DEVICE FOR DISPENSING A FLUID

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ABSTRACT
A device for dispensing a fluid comprises a sealed container for the fluid, a carrier for a cartridge with pressurized propellant gas, pressure reducing means, a dip tube for transporting fluid upward out of the container under the influence of the propellant, which dip tube connects to a dispensing channel via a first valve, which can be opened from outside for the purpose of pressing fluid, with the overpressure from the propellant, to the outlet of a dispensing channel, and there dispensing it. A second valve is present between the pressure reducing means and the container for allowing passage of propellant gas to the container in the opened position. An operating handle serves to operate the valve unit, wherein there are three stable positions, i.e. a rest position in which both valves are closed, a standby position in which the first valve is closed and the second valve is opened, and an operative position in which both valves are opened.
DEVICE FOR DISPENSING A FLUID

[0001] The invention relates to a device for dispensing a fluid, which device comprises:
[0002] a sealed container in which the fluid is received;
[0003] a carrier for a cartridge with pressurized gas, which cartridge has a seal which can be broken by means of first operating means which can be operated manually from the outside, and the carrier comprises breaking means for breaking the seal such that gas is generated by the cartridge;
[0004] pressure reducing means which are coupled to the carrier and connect to the breaking means for receiving pressurized gas, and which generate received gas under reduced pressure to the space inside the container for charging the fluid present therein with gas under a certain overpressure;
[0005] a dip tube which extends in the container from the bottom zone thereof to the inlet of a first valve, the outlet of which debouches on the top side of the container;
[0006] a dispensing conduit which is present on the top side of the container and the inlet of which is connected to the outlet of the first valve and the outlet of which protrudes outside the container for the purpose of dispensing fluid;
[0007] second operating means, which can be operated manually from the outside, for displacing the valve body of the first valve, whereby this first valve is opened, this such that, due to the overpressure of the gas in the container, fluid is pressed via the dip tube, the opened first valve and the dispensing conduit to the outlet of the dispensing conduit, and is there dispensed,
[0008] wherein the breaking means comprise a hollow pin for perforating the seal during an axial displacement of the first valve body relative to the breaking means as a result of operating the first operating means; and
[0009] wherein a first transmission converts a displacement of the first operating means from the rest position to the operative position into said axial displacement of the cartridge relative to the hollow pin.
[0010] Such a device is known in diverse embodiments.
[0011] DE-U-20 002 335 describes a device for dispensing drink from containers with a volume of for instance two litres under the influence of a propellant. The container is provided with a controllable valve with two positions. In the opened position of the valve drink is dispensed from the container while gaseous propellant is simultaneously supplied. Due to the addition of introducing the propellant into the container simultaneously with dispensing of drink from the container, it is possible to opt for a relatively low gas pressure in the container and it is not necessary to already introduce the whole desired supply of propellant during filling of the drink container. The structure of the valve makes it possible, when the valve is activated, for the gaseous propellant to flow into the container on the outside around the elongate valve body, while the drink simultaneously flows outward through a continuous hole in the elongate valve body.
[0012] EP-A-1 281 635 relates to a further development of the principle according to DE-U-2 002 335, with the object of making the principle established therein suitable for spraying fluid products with a higher viscosity or for simultaneous spraying of two different fluids. The most important modification in the elongate valve body is the arrangement of a cylindrical channel for the supply of propellant and the discharge of the second fluid product to be sprayed. Even with this modification, the applied valve has only two positions.

[0013] It is an object of the invention to give a device of the stated type a very simple and operator-friendly structure.
[0014] It is a further object of the invention to embody a device such that it has a very simple structure which can be manufactured at low cost while nevertheless having a high degree of technical reliability.
[0015] With a view to the above stated objectives, the invention provides a device for dispensing fluid of the type stated in the preamble which has the feature that
[0016] third operating means which can be manually operated from outside are present for displacing the valve body of a second valve connected between the outlet of the pressure reducing means and the container for allowing passage of gas under reduced pressure only in the opened position; and
[0017] the second operating means comprise an operating handle which is coupled operatively to a second transmission which converts a pivoting movement of the operating handle into an axial movement of the valve body relative to the valve sleeve, this second transmission defining three stable positions, i.e.
[0018] a rest position in which both valves are closed;
[0019] a standby position in which the first valve is closed and the second valve is opened; and
[0020] an operative position in which both valves are open.

