Patent claims

1. A dosing system (1) for dosing a dosing material, which dosing system (1) has a housing (11) comprising a nozzle (70) and a supply channel (62) for dosing material, and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element,

- the actuator unit (10) comprising an actuator (12) having a membrane (13) which is pressurized by means of a pressure medium to move the discharge element (80) in a discharge direction (RA), wherein a gaseous and/or liquid substance is used as the pressure medium, wherein the pressure medium hits directly on a side surface of the membrane (13) facing away from the discharge element (80), and
- the discharge element (80) being formed separately and being pressed against a side surface (19) of the membrane (13) pointing in the direction of the discharge element (80) by means of a force acting on the discharge element (80) for coupling to the actuator unit (10).

2. The dosing system according to claim 1, wherein the dosing system (1) is formed so that the force acting on the discharge element (80) for coupling is directed in the opposite direction to a discharge direction (RA) of the discharge element (80).

3. The dosing system according to claim 1 or 2, wherein the dosing system (1) is formed so that the discharge element (80) is pressed against the side surface (19) of the membrane (13) by means of at least one spring arrangement (84) for coupling to the actuator unit (10).

4. The dosing system according to one of the preceding claims 1 to 3, wherein the membrane (13) is formed like a disk and/or free of cavities.

5. The dosing system according to one of the preceding claims 1 to 4 having a housing (11) comprising a nozzle (70) and a supply channel (62) for dosing material, and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element, wherein the actuator unit (10) comprises an actuator (12) having a membrane (13) which can be pressurized by a pressure medium to move the discharge element (80) in a discharge direction (RA), and wherein the housing (11) of the dosing system (1) comprises a reservoir (32) for the pressure medium and/or wherein the reservoir (32) directly adjoins a control valve (20) of the actuator unit (10) for controlling the actuator (12).

6. The dosing system according to claim 5, wherein at least one pressure sensor (33) is arranged in the reservoir (32).

7. The dosing system according to claim 5 or 6, wherein the actuator unit (10) is formed to use a pressure medium flowing out of an actuator chamber (16) of the actuator (12) as a cooling medium for cooling the control valve (20).

8. The dosing system according to one of the preceding claims 1 to 7, wherein the dosing system (1) comprises at least one sensor (18) for measuring a speed of a movement of the discharge element (80).

9. The dosing system according to one of the preceding claims 1 to 8, wherein the dosing system (1) comprises at least one pressure regulator (35) to control and/or regulate a pressure of the pressure medium as a function of an input parameter, preferably by means of a control and/or regulating unit (43) of the dosing system (1).

10. The dosing system according to one of the preceding claims 1 to 9 having a housing (11), comprising a nozzle (70) and a supply channel (62) for dosing material, and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element, wherein the actuator unit (10) comprises an actuator (12) having a membrane (13) which can be pressurized by means of a pressure medium to move the discharge element (80) in a discharge direction (RA), and wherein the dosing system (1), preferably a control valve (20) of the dosing system (1) for controlling the actuator (12), comprises at least one throttle device (28) which is formed to control and/or regulate a pressure in the actuator (12) as a function of an input parameter, preferably by means of a control and/or regulating unit (43) of the dosing system (1).

11. The dosing system according to one of the preceding claims 1 to 10 having a housing (11), comprising a nozzle (70) and a supply channel (62) for dosing material, and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element, wherein the actuator unit (10) comprises an actuator (12) having a membrane (13) which can be pressurized by means of a pressure medium to move the discharge element (80) in a discharge direction (RA), and wherein the dosing system (1), preferably a control valve (20) of the dosing system (1) for controlling the actuator (12), comprises at least one throttle device (28) which is formed to control and/or regulate a

pressure profile during a filling of the actuator (12) and/or during emptying of the actuator (12).

12. The dosing system according to one of the preceding claims 1 to 11, wherein the dosing system (1) is formed such that a pressure is maintained in a region between the membrane (13) and a plunger seal (85), which pressure essentially corresponds to a cartridge pressure and/or wherein the dosing system (1) is formed such that a negative pressure, in particular a vacuum, is maintained in a region between the membrane (13), preferably its underside, and the plunger seal (85),
wherein the plunger seal (85) surrounds the discharge element (80) and is realized as part of a fluidic unit of the dosing system (1), and wherein the plunger seal (85) is located opposite an outlet opening of a nozzle (70), wherein the plunger seal (85) delimits a nozzle chamber of the nozzle (70) at the top.

13. A method for controlling a dosing system (1) for dosing a dosing material, which dosing system (1) has a housing (11) comprising a nozzle (70) and a supply channel (62) for dosing material, and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element,

- a membrane (13) of an actuator (12) of the actuator unit (10) being pressurized by a pressure medium to move the discharge element (80) in a discharge direction (RA), wherein a gaseous and/or liquid substance is used as the pressure medium, wherein the pressure medium hits directly on a side surface of the membrane (13) facing away from the discharge element (80), and
- the discharge element (80) being pressed against a side surface (19) of the membrane (13) pointing in the direction of the discharge element (80) by means of a force acting on the discharge element (80) for coupling to the actuator unit (10).

14. The method according to claim 13, wherein a pressure of the pressure medium is controlled and/or regulated as a function of an input parameter so that a speed of the discharge element (80) corresponds to a target value during a discharge movement.

15. The method according to claim 13 or 14, wherein a pressure of a pressure medium flowing into the actuator (12) and/or a pressure of a pressure medium flowing out of the actuator (12) is controlled and/or regulated as a function of an input parameter so that a speed of the discharge element (80) corresponds to a target value during a discharge movement and/or a retraction movement.

16. The method according to one of claims 13 to 15, which dosing system (1) has a housing (11) comprising a nozzle (70) and a supply channel (62) for dosing material and a discharge element (80) movably mounted in the housing (11) and an actuator unit (10) coupled to the discharge element (80), wherein a membrane (13) of an actuator (12) of the actuator unit (10) is pressurized by a pressure medium to move the discharge element (80) in a discharge direction (RA)

and wherein a pressure of the pressure medium is controlled and/or regulated, preferably a throttle device (28) of the dosing system (1) is controlled by means of a control and/or regulating unit (43) of the dosing system (1) so that a speed of the discharge element (80) is varied during a discharge movement and/or during a retraction movement.