

(19)



(11)

EP 3 786 342 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.03.2021 Bulletin 2021/09

(51) Int Cl.:
D06F 58/22 ^(2006.01) **D06F 58/02** ^(2006.01)

(21) Application number: **20187395.7**

(22) Date of filing: **23.07.2020**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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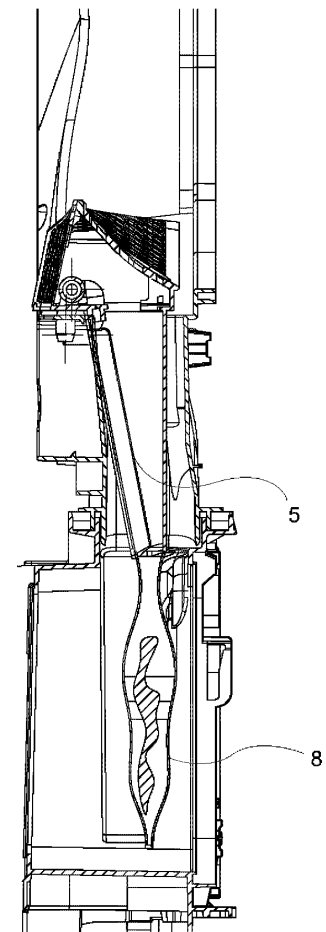
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(30) Priority: **28.08.2019 TR 201913069**

(54) **A DRYER**

(57) The present invention relates to a dryer (1) comprising a body (2); a drum (3) wherein the laundry to be dried is loaded; an air circulation duct (4) for circulating the drying air which dries the laundry in the drum (3); at least one filter (5) which retains the particles in the drying air such as fibers, lint, etc.; a water line (6) which delivers water to the filter (5); and a nozzle (7) which is arranged on the filter (5) and which is connected to the water line (6).

Figure 2



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Description

[0001] The present invention relates to a dryer comprising a filter which retains particles such as fiber, lint, dust, etc. in the drying air.

[0002] In dryers, the air heated by various methods is directed into the drum containing the items to be dried and is sucked back to in the heating cycle. During this circulation of air, particles such as fiber, lint, dust, etc. must be filtered. Therefore, various filters are developed for filtering said particles in dryers. Said filters produced from various materials are disposed in the dryer on the circulation path of the air. Accumulation of the particles retained by means of the filters during the circulation of air adversely affects the flow rate of the drying air and hence the drying performance. Therefore, during the drying cycle said filters are required to be periodically cleaned and removed from the cycle of the drying air. Embodiments are known wherein the filters are cleaned by being sprayed with water by means of nozzles. However, lints washed with water become muddy when accumulated and create an unpleasant view for the user. Furthermore, the fibers may clog the pump which discharges the water.

[0003] In the state of the art European Patent Application No. EP2938777, a dryer is disclosed, wherein the filter retaining the fibers is washed. EP3149237

[0004] In the state of the art European Patent Application No. EP3149237, a dryer is disclosed, wherein the accumulated fibers are broken down by means of a water jet.

[0005] The aim of the present invention is the realization of a dryer wherein the fibers washed away from the filter are collected cleanly.

[0006] 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 sieve which is attached under the filter and wherein the fibers washed away from the filter are collected. The fibers are collected in the sieve and thus, the user replaces or cleans the sieve by removing the same from its place. The sieve is preferably a water-permeable structure, and the water flowing from the filter flows downwards without being collected in the sieve. Thus, only the fibers are collected in the sieve.

[0007] In an embodiment of the present invention, the sieve covers only a portion of the cross-section of the air circulation duct through which the drying air circulates, which is perpendicular to the direction of the flow. By means of this embodiment, the air circulation duct is not blocked and the drying air is enabled to flow even when the sieve is full. Thus, the drying performance is prevented from decreasing.

[0008] In another embodiment of the present invention, the dryer comprises a squeezing mechanism which compresses the sieve and enables the water thereon to be drained. The sieve is preferably produced from fabric and gets wet despite the water-permeable structure thereof

and holds a certain amount of water. The squeezing mechanism compresses the sieve so as to enable the water to be drained and only the fibers to be retained in the sieve.

[0009] In another embodiment of the present invention, the squeezing mechanism is manually controlled by the user. The user enables the water on the sieve to be drained by means of the squeezing mechanism during the drying process or when the sieve is required to be removed.

