

(19)



(11)

EP 3 517 454 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
02.11.2022 Bulletin 2022/44

(51) International Patent Classification (IPC):
B65D 37/00 ^(2006.01) **F15B 1/16** ^(2006.01)
B67D 1/04 ^(2006.01) **B65D 35/00** ^(2006.01)

(21) Application number: **17852469.0**

(52) Cooperative Patent Classification (CPC):
B67D 1/0462; B65D 35/00; B65D 37/00; F15B 1/16

(22) Date of filing: **20.09.2017**

(86) International application number:
PCT/ES2017/070620

(87) International publication number:
WO 2018/055223 (29.03.2018 Gazette 2018/13)

(54) **PORTABLE LIQUID DISPENSER**

TRAGBARER FLÜSSIGKEITSSPENDER

DISTRIBUTEUR PORTABLE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

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(30) Priority: **21.09.2016 ES 201631147 U**

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(43) Date of publication of application:
31.07.2019 Bulletin 2019/31

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Description

Technical field of the invention

[0001] The present invention describes a portable dispenser suitable for generating a flow of pressurised liquid without needing to use any energy source.

Background of the invention

[0002] It is known that in order to generate a flow of liquid it is necessary to have a pressure difference between two points. The pressure difference is obtained by means of pumping groups that work with electric energy, but in places where there is no connection to the electrical grid the use of generators is necessary. Generators are difficult to transport and require the use of fuels.

[0003] It is also known that vessels for water must be sanitised, because bacteria and mould proliferate in the corners of the vessels, especially in damp environments.

[0004] Likewise, metal containers rust, depositing particles in the bottom of the container.

[0005] A person skilled in the art knows different means to achieve the seal in the vessels, such as for example threading, welding or screws.

[0006] The document closest to the invention is ES1098105 U which describes a device for accumulating pressurised fluid. The device comprises a sealed container with a deformable bag. The deformable bag contains a pressurised fluid and the container contains a pressurised gas housed between the walls of the device and the deformable bag. bag. ES1098105 U discloses the preamble of independent claim 1.

[0007] The device described by ES1098105 U is suitable for obtaining a flow of liquid without any energy source. However, the use of the device can produce contaminated liquids or water when the deformable bag breaks. If the deformable bag were to break, the water would fall due to gravity to the bottom of the device, remaining accumulated. The accumulated water will produce the proliferation of microorganisms. Upon refilling the device, the clean water will be contaminated by the accumulated water.

[0008] The device of ES1098105U does not enable the replacement of the deformable bag.

[0009] Document US5911520A1 refers to a portable water shower apparatus that comprises a pressure vessel capable of withstanding an internal pressure of at least about 50 psig (3,45 bar).

[0010] The vessel, which may be sized to hold from about 1 (4,40l) to about 2¼ gallons (9,91 l) of water, is formed having an liquid filling and emptying opening and a combination handle and manual pressurizing pump which seals the opening against pressure loss when the vessel is pressurized. The vessel has a pressurized fluid outlet fitting and the apparatus includes an elongate liquid discharge conduit which is detachably attached to the vessel outlet fitting and which has a manually-operated

shower head attached to the distal end of the hose for controlling the flow of pressurized liquid from the vessel. A conventional valve stem is provided for the vessel enabling the vessel to be pressurized by use of a CO2 device available in bicycle shops. A pressure relief valve is mounted to the vessel to prevent over-pressurizing the vessel. Temperature and pressure gauges are provided as is a manually-operated valve for venting pressure from the vessel. An insulating cover, having an attached pouch for carrying articles, is installed over the vessel.

[0011] Document US3080568A1 refers to a portable shower bath assembly comprising a water tank, means to admit water into said tank, conduit means connecting the lower portion of said water tank to a sprinkler head, means to seal said water tank, and an air inlet check valve on the top of said tank, whereby air may be pumped into the upper portion of the tank to develop a pressure sufficient to force the water in the tank through said conduit means for discharge at said sprinkler head.

[0012] Document GB2333129A refers to a dispenser having a collapsible, liquid impermeable container 4, e. g. a bag or pouch, and an extraction arrangement, e. g. with a hand actuated trigger pump, for extracting liquid from the collapsible container 4 and dispensing the liquid as a spray. A seal is arranged to prevent air ingress into the collapsible container 4. The seal and extraction arrangement being such that the extraction arrangement is operable to dispense the liquid whilst the seal is in the sealing position. The collapsible container 4 collapses as liquid is dispensed, resulting in little or no back pressure (vacuum) existing in the flexible collapsing container; this inhibits ambient air being drawn into the collapsible container. The dispenser is thus suitable for spraying sterile or reactive fluids, e. g. in clean room environments such as hospitals, pharmaceutical or food preparation areas.

