Claims

1. Method for handling waste material in a pneumatic pipe transfer system, wherein waste material is fed in from an input point into conveying piping, and conveyed in the conveying piping, mainly by the aid of suction/a pressure difference and/or a flow of transporting air, onwards to a separating device (1), in which the waste material to be transported and the transporting air separate from each other, from which separating device the waste material is transferred onwards to a separate waste container (26), c h a r a c t e r i z e d in that waste material is transferred, or is transferred and compressed to become denser, from the separating device (1) into a separate waste container (26) in a connecting channel (9) arranged between them with a transfer member (10)-, which is moved with a drive device having at least two operating states, from the input aperture (8) of the connecting channel towards the output aperture (9') and onwards into a separate waste container (26), and in which method the connection from the separating device (1) to the connecting channel (9) is closed at least during the detachment of the waste container (26).

2. Method according to claim 1, c h a r a c t e r i z e d in that the transfer member (10) is moved with a drive device (12, 13, 14, 15, 16), which has at least a first operating state, in which waste material is transferred by moving, with the first drive means (12, 13; 73) of the drive device, the transfer member (10) a part of the distance in the connecting channel (9), at least a second operating state, in which waste material is transferred from the connecting channel (9) into the waste container (26) by moving, moved by the second drive means (15, 16; 74) of the drive device, both the first drive means (12,13, 73) and the transfer member (10), and which has at least a third operating state, in which the connection from the separating device (1) to the connecting channel (9) is closed with the shut-off means (27).

3. Method according to claim 2, c h a r a c t e r i z e d in that the shut-off means (27), preferably an edge (28), is used to cut a detrimental object (30) that is in the connecting channel and causing a blockage or preventing movement of the transfer member.

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 shut-off means (27) is moved with a second drive means (15, 16).

5. Method according to claim 4, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) is connected with a coupling part (18) to a moving part of the second drive means (15, 16; 74) for moving along with it.

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 shut-off means (27) is brought to be placed against the walls of the chamber (9) in the proximity of the input aperture (8) of the chamber.

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 drive device is supported on the bottom wall of the connecting channel, e.g. with a support roller (20) that reduces friction.

8. Method according to any of claims 1 – 7, c h a r a c t e r i z e d in that a partial vacuum is maintained in the separating device (1) and/or the separating device is maintained in operation also during the detachment/replacement of a separate waste container (26).

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 separate waste container (26) is detached from the connection with the connecting channel (9) when the shut-off means (27) is in the closing position.

10. Method according to any of claims 1 – 9, c h a r a c t e r i z e d in that in the method an exhaust air duct (23) is opened when a separate waste container (26) is connected to the connecting channel (9), for achieving a partial vacuum in the connecting channel and/or in the separate waste container after connection of the container.

11. Method according to any of claims 1 - 10, c h a r a c t e r i z e d in that in the method waste material, more particularly household waste material, is transferred from the separating device via the connecting channel into a separate waste container.

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 cylinder-piston units are used as drive means (12, 13; 73; 15, 16; 74), which cylinder-piston units are controlled with control valves (61, 62), with which a differential switch can be selected as one form of use of the drive means.

13. Apparatus for handling material in a pneumatic pipe transport system, which comprises at least one input point, conveying piping and also means for conveying material in the conveying piping, mainly by the aid of suction/a pressure difference and/or a flow of transporting air, into a separating device, where the material to be transported is separated from the transporting air, and also a separate waste container and means (10, 12, 13, 15, 16) for transferring waste material that has accumulated in the separating device (1) from the separating device into the waste container (26), c h a r a c t e r i z e d in that the apparatus comprises a connecting channel (9) arranged between the separating device (1) and a separate waste container (26), in which connecting channel a transfer member (10) and a drive device (12, 13, 14, 15, 16), having at least two operating states, is arranged for moving the transfer member (10) between at least two positions, and in that the apparatus comprises a shut-off means (27) for closing the connection from the separating device (1) to the connecting channel (9) at least during the detachment of the waste container (26).