[0010] In another embodiment of the present invention, the squeezing mechanism is controlled by means of a control unit provided in the dryer. The control unit operates the squeezing mechanism during the drying process so as to enable the water on the sieve to be drained and the sieve to remain dry at the end of the drying process.

[0011] By means of the present invention, the fibers which accumulate on the filter are cleaned and collected in the sieve and the user is allowed to clean the dryer by removing the sieve without touching the fibers. The sieve does not block the air circulation duct and thus is prevented from decreasing the drying performance. Furthermore, by draining the water on the sieve by means of the squeezing mechanism, the performance is prevented from decreasing due to wetness during the drying process.

[0012] A dryer realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the schematic view of a dryer.

Figure 2 - is the sideways cross-sectional view of the filter and the sieve in an embodiment of the present invention,

Figure 3 - is the sideways cross-sectional view of the squeezing mechanism having plates in an alternative embodiment of the present invention,

Figure 4 - is the sideways cross-sectional view of the sieve compressed by the plates in an alternative embodiment of the present invention,

Figure 5 - is the sideways cross-sectional view of the squeezing mechanism having cylinders in an alternative embodiment of the present invention,

Figure 6 - is the sideways cross-sectional view of the sieve being compressed by the cylinders in an alternative embodiment of the present invention.

[0013] The elements illustrated in the figures are numbered as follows:

1. Dryer
2. Body
3. Drum
4. Air circulation duct
5. Filter
6. Water line
7. Nozzle
8. Sieve

- 9. Squeezing mechanism
- 10. Plate
- 11. Cylinder
- 12. Control unit

[0014] The dryer (1) comprises a body (2); a drum (3) wherein the laundry to be dried is loaded; an air circulation duct (4) for circulating the drying air which dries the laundry in the drum (3); at least one filter (5) which retains the particles in the drying air such as fibers, lint, etc.; a water line (6) which delivers water to the filter (5); and a nozzle (7) which is arranged on the filter (5) and which is connected to the water line (6).

[0015] In the dryer (1), the fibers which are separated from the laundry are collected on the filter (5) disposed on the air circulation duct (4). During or before/after the drying process, the filter (5) is washed with water in order to remove the fibers and lints on the filter (5). The water to be delivered to the filter (5) is supplied through the water line (6). The water line (6) is connected to the nozzle (7) which is arranged on the filter (5). The water inlet of the nozzle (7) is preferably inserted into the water line (6) and thus, leakage during the flow of water is avoided. The fibers on the filter are swept by means of the water pumped through the nozzle (7) and thus, the filter (5) is cleaned. The filter (5) can be removed by the user when needed. The lints swept away from the filter (5) can be collected in a separate receptacle or can be discharged together with water.

[0016] The dryer (1) of the present invention comprises a sieve (8) which is attached under the filter (5) and wherein the fibers drained from the filter (5) are collected. The sieve (8) is positioned under the filter (5) and covers only a portion of the cross-section of the air circulation duct (4). The air circulation duct (4) is prevented from being blocked by the filter (5) by washing the filter (5) and cleaning the fibers thereon during the drying process. As the fibers are collected in the sieve (8) which only partially covers the cross-section of the air circulation duct (4), the air circulation duct (4) is enabled to be open at all times. The cross-section of the air circulation duct (4) allows the smooth passage of the drying air even when the sieve (8) is completely filled. Thus, problems such as increased temperature, decreased efficiency and increased duration of the drying process due to the blockage or narrowing of the air circulation duct (4) especially when laundry which produces too much fibers and lint is desired to be dried are avoided.

[0017] In an embodiment of the present invention, the dryer (1) comprises a squeezing mechanism (9) which is provided in the air circulation duct (4) and which compresses the sieve (8) so as to drain the water thereon. The filter (5) is washed and the water used to move the fibers into the sieve (8) flows onto the sieve (8) as well. The moist in the sieve (8) humidifies the drying air during the drying process and decreases the drying efficiency. The squeezing mechanism (9) compresses the wet sieve (8) and enables the water to be drained. The sieve (8)

from which the water is drained is dried by means of the drying air like an ordinary clothing. The drained water is directly discharged or accumulated in a receptacle to be discharged.

[0018] In another embodiment of the present invention, the squeezing mechanism (9) comprises two plates (10) which are arranged on the two opposite sides of the sieve (8) and a movement mechanism (not shown in figures) which moves the plates (10) towards each other. The plates (10) are oppositely positioned such that the sieve (8) is positioned therebetween. The movement mechanism has a mechanical arm or an electrical means such as a motor or a solenoid, and moves the plates (10) towards each other. The sieve (8) is compressed between the plates (10) and the water retained thereon is drained.

