Claims

1. A dosing system for an inhalation device, comprising

(a) a filling chamber (1) for receiving a liquid to be aerosolized, the filling chamber (1) having a lateral wall (42) with an outer side (46), an inlet opening (2) and an outlet opening (3) with a closing means (11) for closing the outlet opening (3);

(b) an overflow chamber (5) surrounding the inlet opening (2) of the filling chamber (1) and having an outer wall (45) with an inner side (47), wherein the outer side (46) of the lateral wall of the filling chamber and the inner side (47) face the overflow chamber (5); and

(c) a plunger (4) which is at least partially insertable into the filling chamber (1), and which sealingly contacts the lateral wall (42) while being at least partially inserted into the filling chamber (1) such as to push, after the filling chamber (1) has received at least a predefined fill volume of the liquid, a metered volume of the liquid out from the filling chamber (1) through the outlet opening (3), wherein the metered volume is smaller than the fill volume,

wherein the filling chamber has a portion into which the plunger (4) is inserted and wherein the filling chamber (1), or the portion of the filling chamber (1) into which the plunger (4) is inserted is made of a flexible material;

wherein the dosing system comprises a flip-top lid (9) which is attached with an off-centered hinge (10);

wherein the plunger (4) is connectable to, or an integral part of the lid (9);

and wherein the plunger (4) is sized and shaped such as to be capable of closing the filling chamber (1), or wherein the lid (9) is capable of closing the filling chamber (1).

2. The dosing system according to claim 1, wherein the inhalation device comprises a nebulizer selected from ultrasonic nebulizers, jet nebulizers or vibrating mesh nebulizers.

3. The dosing system according to any of the preceding claims, wherein the dosing system has an operating orientation, and wherein the filling chamber has an upper end and a lower end, and wherein, in the operating orientation, the inlet opening (2) is located at the upper end of the filling chamber (1), and the outlet opening (3) is located at the lower end of the filling chamber (1).

4. The dosing system according to any of the preceding claims, wherein the outlet opening (3) is closable by means of a capillary tube, a liquid flow resistor, a nozzle, a valve, a one-way valve, a duckbill valve, a slit valve or a ball valve.

5. The dosing system according to claim 2, wherein the dosing system has an operating orientation, and wherein the nebulizer is a vibrating mesh (8) nebulizer; and wherein, in the operating orientation, the mesh (8) of the vibrating mesh nebulizer is positioned below the outlet opening (3) and has a horizontal orientation.

6. The dosing system according to any of the preceding claims, wherein the plunger has a portion which is insertable into the filling chamber (1); and
wherein the filling chamber (1), or the portion of the filling chamber (1) into which the plunger (4) or the insertable portion of the plunger (4) is inserted and the plunger (4), or the portion of the plunger (4) which is insertable into the filling chamber (1), are substantially cylindrical.

7. The dosing system according to any of the preceding claims, wherein the plunger (4) is at least partially inserted into the filling chamber (1) when closing the lid (9), and wherein during its insertion, the plunger (4) seals the filling chamber (1) towards the inlet opening (2) such that no liquid leaves the filling chamber (1) through the inlet opening (2).

8. The dosing system according to any of the preceding claims, wherein the outlet opening (3) is surrounded by a residual pocket (12).

9. The dosing system for an inhalation device according to any of the preceding claims, wherein
(a) the lateral wall (42) has an upper end, and wherein the upper end of the lateral wall (42) forms a bulge (44), and/or
(b) the outer wall (45) has an upper end, and wherein the upper end of the outer wall forms a bulge.

10. The dosing system according to any of the preceding claims, wherein the outer side (46) and/or the inner side (47) is concavely curved or leaning towards the overflow chamber (5).

11. An inhalation device comprising the dosing system of claims 1 to 10.

12. A method for dosing a liquid to be aerosolized comprising the steps of:

(1) providing a filling chamber (1) for receiving a liquid to be aerosolized, the filling chamber having (a) a lateral wall (42) with an outer side (46), (b) an inlet opening (2) and (c) an outlet opening (3) with a closing means (11) for closing the outlet opening (3);

(2) providing an overflow chamber (5) surrounding the inlet opening (2) of the filling chamber (1) and having an outer wall (45) with an inner side (47), wherein the outer side (46) of the lateral wall of the filling chamber and the inner side (47) face the overflow chamber (5); and

(3) providing a plunger (4) which is at least partially insertable into the filling chamber (1), and which scalingly contacts the lateral wall (42) while being at least partially inserted into the filling chamber (1) such as to push, after the filling chamber (1) has received at least a predefined fill volume of the liquid, a metered volume of the liquid out from the filling chamber (1) through the outlet opening (3); wherein the filling chamber has a portion into which the plunger (4) is inserted; and wherein the filling chamber (1), or the portion of the filling chamber (1) into which the plunger (4) is inserted, is made of a flexible material; wherein the plunger (4) is connectable to, or an integral part of a flip-top lid (9) which is attached with an off-centered hinge (10); and wherein the plunger (4) is sized and shaped such as to be capable of closing the filling chamber (1), or wherein the lid (9) is capable of closing the filling chamber (1);

(4) filling the filling chamber (1) with at least a predefined fill volume of the liquid; and

(5) at least partially inserting the plunger (4) such as to push a metered volume of the liquid out from the filling chamber (1) through the outlet opening (3), wherein the metered volume is smaller than the fill volume.