

(19)



(11)

EP 1 996 757 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
20.01.2010 Bulletin 2010/03

(21) Application number: **07726981.9**

(22) Date of filing: **16.03.2007**

(51) Int Cl.:
D06F 58/08 ^(2006.01) **D06F 37/30** ^(2006.01)

(86) International application number:
PCT/EP2007/052501

(87) International publication number:
WO 2007/107512 (27.09.2007 Gazette 2007/39)

(54) **A WASHER/DRYER**

WASCHTROCKNER

LAVE-LINGE/SECHE-LINGE

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

(30) Priority: **17.03.2006 TR 200601257**

(43) Date of publication of application:
03.12.2008 Bulletin 2008/49

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Description

[0001] The present invention relates to a washer/dryer wherein the electric motor that drives the drum is prevented from excessive heating.

[0002] In washer/dryers, the motors that provide the actuation of the drums can go above the temperature values designated in standards as a result of high voltage or overload. The thermal protector that is used to protect the motor from overheating is energized when the predetermined temperature value is reached and stops the motor by cutting off the current delivered to the motor. Even though the motor is protected by the thermal protector from overheating, it operates under strain for a long while and the motor windings are damaged. The increase in the motor temperature reduces the start up torque and increases the possibility of rotor locking and the frequent repeating of this condition results in the decrease of the motor service life.

[0003] In the United States of America patent document no. US5187954, in a washing machine the motor movement is transmitted to the tub by means of a motor pulley and a belt, and blades are provided on the pulley connected to the motor shaft for cooling the motor.

[0004] In the Japanese patent document no. US 5187954, the explanation is given for a cooling fan attached to the motor shaft and coupled by a one-way clutch.

[0005] In the Japanese patent document no. JP3215295, the motor cooling fan is directly mounted on the motor axle.

[0006] In the European patent document no. EP1209277, in a heat-pump clothes drying machine, the motor that drives the drum is also connected to a first fan which circulates the drying air that cools the compressor.

[0007] The aim of the present invention is the realization of a washer/dryer wherein the electric motor that drives the drum is prevented from overheating by means of a simple device without the requirement for consuming extra energy.

[0008] The washer/dryer realized in order to attain the aim of the present invention is explicated in the attached claims.

[0009] In the washer/dryer, the tightness of the belt that rotates the drum driven by an electric motor and wherein laundry is loaded is adjusted by an idler pulley so that it can function with the required tension and blades are arranged on the idler pulley that move together with the idler pulley preventing overheating of the motor by blowing air thereupon during its operation.

[0010] In an embodiment of the present invention, the blades that are situated on the idler pulley extend in between the frame contacting the belt and the hub, while in another embodiment they are situated on a blade support ring adjacent to the pulley and with a larger diameter such that they can sweep an area larger than the diameter of the frame that the belt contact.

[0011] By means of the embodiment of the present in-

vention, the overheating of the motor is prevented in a cost effective manner without consuming extra energy or materials.

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

[0013] Figure 1 - is the schematic view of the drum, the motor and the belt situated in the washer/dryer.

[0014] Figure 2 - is the schematic view of an idler pulley.

[0015] Figure 3 - is the schematic view of the drum, motor and the belt situated in the washer/dryer in another embodiment of the present invention.

[0016] Figure 4 - is the schematic view of an idler pulley in another embodiment of the present invention.

[0017] The elements illustrated in the figures are numbered as follows:

[0018] 1. Washer/dryer

[0019] 2. Drum

[0020] 3. Motor

[0021] 4. Motor pulley

[0022] 5. Belt

[0023] 6. Idler pulley

[0024] 7. Hub

[0025] 8. Frame

[0026] 9. Blade

[0027] 10. Blade support ring

[0028] The washer/dryer (1) comprises a drum (2) wherein the laundry is loaded, a motor (3) that activates the drum (2) providing its rotation, a motor pulley (4) attached to the motor (3) shaft, a belt (5) that transmits the motor (3) drive from the motor pulley (4) to the drum (2) and an idler pulley (6) that provides to increase the tightness of the belt (5) and the friction surface of the belt (5) on the motor pulley (4) and the drum (2) by exerting pressure on the belt (5) so that the belt (5) operates with the required tightness, and when the belt (5) is moved by the motor (3), making a rotational movement by means of the friction effect between the belt (5) and itself.

