and 2, the pneumatic actuator 12 and the coupling to the discharge element are shown only schematically. In particular, a membrane 13 of the actuator 12 is shown only schematically, that is, not in a real position or configuration that the membrane 13 actually has during operation during a deflection or a retraction. This is explained later with reference to Figures 3 and 4.

The pneumatic actuator 12 (Figure 1) is coupled to the fluidic unit 60 in such a way that the plunger 80 is actuated by means of a control of the pneumatic actuator 12 in such a way that a medium to be dosed from the fluidic unit 60 is discharged in the desired amount at the desired time. In the case illustrated here, the plunger 80 currently closes a nozzle opening 72 and thus also serves as a closure element 80. However, since most of the medium is already discharged from the nozzle opening 72 when the plunger 80 is moved in an discharging direction RA (see Figure 2), it is referred to herein as an discharge element 80. The coupling between pneumatic actuator 12 and plunger 80 is explained in detail later with reference to Figure 3.

The pneumatic actuator 12 is arranged in the actuator unit 10 in the immediate vicinity of a control valve 20 for controlling the actuator 12. The control valve 20, for example, a pneumatic 3/2-way valve is formed to supply the actuator 12 a pressure medium, for example, compressed room air, and/or discharge a pressure medium from the actuator 12. For this purpose, the actuator 12 is arranged in the actuator unit 10 so that a bore 17 of the actuator 12 interacts with a working connection 23 of the control valve 20 and is spatially connected thereto. This becomes clear especially in Figure 2.

The control valve 20 further comprises a compressed air connection 22 and a vent connection 24, wherein depending on the control or switching position of the control valve 20, either the compressed air connection 22 or the vent connection 24 interacts with or is connected to the working connection 23. The control valve 20 is coupled to a circuit board 42 of the dosing system by means of a connection cable 21 and can furthermore be controlled by a control unit of the dosing system 1 (for example, electrically) (see Figure 1).

It can be seen in Figure 2 that the control valve 20 is arranged in the actuator unit 10 so that the compressed air connection 22 interacts with or is connected to a bore 25 (here above left), wherein the bore 25 and the compressed air connection 22 substantially have the same diameter. The bore 25 here is realized as a discharge opening 25 of an internal pressure reservoir 32 (in the following also referred to as a pressure tank 32) of the dosing

In order to bring the actuator 12 back into a rest position after dispensing the dosing material, the pneumatic valve 20 can be switched by the control unit so that the working connection 23 is connected to the vent connection 24 by means of an internal flow channel 27' (see Figure 6) of the solenoid valve 20 (second switch position). The pressure medium then flows into the venting region of the actuator unit 10. This is explained later with reference to Figure 6.

The rest position of the actuator 12, as said before, is then present when both the membrane 13 and the discharge element 80 are in a rest position. The membrane 13 of the actuator 12, which is currently not pressurized by pressure medium, returns back to its rest position due to its residual stress. In order to bring the plunger 80 back into a rest position, so that the nozzle opening 72 is released, a plunger head 81 of the plunger 80 is pressed by means of a return spring 84 upwards in the direction of the control valve 20. The exact operation of the actuator 12 is explained in detail later with reference to Figures 3 and 4.

It is particularly clear from Figure 2 that the fluidic unit 60 of the dosing system 1 comprises a second housing part 11b and, as mentioned, is connected to the actuator unit 10 or its housing part 11a by means of a quick coupling to form the housing 11 here. The fluidic unit 60 comprises the plunger 80, which directly abuts against a contact surface 86 of the plunger head 81 of a side surface (underside) of the membrane 13 of the actuator 12 pointing in the direction of the plunger 80. The plunger 80 is here, as is also generally preferred with of the dosing system, in one piece, that is, formed from one piece. For coupling to the actuator unit 10 (only partially shown), the plunger 80, in particular the plunger head 81, is pressed by means of a spring 84 in the axial direction upwards against the membrane 13. The return spring 84 abuts a plunger bearing 83, which connects downward to a plunger seal 85. In the case shown here (Figure 2), the membrane 13 (shown schematically) of the actuator 12 is pressurized by pressure medium (operating position of the actuator 12), so that the plunger tip 82 abuts the sealing seat 73 of the nozzle 70.

If the actuator 12, other than shown here, is located in a rest position, that is, the membrane 13 of the actuator 12 is not pressurized or not deflected, the plunger tip 82 is pushed away from the sealing seat 73 of the nozzle 70 by means of the return spring 84. The plunger tip 82 is then located at a distance from the sealing seat 73 of the nozzle 70, so that the nozzle opening 72 is free or unlocked.

is moved back into a rest position by means of a spring 84. A cycle of dispensing of dosing material is thus passed through.

Figure 6 shows the dosing system of Figures 1 to 3 during a venting of the pneumatic actuator. The control valve 20 is here controlled by the control unit (not shown) so that the working connection 23 interacts with the vent connection 24. For this purpose, the control valve 20 is moved to a second switching position, so that in the interior of the control valve 20, a flow channel 27' (shown here in broken lines), connects the two connections 23, 24. The pressure medium flows out of the actuator 12 via the bore 17 and is conducted through the flow channel 27' to the vent connection 24 and finally into the venting region 34. The plunger 80 is pushed by means of the spring 84 away from the nozzle 70 upwards in the direction of the actuator unit 10, so that a small gap between the plunger tip 82 and the sealing seat 73 is formed (not shown). The membrane 13 is shown here in a horizontal "intermediate position", that is, the membrane returns currently back to a rest position due to the venting of the actuator chamber.

The venting region 34 represents a cavity or a chamber within the housing of the actuator unit 10. In this illustration, the chamber of the venting region 34 is covered by the inflowing pressure medium DE. The pressure medium has a low pressure in the vent region 34 as the actuator supply pressure and is therefore designated as an expanded pressure medium DE. On the one hand, the venting region 34 directly adjoins the control valve 20 by means of the bore 26 and, on the other hand, has a bore to the outside of the dosing system (not shown). As shown here, the vent region 34 encloses a substantial portion of the control valve 20 from the outside.

The venting region 34 is separated spatially and in terms of control technology in particular from the pressure tank 32 of the actuator unit 10. The pressure tank 32 is here filled with a compressed pressure medium DK, wherein a chamber forming the pressure tank 32 is covered by the pressure medium DK.

The pressure medium flowing into the vent region 34 can be guided past the control valve, for example, by means of flow-conducting elements in order to discharge as much heat as possible from a surface of the control valve 20. The pressure medium, for example, compressed air, is hardly heated due to the passage of the actuator 12 and can therefore be used as a cooling medium. Due to the comparatively large volume of the venting region 34, in particular with respect to the actuator chamber, the pressure of the pressure medium in