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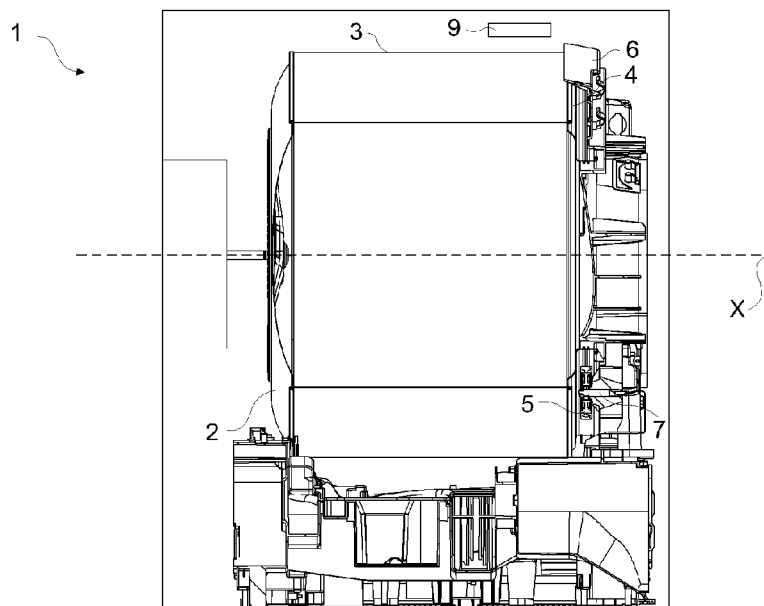
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(54) Title: A DRYER COMPRISING A DRUM THE FRONT BEARING OF WHICH IS PERFORMED BY WHEELS

Figure 1



(57) Abstract: The present invention relates to a dryer (1) comprising a horizontal axis drum (2) which can rotate around itself and which has a cylindrical body (3) and a ring-shaped front wall (4) that forms the front surface of the body (3), and more than one wheel (5) whereon the front wall (4) is seated, disposed such that there is at least one on each of the both sides of the drum (2), and which has a rotational axis parallel with the rotational axis (X) of the drum (2), and supports the drum (2) by rotating around itself during the drying process by the rotational movement of the drum (2).



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Description**A DRYER COMPRISING A DRUM THE FRONT BEARING OF WHICH IS
PERFORMED BY WHEELS**

- [0001] The present invention relates to a dryer wherein amount of laundry loaded into the drum is determined.
- [0002] As it is known, in dryers, laundry to be dried is loaded into a drum. The drying process is performed by this drum being driven and rotated by a motor. Determining the amount of laundry loaded into the drum is important in terms of the application of drying algorithms. Parameters such as drying type, drying time change as per the amount of the laundry desired to be dried.
- [0003] Various embodiments for determining the amount of laundry loaded into the drum are present in the state of the art. However, it is critical to find low-cost solutions while determining the said amount.
- [0004] In one of the state of the art embodiments, United States of America Patent Application US2010011614, a dryer wherein the amount and dryness of the laundry is detected is explained.
- [0005] The aim of the present invention is the realization of a dryer wherein the amount of laundry loaded into the drum is determined.
- [0006] In the dryer realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, the drum rotates on the wheels against which the front wall bears. The wheels are borne on the bearing member by means of a shaft rotating around itself. The dryer of the present invention, furthermore, comprises a strain gauge disposed on the shaft, that measures the amount of deformation occurring on the shaft due to the weight of the laundry loaded into the drum. The shaft is bent downwards due to the weight of the laundry loaded into the drum. Because of the bending in the shaft, the shaft elongates. The strain gauge disposed on the shaft measures the elongation occurring on the shaft and consequently the amount of laundry loaded into the drum is calculated. Thus, the amount of laundry loaded into the drum is determined by means of a low-cost and simple method.
- [0007] In an embodiment of the present invention, the strain gauge is

longitudinally disposed on the shaft. Since the laundry loaded into the drum causes deformation on the shaft in the direction of the rotational axis of the shaft, the strain gauge is provided to detect this deformation.

- [0008] In another embodiment of the present invention, the dryer comprises a control unit that detects the amount of laundry loaded into the drum according to the data received from the strain gauge and that defines the drying parameters.
- [0009] In another embodiment of the present invention, elongation values predetermined by the producer corresponding to various laundry amounts measured by the strain gauge are recorded in the control unit memory. The control unit determines the amount of laundry loaded into the drum by comparing the elongation value measured by the strain gauge during the drying process with the elongation values recorded in the memory thereof.
- [0010] In various embodiments of the present invention, parameters such as drying time, drying temperature, fabric type, fan speed are determined according to the laundry amount data calculated depending on the elongation value received from the strain gauge.
- [0011] The dryer realized in order to attain the aim of the present invention are illustrated in the attached figures, where:
- [0012] Figure 1 – is the schematic view of a dryer.
- [0013] Figure 2 – is the rear perspective view of the bearing member and the rollers.
- [0014] Figure 3 – is the perspective view of the wheel and the shaft.
- [0015] Figure 4 – is the perspective view of the wheel, the shaft and the strain gauge.
- [0016] The elements illustrated in the figures are numbered as follows:
1. Dryer
 2. Drum
 3. Body
 4. Front wall
 5. Wheel
 6. Bearing member
 7. Shaft

8. Strain gauge

9. Control unit

[0017] The dryer (1) of the present invention comprises a drum (2) that is rotated around its own horizontal axis (X) (Figure 1). The dryer (1) of the present invention is a horizontal axis dryer (1).