[0021] Attention is drawn to the fact that taps with three positions have already been proposed, for instance in GB-A-1 163 761. The passage on page 2, lines 81-93, indicates however that the third position has a function other than that proposed with the present invention.
[0023] It is noted emphatically that the prior art briefly specified above relates only to a tap with three positions. The device however relates to a valve unit which has three positions which, by means of specific operating means and an associated transmission, are all three stable and have the specific functionalities as described in the introduction to the invention.
[0024] In a specific embodiment the device has the special feature that the first valve and the second valve are both slide valves with a sleeve provided with a number of passages and an elongate valve body axially displaceable therein in sealing manner.
[0025] According to yet another aspect of the invention, the device has the special feature that said valves are integrated into one valve unit with one sleeve and one valve body displaceable therein.
[0026] According to an important aspect of the invention, the device has the special feature that the second transmission comprises a cam disc which is connected with rotation locking to the operating handle and has three cams corresponding to said positions, and a follower is coupled to the integral valve body.
[0027] Use could be made of a forced drive, which is per se known and ensures that the follower follows every local displacement of the relevant cams. Simpler and therefore preferably applied is an embodiment comprising spring means for pressing the follower against the cam disc.
[0028] According to yet another aspect of the invention, the invention has the special feature that the operating handle is also the carrier for a cartridge for pressurized gas.
[0029] For the sake of completeness attention is drawn once again in this respect to GB-A-1 163 761, from which this aspect is per se known.

[0030] This latter embodiment can advantageously have the special feature that the pressure reducing means are received in the transition zone between the operating handle and a connecting tube on which the operating handle extends substantially at right angles and which is coupled with rotation locking to the operating handle, and leads the gas under reduced pressure to the second valve.

[0031] In a further embodiment the device has the feature that the pressure reducing means are adjustable by means of pressure adjusting means which can be operated from outside. The pressure of the propellant admitted into the container can hereby be set to a desired value. When tapping beer for instance, use is made of a value in the order of 0.8-1.0 bar. Other pressures can also be applied for other beverages, also subject to the personal preference of a user.

[0032] The pressure reducing means can be of any suitable and known type. Suitable for instance are commercially available pressure reducing units of the membrane type or the type with a cylinder-piston unit. These means do not however themselves form part of the invention and do not therefore require further discussion here.

[0033] According to a subsequent aspect of the invention, the device has the special feature that the container is a bottle with a bottom, a body and a mouth, and the mouth rim carries a head, forming part of which are: the carrier with the breaking means, the pressure reducing means, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission, this head being located outside the container.

[0034] In yet another embodiment the device has the feature that the container is a bottle with a bottom, a body and a mouth, and the mouth rim sealingly bears a dish which has in its central zone a continuous hole to which the valve unit is sealingly connected, which valve unit carries the dip tube on its underside.

[0035] A further variant has the special feature that the container is a bottle with a bottom, a body and a mouth, and the mouth rim bears a head, forming part of which are the carrier with the breaking means, the pressure reducing means, the dispensing conduit, the first operating means, the second operating means and the second transmission, this head being located outside the bottle.

[0036] The device can also have the special feature that the head is coupled releasably to the mouth rim of the bottle by means of a connection from the group including: a screw connection, a snap connection, a bayonet connection.

[0037] According to an important aspect of the invention, the device according to the invention has the feature that the bottle consists substantially of PET.

[0038] According to yet another aspect of the invention, the device has the feature that the wall of the container is provided with a layer which forms a barrier to the pressurized gas in the container and forms a barrier to oxygen from the ambient air. Diffusion to the outside of for instance nitrogen gas or carbon dioxide can hereby be prevented, and oxidation of for instance the beverages through diffusion of oxygen from the ambient air to the interior of the container can effectively be prevented.

[0039] A very practical embodiment has the special feature that the breaking means comprise a screw thread which is present on the carrier and, in the manner of a screw and nut, co-acts with a complementary screw thread disposed fixedly relative to the breaking means.

[0040] In an embodiment where use is made of an operating handle present on the top side of the container there could be the risk, in the case of careless use, of the container tending to tilt during tapping, which is undesirable. In this respect it is possible to envisage embodying the device according to the invention such that an optionally releasable support is added to the container which enforces the bottom in the direction of the operative position. Such a support can also fulfil the function of a drip-tray.

