which the protective atmosphere is supplied through a nozzle arranged separately from the filling nozzle.

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