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(71) Applicant: **Maiorelli, Marco**
10400 Bangkok (TH)

(72) Inventor: **Maiorelli, Marco**
10400 Bangkok (TH)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners (IT)
Via Meravigli, 16
20123 Milano (IT)

(54) **Dispenser of liquid substances**

(57) A dispenser of liquid substances (1), comprising a hermetic enclosure (2), at least one duct (3), which is internal to the enclosure (2) and leads to a respective valve element (4) which is arranged at least partially on an outer face (5) of the enclosure (2), the dispenser (1) comprisingat least one vessel (6) containing liquids, which can be accommodated within the enclosure (2) and is adapted for coupling to at least one free end of the duct (3), the dispenser (1) further comprising at least one compression unit (7), which is adapted to increase, inside the enclosure (2), the value of the pressure, the increase of the pressure inside the enclosure (2) consequently causing the outflow of the liquid through the duct (3) and its exit from the valve element (4) upon the opening of the valve element (4) by a user.

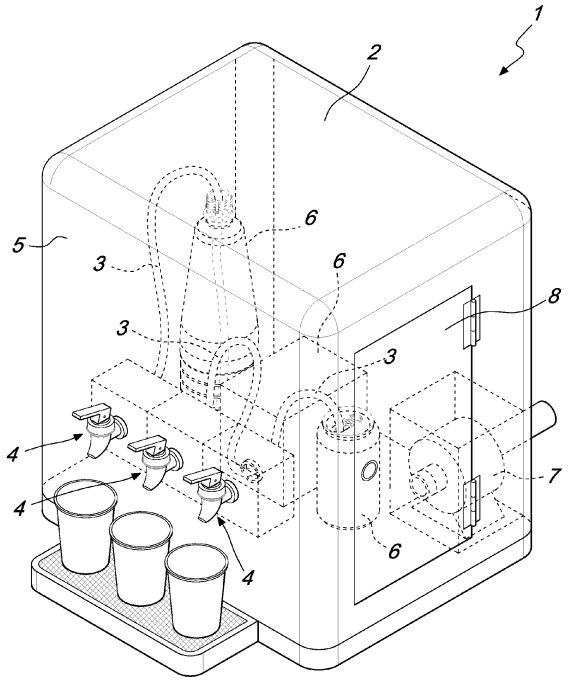

Fig. 1

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Description

[0001] The present invention relates to a dispenser of liquid substances for food use, industrial use and other uses.

[0002] Packagings for the storage and transport of liquids, generally termed bag-in-box, are known.

[0003] The bag-in-box is constituted substantially by a bag for liquids that is accommodated within a box, generally made of corrugated cardboard.

[0004] The bag is constituted by one or more layers of metallic or plastic material and is provided with a valve or tap for dispensing the liquid contained therein.

[0005] However, the bag-in-box has the limitation that it does not allow optimum and complete emptying of the bag from the liquid contained therein.

[0006] When the bag is almost completely empty and the liquid is deposited on its bottom, it is in fact necessary to tilt the box and in some cases wring the bag, so that the liquid contained therein can exit through the tap.

[0007] Despite this, possibly liquid can in any case remain inside the bag.

[0008] Beverage dispensers are further known which are constituted substantially by a plurality of tanks, each containing a different type of beverage and each connected to a different dispensing tap.

[0009] In particular, each tank is provided with a valve for introducing a gaseous substance, which generates the necessary propulsion so that the contained liquid can exit from the tank and reach the respective tap.

[0010] One of the disadvantages of this type of dispensers is that they are characterized by high consumption, particularly electrical consumption, and accordingly by high operating costs.

[0011] Another disadvantage is that these dispensers are generally large.

[0012] This characteristic of theirs accordingly makes them unsuitable to be used for example in mobile kiosks or in other applications that require easy movement of such dispenser.

[0013] The aim of the present invention is to solve the problems described above, by devising a dispenser of liquid substances that has reduced energy consumption.

[0014] Within this aim, an object of the invention is to devise a dispenser of liquid substances that is easy and straightforward to use.

[0015] Another object of the invention is to devise a dispenser of liquid substances that has small dimensions.

[0016] A further object of the present invention is to provide a dispenser of liquid substances that has low costs, is relatively simple to provide in practice and is safe in application.

