CLAIMS

1. A pressure control device (1) for maintaining a constant predetermined pressure in a fluid container (50, 60) which is arranged for dispensing a fluid contained in the container from the fluid container at said pressure, the pressure control device (1) comprising
a cylinder (40) having an open end and a closed end, and a stopper (8) movable within said cylinder (40) to define a first chamber (4),
a second chamber (3) encompassing the cylinder (40) of the first chamber (4), the second chamber (3) fillable with a gas which in use has a higher pressure than said pressure in the container (50, 60),
at least one fluid connection (9) between the second chamber (3) and the container (50, 60), and a closing member (7) movable relative to the cylinder (40) for releasing and closing said fluid connection (9) between the second chamber (3) and the fluid dispensing container (50, 60) depending on the position of the closing member (7) relative to the first chamber (4),
the position of the closing member (7) relative to the second chamber (3) being at least dependent on the prevailing pressure in the fluid dispensing container (50, 60) and the prevailing pressure in the first chamber (4),
while in use the fluid connection (9) is released when the pressure in the fluid dispensing container (50, 60) decreases below the predetermined pressure, so that gas flows from the second chamber (3) to the fluid dispensing container (50, 60) and the pressure in the fluid dispensing container (50, 60) increases until the fluid connection (9) is closed by the closing member (7) as a result of the increased pressure in the fluid dispensing container (50, 60), **characterized in that,**
said fluid connection (9) is provided outside of said cylinder (40) and facing said closing member (7); and wherein to define said first chamber (4), said second chamber (3) is formed with a cylinder shaped wall (40) for receipt of said stopper (8) provided with said closing member (7), in the cylinder shaped wall (40) of said second chamber (3) said stopper (8) is inserted, and the stopper (8) and closing member (7) are mounted with respect to the fluid connection (9) such that the communication between the second chamber (3) and outside can be closed.

2. The pressure control device (1) according to claim 1, characterized in that said second chamber (3) is formed out of a synthetic material of high stability against deformation by pressure, and said second chamber (3) is provided with a fluid connection (9) and a bottom opening (41) closable with a closure (42).

3. The pressure control device according to claim 1 or 2, **characterized in that,** said fluid connection (9) is provided with a circumferential protrusion (6, 16, 26) extending from the outer side of the wall (17) of the second chamber (3) facing the fluid dispensing container (50, 60); preferably extending by a height H1 of 0.1-2.0 mm; and/or

said closing member (7) is provided with a protrusion (71) for acting on said fluid connection (9); preferably said protrusion has a height H2 of 0.1-2.0 mm;
wherein said protrusion (6, 16, 26, 71) preferably is a knob, a frustoconical shape, a cubic or rectangular shape, such as provided by a needle.

4. The pressure control device according to any of claims 1 to 3, **characterized in that,** the cylinder (40) and/or fluid connection (9) are provided as an insert (230).

5. The pressure control device (1) according to any of claims 1 to 4, wherein said stopper (8) comprises a collar (15) or one or more collar parts, preferably two collar parts, for actuating said fluid connection (9); preferably for actuating said circumferential protrusion (6, 16, 26); more preferably wherein the collar (15) or one or more collar parts and/or the stopper neck (34), or the stopper (8), are provided with or are made from elastomer material (7); and most preferably wherein one or more guiding means (70) are provided for guiding of said one or more collar parts.

6. The pressure control device (1) according to any of claims 1 to 5, wherein the stopper neck (34) is made of a sealing material or is provided with a sealing material (5); preferably an O-ring or X-ring.

7. The pressure control device (1) according to any of claims 1 to 6, wherein one or more liquid barriers (7, 86) and/or venting means (72) and/or guiding means for guiding one or more pressure control means (70, 70') are provided.

8. A pressure control system (100) comprising a fluid dispensing container (50, 60) and a pressure control device (1) according to any of claims 1 to 7; preferably said container is a PET container or a metal can.

9. The pressure control system (100) according to claim 8, wherein the fluid dispensing container (50) has a dispensing opening with a dispensing valve (51), and a movable piston (52) is provided in the container between the pressure control device (1) and the dispensing opening, which movable piston (52) is separating the fluid and the gas, and which is movable towards the dispensing opening by the excess pressure prevailing in the fluid dispensing container (50); preferably the movable piston (52) is designed as a dome with annular ribs (53, 54).

10. The pressure control system (100) according to claim 9, wherein the container (60) has a dispensing opening (61) with a dispensing valve (62), and a bag for holding fluid (68) is provided onto said valve.

11. The pressure control system (100) according to any of claims 8 to 10, wherein said PET fluid dispensing container (50) is attached to said pressure control device (1) by welding,

preferably by laser welding, more preferably by a double seam, most preferably one of said seams runs circumferentially around the bottom opening of said PET container.

12. A method for maintaining a constant predetermined pressure in a fluid container (50, 60) arranged for dispensing a fluid contained in the container from the fluid container at said pressure, the method comprising:
providing a pressure control device (1) according to one of claims 1 to 7 for delivery of said constant predetermined pressure;
releasing the fluid connection (9) of the pressure control device (1) when the pressure in the fluid dispensing container (50, 60) decreases below the predetermined pressure; and closing the fluid connection (9) when the pressure in the fluid dispensing container (50, 60) reaches the predetermined pressure.

13. A method for manufacturing a pressure control system (100) as in any of claims 8 to 11, wherein a pressure control device (1) according to any of claims 1 to 7 is positioned inside a fluid dispensing container (50, 60); preferably formed from a synthetic material by injection stretch blow-moulding or formed from a metal sheet; said fluid dispensing container (50) is provided with fluid for dispensing; and said second container (3) is filled with propellant, preferably compressed air.

14. Method for manufacturing a pressure control system (100) according to claim 13, wherein said pressure control device (1) is provided with a liquid barrier (7, 86).

15. Method for manufacturing a pressure control system (100) as described in claim 8 and according to claim 13 or 14, comprising the step of: inserting a movable piston (52) onto said pressure control device (1) prior to positioning into said fluid dispensing container (50) or positioning a movable piston (52) inside said fluid dispensing container followed by insertion of said pressure control device (1); and preferably
comprising the step of: inserting the stopper into a cylinder (40) provided with venting means thereby leaving the first chamber (4) under atmospheric pressure.

16. Method for manufacturing a pressure control system (100) according to any of claims 13 to 15, wherein parts are joined by welding; preferably by laser welding; more preferably a bottom plate (2) is welded to the second chamber (3); even more preferably both the second chamber (3) and the fluid dispensing container (50, 60) are welded to the bottom plate (2).