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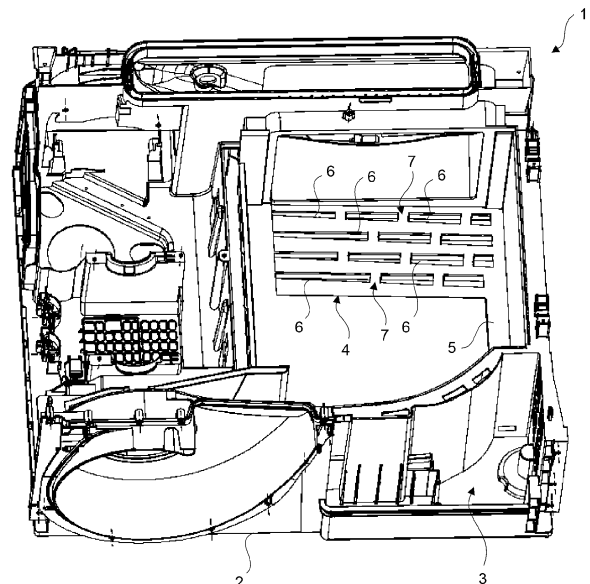
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(54) **A LAUNDRY DRYER**

(57) The present invention relates to a dryer (1) comprising a body (2); a drum wherein the laundry to be dried is placed; an air circulation duct which enable the drying air to be sent to the laundry in the drum; at least one heat exchanger which is provided on the air circulation duct and which enables the temperature of the drying air to be changed; at least one filter which retains fiber, lint and dust in the drying air; a tank wherein the condensate is collected; a discharge channel (4) which has a flat bottom and wherein the water mixed with the fiber, lint and dust draining from the filter and the heat exchanger washed by the water taken from the tank is collected; a receptacle (3); a transfer member (5) which is connected to the discharge channel (4) at one end and connected to the receptacle (3) at the other end and which connects the discharge channel (4) and the receptacle (3) to each other so as to enable the fluid coming from the discharge channel (4) to be transferred to the receptacle (5); and at least one protrusion (6) which is provided on the bottom of the discharge channel (4) so as to be separated from each other by a certain distance, and which forms grooves between the wall of the discharge channel (4) and the protrusion (6), through which the water can flow.

Figure 1



Description

[0001] The present invention relates to a laundry dryer wherein the fiber, lint and dust accumulating on components such as heat exchanger, filter, etc. are removed.

[0002] While the laundry is being dried in the laundry dryer, fiber, lint and dust break off from the laundry particularly due to mechanical effects. In state of the art laundry dryers, most of these particles are collected by means of one or more than one filter provided in the laundry dryer. Thus, said particles are prevented from accumulating on components such as heat exchanger, etc. The water, which is evaporated from the laundry and condensed in the heat exchanger during the drying cycle, is collected in a tank in the laundry dryer.

[0003] In the state of the art, the use of the water collected in the tank for the cleaning of components such as the filter, the heat exchanger, etc. is disclosed. In these embodiments, the water received from the tank collects the undesired particles on the components being cleaned and continues its circulation.

[0004] Fiber, lint and dust are removed by washing components such as filter, heat exchanger, etc. These particles removed should be transferred to the tank together with water. During this process, while the water containing particles therein is sucked by the discharge pump and pumped into the discharge channel, the particles in the water may accumulate at the narrow sections of the discharge channel and at the suction port of the discharge pump. In this case, the outlet of the discharge pump gets clogged. When a pipe with a larger diameter is used at the outlet of the discharge pump, the fiber, lint and dust can be transferred to the tank together with water without causing clogging. However, when the discharge pump stops operating, the water remaining between the tank and the discharge pump moves in the reverse direction into the discharge channel with the effect of gravity. When a hose with a small diameter is used in order to decrease the amount of water which moves in the reverse direction, the outlet of the discharge pump is clogged.

[0005] In the state of the art, there are various embodiments for facilitating the discharge of fiber, lint and dust accumulating on components such as filter, heat exchanger, etc. after the washing of these components.

[0006] In the state of the art International Patent Applications No. WO2012146533 and WO2012146534, a dryer is disclosed, comprising a discharge channel which is disposed between the evaporator and the condenser and which enables the condensate received from the evaporator to be transferred to the discharge pump so as to be discharged.

