Assembly of drink dispenser and container provided with a pressure medium reservoir

Embodiments of the present invention relate to an assembly of a drink dispenser provided with a chamber for accommodating a container containing carbonated drink, a lid for closing off the chamber, a dispensing head for opening and closing a dispensing line and a container containing carbonated drink provided with a drink dispensing opening and with a dispensing line that may connect the drink dispensing opening to the dispensing head, wherein the container is provided with a pressure medium feed opening.

Embodiments of the present invention also relate to a drink dispenser and a container for use in such a dispenser.

A drink dispenser assembly is disclosed in NL-A 1019054 in the name of the Applicant. In this publication a container containing carbonated drink, in particular beer, is described, wherein the beer is packed in a flexible bag, which bag is accommodated in a rigid plastic container. The container is placed in the dispenser, which is provided with a compressor that is connected to the container via a pressure line to build up pressure in the space between the flexible bag and the rigid outer container. The use of a compressor in the dispenser makes this relatively complex, whilst the compressor can give rise to vibration and an increased noise level.

Furthermore, it is known to supply pressure medium, such as CO_2, to containers, such as metal containers containing whipped cream or cans of beer, by means of a CO_2 cartridge containing CO_2 under high pressure, such as 50 bar and higher. The volume of the CO_2 cartridge is relatively small and a large proportion of the CO_2 will escape on connection if the connection is not made quickly and in a sealed manner. The seals for the high-pressure CO_2 cartridges and the pressure regulation thereof are relatively complex. Furthermore, with the known devices there is no facility for the user to set a regulating pressure.

A beer keg in which a pressure medium chamber is formed by a cavity in the keg containing gaseous CO_2 therein is also known from Gebrauchsmusterschrift DE 201 15 158 U1. A separate dispensing head that contains a pressure regulator can be connected by the user to a beer dispensing valve and to a CO_2 feed valve of the beer keg. When the dispensing head is connected the pressure medium chamber is connected to the volume of beer in the keg. The pressure regulating element is not indicated in more detail. However, if

manual connection is effected by an inexperienced user, loss of CO2 from the pressure medium chamber can take place, so that the tap pressure is reduced or as a result of which, in the worst case, only a portion of the contents can be tapped from the beer keg.

Embodiments of the present invention seek to provide an assembly of a drink dispenser and a container containing carbonated drink, for which no external pressure means such as a compressor are needed.

Embodiments of the present invention seek to provide a drink dispenser assembly with which the chamber with carbonated drink therein can be connected in a simple, rapid and reliable manner to a pressure medium reservoir by inexperienced users.

Embodiments of the present invention seek to provide a drink dispenser assembly where commercially available reservoirs containing liquid CO2 under high pressure can be connected in a simple manner and with relatively low losses.

In accordance with an aspect of the present invention, there is provided an assembly of a drink dispenser provided with a chamber for accommodating a container containing carbonated drink, a lid for closing off the chamber, a dispensing head for opening and closing a dispensing line and a container containing carbonated drink provided with a drink dispensing opening and with a dispensing line that connects the drink dispensing opening to the dispensing head, wherein the container is provided with a pressure medium feed opening and with a reservoir with a pressure medium therein, which reservoir is provided with a pressure line coupling, wherein the lid is provided with a pressure line with, at one end, a reservoir connector for connecting to the pressure line coupling of the reservoir and with, at the other end, a pressure medium feed connector for connecting to the pressure medium feed opening of the container, wherein the reservoir connector and the pressure medium feed connector are brought into fluid-tight engagement with the pressure line coupling and the pressure medium feed opening, respectively, by closing the lid.

In example embodiments, the container of the assembly is provided with a pressure medium feed opening and with a reservoir with a pressure medium therein, which reservoir is provided with a pressure line coupling, wherein the lid is provided with a pressure line with, at one end, a reservoir connector for connecting to the pressure line coupling of the reservoir and with, at the other end, a pressure medium feed connector for connecting to the pressure medium feed opening of the container, wherein the reservoir connector and the pressure medium feed connector are brought into fluid-tight engagement with the pressure line coupling and the pressure medium feed opening, respectively, by closing the lid.