[0041] The device according to the invention is suitable, or can be made suitable, for storing and dispensing the most diverse fluids. The device can for instance have the special feature that the fluid is a beverage such as fruit juice, mineral water, for instance a carbonated drink such as beer, soft drink, carbonated mineral water or the like.

[0042] According to an important aspect of the invention, the device comprises valve means controlled by the operating handle which are closed in the position of the operating handle corresponding to the rest position and are opened in the position of the operating handle corresponding to the standby position and the operative position, which valve means connect to the pressure reducing means immediately downstream of the pressure reducing means and in the rest position block passage of gas under reduced pressure to the interior of the container, and in the standby position and the operative position allow passage of gas under reduced pressure to the interior of the container.

[0043] In contrast to an above discussed aspect of the invention, the device can have the special feature in another embodiment that the first valve (11) is of the aerosol type.

[0044] The device can have the further feature that the second valve is of the aerosol type.

[0045] Valves of the aerosol type have the advantage of being of the generally known and frequently applied type and of being readily available commercially and at low cost.

[0046] The invention further relates to a container, adapted and evidently intended as component of a device according to the above stated specification, which container, after being filled, is closed sealingly by means of closing means to which guarantee seal means are added which can be broken only in recognisable manner and only in broken state enable opening of the closing means.

[0047] In a specific embodiment the container has the special feature that the mouth rim bears a dish in sealing manner which has in its central zone a continuous hole to which the valve unit is sealingly connected.

[0048] The invention further relates to a head, adapted and evidently intended as component of a device according to the above stated specification, which head bears the following components and/or to which head the following components are connected: the carrier with breaking means, the pressure reducing means, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission.

[0049] According to a further aspect of the invention, the device can comprise: a non-return valve which at least in the standby position and the operative position is opened for passage of pressurized gas from the pressure reducing means to the interior of the container, which non-return valve comprises a valve body spring-loaded toward the closed position of the non-return valve and having a downward protruding operating pin which, when the head is placed on the container,
presses against the dish and thereby opens the non-return valve such that, when a separate head is not placed on a container, the non-return valve blocks the escape of pressurized gas.

The device also relates to a head, adapted and evidently intended as component of a device according to the above stated specification, of which head the following components form part: the carrier with the breaking means, the pressure reducing means, the dispensing conduit, the first operating means, the second operating means and the transmission, this head being located outside the bottle.

The invention will now be elucidated on the basis of the accompanying drawings of three exemplary embodiments and a number of specific optional aspects. For the sake of clarity and a good understanding of the similarities and differences between the three exemplary embodiments to be described hereinbelow, identical components will, where possible and useful, be designated with the same reference numerals, and differently embodied but functionally corresponding components will be designated respectively with unmarked reference numerals for the first exemplary embodiment and the same reference numerals with respectively one and two accents for the second and third exemplary embodiment. The FIGS. 1-12 relate to the first exemplary embodiment, FIGS. 13-15 to a second exemplary embodiment, FIGS. 16A, 16B and 16C to an alternative valve of the aerosol type, and FIGS. 17A, 17B, 17C, 18A and 18B to a third exemplary embodiment.

In the drawings:

FIG. 1A shows a perspective view of a device according to the invention in the rest position, wherein a support with a drip-tray is drawn some distance below the bottom;

FIG. 1B is a transparent view of the device according to FIG. 1A in which the dip tube can be seen;

FIG. 2 shows a perspective view of the device in the standby position;

FIG. 3 is a perspective view of the device in the operative position;

FIG. 4 is a side view of the device in the rest position;

FIG. 5 is a side view of the device in the standby position;

FIG. 6 is a side view of the device in the operative position;

FIG. 7 shows a longitudinal section through a part of the device in the rest position;

FIG. 8 shows a longitudinal section through the same part of the device in the standby position;

FIG. 9 shows a longitudinal section through a part of the device in the operative position;

FIG. 10 shows a longitudinal section through the same part of the device as in FIGS. 7, 8 and 9, but in a plane perpendicular thereto;

FIG. 11 is a top view of the device;

FIG. 12 shows a longitudinal section along the plane XII-XII in FIG. 11;

FIG. 13 shows a section corresponding to FIG. 7 through a second exemplary embodiment;

FIG. 14 shows a section corresponding to FIG. 8 through a second exemplary embodiment;