[0007] In state of the art embodiments wherein the discharge channel is used, the discharge channel is filled with fiber, lint and dust over time, and thus, the water flow from the discharge channel towards the tank cannot be performed efficiently, and the discharge channel may even get clogged completely.

[0008] In the state of the art German Patent Application No. DE102008054832, a dryer is disclosed, comprising a hose enabling the water accumulated in the discharge channel to be received and transferred into the tank.

[0009] The aim of the present invention is the realization of a laundry dryer wherein the discharge channel is prevented from getting clogged and the water is transferred into the tank.

[0010] The dryer realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a discharge channel with a flat bottom; a receptacle; a transfer member which connects the discharge channel to the receptacle, which is connected to the discharge channel at one end and to the receptacle at the other end so as to enable the fluid coming from the discharge channel to be transferred to the receptacle; and at least one protrusion which is provided on the bottom of the discharge channel at predetermined intervals so as to form grooves between the wall of the channel and the protrusion through which the water can flow. Thus, the protrusion divides the bottom into at least two partitions. Thus, the water which accumulates in the discharge channel is enabled to be directed more effectively towards the transfer member and consequently, to the receptacle. The water is enabled to leave the discharge channel at the same amount entering the discharge channel, and a homogeneous flow is provided in the discharge channel by means of the structure formed with the use of the protrusions, and alternative flow paths are created against any possible clogging.

[0011] In the embodiment of the present invention, at least two parallel lines of protrusions are provided on the bottom so as to be separated from each other for a certain distance in the horizontal direction. Intermediate discharge channels are formed between each two protrusions on the same line. Thus, the water which accumulates in the discharge channel is enabled to be directed more effectively towards the transfer member and consequently, to the receptacle. Consequently, the water is enabled to leave the discharge channel at the same amount entering the discharge channel. Moreover, a homogeneous flow is provided in the discharge channel by means of the structure formed using the protrusions and alternative flow routes paths are created against any possible clogging.

[0012] In the preferred embodiment of the present invention, the dryer comprises a plurality of protrusions arranged at predetermined distances on four parallel lines, forming intermediate discharge gaps.

[0013] In another embodiment of the present invention, the dryer comprises at least one protrusion which extends throughout the base in a parallel manner, and at least one opening on the protrusion, joining with the base. In this embodiment, the openings formed on the protrusion function as intermediate discharge channels.

[0014] By means of the present invention, the water which accumulates in the discharge channel is enabled

to be directed more effectively towards the transfer member and consequently, to the receptacle. The water is enabled to leave the discharge channel at the same amount entering the discharge channel, and a homogeneous flow is provided in the discharge channel by means of the structure formed with the use of the protrusions, and alternative flow paths are created against any possible clogging.

[0015] The dryer realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the perspective view of a discharge channel, a transfer member and protrusions.

Figure 2 - is the top view of the discharge channel, the transfer member and the protrusions.

[0016] The elements illustrated in the figures are numbered as follows:

1. Dryer
2. Body
3. Receptacle
4. Discharge channel
5. Transfer member
6. Protrusion
7. Intermediate discharge channel

[0017] The dryer (1) comprises a body (2); a drum wherein the laundry to be dried is placed; an air circulation duct which enable the drying air to be sent to the laundry in the drum; at least one heat exchanger which is provided on the air circulation duct and which enables the temperature of the drying air to be changed; at least one filter which retains fiber, lint and dust in the drying air; a tank wherein the condensate is collected; a discharge channel (4) which has a flat bottom and wherein the water mixed with the fiber, lint and dust draining from the filter and the heat exchanger washed by the water taken from the tank is collected; a receptacle (3); a transfer member (5) which is connected to the discharge channel (4) at one end and connected to the receptacle (3) at the other end and which connects the discharge channel (4) and the receptacle (3) to each other so as to enable the fluid coming from the discharge channel (4) to be transferred to the receptacle (5); and at least one protrusion (6) which is provided on the bottom of the discharge channel (4) so as to be separated from each other by a certain distance, and which forms grooves between the wall of the discharge channel (4) and the protrusion (6), through which the water can flow. Thereby, the protrusion (6) divides the bottom into at least two partitions. Thus, the water which accumulates in the discharge channel (4) is enabled to be directed more effectively towards the transfer member (5) and consequently, to the receptacle (3). The water is enabled to leave the discharge channel (4) at the same amount entering the discharge channel (4), and a homogeneous flow is provided in the discharge channel

(4) by means of the structure formed with the use of the protrusions (6), and alternative flow paths are created against any possible clogging.