14. Apparatus according to claim 13, c h a r a c t e r i z e d in that the drive device (12, 13, 14, 15, 16) has a first operating state, in which the transfer member (10) is arranged to be moved with the first drive means (12, 13; 73) of the drive device a part of the distance in the connecting channel (9), a second operating state, in which the second drive means (15, 16; 74) of the drive device is arranged to transfer the first drive means (12,13; 73) and the transfer member (10), and at least one third operating state, in which the shut-off means (27) is arranged to close the connection from the separating device (1) to the connecting channel (9).

15. Apparatus according to any of claims 13 – 14, c h a r a c t e r i z e d in that the shut-off means (27), preferably an edge (28), is configured to function as a cutting means for cutting a detrimental object (30) having an effect in the connecting channel (9).

16. Apparatus according to any of claims 13 – 15, c h a r a c t e r i z e d in that the shut-off means (27) is configured to be moved with a second drive means (15, 16; 74).

17. Apparatus according to any of claims 13 – 16, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) is connected with a coupling part (18) to a moving part of the second drive means (15, 16; 74) for moving along with it.

18. Apparatus according to any of claims 13 – 17, c h a r a c t e r i z e d in that the shut-off means (27) is arranged on the coupling part (18) for moving along with it.

19. Apparatus according to any of claims 13 – 18, c h a r a c t e r i z e d in that the apparatus comprises means for placing the shut-off means (27) against the walls of the connecting channel (9) in the proximity of the input aperture (8) of the connecting channel.

20. Apparatus according to any of claims 13 – 19, c h a r a c t e r i z e d in that a means that reduces friction, e.g. a support roller (20), is arranged on the drive device.

21. Apparatus according to any of claims 13 – 20, c h a r a c t e r i z e d in that an exhaust air duct (23) is arranged in the connecting channel, for achieving a partial vacuum in the connecting channel (9) after connection of the waste container (26).

22. Apparatus according to any of claims 13 – 21, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) and/or the second drive means (15, 16; 74) is a cylinder-piston unit, which cylinder-piston units are controlled with control valves (61, 62), with which a differential switch can be selected as one form of use of the drive means.

Claims

1. Method for handling waste material in a pneumatic pipe transfer system, wherein waste material is fed in from an input point into conveying piping, and conveyed in the conveying piping, mainly by the aid of suction/a pressure difference and/or a flow of transporting air, onwards to a separating device (1), in which the waste material to be transported and the transporting air separate from each other, from which separating device the waste material is transferred onwards to a separate waste container (26), c h a r a c t e r i z e d in that waste material is transferred, or is transferred and compressed to become denser, from the separating device (1) into a separate waste container (26) in a connecting channel (9) arranged between them with a transfer member (10), which is moved with a drive device having at least two operating states, from the input aperture (8) of the connecting channel towards the output aperture (9') and onwards into a separate waste container (26), and in which method the connection from the separating device (1) to the connecting channel (9) is closed at least during the detachment of the waste container (26).

2. Method according to claim 1, c h a r a c t e r i z e d in that the transfer member (10) is moved with a drive device (12, 13, 14, 15, 16), which has at least a first operating state, in which waste material is transferred by moving, with the first drive means (12, 13; 73) of the drive device, the transfer member (10) a part of the distance in the connecting channel (9), at least a second operating state, in which waste material is transferred from the connecting channel (9) into the waste container (26) by moving, moved by the second drive means (15, 16; 74) of the drive device, both the first drive means (12,13, 73) and the transfer member (10), and which has at least a third operating state, in which the connection from the separating device (1) to the connecting channel (9) is closed with the shut-off means (27).

3. Method according to claim 2, c h a r a c t e r i z e d in that the shut-off means (27), preferably an edge (28), is used to cut a detrimental object (30) that is in the connecting channel and causing a blockage or preventing movement of the transfer member.

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 shut-off means (27) is moved with a second drive means (15, 16).

5. Method according to claim 4, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) is connected with a coupling part (18) to a moving part of the second drive means (15, 16; 74) for moving along with it.

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 shut-off means (27) is brought to be placed against the walls of the chamber (9) in the proximity of the input aperture (8) of the chamber.

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 drive device is supported on the bottom wall of the connecting channel, e.g. with a support roller (20) that reduces friction.