FIG. 15 shows a section corresponding to FIG. 9 through the second exemplary embodiment;

FIG. 16A is a longitudinal section through a valve unit of the aerosol type which is applied in the second exemplary embodiment, in the position corresponding to the rest position;

FIG. 16B shows a section corresponding to FIG. 16A through the valve unit in the ready-to-use or standby position;

FIG. 16C shows a section corresponding to FIGS. 16A and 16B through the valve in the operative position;

FIG. 17A shows a vertical section through the head in the rest position;

FIG. 17B shows a section corresponding to FIG. 17A through the head in the standby position;

FIG. 17C shows a section corresponding to FIGS. 17A and 17B through the head in the operative position;

FIG. 18A shows a top view of the device according to the second exemplary embodiment; and

FIG. 18B shows a vertical section along the line IIXX-IIXX in FIG. 18A.

As described, a device according to the invention has three positions, i.e. a rest position, a ready-to-use or standby position and an operative position.

FIGS. 1A, 1B, 4, 7, 13, 16A and 17A show a device in the rest position; FIGS. 2, 5, 8, 10, 14, 16B, 17B, 18A and 18B show a device in the standby position; FIGS. 3, 6, 9, 11, 12, 15, 16C and 17C show a device in the operative position.

FIGS. 1-12 show a device 1 for dispensing a fluid, which device 1 comprises:

a sealed container 2 in which the fluid is received;

a carrier 3 for a cartridge 4 with pressurized gas, which cartridge 4 has a seal 6 which can be broken by means of first operating means 5 which can be operated manually from the outside, and the carrier comprises breaking means for breaking the seal such that gas is generated by cartridge 4;

a pressure reducing means 7 which are coupled to carrier 3 and connect to breaking means 8 for receiving pressurized gas, and which generate received gas under reduced pressure to space 9 inside container 2 for charging the fluid present therein with gas under a certain overpressure;

dip tube 10 which extends to container 2 from the top zone thereof to the inlet of a first valve 11, the outlet 12 of which debouches on the top side of container 2;

dispensing channel 13 which is present on the top side of container 2 and the inlet 14 of which is connected to outlet 12 of first valve 11 and the outlet 12 of which protrudes outside container 2 for the purpose of dispensing fluid;

second operating means 16, which can be operated manually from the outside, for displacing valve body 33 of first valve 11, whereby this first valve 11 is opened, this such that, due to the overpressure of the gas in container 2, fluid is pressed via dip tube 10, the opened first valve 11 and dispensing conduit 13 to outlet 32 of dispensing conduit 13, and is thereby dispensed,

wherein breaking means 8 comprise a hollow pin 17 for perforating seal 6 during an axial displacement 18 of cartridge 4 relative to breaking means 8 as a result of operating the first operating means 5; and

wherein a first transmission 57, 58 converts a displacement of first operating means 5 from the rest position to the operative position into said axial displacement 18 of cartridge 4 relative to hollow pin 17.

According to the invention this device has the special feature that third operating means 35 which can be manually operated from outside are present for displacing valve
body 34 of a second valve 25 connected between the outlet of pressure reducing means 7 and container 2 for allowing passage of gas under reduced pressure only in the opened position;

[0089] first valve 11 and second valve 25 are both slide valves with a sleeve provided with a number of passages and an elongate valve body axially displaceable therein in sealing manner;

[0090] said valves are integrated into one valve unit 31 with one sleeve 36 and one valve body 37 displaceable therein; and

[0091] the second operating means comprise an operating handle 38 which is coupled operatively to a second transmission 39 which converts a pivoting movement of operating handle 38 into an axial movement 40 of valve body 37 relative to valve sleeve 36, this second transmission 39 defining three stable positions, i.e.

[0092] a rest position in which both valves 11, 25 are closed;

[0093] a standby position in which first valve 11 is closed and second valve 25 is opened; and

[0094] an operative position in which both valves 11, are open.

[0095] As shown in, among others, FIG. 12, the integral valve body 33 is loaded toward the closing position of both valves 11, 25 by a pressure spring 65.

[0096] Device 1 further has the special feature that second transmission 39 comprises a cam disc 19 which is connected with rotation locking to operating handle 38 and has three cants 21, 22, 23 corresponding to said positions, and a follower 41 is coupled to integral valve body 37.