[0018] In the laundry dryer (1) of the present invention, the water taken from the tank is directed onto components such as the filter, the heat exchanger, etc. The water which drains from the washed components and flows into the discharge channel (4) and which is mixed with fiber, lint and dust is transferred back to the tank.

[0019] In the embodiment of the present invention, at least two parallel lines of protrusions (6) are provided on the bottom, so as to be separated from each other by a certain distance in the horizontal direction. Intermediate discharge channels (7) are formed between each two protrusions (6) on the same line. Thus, the water which accumulates in the discharge channel (4) is enabled to be directed more effectively towards the transfer member (5) and consequently, to the receptacle (3). Thereby, the water is enabled to leave the discharge channel (4) at the same amount entering the discharge channel (4). Furthermore, a homogeneous flow is provided in the discharge channel (4) by means of the structure formed with the use of the protrusions (6), and alternative flow paths are created against any possible clogging.

[0020] In the preferred embodiment of the present invention, the dryer (1) comprises a plurality of protrusions (6) arranged at predetermined distances on four parallel lines, forming the intermediate discharge channels (7).

[0021] In another embodiment of the present invention, the dryer (1) comprises at least one protrusion (6) which extends along the base in a parallel manner and at least one opening on the protrusion (6), joining with the base. In this embodiment, the openings formed on the protrusion (6) function as intermediate discharge channels (7).

[0022] In an embodiment of the present invention, the dryer (1) comprises a water line which functions as the transfer member (5).

[0023] In another embodiment of the present invention, the dryer (1) comprises a hose which functions as the transfer member (5).

[0024] By means of the present invention, the water which accumulates in the discharge channel (4) is enabled to be directed more effectively towards the transfer member (5) and consequently, to the receptacle (3). The water is enabled to leave the discharge channel (4) at the same amount entering the discharge channel (4), and a homogeneous flow is provided in the discharge channel (4) by means of the structure formed with the use of the protrusions (6), and alternative flow paths are created against any possible clogging.

Claims

1. A dryer (1) comprising a body (2); a drum wherein the laundry to be dried is placed; an air circulation duct which enable the drying air to be sent to the laundry in the drum; at least one heat exchanger

which is provided on the air circulation duct and which enables the temperature of the drying air to be changed; at least one filter which retains fiber, lint and dust in the drying air; a tank wherein the condensate is collected; a discharge channel (4) which has a flat bottom and wherein the water mixed with the fiber, lint and dust draining from the filter and the heat exchanger washed by the water taken from the tank is collected; a receptacle (3); a transfer member (5) which is connected to the discharge channel (4) at one end and connected to the receptacle (3) at the other end and which connects the discharge channel (4) and the receptacle (3) to each other so as to enable the fluid coming from the discharge channel (4) to be transferred to the receptacle (5); **characterized by** at least one protrusion (6) which is provided on the bottom of the discharge channel (4) so as to be separated from each other by a certain distance, and which forms grooves between the wall of the discharge channel (4) and the protrusion (6), through which the water can flow.

2. A dryer (1) as in Claim 1, **characterized by** the protrusion (6) which divides the bottom of the discharge channel (4) into at least two partitions.
3. A dryer (1) as in Claim 1 and 2, **characterized by** at least two parallel lines of protrusions (6) which are provided on the bottom of the discharge channel (4), so as to be separated from each other by a certain distance in the horizontal direction.
4. A dryer (1) as in any one of the above claims, **characterized by** intermediate discharge channels (7) which are formed between each two protrusions (6) on the same line.
5. A the dryer (1) as in Claim 4, **characterized by** a plurality of protrusions (6) arranged at predetermined distances on four parallel lines, forming the intermediate discharge channels (7).
6. A dryer (1) as in Claim 1, **characterized by** at least one opening provided on the protrusion (6), joining with the bottom.