[0029] The idler pulley (6) comprises a hub (7) that provides it to be rotatably housed on a shaft preferably situated on the motor (3) casing and a frame (8) that is in contact with the belt (5). The idler pulley (6) rotates around the shaft it is housed, actuated by the belt (5) to which the frame (8) contacts and presses on, as long as the motor (3) operates.

[0030] The washer/dryer (1) comprises more than one blade (9) situated on the idler pulley (6), rotating together with the idler pulley (6) and preventing the overheating of the motor (3) by blowing air over the motor (3) during its rotation.

[0031] In an embodiment of the present invention, the blades (9) extend between the hub (7) and the frame (8) (Figures 1-2).

[0032] In this embodiment, the blades (9) also serve as a support between the hub (7) of the idler pulley (6) and its frame (8) and provide the body of the idler pulley (6) to get lighter and thus savings in material.

[0033] In another embodiment of the present invention, the idler pulley (6) comprises a blade support ring (10) that surrounds the blades (9), around the same hub (7) axis and having a greater diameter than the frame (8) (Figures 3-4).

[0034] In this embodiment, the blade support ring (10) is preferably produced in a single piece with the frame (8), rotates together with the frame (8) thus increasing the area swept and the amount of air blown by the blades (9) providing a more effective cooling of the motor (3). In this embodiment, the idler pulley (6) is furthermore driven via the blade support ring (10) by means of an additional transmission element, e.g. a second belt, and serves as a reduction gear providing to decrease the speed of the motor (3) being transmitted to the drum (2).

[0035] In the washer/dryer (1), before the motor (3) starts operating, the idler pulley (6) and the tightness of the belt (5) are pre-adjusted so that the belt (5) presses on the maximum amount of friction area on the motor pulley (4) and the drum (2) surface and increases the efficiency of the motion transmission. The idler pulley (6) is rotatably housed from its hub (7) on a shaft. When the motor (3) operates, the idler pulley (6) makes a rotational movement by means of the belt (5) rotated via the motor pulley (4) or another transmission element. The blades (9) situated on the idler pulley (6) rotate together with the idler pulley (6) and cooling of the motor (3) is provided.

[0036] By means of the embodiment of the present invention, air is blown on the motor (3) and overheating is prevented by forming blades (9) on the existing idler pulley (6) that serves to tighten the belt (5) without constructing an additional mechanism and requiring (extra) energy consumption.

Claims

1. A washer/dryer (1) comprising a drum (2) wherein the laundry is loaded, a motor (3) that activates the drum (2) providing its rotation, a motor pulley (4) attached to the motor (3) shaft, a belt (5) that transmits the motor (3) drive from the motor pulley (4) to the drum (2) and an idler pulley (6) that provides to increase the tightness of the belt (5) by exerting pressure on the belt (5) and **characterized by** more than one blade (9) situated on the idler pulley (6), rotating together with the idler pulley (6) and preventing the overheating of the motor (3) by blowing air over the motor (3) during its rotation.
2. A washer/dryer (1) as in Claim 1, **characterized by** an idler pulley (6) comprising a hub (7) for housing it and a frame (8) that contacts the belt (5) and blades (9) that extend between the hub (7) and the frame (8).
3. A washer/dryer (1) as in Claim 1, **characterized by** an idler pulley (6) comprising hub (7) for housing it, a frame (8) that contacts the belt (5) and a blade

support ring (10) that surrounds the blades (9), on the same hub (7) axis and with a greater diameter than the frame (8).