[0097] Device 1 further comprises a pressure spring 59 for pressing the follower against the cam disc.

[0098] As shown particularly clearly in FIG. 10, device 1 is embodied such that operating handle 38 is also the carrier 3 for a cartridge 4 for pressurized gas.

[0099] Referring once again to FIG. 10, this shows that in this first exemplary embodiment the pressure reducing means 7 are received in the transition zone 42 between operating handle 38 and a connecting tube 43 which is rotatable about its axis sealingly relative to the inlet of the second valve and on which the operating handle 38 extends substantially at right angles and which is coupled with rotation locking to operating handle 38, and leads the gas under reduced pressure to second valve 25.

[0100] FIG. 10 further shows that in this random exemplary embodiment the pressure reducing means 7 are achieved by means of pressure adjusting means 26 which can be operated from outside. These pressure adjusting means comprise a turning knob 27 which can be operated from outside and which comprises an internal screw element 44 which is provided with thread 45, which thread co-acts in screwing manner with thread 46 forming part of the tap head 47 to be described hereinbelow, which screw element 44 is in pressing co-action with a pressure spring 29 which presses on the other side against a membrane 30. Connected to this membrane 30 via a valve stem 48 is a valve body forming part of a per se known pressure reducing valve, which will not be described further here.

[0101] The figures further show that in this exemplary embodiment the container is a bottle with a bottom, a body and a mouth, and the mouth rim carries a head, forming part of which are: the carrier with the breaking means, the pressure reducing means, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission, this head being located outside the container.

[0102] The figures further show that in this embodiment the container 2 is a bottle with a bottom 51, a body 52 and a mouth 53, and the mouth rim 54 sealingly bears a dish 56 which has in its central zone a continuous hole to which valve unit 31 is sealingly connected, which valve unit 31 bears dip tube 10 on its underside.

[0103] According to an aspect of the invention discussed above, container 2 is a bottle with a bottom 51, a body 52 and a mouth 53, wherein mouth rim 54 bears a head 55, forming part of which are carrier 3 with breaking means 8, pressure reducing means 7, dispensing conduit 13, first operating means 5, second operating means 16 and the second transmission, this head 55 being located outside bottle 2.

[0104] Most practical is an embodiment of the device according to the invention wherein the container embodied as bottle is provided, after being filled, with a non-removably arranged valve unit with dip tube. After arranging hereof, a cover will be arranged in combination with a guarantee seal.

[0105] A separate head of the described type and with the described components can be supplied with this embodiment. If desired, this head can be used a number of times. It will be apparent that for this purpose it will have to be cleaned properly in a manner to be described in the instructions for use.

[0106] It is therefore recommended that head 55 is coupled releasably to mouth rim 54 of bottle 2 by means of a connection from the group including: a screw connection, a snap connection, a bayonet connection. In the shown embodiment use is made of a snap connection 57.

[0107] Bottle 2 consists of PET.

[0108] Not shown is that in device 1 the wall of container 2 is provided with a layer which forms a barrier to the pressurized gas in the container and forms a barrier to oxygen from the ambient air. This layer can be arranged either on the inner side of the wall or be embbeded in the wall.

[0109] FIG. 10 further shows that breaking means 8 comprise a screw thread 57 which is present on carrier 3 and in the manner of a screw and nut co-acts with a complementary screw thread 58 disposed fixedly relative to breaking means 8.

[0110] FIG. 1A further shows that a releasable support 62 is added to container 2 which enlarges the bottom 51 in the direction of the operative position and thus increases the stability of device 1 during tapping. A drip-tray 63 is also added to support 62. This is covered with a perforated plate 64.

[0111] Not shown in the figures is a container which is adapted and evidently intended as component of a device according to the above stated specification, which container, after being filled, is closed sealingly by means of closing means to which guarantee seal means are added which can be broken only in out wardly recognisable manner, and only in broken state enable opening of the closing means.

[0112] The invention also relates to a container 2 which is adapted and evidently intended as component of a device 1 according to the foregoing specification, in which the mouth rim 54 bears a dish 56 in sealing manner which has in its central zone a continuous hole to which valve unit 31 is sealingly connected.

[0113] As described above, the invention also relates to a head 55, adapted and evidently intended as component of a device 1, which head 55 bears the following components and/or to which head 55 the following components are con-
The manner in which these three positions of operating handle 38 are functionally implemented is shown in the respective FIGS. 7, 8 and 9.