[0019] In a version of this embodiment, the surfaces of the plates (10) are perforated. The water on the compressed sieve (8) is enabled to be discharged more quickly by means of the perforated structure of the plates (10). Furthermore, since the water can flow through a larger surface area, the movement mechanism is enabled to apply a smaller force and thus, the energy consumption is decreased.

[0020] In another embodiment of the present invention, the squeezing mechanism (9) comprises two cylinders (11) which are arranged on the two opposite sides of the sieve (8) and which move from top to bottom so as to compress the sieve (8). The cylinders (11) compress the sieve (8) like a roller and move downwards. Thus, the water on the sieve (8) is drained so as to flow downwards.

[0021] In another embodiment of the present invention, the squeezing mechanism (9) is manually controlled by the user. The user operates the squeezing mechanism (9) by means of a manual arm, etc. to drain the water on the sieve (8) when needed. For example, when the user requires to clean or replace the sieve (8), he/she drains the water accumulated on the sieve (8) by means of the squeezing mechanism (9).

[0022] In another embodiment of the present invention, the dryer (1) comprises a control unit (12) which enables the squeezing mechanism (9) to be operated during the drying process. In this embodiment, the control unit (12) automatically operates the squeezing mechanism (9). The squeezing mechanism (9) can be operated at any other time or during the drying process so as to enable the sieve (8) to be dry at the end of the drying process. Thus, the user does not encounter a wet and unpleasant view when he/she requires to clean or replace the sieve (8).

[0023] By means of the present invention, the fibers removed from the filter (5) are collected in the sieve (8) and the user is prevented from encountering an unpleasant view. Furthermore, by collecting the fibers in the sieve (8), the fibers are dehumidified and bacterial growth due to the presence of moisture is avoided. The hygienic conditions are further improved by means of the squeezing mechanism (9).

Claims

1. A dryer (1) **comprising** a body (2); a drum (3) where-
in the laundry to be dried is loaded; an air circulation
duct (4) for circulating the drying air which dries the
laundry in the drum (3); at least one filter (5) which
retains the particles in the drying air such as fibers,
lint, etc.; a water line (6) which delivers water to the
filter (5); and a nozzle (7) which is arranged on the
filter (5) and which is connected to the water line (6),
characterized by a sieve (8) which is attached under
the filter (5) and wherein the fibers drained from the
filter (5) are collected. 5 10
2. A dryer (1) as in Claim 1, **characterized by** the sieve
(8) which only partially covers the cross-section of
the air circulation duct (4). 15
3. A dryer (1) as in Claim 1 or Claim 2, **characterized
by** a squeezing mechanism (9) which is provided in
the air circulation duct (4) and which compresses the
sieve (8) so as to drain the water thereon. 20
4. A dryer (1) as in Claim 3, **characterized by** the
squeezing mechanism (9) comprising two plates
(10) which are arranged on the two opposite sides
of the sieve (8) and a movement mechanism which
moves the plates (10) towards each other. 25
5. A dryer (1) as in Claim 4, **characterized by** the plates
(10) having perforated surfaces. 30
6. A dryer (1) as in Claim 3, **characterized by** the
squeezing mechanism (8) comprising a pair of cyl-
inders (11) which are arranged on the two opposite
sides of the sieve (8) and which move from top to
bottom so as to compress the sieve (8). 35
7. A dryer (1) as in any one of the Claims 3 to 6, **char-
acterized by** the squeezing mechanism (9) which is
manually controlled by the user. 40
8. A dryer (1) as in any one of the Claims 3 to 6, **char-
acterized by** a control unit (12) which enables the
squeezing mechanism (9) to be controlled. 45
9. A dryer (1) as in Claim 8, **characterized by** the con-
trol unit (12) which enables the squeezing mecha-
nism (9) to be operated during the drying process. 50