[0018] The drum (2) comprises a cylindrical body (3), and a ring-shaped front wall (4) forming the front surface of the body (3) (Figure 1).

[0019] The dryer (1), furthermore, comprises

- more than one wheel (5) whereon the front door (4) is seated and which has a rotational axis parallel to the rotational axis (X) of the drum (2), and supports the drum (2) by rotating around itself during the drying process by the rotational movement of the drum (2),
- a bearing member (6) whereon the wheels (5) are borne by being mounted thereon,
- shafts (7), each providing each wheel (5) to be rotatably mounted to the bearing member (6),

[0020] The drum (2) is borne into the body (3) by means of preferably two wheels (5) disposed on the front wall (4) and a shaft (7) disposed at the center of the rear wall of the drum (2). Some portion of the weight of the laundry loaded into the drum (2) is carried by the shaft (7) behind the drum (2) and some by the wheels (5).

[0021] The dryer (1) of the present invention, furthermore, comprises a strain gauge (8) disposed on the shaft (7), that provides the measuring of the elongation occurring on the shaft (7) due to the weight that the laundry loaded into the drum (2) causes on the wheel (5). Since some portion of the weight of the laundry loaded into the drum (2) is carried by the wheels (5), deformation occurs on the shaft (7) when laundry is loaded into the drum (2). In other words, when laundry is loaded into the drum (2), the shaft (7) is bent downwards with respect to its rotational axis. Thus, an elongation is formed on the upper lateral surface of the shaft (7). The amount of the laundry loaded into the drum (2) is determined by the moment calculation made by using the elongation amount measured by the strain gauge (8). Thus, the amount of laundry loaded into the drum (2)

is determined by means of a low-cost and simple method.

- [0022] In an embodiment of the present invention, the strain gauge (8) is disposed on the shaft (7) so as to extend parallel to the rotational axis of the shaft (7). Since the weight of the laundry loaded into the drum (2) causes an elongation on the shaft (7) in a direction parallel to the rotational axis of the shaft (7), reliability of the measurement performed by the strain gauge (8) increases.
- [0023] In another embodiment of the present invention, the dryer (1) comprises a control unit (9) that detects the amount of laundry loaded into the drum (2) according to the data received from the strain gauge (8) and that regulates the drying process. Since the amount of laundry loaded into the drum (2) is determined by means of the strain gauge (8), the control unit (9) determines the drying parameters according to the amount of laundry. Thus, both the drying performance of the dryer (1) is improved and also energy saving is provided by optimizing the drying time.
- [0024] In another embodiment of the present invention, the control unit (9) has a memory wherein laundry amount values corresponding to various elongation values occurring on the shaft (7) are recorded and the control unit (9) determines the amount of laundry loaded into the drum (2) by comparing the elongation values received from the strain gauge (8) with the values recorded in the memory thereof. The elongation values predetermined as the result of experimental studies undertaken by the producer, corresponding to different amounts of laundry and measured by the strain gauge (8) are recorded in the memory of the control unit (9). During the drying of the laundry, the strain gauge (8) transmits the information on the amount of elongation occurred on the shaft (7) to the control unit (9). The control unit (9) determines the amount of laundry in the drum (2) by comparing the elongation values in the memory thereof with the value measured by the strain gauge (8).
- [0025] In another embodiment of the present invention, the control unit (9) detects the amount of laundry loaded into the drum (2) according to the data received from the strain gauge (8) and hence determines the drying time. Determining the drying time depending on the laundry amount provides

the drying time to be optimized. When a small amount of laundry is loaded into the drum (2), the drying time is shortened and thus energy saving is provided.

[0026] In another embodiment of the present invention, the control unit (9) detects the amount of laundry loaded into the drum (2) according to the data received from the strain gauge (8) and hence determines the drying temperature.

[0027] By means of the present invention, the amount of laundry loaded into the drum (2) is determined and the drying performance of the dryer (1) is improved by determining the drying algorithm depending on the amount of laundry.