In the rest position according to FIG. 7, a pressure spring 59 presses the follower 41 with its recess 60 against cam 21. Owing to this construction the rest position is stable.

When operating handle 38 is rotated from the position according to FIG. 7 to the position shown in FIG. 8, follower 41 loses contact with cam 21 and comes into contact with cam 22, wherein valve body 37 has undergone a downward directed displacement. In this position the second valve 25 is open, whereby propellant, in particular carbon dioxide, from the cartridge is admitted via second valve 25 to space 9 inside container 2. During first use there could be a short wait before tapping until the gas, in particular carbon dioxide, has had the opportunity through diffusion to also partially dissolve in the fluid in order to supplement the carbon dioxide optionally prearranged therein. This is important for carbonated drinks, and in particular for beer.

Operating handle 38 can then be pivoted from the position shown in FIG. 8 to the position shown in FIG. 9. In this position the third cam 23 is in contact with follower 41.

First valve 11 is hereby also opened whereby, as a result of the propellant pressure in the container, the fluid is pressed via dip tube 10 and first valve 11 to dispensing conduit 13 and is dispensed via the outer end 32 thereof. This situation is shown on larger scale in FIG. 12. Arrows 61 indicate the manner in which the propellant can flow through the opened second valve 25 out of cartridge 4 to space 9. Arrows 82 show the path along which fluid is dispensed from space 9 and supplied to dispensing conduit 13.

The embodiment according to FIGS. 13, 14 and 15 differs mainly from the first exemplary embodiment in the choice of the valve unit, which can be deemed the “heart” of the device according to the invention.

In the above described exemplary embodiment the first and the second valve are both slide valves, and these valves are integrated into one valve unit. In the further exemplary embodiments use is made of a valve unit with valves of the aerosol type. This valve has three positions corresponding to the above defined positions according to the invention as according to FIGS. 13, 14 and 15. The valve in question is shown in more detail in FIGS. 16A, 16B and 16C, in which the three respective positions are shown.

FIGS. 17A, 17B and 17C likewise show the three respective positions. Other than in the first exemplary embodiment, use is not made in this embodiment of a cam disc with three cams, but of a curve disc 69 which co-acts with a follower 70.

As shown clearly in FIGS. 17A, 17B and 17C, curve disc 69 with follower 70 defines three stable positions, these being defined by substantially partly cylindrical curve parts 71, 72 and 73 respectively, the distances of which to the rotation axis 74 increase from first curve part 71 to third curve part 73.

After the extensive description given in respect of the first exemplary embodiment, a detailed description of the present exemplary embodiment is further omitted.

Valve unit 31', which forms part of device 1' according to FIGS. 13, 14 and 15, is drawn on larger scale and in detail in the respective FIGS. 16A, 16B and 16C.

Valve unit 31' is of the type shown in FIG. 16A in which the valve 75 is opened and propellant is admitted as according to arrows 61 to space 78 in container 2'. Reference is made to the transition between FIGS. 16A and 16B, which shows that for this purpose the hollow valve stem 79 has undergone a downward directed displacement 80 through a certain distance.

With a further downward directed displacement 81 fluid valve 76 is then also opened, as indicated in the transition between FIGS. 16B and 16C, whereby via the dip tube and fluid valve 76 fluid can be displaced upward as according to arrows 82 via the hollow valve stem 79 which, in the manner shown in FIGS. 17A, 17B and 17C, connects to dispensing conduit 13.

The displacements 80 and 81 are effected by the respective cams 21, 22 and 23 or curve parts 71, 72, 73 during the corresponding pivoting movements of operating handle 38, 38'.

FIG. 18B shows a specific aspect of the invention. In this embodiment the device 1' comprises a non-return valve 66 which at least in the standby position and in the operative position is opened for passage of pressurized propellant gas from the pressure reducing means (not shown in the section of FIG. 18B) to space 78 inside container 2', which non-return valve 66 comprises a valve body 67 spring-loaded toward the closed position and having a downward protruding operating pin 68 which, when head 55' is placed on container 2', presses against the profiled dish 56 and thereby opens non-return valve 66 such that, when a head 55' is not placed on container 2', non-return valve 66 blocks free escape of pressurized propellant gas to the environment, and therefore loss of such gas. It is important for this function that dish 56 has a rotation-symmetrical form so that, when head 55' is placed with a rotating movement, the pin always has the same stop position, preferably the recessed part of dish 56.

