Claims

1. Method for conveying material that is in the piping of a pneumatic waste conveying system, in which method at least one conveying means (1) of material is fed into a conveying pipe, and a pressure difference is achieved in the pipe and under the influence of the pressure difference the conveying means is brought to move for conveying material in the conveying pipe section, c h a r a c t e r i z e d in that in the method a conveying means (1) or a combination of a number of conveying means (1, 1') is moved in the conveying piping (100, 101) and in that the conveying means (1) or combination of a number of conveying means (1, 1') is connected to a transmission means (2), with which the movement of the conveying means (1) or combination of a number of conveying means (1, 1') in the conveying piping is limited or guided and in that a duct (16) is arranged in the conveying means (1) through it from a first side to a second side, through which duct transporting air is conducted in the conveying piping.

2. Method according to claim 1, c h a r a c t e r i z e d in that the transmission means (2) is arranged in a moving device (3, 4), which moving device (3, 4) comprises at least a reel (3) and its drive device (4).

3. Method according to claim 1 or 2, c h a r a c t e r i z e d in that the transmission means (2) is a transmission means, such as a wire, line, cable or corresponding, to be wound onto the reel (3) and discharged from the reel (3).

4. Method according to any of claims 1 – 3, c h a r a c t e r i z e d in that the movement speed of the conveying means (1) or combination of a number of conveying means (1, 1') is slowed down, e.g. with a brake device (5).

5. Method according to any of claims 1 – 4, c h a r a c t e r i z e d in that the conveying means (1) or a combination of a number of conveying means (1, 1') is moved in the piping by pulling with the transmission means (2) with the moving device (3, 4) alone or together with negative pressure and/or positive pressure.

6. Method according to any of claims 1 – 5, c h a r a c t e r i z e d in that the conveying means (1) or a combination of a number of conveying means (1, 1') is moved in the conveying piping (100, 101) from the starting position the distance

desired in a first direction and then in a second direction back to the staring position or at least in the direction of the starting position.

7. Method according to any of claims 1 – 6, c h a r a c t e r i z e d in that the conveying distance of the conveying means (1) in the conveying piping (100, 101) is limited by a brake device (5) acting on the transmission means (2) or by limiting the winding out of the transmission means (2) from the reel (3).

8. Method according to any of claims 1 – 7, c h a r a c t e r i z e d in that the movement of the conveying means (1) in the conveying piping is facilitated by arranging replacement air into the pipe section (101) of the starting position of the conveying means, into the space between its butt end part (7) and the conveying means (1), when the conveying means moves away from the starting position, or by removing air from there when the conveying means moves towards the starting position, via the most suitable replacement air duct (102).

9. Method according to any of claims 1 – 8, c h a r a c t e r i z e d in that the movement of the conveying means (1) is facilitated by bringing air into the pipe section (101) of the starting position of the conveying means, into the space between its butt end part (7) and the conveying means (1), by connecting the blowing side of a pump device (115) to it, or by removing air from the space between the pipe section (101) of the starting position, its butt end part (7), and the cleaning means (1) by connecting the suction side of a pump device (115) to it.

10. Method according to any of claims 1 – 9, c h a r a c t e r i z e d in that cleaning liquid (CL), in addition to the conveying means (1), is brought into the conveying pipe, which cleaning liquid is moved in the conveying piping together with the conveying means (1) or the conveying means (1, 1').

11. Method according to any of claims 1 – 10, c h a r a c t e r i z e d in that the conveying means (1, 1') and the cleaning liquid (CL) brought into the space (V) between the inner surface of the conveying pipe (100, 101) and the conveying means are moved as a combination.

12. Method according to any of claims 1 – 11, c h a r a c t e r i z e d in that in the method possible pipe blockages are also removed with the conveying means (1).

13. Method according to any of claims 1 – 12, c h a r a c t e r i z e d in that the conveying means (1) is used as a shut-off means in the conveying piping.

14. Method according to any of claims 1 – 13, c h a r a c t e r i z e d in that some of the material to be conveyed is conveyed from in front of the conveying means with the air current traveling through the duct (14) and some of the material to be conveyed is conveyed with the conveying means (1).

15. Conveying apparatus for the waste material of a pneumatic waste conveying system, which apparatus comprises at least one conveying means (1) to be arranged in a conveying pipe, which conveying means is configured to move under the influence of a pressure difference for conveying material in a pipe in at least one direction in the conveying pipe section intended for cleaning, c h a r a c t e r i z e d in that the conveying means (1) is connected to a transmission means (2), which is configured to limit or to guide the movement of the conveying means (1), and in that a duct (16) is arranged in the conveying means (1) through it from a first side to a second side.

16. Apparatus according to claim 15, c h a r a c t e r i z e d in that the transmission means is arranged in a moving device (3, 4), which moving device (3, 4) comprises at least a reel (3) and its drive device (4).

17. Apparatus according to claim 15 or 16, c h a r a c t e r i z e d in that the transmission means (2) is a transmission means, such as a wire, line, cable or corresponding, to be wound onto the reel (3) and discharged from the reel (3).