Object of the invention

[0013] The problem that the present invention solves is obtaining a flow of liquid without supplying energy and preventing the contamination in the liquid.

[0014] The solution found by the inventors is the dispenser described in the claims.

[0015] The dispenser comprises a deformable bag that stores the pressurised liquid and a pressurised gas housed between the deformable bag and the wall of the dispenser. Furthermore, the dispenser is connected to a manometer that measures the pressure in the deformable bag.

[0016] The manometer prevents contamination in the tank, since a break in the deformable bag will produce a drop in pressure. The user will be able to replace the membrane and clean the dispenser.

[0017] In a preferred manner, the dispenser is a container with a threaded neck wherein the upper end of the deformable bag is trapped by the lid when the container is closed. This configuration optimises the seal of the

container since the deformable bag acts as an O-ring.

Brief description of the figures

[0018]

Figure 1 illustrates the essential elements of the invention.

Figure 2 illustrates the preferred embodiment of the invention.

Figure 3 is a top-down view of the lid and the deformable bag.

Description of the invention

[0019] Figure 1 discloses a portable dispenser made up of a sealed container (1) comprising:

- a deformable bag (4) wherein the liquid is stored,
- a valve (2) for introducing air between the walls of the container and the deformable bag,
- at least one hole (5) for liquid inlet and outlet.

wherein the container has a manometer (3) arranged to measure the pressure inside the deformable bag. The manometer enables it to be known if the deformable bag has broken, due to the drop in pressure, preventing the contamination of the bottom by the accumulation of the liquid.

[0020] The container can be manufactured from any material such as metal, fiberglass or plastic.

[0021] Additionally, the dispenser can couple heating means, handles, covers and other means known by a person skilled in the art.

[0022] The dispenser is suitable, for example, for vehicles, small cars, trailers, campsites, boats, humanitarian aid, etc. The dispenser is suitable for any liquid, especially for water.

Preferred embodiment of the invention

[0023] Figure 2 shows the preferred embodiment of the invention. The container (1) has a threaded neck (6) that is closed with a lid (7). The upper portion of the deformable bag (4), according to figure 3, stays trapped by the lid (7) and the perimeter of the neck (6) acting as an O-ring.

[0024] The lid comprises 3 holes wherein the liquid outlet (8) is coupled with a diameter of 12.7mm ($\frac{1}{2}$ an inch), the liquid inlet (9) with a diameter of 12.7mm ($\frac{1}{2}$ an inch) and the manometer (3) with a diameter of 6.35mm ($\frac{1}{4}$ an inch).

[0025] The container (1) is closed with the lid (7) and the deformable bag (4) acts as an O-ring. In the assembly line, an air pressure of 0.3 bar is introduced through the valve (2) into the volume created by the walls of the container (1) and the outside of the deformable bag (4). Subsequently, a flow of liquid at a pressure of 3-4 bar is in-

troduced through the liquid inlet. When the vessel is full, the manometer will indicate this pressure on the inside of the deformable bag (4) which stores the liquid. The pressure will start to go down as the container empties.

5 [0026] If the deformable bag (4) breaks, the manometer (3) will detect a sudden drop in the pressure. The deformable bag (4) can be easily replaced by opening the threaded lid (7).

10 [0027] The liquid outlets can be, for example, a flexible tube with shut-off valves to regulate the flow of the outlet.

15 [0028] The dispenser described enables a flow of liquid at 3-4 bar to be obtained without an external energy source 30. Thus, for a 20-litre container a constant flow is obtained for 7-10 minutes. The dispenser described is also suitable for raising the liquid to a minimum height of 3 metres.

[0029] Preferably, the vessel is manufactured in high-density polyethylene and it is manufactured by means of blow moulding. The thickness of the walls is comprised

20 between 6-8 millimetres.
[0030] The threaded lid (7) is manufactured by injection with high-density polyethylene. The use of high-density polyethylene prevents the corrosion of the vessels and the deformation of the vessels by the pressure variations.