The head 55' further comprises valve means 169 which are controlled by operating handle 38' and which are closed in the position of handle 38' corresponding to the rest position and are opened in the position of operating handle 38' corresponding to the standby position and the operative position. These valve means 169 connect directly downstream to the pressure adjusting means 26 and in the rest position block the passage of propellant under reduced pressure to space 78 of container 2'. In the standby position and the operative position the valve means allow passage of propellant under reduced pressure to the interior of the container.

This latter aspect achieves that, in the rest position after activation of the breaking means, the components placed downstream of said valve means, in particular seals, are not needlessly loaded by gas pressure. Such a load could after all result in wear and microleakage, whereby gas is gradually lost and the propellant cartridge might have to be replaced prematurely.

Valve means 169 are axially displaceable as according to an arrow 83 under the influence of the pivoting displacement of operating handle 38' between the rest position
and the other two positions, thus the standby position and the operative position. A transmission \textsuperscript{84} converts the pivoting movement of operating handle \textsuperscript{38} into said axial displacement \textsuperscript{83}.

\textbf{[0132]} The invention also relates to a separate head \textsuperscript{55}, \textsuperscript{55}; adapted and evidently intended as component of a device \textsuperscript{1}, \textsuperscript{1}' according to the above stated specification, of which head \textsuperscript{55}, \textsuperscript{55} at least the following components form part: carrier \textsuperscript{3} with breaking means \textsuperscript{8}, pressure reducing means \textsuperscript{7}, dispensing conduit \textsuperscript{13}, first operating means \textsuperscript{5}, second operating means \textsuperscript{16} and second transmission \textsuperscript{39}.

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\textbf{1-25. (canceled)}
\textbf{26. Device for dispensing a fluid, which device comprises: a sealed container in which the fluid is received; a carrier for a cartridge with pressurized gas, which cartridge has a seal which can be broken by means of first operating means which can be operated manually from outside the carrier, and the carrier comprises breaking means for breaking the seal such that gas is generated by the cartridge; a pressure reducer which is coupled to the carrier and connect to the breaking means for receiving pressurized gas, and which generate received gas under reduced pressure to a space inside the container for charging the fluid present therein with gas under a certain overpressure; a dip tube which extends in the container from a bottom zone thereof to an inlet of a first valve, an outlet of which debouches on a top side of the container; a dispensing channel or conduit which is present on the top side of the container and an inlet of which is connected to the outlet of the first valve and an outlet of the dispensing conduit which protrudes outside the container for the purpose of dispensing fluid; second operating means, which can be operated manually from outside the carrier, for displacing a valve body of the first valve, whereby this first valve is opened, such that, due to the overpressure of the gas in the container, fluid is pressed via the dip tube, the opened first valve and the dispensing conduit to the outlet of the dispensing conduit, and is there dispensed, wherein the breaking means comprise a hollow pin for perforating the seal during an axial displacement of the cartridge relative to the breaking means as a result of operating the first operating means; and wherein a first transmission converts displacement of the first operating means from a rest position to an operative position into axial displacement of the cartridge relative to the hollow pin; characterized in that third operating means which can be manually operated from outside are present for displacing a valve body of a second valve connected between an outlet of the pressure reducer and the container for allowing passage of gas under reduced pressure only in an opened position of the second valve; and the second operating means comprise an operating handle which is coupled operatively to a second transmission which converts a pivoting movement of the operating handle into axial movement of a valve body relative to a valve sleeve, this second transmission defining three stable positions, i.e. a rest position in which both valves are closed; a standby position in which the first valve is closed and the second valve is opened; and an operative position in which both valves are open.

27. Device as claimed in claim \textsuperscript{26}, wherein the first valve and the second valve are both slide valves with a sleeve provided with a number of passages and an elongate valve body axially displaceable therein in sealing manner.

28. Device as claimed in claim \textsuperscript{26}, wherein the valves are integrated into one valve unit with one sleeve and one valve body displaceable therein.

29. Device as claimed in claim \textsuperscript{26}, wherein the second transmission comprises a cam disc or curve disc which is connected with rotation locking to the operating handle and has three cams or curve parts corresponding to the positions, and a follower is coupled to the valve bodies.