[0017] This aim and these objects are achieved by a dispenser of liquid substances, **characterized in that** it comprises a hermetic enclosure, at least one duct, which is internal to said enclosure and leads to a respective valve element which is arranged at least partially on an outer face of said enclosure, at least one vessel for liquids, which can be accommodated within said enclosure and is adapted for coupling to at least one free end of said duct, and at least one compression unit, which is adapted to increase, inside said enclosure, the value of the pressure, with consequent outflow of the liquid through said duct and exit thereof from said valve element upon the opening of said valve element by a user.

[0018] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the dispenser of liquid substances according to the invention, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a top perspective view of the dispenser of liquid substances according to the invention;
Figure 2 is a sectional view, taken along a transverse axis, of the dispenser of liquid substances according to the invention.

[0019] With reference to the figures, the reference numeral 1 generally designates a dispenser of liquid substances for food use, industrial use and other uses, which comprises a hermetic enclosure 2, at least one duct 3, which is internal to the enclosure 2 and leads to a respective valve element 4.

[0020] The element 4 can be arranged at least partially on an outer face 5 of the enclosure 2 and actuated by the user to allow or disallow the dispensing of the liquid that flows in the duct.

[0021] According to the invention, the dispenser 1 comprises at least one vessel 6 that contains liquids, can be accommodated within the enclosure 2 and is adapted for coupling to at least one free end of the duct 3 (for example, the end can be inserted within the vessel 6 or associated with its dispensing tap).

[0022] The vessel 6 can be of the type selected preferably among a bottle, a can, a keg, a drum, a bag-in-box and the like.

[0023] The capacity of the vessel 6, and accordingly its dimensions, may be different depending on the respective dimensions of the enclosure 2 and on the application for which the dispenser 1 is intended.

[0024] Moreover, the dispenser 1 can comprise at least one compression unit 7 adapted to increase the value of the pressure inside the enclosure 2.

[0025] The increase of the pressure inside the enclosure 2 accordingly causes the outflow of the liquid through the duct 3 and its exit from the valve element 4 upon the opening of the valve element 4 by a user.

[0026] In the case of liquids for food use, it is believed useful to distinguish beverages (which can be dispensed easily even at minimum internal overpressure values) from other raw materials and substances that are denser (for which it is necessary to provide higher internal overpressure values): among beverages, mention is made for example of water, tea, wine, coffee, fruit juices and

the like; among raw materials and other substances, mention is made of oils, tomato pulp, sauces and the like.

[0027] To dispense liquids for industrial use, the required internal overpressure depends on the density thereof: for example, to dispense mineral oils and emulsions a greater overpressure is provided than needed to dispense detergent solutions, fuels and distilled water.

[0028] In any case, use of the dispenser 1 to distribute liquids that are different from the ones described above by way of example is not ruled out.

[0029] In this manner, when the vessel 6 is almost empty, it is not necessary to perform any operation to facilitate its emptying, since the liquid flows out naturally toward the duct 3 under the action of the pressure proper inside the enclosure 2.

[0030] Moreover, the increase in pressure, required to cause the outflow of the liquid, is small, and accordingly the compression unit 7 can be small and therefore characterized by low consumption.

[0031] According to a solution of unquestionable interest in practice and in application, the dispenser 1 can comprise a cooling apparatus.

[0032] An intermediate portion of the duct 3 can affect at least partially said apparatus in order to cool the liquid that flows therein.

[0033] More particularly, the cooling apparatus might be constituted by a cooling coil arranged in substantially direct contact with an intermediate portion of the duct 3.

[0034] According to a different constructive solution of particular usefulness and efficiency, the cooling apparatus can comprise a tank for a low-temperature fluid.

[0035] The intermediate portion of the respective duct 3 can pass, in a partially immersed configuration, through the tank in order to cool the liquid that flows therein.

[0036] The tank, in which the duct 3 is immersed, might be constituted by a reservoir that contains water and ice.

[0037] In this solution, the cooling apparatus adopted, differently from the ones used in dispensers of the known type, therefore does not require an electric power supply for its operation and accordingly its presence does not increase substantially the operating costs of the dispenser 1.

[0038] According to a further constructive solution of particular simplicity and effectiveness, the dispenser 1 can comprise a heating element.

[0039] A substantially intermediate portion of the duct 3 can affect at least partially the heating element in order to heat the liquid that flows therein.