8. Method according to any of claims 1 – 7, c h a r a c t e r i z e d in that a partial vacuum is maintained in the separating device (1) and/or the separating device is maintained in operation also during the detachment/replacement of a separate waste container (26).

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 separate waste container (26) is detached from the connection with the connecting channel (9) when the shut-off means (27) is in the closing position.

10. Method according to any of claims 1 – 9, c h a r a c t e r i z e d in that in the method an exhaust air duct (23) is opened when a separate waste container (26) is connected to the connecting channel (9), for achieving a partial vacuum in the connecting channel and/or in the separate waste container after connection of the container.

11. Method according to any of claims 1 - 10, c h a r a c t e r i z e d in that in the method waste material, more particularly household waste material, is transferred from the separating device via the connecting channel into a separate waste container.

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 cylinder-piston units are used as drive means (12, 13; 73; 15, 16; 74), which cylinder-piston units are controlled with control valves (61, 62), with which a differential switch can be selected as one form of use of the drive means.

13. Apparatus for handling material in a pneumatic pipe transport system, which comprises at least one input point, conveying piping and also means for conveying material in the conveying piping, mainly by the aid of suction/a pressure difference and/or a flow of transporting air, into a separating device, where the material to be transported is separated from the transporting air, and also a separate waste container and means (10, 12, 13, 15, 16) for transferring waste material that has accumulated in the separating device (1) from the separating device into the waste container (26), c h a r a c t e r i z e d in that the apparatus comprises a connecting channel (9) arranged between the separating device (1) and a separate waste container (26), in which connecting channel a transfer member (10) and a drive device (12, 13, 14, 15, 16), having at least two operating states, is arranged for moving the transfer member (10) between at least two positions, and in that the apparatus comprises a shut-off means (27) for closing the connection from the separating device (1) to the connecting channel (9) at least during the detachment of the waste container (26).

14. Apparatus according to claim 13, c h a r a c t e r i z e d in that the drive device (12, 13, 14, 15, 16) has a first operating state, in which the transfer member (10) is arranged to be moved with the first drive means (12, 13; 73) of the drive device a part of the distance in the connecting channel (9), a second operating state, in which the second drive means (15, 16; 74) of the drive device is arranged to transfer the first drive means (12,13; 73) and the transfer member (10), and at least one third operating state, in which the shut-off means (27) is arranged to close the connection from the separating device (1) to the connecting channel (9).

15. Apparatus according to any of claims 13 – 14, c h a r a c t e r i z e d in that the shut-off means (27), preferably an edge (28), is configured to function as a cutting means for cutting a detrimental object (30) having an effect in the connecting channel (9).

16. Apparatus according to any of claims 13 – 15, c h a r a c t e r i z e d in that the shut-off means (27) is configured to be moved with a second drive means (15, 16; 74).

17. Apparatus according to any of claims 13 – 16, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) is connected with a coupling part (18) to a moving part of the second drive means (15, 16; 74) for moving along with it.

18. Apparatus according to any of claims 13 – 17, c h a r a c t e r i z e d in that the shut-off means (27) is arranged on the coupling part (18) for moving along with it.

19. Apparatus according to any of claims 13 – 18, c h a r a c t e r i z e d in that the apparatus comprises means for placing the shut-off means (27) against the walls of the connecting channel (9) in the proximity of the input aperture (8) of the connecting channel.

20. Apparatus according to any of claims 13 – 19, c h a r a c t e r i z e d in that a means that reduces friction, e.g. a support roller (20), is arranged on the drive device.

21. Apparatus according to any of claims 13 – 20, c h a r a c t e r i z e d in that an exhaust air duct (23) is arranged in the connecting channel, for achieving a partial vacuum in the connecting channel (9) after connection of the waste container (26).

22. Apparatus according to any of claims 13 – 21, c h a r a c t e r i z e d in that the first drive means (12, 13; 73) and/or the second drive means (15, 16; 74) is a cylinder-piston unit, which cylinder-piston units are controlled with control valves (61, 62), with which a differential switch can be selected as one form of use of the drive means.