30. Device as claimed in claim \textsuperscript{29}, comprising spring means for pressing the follower against the disc.

31. Device as claimed in claim \textsuperscript{26}, wherein the operating handle is also the carrier for a cartridge for pressurized gas, wherein the breaking means comprise a screw thread which is present on the carrier and, in the manner of a screw and nut, co-acts with a complementary screw thread disposed fixedly relative to the breaking means.

32. Device as claimed in claim \textsuperscript{31}, wherein the pressure reducer is received in a transition zone between the operating handle and a connecting tube which is rotatable about its axis sealingly relative to the inlet of the second valve and on which the operating handle extends substantially at right angles and which is coupled with rotation locking to the operating handle, and leads the gas under reduced pressure to the second valve.

33. Device as claimed in claim \textsuperscript{26}, wherein the pressure reducer is adjustable by means of pressure adjusting means which can be operated from outside.

34. Device as claimed in claim \textsuperscript{28}, wherein the container is a bottle with a bottom, a body and a mouth, and a mouth rim carries a head, forming part of which are: the carrier with the breaking means, the pressure reducer, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission, this head being located outside the container.

35. Device as claimed in claim \textsuperscript{28}, wherein the container is a bottle with a bottom, a body and a mouth, and a mouth rim sealingly bears a dish which has in its central zone a continuous hole to which the valve unit is sealingly connected, which valve unit carries the dip tube on its underside.

36. Device as claimed in claim \textsuperscript{26}, wherein the container is a bottle with a bottom, a body and a mouth, and a mouth rim bears a head, forming part of which are: the carrier, the breaking means, the pressure reducer, the dispensing conduit, the first operating means, the second operating means and the second transmission, this head being located outside the bottle.
37. Device as claimed in claim 34, wherein the head is coupled in optionally releasable manner to the mouth rim of the bottle by means of a connection from the group including: a screw connection, a snap connection, and a bayonet connection, and wherein the bottle consists substantially of PET.

38. Device as claimed in claim 26, wherein a wall of the container is provided with a layer which forms a barrier to the pressurized gas in the container and forms a barrier to oxygen from the ambient air and wherein an optionally releasable support is added to the container which enlarges the bottom in the direction of the operative position.

39. Device as claimed in claim 26, wherein the fluid is a beverage such as fruit juice, mineral water, for instance a carbonated drink such as beer, soft drink, carbonated mineral water or the like and wherein the first valve is of the aerosol type and wherein the second valve is of the aerosol type.

40. Device as claimed in claim 26, comprising valve means controlled by the operating handle which are closed in a position of the operating handle corresponding to the rest position and are opened in a position of the operating handle corresponding to the standby position and the operative position, which valve means connect to the pressure reducer immediately downstream of the pressure reducer and in the rest position block passage of gas under reduced pressure to the interior of the container, and in the standby position and the operative position allow passage of gas under reduced pressure to the interior of the container.

41. Container adapted and intended as component of a device as claimed in claim 26, which container, after being filled, is closed sealingly by means of closing means to which guarantee seal means are added which can be broken only in outwardly recognisable manner, and only in broken state enable opening of the closing means.

42. Container adapted and intended as component of a device as claimed in claim 28, wherein a mouth rim of the container bears a dish in sealing manner which has in its central zone a continuous hole to which the valve unit of the device of claim 28 is sealingly connected.

43. Head adapted and intended as component of a device as claimed in claim 34, which head bears the following components and/or to which head the following components are connected: the carrier with breaking means, the pressure reducer, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission.

44. Device as claimed in claim 35, and which comprises: a head which bears the following components and/or to which head the following components are connected: the carrier with breaking means, the pressure reducing means, the dip tube, the valve unit, the dispensing conduit, the first operating means, the second operating means and the second transmission; and a non-return valve which at least in the standby position and the operative position is opened for passage of pressurized gas from the pressure reducer to the interior of the container, which non-return valve comprises a valve body spring-loaded toward a closed position of the non-return valve and having a downward protruding operating pin which, when the head is placed on the container, presses against the dish and thereby opens the non-return valve such that, when a separate head is not placed on a container, the non-return valve blocks the escape of pressurized gas.

45. Head adapted and intended as component of a device as claimed in claim 34, of which head the following components form part: the carrier with the breaking means, the pressure reducing means, the dispensing conduit, the first operating means, the second operating means and the second transmission.