[0040] In particular, the heating element might be constituted by a resistance heater arranged in substantially direct contact with an intermediate portion of the duct 3.

[0041] The possibility is not excluded to use as a heating element a brazier, which does not require electric power for its operation and accordingly is characterized by low consumption and low operating costs.

[0042] In particular, in the constructive solution shown in Figure 2, the component 9 can alternately constitute the heating element or the cooling apparatus.

[0043] According to a further constructive solution of particular simplicity and effectiveness, the dispenser 1 can comprise at least one duct 3 that is selected between a first tubular element that interferes at least partially with a cooling apparatus upstream of the respective valve element 4, a second tubular element that interferes at least partially with a heating element upstream of the respective valve element 4, and a third tubular element that leads directly to a respective valve element 4 in order to dispense the liquid at ambient temperature.

[0044] In this case, the dispensed liquid can be supplied at ambient temperature, heated or cooled, depending on the valve element 4 that is selected (which corresponds to a specific duct 3).

[0045] According to a different constructive solution, shown in Figure 1, that is of particular usefulness, the dispenser 1 can comprise a plurality of vessels 6, each containing different types of liquid.

[0046] Moreover, each vessel 6 can be adapted to accommodate or be connected to the free end of at least one respective duct 3.

[0047] The free ends of three different ducts 3 might also be associated with each vessel 6.

[0048] A first duct 3, which at least partially interferes, in one of its portions, with the cooling apparatus, for dispensing the cooled liquid.

[0049] A second duct 3, which at least partially interferes, in one of its portions, with the heating element in order to dispense the heated liquid.

[0050] A third duct 3, which leads directly to a respective valve element 4 in order to dispense the liquid at ambient temperature.

[0051] In this manner, the user can have the liquid available at the desired temperature.

[0052] The compression unit 7 can be of the type selected preferably among a manually operated pump, an electrically operated pump, a vacuum pump and the like.

[0053] More particularly, the use of a vacuum pump allows the top-up/filling of the at least one vessel by connecting the valve element to a reservoir that contains a liquid.

[0054] By imposing inside the enclosure a pressure value that is lower than the atmospheric value, a head is produced at the valve element, allowing it to draw the liquid from the reservoir.

[0055] In this manner, the liquid does not make direct contact with the atmosphere and therefore the liquid is not subject to contamination and/or oxidation (particularly harmful phenomena for liquids such as oils for food use and wine).

[0056] In particular, the manually actuated pump is a simple machine that has small dimensions and can be operated by hand or with a pedal.

[0057] This type of pump, by using exclusively human power for movement, therefore does not require an electric power supply for its operation and accordingly its presence does not increase substantially the operating costs of the dispenser 1 and makes it independent of the

electrical grid.

[0058] The possibility is not excluded to use as compression unit cylinders or other vessels that contain compressed gas (for example air, nitrogen, carbon dioxide and others).

[0059] In this case, downstream of said cylinders there are valve assemblies designed to adjust the dispensing of the compressed gas.

[0060] The enclosure 2 can have an opening provided with a respective hermetic door 8 for the insertion/extraction of the vessel 6 within the enclosure 2.

[0061] The possibility is not excluded to provide a kiosk for liquid substances that comprises a supporting structure, optionally provided with wheels for its movement.

[0062] The kiosk according to the invention can have, arranged on the structure, a dispenser of liquid substances 1 that comprises a hermetic enclosure 2, at least one duct 3 that is internal to the enclosure 2 and leads to a respective valve element 4 that is arranged at least partially on an outer face 5 of the enclosure 2.

[0063] According to the invention, the dispenser 1 comprises at least one vessel 6 that contains liquids, can be accommodated within the enclosure 2 and is adapted for coupling to at least one free end of the duct 3.

[0064] Moreover, the dispenser 1 can comprise at least one compression unit 7 that is adapted to increase the value of the pressure inside the enclosure 2.

[0065] The increase in pressure inside the enclosure 2 accordingly causes the outflow of the liquid through the duct 3 and its exit from the valve element 4 upon the opening of the valve elements 4 by a user.

[0066] The possibility is not excluded of connecting downstream of the valve element 4 a hydraulic circuit for the distribution of the liquid through one or more taps arranged even in a different location that is distant from the one where the dispenser 1 is located.