Claims

1. A portable dispenser comprising a sealed container (1), the sealed container (1) comprising:

- a deformable bag (4) positioned inside the sealed container (1) in which a pressurised liquid is stored;
- a valve (2) for introducing pressurised gas between the walls of the sealed container (1) and the deformable bag (4);

characterised in that

- the sealed container (1) comprises a threaded neck (6);
- the dispenser comprising a threaded lid (7) which is threadable on the threaded neck (6) of the sealed container (1);
- the lid (7) comprising three holes for a liquid outlet (8), a liquid inlet (9) and a manometer (3);
- a manometer (3) is coupled to the lid (7) to measure the pressure inside the deformable bag (4);
- in use, the upper portion of the deformable bag (4) is trapped by the joint between the threaded lid (7) and the perimeter of the threaded neck (6), whereby the deformable bag (4) acts as an O-ring.

2. The dispenser according to claim 1, **characterised in that** the sealed container (1) is manufactured in

high-density polyethylene.

Patentansprüche

1. Tragbarer Spender mit einem versiegelten Behälter (1), wobei der versiegelte Behälter (1) umfasst:

- einen verformbaren Beutel (4), der im Inneren des versiegelten Behälters (1) angeordnet ist und in dem eine unter Druck stehende Flüssigkeit gelagert wird;
- ein Ventil (2) zum Einleiten von Druckgas zwischen den Wänden des versiegelten Behälters (1) und dem verformbaren Beutel (4);

dadurch gekennzeichnet, dass

- der versiegelte Behälter (1) einen Gewindehals (6) umfasst;
- wobei der Spender einen Gewindedeckel (7) umfasst, der auf den Gewindehals (6) des versiegelten Behälters (1) aufgeschraubt werden kann;
- der Deckel (7) drei Löcher für einen Flüssigkeitsauslass (8), einen Flüssigkeitseinlass (9) und ein Manometer (3) umfasst;
- ein Manometer (3) mit dem Deckel (7) verbunden ist, um den Druck im Inneren des verformbaren Beutels (4) zu messen;
- im Gebrauch der obere Teil des verformbaren Beutels (4) durch die Verbindung zwischen dem Gewindedeckel (7) und dem Umfang des Gewindehalses (6) eingeklemmt wird, wodurch der verformbare Beutel (4) wie ein O-Ring wirkt.

2. Spender nach Anspruch 1, **dadurch gekennzeichnet, dass** der versiegelte Behälter (1) aus hochdichtem Polyethylen hergestellt ist.

Revendications

1. Distributeur portable comprenant un récipient scellé (1), le récipient scellé (1) comprenant :

- un sac déformable (4) positionné à l'intérieur du récipient scellé (1) dans lequel un liquide pressurisé est stocké ;
- une valve (2) pour introduire du gaz pressurisé entre les parois du récipient scellé (1) et le sac déformable (4) ;

caractérisé en ce que

- le récipient scellé (1) comprend un goulot fileté (6) ;
- le distributeur comprenant un couvercle fileté

(7) qui est filetable sur le goulot fileté (6) du récipient scellé (1) ;

- le couvercle (7) comprenant trois perforations pour une sortie de liquide (8), une entrée de liquide (9) et un manomètre (3) ;

- un manomètre (3) est couplé au couvercle (7) pour mesurer la pression à l'intérieur du sac déformable (4) ;

- lors de l'utilisation, la portion supérieure du sac déformable (4) est emprisonnée par le joint entre le couvercle fileté (7) et le périmètre du goulot fileté (6), sur quoi le sac déformable (4) agit comme un joint-O.

2. Distributeur selon la revendication 1, **caractérisé en ce que** le récipient scellé (1) est fabriqué en polyéthylène haute densité.