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Figure 1

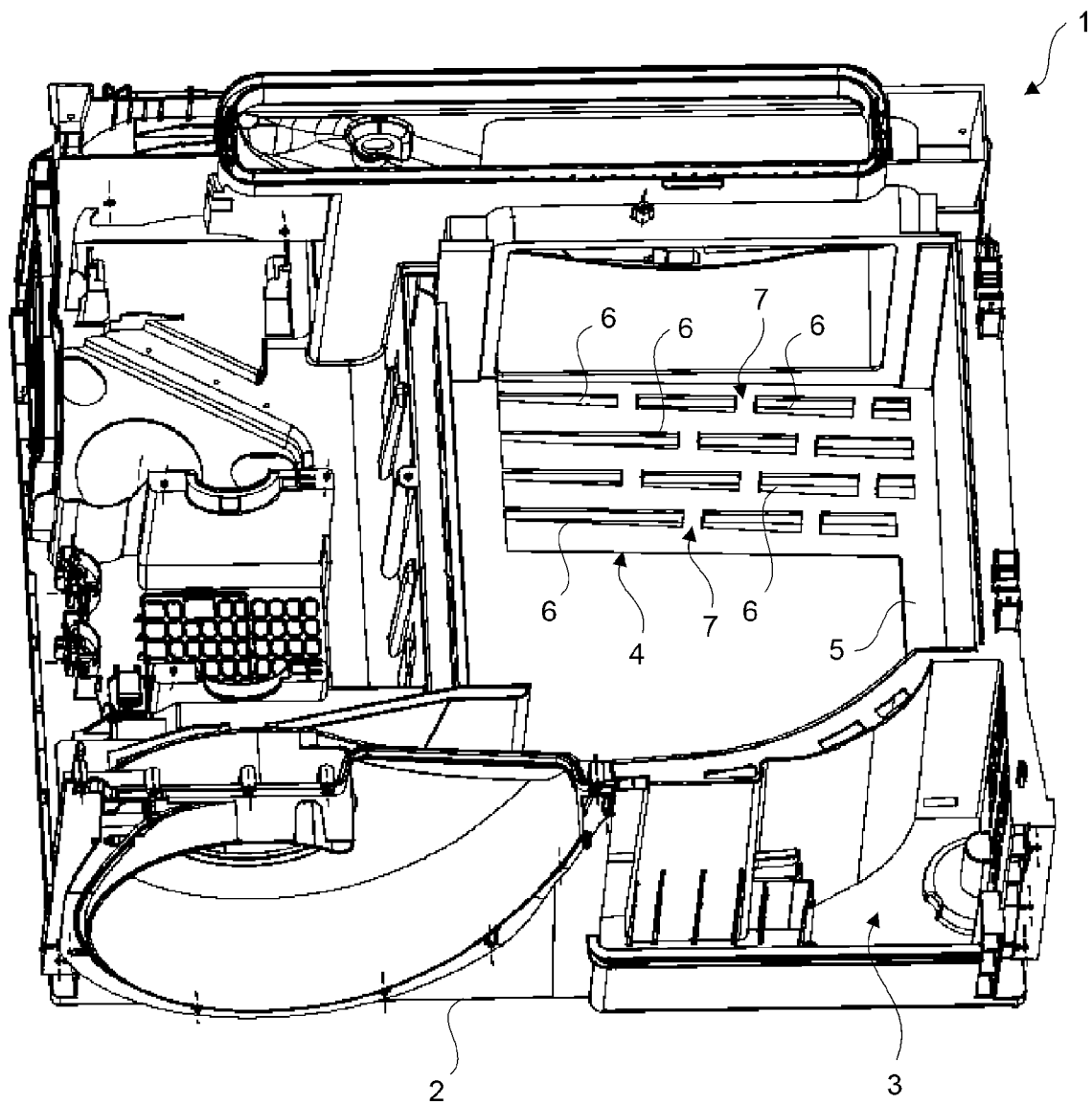
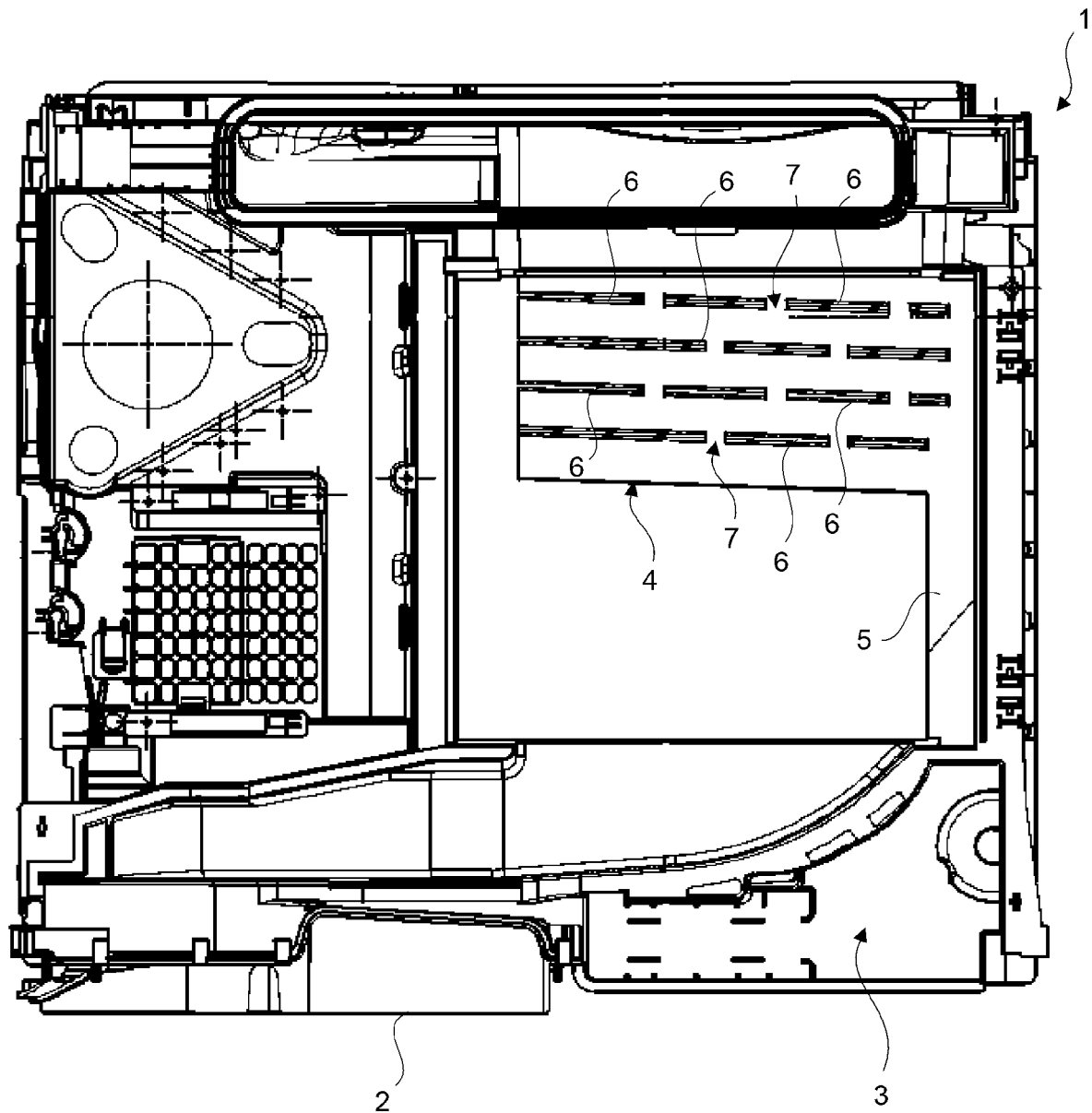


Figure 2





EUROPEAN SEARCH REPORT

Application Number
EP 20 21 0338

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 3 366 827 A1 (WHIRLPOOL CO [US]) 29 August 2018 (2018-08-29) * paragraph [0033] - paragraph [0035]; figures 11-13 *	1-5	INV. D06F58/22 D06F58/24
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 February 2021	Examiner Diaz y Diaz-Caneja
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 20 21 0338

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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