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Figure 1

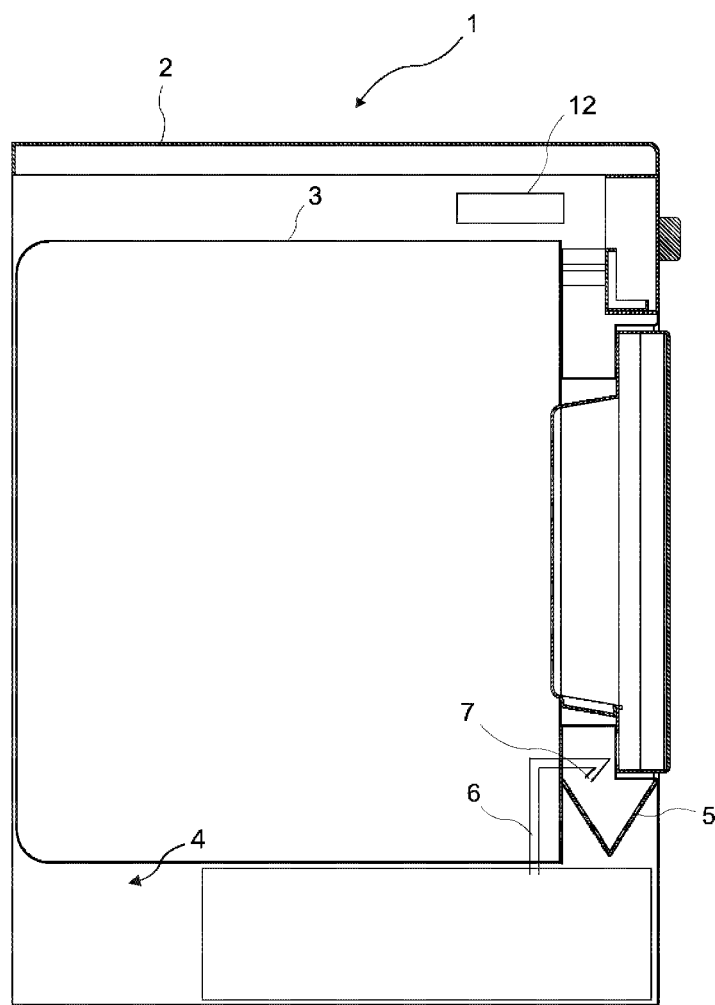


Figure 2

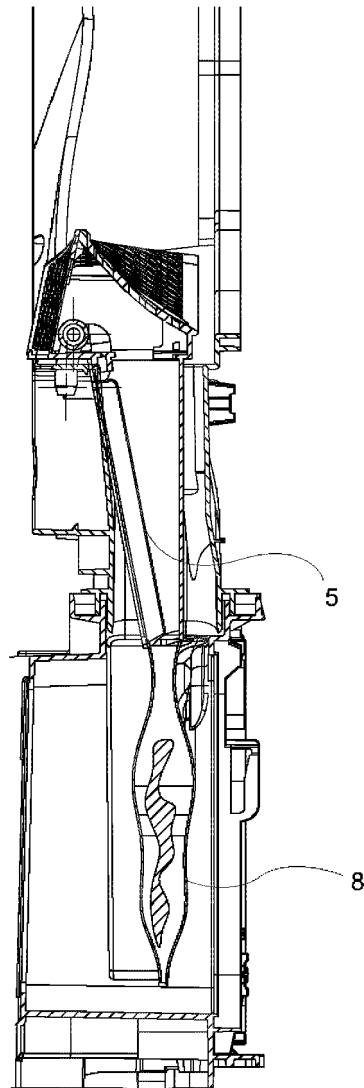


Figure 3

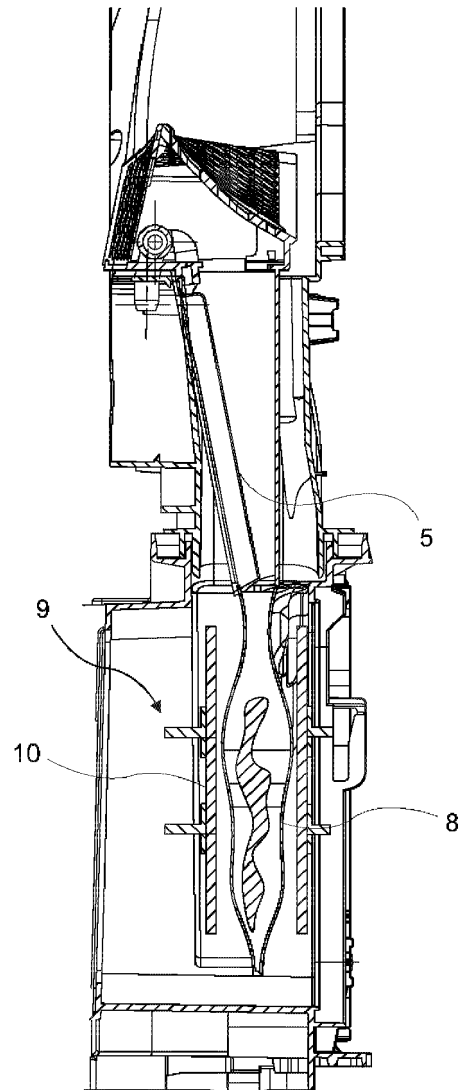


Figure 4

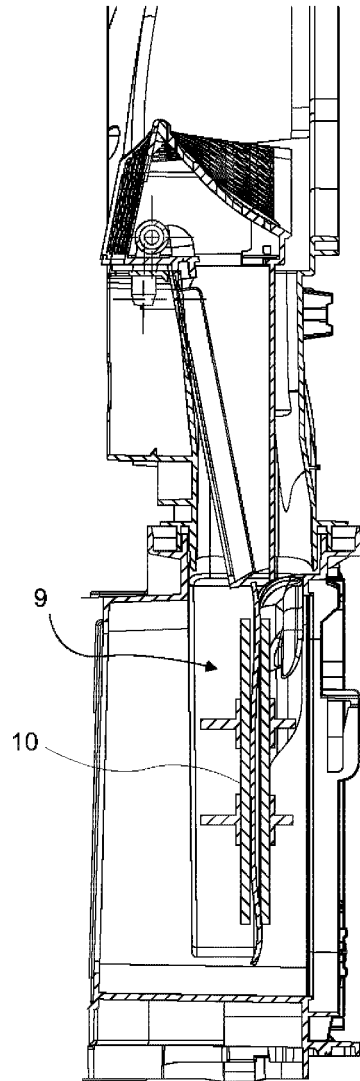


Figure 5

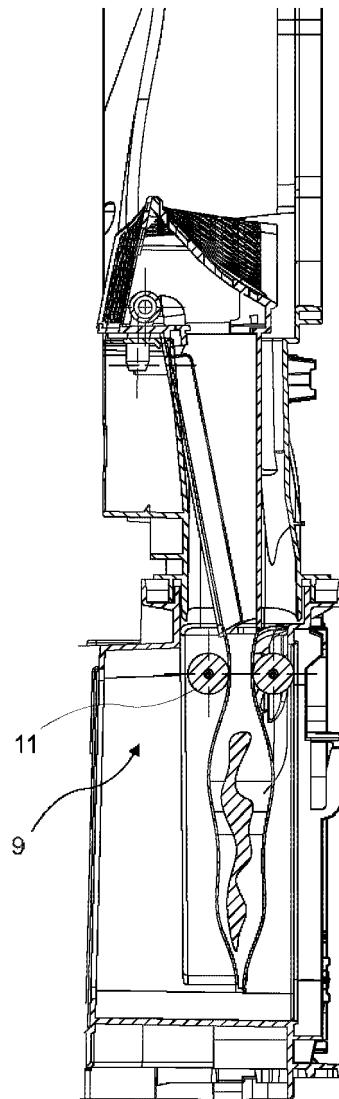
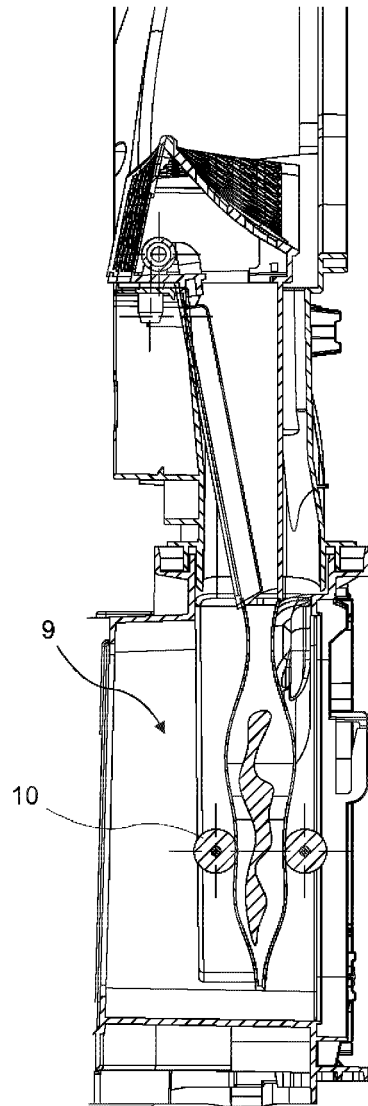


Figure 6





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 Application Number
 EP 20 18 7395

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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 14 December 2020	Examiner Werner, Christopher
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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