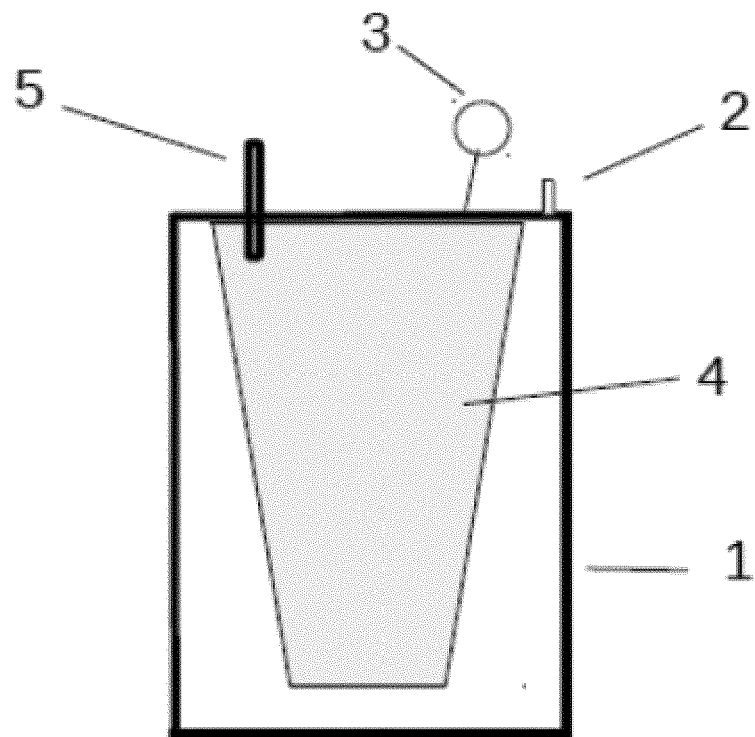


FIG. 1

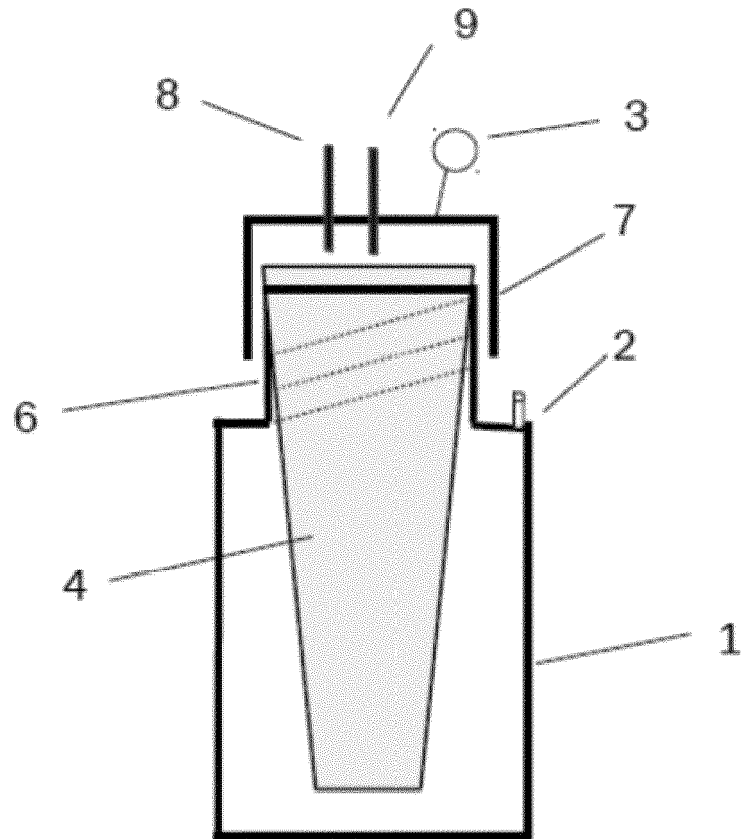


FIG. 2

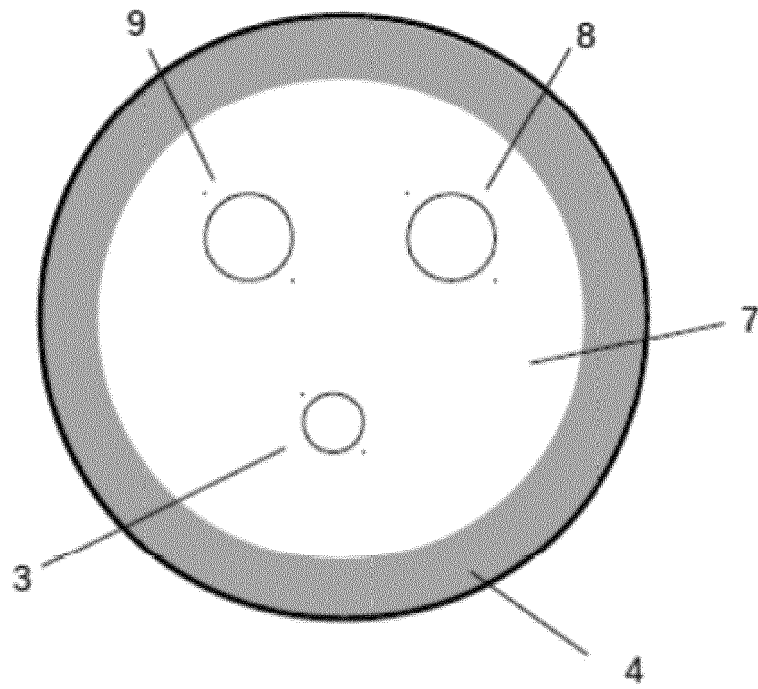


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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