18. Apparatus according to any of claims 15 – 17, c h a r a c t e r i z e d in that the apparatus comprises a brake device (5).

19. Apparatus according to any of claims 15 – 18, c h a r a c t e r i z e d in that the apparatus comprises a replacement air duct (102), which is provided with a valve means (104), and arranged on the pipe section (101) of the starting position of the conveying means (1), in a section between its butt end part (7) and the conveying means (1).

20. Apparatus according to any of claims 15 – 19, c h a r a c t e r i z e d in that the apparatus comprises a pump device (115), the suction side and/or blowing side of

which can be connected to the pipe section (101) of the starting position of the conveying means (1), in a section between its butt end part (7) and the conveying means (1).

21. Apparatus according to any of claims 15 – 20, c h a r a c t e r i z e d in that there are a number of conveying means (1, 1'), which are connected to each other with coupling means (2').

22. Apparatus according to any of claims 15 – 21, c h a r a c t e r i z e d in that the apparatus comprises means for bringing cleaning liquid (CL) into the conveying pipe, preferably into connection with the conveying means (1) and/or a number of conveying means (1, 1').

23. Apparatus according to any of claims 15 – 22, c h a r a c t e r i z e d in that the conveying means (1) is configured to function as a shut-off means in the conveying piping.

24. Apparatus according to any of claims 15 – 23, c h a r a c t e r i z e d in that a valve means (20), such as a non-return valve, is arranged in the duct (16) of the conveying means (1).

25. Pneumatic wastes conveying system, which comprises conveying piping, means for feeding the material to be conveyed into the conveying piping, as well as means for achieving a pressure difference in the conveying piping and a separating device for separating the material from the transporting air,
c h a r a c t e r i z e d in that the system comprises a number of conveying devices, each of which conveying devices comprises at least one conveying means (1) to be arranged in a conveying pipe, which conveying means is configured to move under the influence of a pressure difference for conveying material in a pipe in a conveying pipe section in at least one direction, and in that the conveying means (1) is connected to a transmission means (2), which is configured to limit or to guide the movement of the conveying means (1), and in that the conveying means (1(I), 1 (II), 1(III), 1(IV)) of a number of conveying devices are configured to convey in a desired sequence (I, II, II, IV) material that has collected in the conveying pipe section onwards in the conveying piping, preferably towards a separating device, and in that a duct (16) is arranged in the conveying means (1) from its first side to its second side.

26. System according to claim 25, c h a r a c t e r i z e d in that in the system the conveying distances of the conveying means (1(I), 1(II), 1(III), 1(IV)) are arranged in such a way that the conveying movement, i.e. conveying distance, of the conveying means (1(I), 1(II), 1(III)) of the previous cleaning section in the conveying sequence, always extends in the conveying pipe slightly into the pipe section of the conveying means of the following conveying device (1(II), 1(III), 1(IV)) in the conveying sequence, from which pipe section it conveys the material onwards.

27. System according to claim 25 or 26, c h a r a c t e r i z e d in that a transmission means (2) of the conveying device is arranged in a moving device (3, 4), which moving device (3, 4) comprises at least a reel (3) and its drive device (4).

28. System according to any of claims 25 – 27, c h a r a c t e r i z e d in that the transmission means (2) of the conveying device is a transmission means, such as a wire, line, cable or corresponding, to be wound onto the reel (3) and discharged from the reel (3).

29. System according to any of claims 25 – 28, c h a r a c t e r i z e d in that in the system the conveying means (1) is moved in the return direction in the piping by pulling with the transmission means (2) with the moving device (3, 4) alone or together with negative pressure and/or positive pressure.

30. System according to any of claims 25 – 29, c h a r a c t e r i z e d in that the conveying apparatus comprises a replacement air duct (102), which is provided with a valve means (104), and arranged on the pipe section (101) of the starting position of the conveying means (1), in a section between its butt end part (7) and the conveying means (1).

31. System according to any of claims 25 – 30, c h a r a c t e r i z e d in that the conveying apparatus comprises a pump device (115), the suction side and/or blowing side of which can be connected to the pipe section (101) of the starting position of the conveying means (1), in a section between its butt end part (7) and the conveying means (1).

32. System according to any of claims 25 – 31, c h a r a c t e r i z e d in that there are a number of conveying means (1, 1'), which are connected to each other with coupling means (2').

33. System according to any of claims 25 – 32, c h a r a c t e r i z e d in that the conveying apparatus comprises means for bringing cleaning liquid (CL) into the conveying pipe, preferably into connection with the conveying means (1) or a number of conveying means (1, 1').

34. System according to any of claims 25 – 33, c h a r a c t e r i z e d in that in the system the conveying means (1) is configured to function as a shut-off means in the conveying piping.

35. System according to any of claims 25 – 34, c h a r a c t e r i z e d in that the movement of the conveying means (1) is slowed down by slowing the movement of the transmission means.

36. System according to any of claims ~~23~~ 25 – 35, c h a r a c t e r i z e d in that a valve means (20), such as a non-return valve, is arranged in the duct (16) of the conveying means (1).