In example embodiments, when the container is placed in the drink dispenser, the contents of the container are connected to the pressure medium reservoir when the lid is closed, without further intermediate operations on the part of the user. The position of the container relative to the lid is accurately defined, for example, by the use of the positioning cheeks on the container as described in NL-A 1019526 in the name of the Applicant, which application is incorporated herein by reference. Closing the lid produces the connection between the pressure medium reservoir and the container without significant loss of pressure medium. To provide a correct closing action, the lid can be provided with a double closure as described in NL-A 1019054 in the name of the Applicant, which publication is incorporated herein by reference.

In one embodiment, the pressure line is connected to a pressure regulator for setting a pressure drop between the reservoir connector and the

pressure medium feed connector of the pressure line. In this way the dispenser can be set by the user in such a way that a desired dispensing pressure, for example for tapping beer under high pressure, with a large head, or under low pressure, with less frothing, can be set.

In one embodiment the container is provided with an accommodating cavity with a replaceable container containing CO_2 under a pressure higher than 1 bar therein. The container can contain on (sic) compressed CO_2 or CO_2 adsorbed on carbon under a pressure of approximately 10 bar, as described in NL-A 1012922, or can contain liquid CO_2 under a pressure of more than 50 bar. As a result of the rapid and reliable connection of the pressure line to, on the one hand, the CO_2 cartridge and, on the other hand, the drink chamber when the lid is closed (which lid can hinge, rotate or slide with respect to the chamber), there may be little loss of pressure medium, which is advantageous in particular when relatively small volumes of pressure medium under high pressure are used.

In a further preferred embodiment the pressure line is in communication with an expansion chamber located between the reservoir connector and the pressure medium feed connector of the pressure line to reduce the pressure of the CO_2 from the reservoir. As a result, the pressure medium feed connection from the pressure line to the chamber containing the carbonated drink can be a relatively low pressure connection, the sealing of which can be implemented relatively easily. Because of the relatively low pressure, a pressure regulator incorporated between the expansion chamber and the pressure medium feed connector can likewise be of simple and consequently inexpensive construction. Furthermore, when the lid is closed, the CO_2 issuing from the reservoir will move to the expansion chamber, so that loss of pressure medium as a result of leakage into the surroundings may be reduced.

In example embodiments, the reservoir containing CO_2 can be connected to the container such that it can be removed and can comprise an aerosol container or a metal CO_2 cartridge containing liquid CO_2 accommodated in a cavity in the top wall, bottom wall or side wall of the container.

A few embodiments of an assembly according to the invention will be explained in more detail with reference to the appended drawing. In the drawing:

Fig. 1 shows a diagrammatic side view of an assembly according to the present invention,

Fig. 2 shows an assembly where the lid of the drink dispenser is provided with an expansion chamber, and

Fig. 3 shows a detail, on an enlarged scale, of a connection between reservoir connector and pressure line coupling.

Fig. 1 shows an assembly 1 of a drink dispenser 2 and a container 3 containing carbonated drink. Such an assembly is described in NL-A 1019054 in the name of the Applicant, which is incorporated herein by reference. The drink dispenser 2 has a chamber 4, for accommodating the container through a top surface, and a lid 5 that is connected to the wall of the chamber at hinge 6 such that it can hinge. The container 3 is provided with a dispensing opening 8 that is closed off by a spring-loaded valve 9. A dispensing line 10, which pushes in the spring valve 9, is connected to a tap head 13 by means of which a shut-off valve, which is not shown in more detail, at the end of the dispensing line 10 can be opened and closed via a tap handle 14. The chamber 4 can be cooled by a Peltier cooling element.

An accommodating cavity 16 has been made in the container 3, in which cavity a CO_2 cartridge 17 containing liquid CO_2 is accommodated. This can be connected to the accommodating cavity in the fill line, after or before filling the container 3 with carbonated drink, such as beer, in a manner such that it cannot be released by the user. The CO_2 cartridge is provided with a pressure line coupling in the form of a slim connecting nipple 20. Furthermore, the container 3 is provided with a pressure medium feed opening 21 that can be closed off by a spring-loaded ball valve or by a membrane that can be penetrated.