[0067] The hydraulic circuit comprises, in this case, at least one duct for connecting the valve element 4 to one or more respective taps.

[0068] Advantageously, the dispenser of liquid substances 1 according to invention has a reduced energy consumption.

[0069] Positively, the dispenser of liquid substances 1 is compact.

[0070] Usefully, the dispenser of liquid substances 1 is easy and straightforward to use.

[0071] If any sediment is present in the vessel to be emptied, thanks to the dispenser 1 it would remain easily confined, thus preventing the compromising of the operation and/or the need for frequent maintenance.

[0072] In practice it has been found that the dispenser of liquid substances 1 according to the invention achieves fully the intended aim, since it has a reduced energy consumption.

[0073] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0074] In the examples of embodiment shown, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiment.

[0075] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0076] In practice, the materials used, as well as the dimensions, may be any according to requirements and to the state of the art.

[0077] The disclosures in Italian Patent Application No. BO2012A000255 from which this application claims priority are incorporated herein by reference.

[0078] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A dispenser of liquid substances, **characterized in that** it comprises a hermetic enclosure (2), at least one duct (3), which is internal to said enclosure (2) and leads to a respective valve element (4) which is arranged at least partially on an outer face (5) of said enclosure (2), at least one vessel (6) for liquids, which can be accommodated within said enclosure (2) and is adapted for coupling to at least one free end of said duct (3), and at least one compression unit (7), which is adapted to increase, inside said enclosure (2), the value of the pressure, with consequent outflow of the liquid through said duct (3) and exit thereof from said valve element (4) upon the opening of said valve element (4) by a user.

2. The dispenser of liquid substances according to claim 1, **characterized in that** it comprises a cooling apparatus, an intermediate portion of said duct (3) affecting at least partially said apparatus for cooling the liquid that flows therein.

3. The dispenser of liquid substances according to claim 1, **characterized in that** said cooling apparatus comprises a tank for a low-temperature fluid, said intermediate portion of the respective duct (3) passing, in an at least partially immersed configuration, through said tank for cooling the liquid that flows therein.

4. The dispenser of liquid substances according to claim 3, **characterized in that** it comprises a heating element, a substantially intermediate portion of said

duct (3) affecting at least partially said heating element in order to heat the liquid that flows therein.

5. The dispenser of liquid substances according to claim 1, **characterized in that** it comprises at least one duct (3) selected among a first tubular element, which interferes at least partially with a cooling apparatus upstream of the respective valve element (4), a second tubular element, which interferes at least partially with a heating element upstream of the respective valve element (4), and a third tubular element, which leads directly to a respective valve element (4) for dispensing the liquid at ambient temperature.

6. The dispenser of liquid substances according to one or more of the preceding claims, **characterized in that** it comprises a plurality of vessels, each containing different types of liquid substances, each vessel (6) being adapted to accommodate the free end of at least one respective duct (3).

7. The dispenser of liquid substances according to one or more of the preceding claims, **characterized in that** said compression unit (7) is of the type selected preferably among a manually-operated pump, an electrically-operated pump, and the like.

8. The dispenser of liquid substances according to one or more of the preceding claims, **characterized in that** said enclosure (2) has an opening which is provided with a respective hermetic door (8), for the insertion/extraction of said vessel (6) inside said enclosure (2).

9. A beverage kiosk comprising a supporting structure which is optionally provided with wheels for its movement, **characterized in that** a dispenser of liquid substances is arranged on said structure and comprises a hermetic enclosure (2), at least one duct (3), which is internal to said enclosure (2) and leads to a respective valve element (4) which is at least partially arranged on an outer face of said enclosure (2), at least one vessel (6) for liquids, which can be accommodated within said enclosure (2) and is adapted for coupling to at least one free end of said duct (3), and at least one compression unit (7), which is adapted to increase, inside said enclosure (2), the value of the pressure, with consequent outflow of the liquid through said duct (3) and exit thereof from said valve element (4) upon opening of said valve element (4) by a user.