Patentansprüche

1. Wasch-/Trockenmaschine (1), umfassend eine Trommel (2), in die die Wäsche geladen wird, einen Motor (3), der die Trommel (2) durch das Vorsehen ihrer Drehung aktiviert, eine Motorriemenscheibe (4), die an der Welle des Motors (3) befestigt ist, einen Riemen (5), der die Antriebskraft des Motors (3) von der Motorriemenscheibe (4) auf die Trommel (2) überträgt, und eine Spannrolle (6), die vorsieht, die Straffheit des Riemens (5) zu erhöhen, indem sie Druck auf den Riemen (5) ausübt, und **gekennzeichnet durch** mehrere Schaufeln (9), die an der Spannrolle (6) angeordnet sind, und die sich zusammen mit der Spannrolle (6) drehen und ein Überhitzen des Motors (3) verhindern, indem sie während ihrer Drehung Luft über den Motor (3) blasen.
2. Wasch-/Trockenmaschine (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Spannrolle (6) eine Nabe (7) umfasst, die sie aufnimmt, und einen Rahmen (8), der in Kontakt mit dem Riemen (5) gelangt, und Schaufeln (9), die sich zwischen der Nabe (7) und dem Rahmen (8) erstrecken.
3. Wasch-/Trockenmaschine (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Spannrolle (6) eine Nabe (7) umfasst, die sie aufnimmt, einen Rahmen (8), der in Kontakt mit dem Riemen (5) gelangt, und auf der gleichen Achse der Nabe (7) einen Schaufelstützring (10), der die Schaufeln (9) umgibt, und dessen Durchmesser größer ist als der des Rahmens (8).

Revendications

1. Une machine à laver/séchoir (1) comprenant un tambour (2) où le linge est chargé, un moteur (3) qui démarrant le tambour (2) et lui permettant de tourner, une poulie de moteur (4) attachée à l'axe de moteur (3), une courroie (5) qui transmet l'entraînement par moteur (3) de la poulie de moteur (4) au tambour (2) et une poulie guide (6) qui permet d'accroître la tension de la courroie (5) en appliquant une pression sur la courroie (5) et **caractérisée par** plus d'une lame (9) situé sur la poulie guide (6), tournant avec la poulie guide (6) et empêchant la surchauffe du moteur (3) en soufflant l'air sur le moteur (3) pendant la rotation de celui-ci.
2. Une machine à laver/séchoir selon la Revendication 1, **caractérisée par** une poulie guide (6) compre-

nant un moyeu (7) pour la loger et un cadre (8) qui contacte avec la courroie (5) et les lames (9) qui s'étend entre le moyeu (7) et le cadre (8).

3. Une machine à laver/séchoir selon la Revendication 1, **caractérisée par** une poulie guide (6) comprenant un moyeu (7) pour la loger et un cadre (8) qui contacte avec la courroie (5) et un anneau de soutien de lame (10) qui encercle les lames (9), au même axe du moyeu et avec un diamètre plus grand que le cadre (8).