Furthermore, a pressure line 22 with a reservoir connector 23 for engaging in a gas-tight manner on the nipple 20 of the CO_2 cartridge 17 is accommodated in the lid 5. At the other end the pressure line is provided with a pressure medium feed connector 24, for example in the form of a simple gland and opening in the wall of the container 3. A pressure regulator 5 (sic) is incorporated in the pressure line 5 (sic) so that the reduction in pressure between the CO_2 cartridge 17 and the interior of the container 3 can be set by a user in order to obtain the desired tapping characteristics in the case of beer. The position of the pressure line 22 in the lid 5 and of the CO_2 cartridge 17 are such that when the lid 5 is hinged closed, the reservoir connector 23 and the pressure medium feed connector 24 connect to the CO_2 cartridge 17 and to the pressure medium feed opening 21 in the container, respectively. The CO_2 cartridge is activated by the pressure from the lid, for example by puncturing a seal or by operating a ball valve in the CO_2 cartridge, as shown in Fig. 3.

Fig. 2 shows an embodiment where the pressure line 22 is provided with an expansion chamber 40 which has a volume that, for example, is 10 times greater than the volume of the CO_2 cartridge 17. Instead of a CO_2 cartridge it would also be possible to use a container containing active carbon as described in NL-A 1012922 in the name of the Applicant or an aerosol container known per se.

Fig. 3 shows a pressure line coupling 20 for the reservoir 17. This comprises a spring-loaded ball valve 43 and an accommodating sleeve 44, which have been made in an annular plastic fixing member 45. The fixing member 45 is connected to a top wall 47 of the container 3 via a screw thread 46. As reservoir connector 23, the pressure line 22 has a slim nose 48 that is able to extend into the accommodating sleeve 44 and when pushed down as a consequence of closing of the lid 5 pushes down the ball valve 43 and thus connects the contents of the reservoir 17, via pressure regulating valve 25, to the interior of the container 3. The top surface 47 of the container 3 is provided with a feed opening 21 into which the end section of the pressure line 22 has been pushed via a rubber ring seal 50.

Claims

1. Assembly of a drink dispenser provided with a chamber for accommodating a container containing carbonated drink, a lid for closing off the chamber, a dispensing head for opening and closing a dispensing line and a container containing carbonated drink provided with a drink dispensing opening and with a dispensing line that connects the drink dispensing opening to the dispensing head, wherein the container is provided with a pressure medium feed opening and with a reservoir with a pressure medium therein, which reservoir is provided with a pressure line coupling, wherein the lid is provided with a pressure line with, at one end, a reservoir connector for connecting to the pressure line coupling of the reservoir and with, at the other end, a pressure medium feed connector for connecting to the pressure medium feed opening of the container, wherein the reservoir connector and the pressure medium feed connector are brought into fluid-tight engagement with the pressure line coupling and the pressure medium feed opening, respectively, by closing the lid.

2. Assembly according to Claim 1, wherein the pressure line is connected to a pressure regulator for setting a pressure drop between the reservoir connector and the pressure medium feed connector of the pressure line.

3. Assembly according to Claim 1 or 2, wherein the container is provided with an accommodating cavity with a replaceable container containing CO_2 under a pressure higher than 1 bar therein.

4. Assembly according to Claim 3, wherein the replaceable container contains liquid CO_2.

5. Assembly according to one of the preceding claims, wherein the pressure line is is (sic) communication with an expansion chamber located between the reservoir connector and the pressure medium feed connector of the pressure line to reduce the pressure of the CO_2 from the reservoir.

6. Dispenser for use in an assembly according to one of the preceding claims, comprising a chamber for accommodating a container containing carbonated drink, a lid for closing off the chamber, a dispensing head for opening and closing a dispensing line, wherein the lid is provided with a pressure line with, at one end, a reservoir connector for connecting to a pressure line coupling of the reservoir and with, at the other end, a pressure medium feed connector for connecting to the pressure medium feed of a container, wherein the reservoir connector and the pressure medium feed connector are brought into fluid-tight engagement with the pressure line coupling and the pressure medium feed opening of the container, respectively, by closing the lid when a container has been placed in the dispenser.