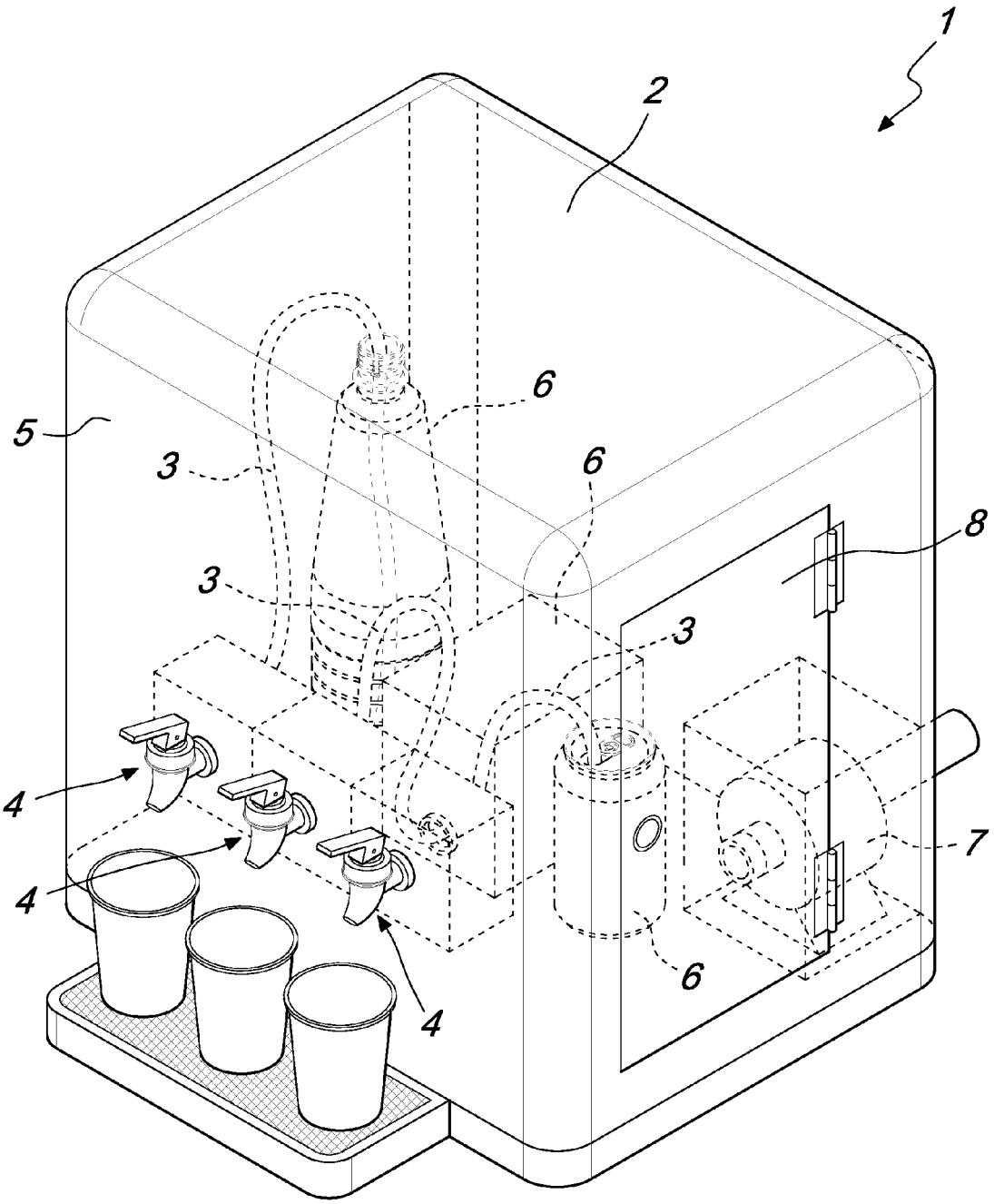

Fig. 1

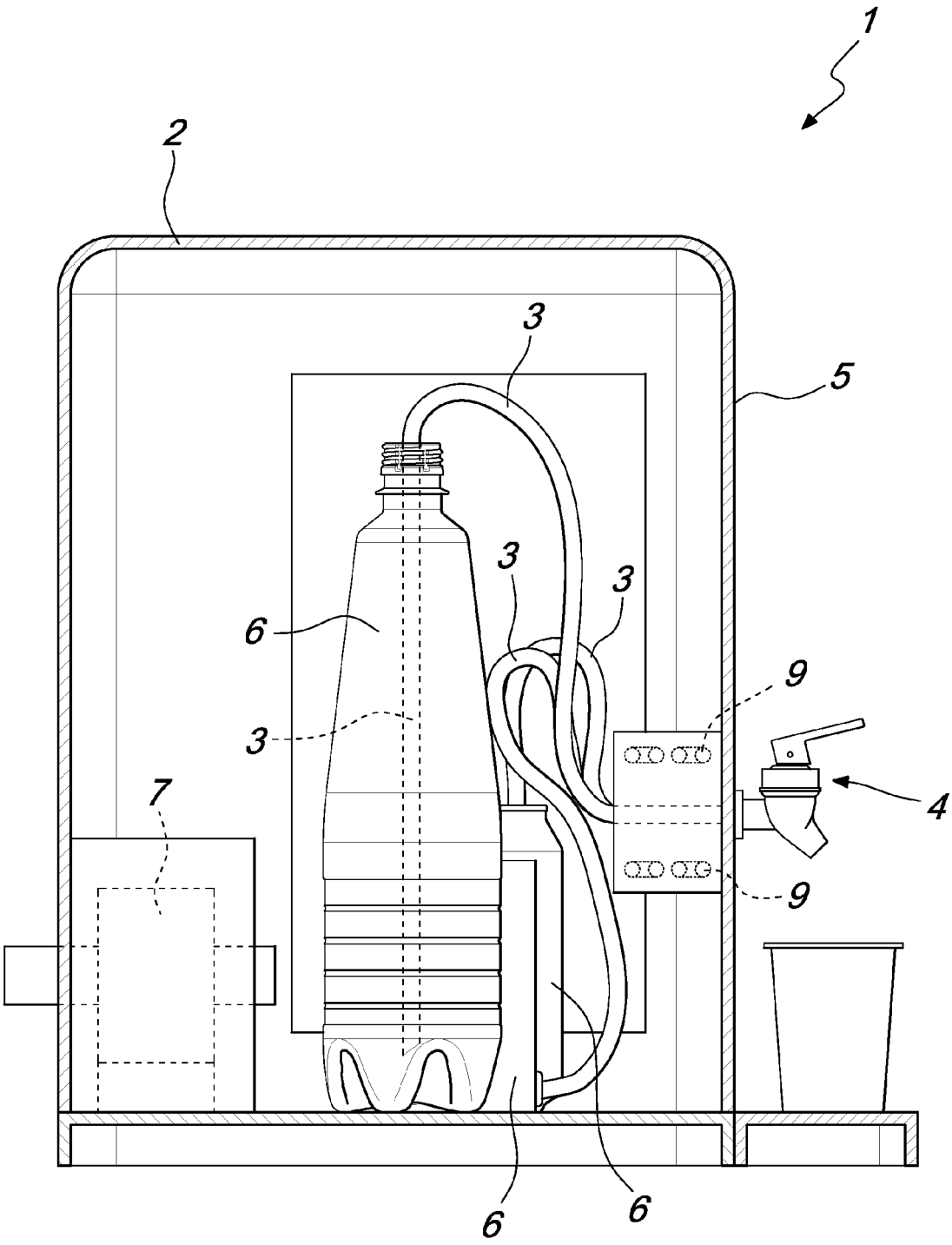

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 13 16 6891

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	WO 81/02002 A1 (BOSTROEM G; ERIKSSON B) 23 July 1981 (1981-07-23) * the whole document *	1,3-9	INV. B67D1/04
Y	US 2003/098314 A1 (PHELPS JOHNE [US] ET AL) 29 May 2003 (2003-05-29) * abstract; figures 1-4 *	1,6-9	
Y	EP 1 426 327 A2 (IONOX WASSER TECHNOLOGIE GMBH [DE]) 9 June 2004 (2004-06-09) * abstract; figure 1 * * paragraph [0010] - paragraph [0011] *	3	
Y	WO 2006/126882 A2 (FRIESLAND BRANDS BV [NL]; BONGERS CORNELIS MARGARETHA TH [NL]; REIN ST) 30 November 2006 (2006-11-30) * page 4, line 29 - line 30; figure 1 *	4,5	
			TECHNICAL FIELDS SEARCHED (IPC)
			B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 June 2013	Ferrien, Yann

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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E : earlier patent document, but published on, or after the filing date
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L : document cited for other reasons

& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 16 6891

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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