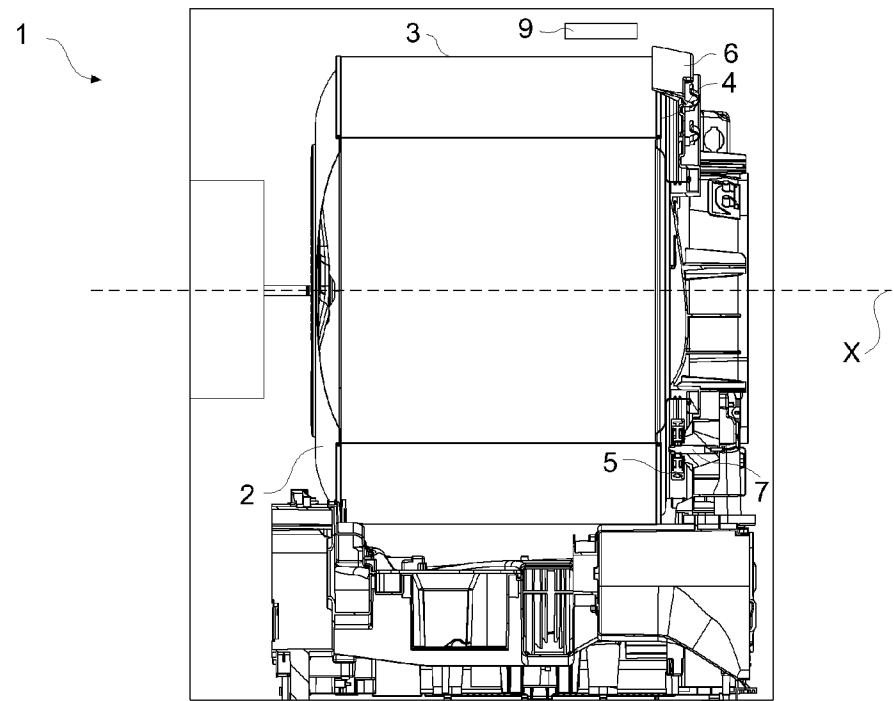
[0028] It is to be understood that the present invention is not limited by the embodiments disclosed above and a person skilled in the art can easily introduce different embodiments. These should be considered within the scope of the protection postulated by the claims of the present invention.

Claims

1. A dryer (1) comprising
 - a horizontal axis drum (2) which can rotate around itself, and which has a cylindrical body (3) and a ring-shaped front wall (4) that forms the front surface of the body (3),
 - more than one wheel (5) whereon the front wall (4) is seated and which has a rotational axis parallel to the rotational axis (X) of the drum (2), and supports the drum (2) by rotating around itself during the drying process by the rotational movement of the drum (2),
 - a bearing member (6) whereon the wheels (5) are borne by being mounted thereon,
 - shafts (7), each providing each wheel (5) to be rotatably mounted to the bearing member (6),**characterized by** a strain gauge (8) disposed on the shaft (7), that provides the measuring of the elongation occurring on the shaft (7) due to the weight that the laundry loaded into the drum (2) causes on the wheel (5).
2. A dryer (1) as in Claim 1, **characterized by** the strain gauge (8) disposed so as to extend parallel to the rotational axis of the shaft (7).
3. A dryer (1) as in Claim 1 or 2, **characterized by** a control unit (9) that determines the amount of the laundry loaded into the drum (2) according to the data received from the strain gauge (8) and that regulates the drying process.
4. A dryer (1) as in any one of the above claims, **characterized by** the control unit (9) that has a memory wherein laundry amount values corresponding to various elongation values occurring on the shaft (7) are recorded and that determines the amount of laundry loaded into the drum (2) by comparing the elongation value received from the strain gauge (8) with the values recorded in the memory thereof.
5. A dryer (1) as in any one of the above claims, **characterized by** the control unit (9) that determines the amount of the laundry loaded into the drum (2) according to the data received from the strain gauge (8) and hence that determines the drying time.
6. A dryer (1) as in any one of the claims 1 to 5, **characterized by** the control unit (9) that determines the amount of the laundry loaded into the drum (2)

according to the data received from the strain gauge (8) and hence that determines the drying temperature.

Figure 1



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Figure 3

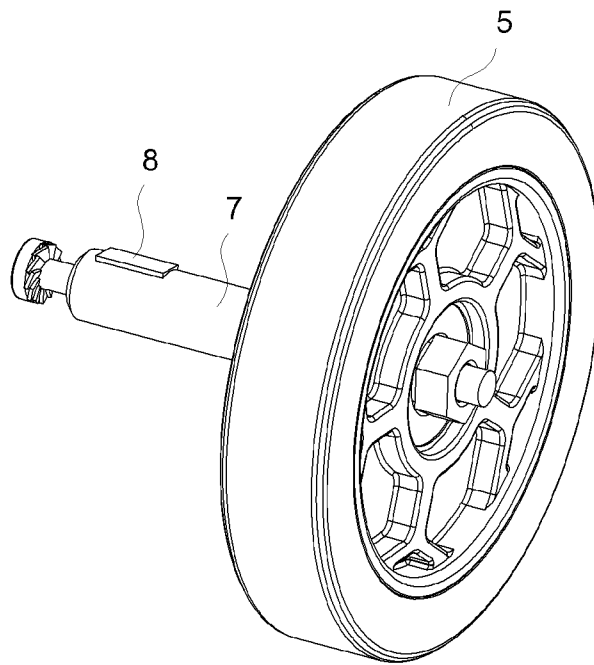


Figure 4