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Figure 1

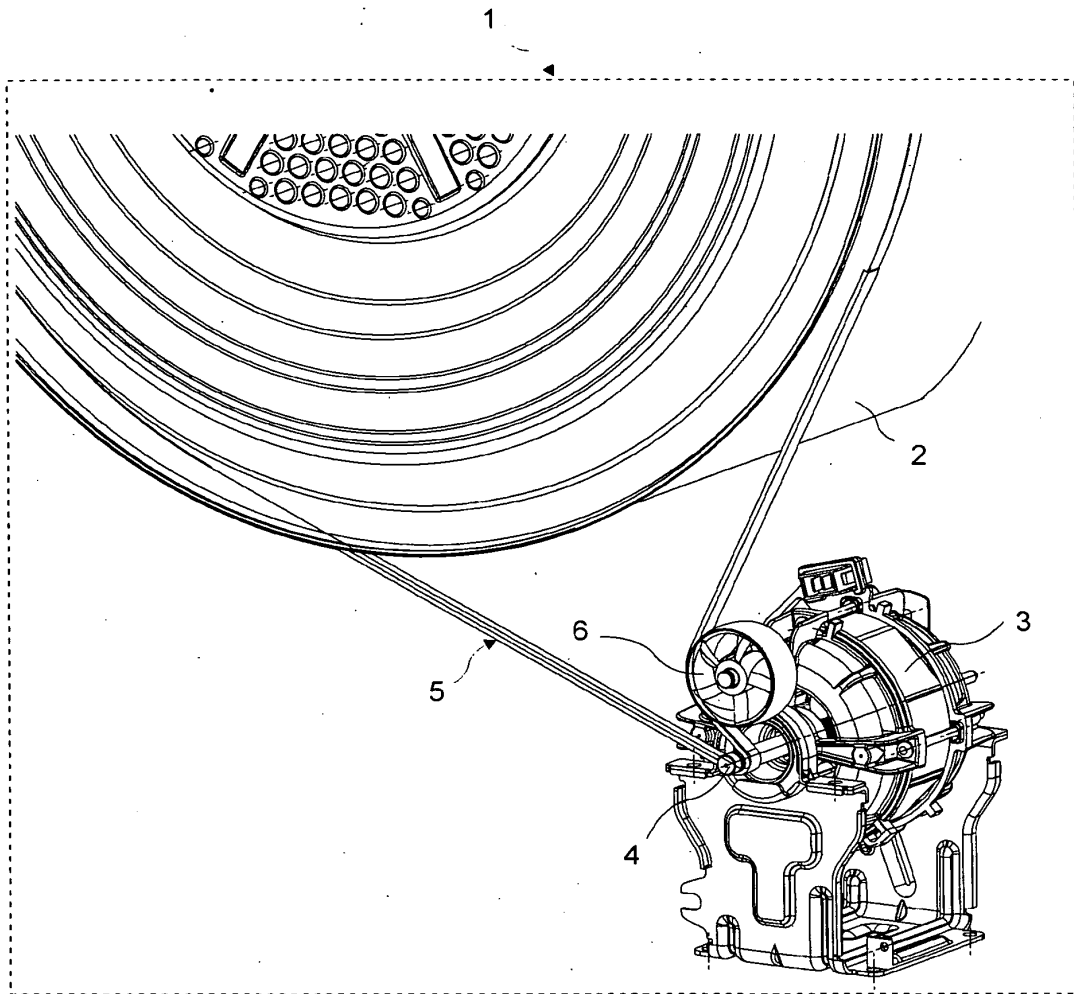


Figure 2

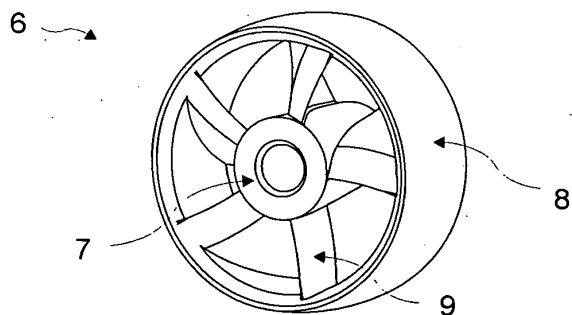
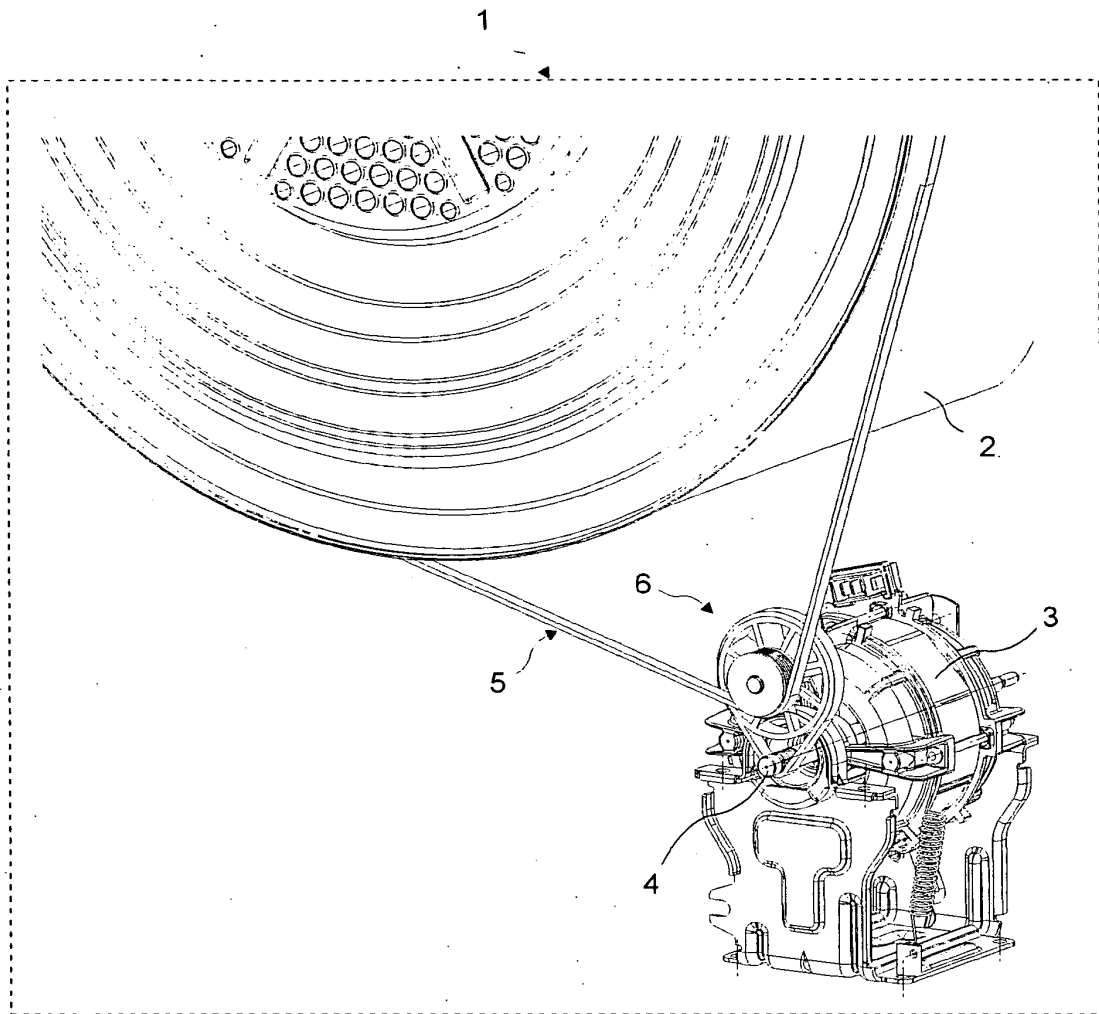
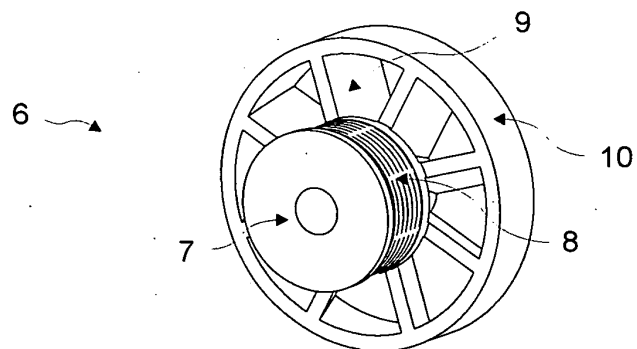


Figure 3



[Fig.]

Figure 4



REFERENCES CITED IN THE DESCRIPTION

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