(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 June 2016 (23.06.2016)

WIPO | PCT

(10) International Publication Number
WO 2016/098019 A1

(51) International Patent Classification:
D06F 58/28 (2006.01) *D06F 35/00* (2006.01)
D06F 25/00 (2006.01)

(21) International Application Number:
PCT/IB2015/059681

(22) International Filing Date:
16 December 2015 (16.12.2015)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
TO2014A001074 19 December 2014 (19.12.2014) IT

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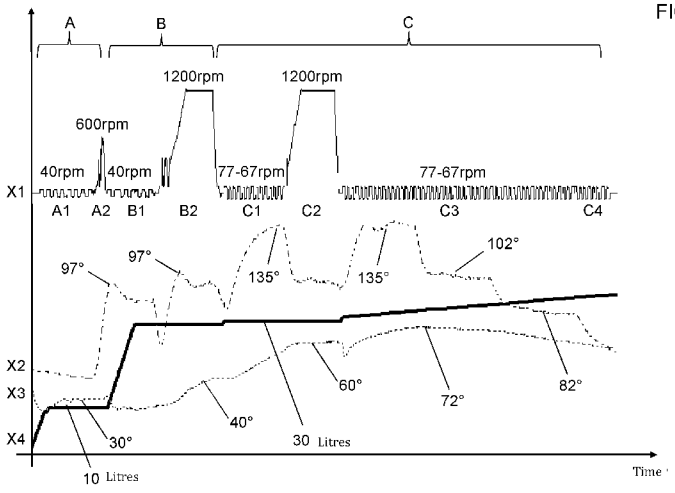
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*

(54) Title: METHOD FOR CONTROLLING A MACHINE ADAPTED TO PERFORM AT LEAST A DRYING CYCLE, AND MACHINE CONFIGURED TO CARRY OUT SAID METHOD

FIG. 2



(57) Abstract: Method for controlling a machine adapted to carry out at least one drying cycle, said machine comprising: a) a drum (10) mounted on a frame (100) and rotatable relative to said frame by an actuator (30), said drum (10) being adapted to house laundry to be dried; b) a drying system (60) for drying laundry items loaded in said drum (10); wherein said method comprises a drying cycle (C) comprising a main step wherein: a) said drum (10) is rotated in a manner such that the laundry loaded therein will stay in a suspended condition for a predetermined time; b) during said predetermined time, said drying system (60) is activated in order to promote a flow of drying air through said drum (10).

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METHOD FOR CONTROLLING A MACHINE ADAPTED TO PERFORM AT LEAST ONE DRYING CYCLE, AND MACHINE CONFIGURED TO CARRY OUT SAID METHOD

DESCRIPTION

[TECHNICAL FIELD]

The present invention relates to a method for controlling a machine adapted to carry out at least one drying cycle.

The present invention also relates to a machine configured so as to execute said method.

Said machine being, for example, a drying machine or a washing/drying machine.

[PRIOR ART]

As it is known, drying machines and washing/drying machines are adapted to carry out drying operations, wherein the drum in which the laundry items are loaded is rotated and/or air, preferably hot, flows through said drum.

The Applicant has noticed that the distribution of laundry inside the drum, during the drying operations, plays a very important role.

The Applicant, in particular, has verified that, if the laundry is not evenly distributed, the drying operation can be partially ineffective and/or demand excessively long execution times. Indeed, if the laundry items are, for example, crammed together, the drying air flow can not reach effectively all laundry items. Moreover, if each item is not sufficiently stretched or "opened", some parts of it cannot be properly reached by drying air.

The Applicant has thus found that, by properly adjusting the force applied to the load through the rotation of the drum, it is possible to achieve the optimisation of the laundry load distribution, aimed at drying said laundry. The idea underlying the present invention consists in controlling the rotation of the drum, so that the laundry items stay in a so-called suspended condition, i.e. a condition in which they are distributed along the inner circumferential surface of the drum, being rotatably dragged by it, without however being pressed against such surface with excessive intensity.

In this way, it is possible to optimise the efficiency of the drying air flow, making the drying operation more effective and/or quick.

It is thus an object of the present invention a method for controlling a machine adapted to carry out at least one drying cycle, said machine comprising:

a) a drum mounted on a frame and rotatable relative to said frame by an actuator, said drum being adapted to house laundry to be dried;

b) a drying system for drying laundry items loaded in said drum;

wherein said method comprises a drying cycle comprising a main step wherein:

i. said drum is rotated in a manner such that the laundry loaded therein will stay in a suspended condition for a predetermined time;

ii. during said predetermined time, said drying system is activated in order to promote a flow of drying air through said drum.

Preferably, the rotation of said drum exerts a centrifugal force comprised between 14 N and 34 N on said laundry.

Preferably, said laundry has a weight comprised between 1.5 kg and 2.5 kg.

Preferably, said drum has a diameter comprised between 450 mm and 500 mm, preferably substantially equal to 480 mm.

Preferably, for laundry having a weight of approx. 1.5 kg, a centrifugal force substantially equal to 14 N is exerted.

Preferably, for laundry having a weight of approx. 2 kg, a centrifugal force substantially equal to 24 N is exerted.

Preferably, for laundry having a weight of approx. 2.5 kg, a centrifugal force substantially equal to approx. 34 N is exerted.

Preferably, said drying cycle comprises:

a) a first operating sub-step, wherein a revolution speed of said drum is preferably comprised between 50 rpm and 80 rpm, said first operating sub-step having a duration preferably comprised between 8 min and 20 min, in particular of approx. 10 min.;

b) a spin sub-step, wherein a revolution speed of said drum is higher than the revolution speed in said first operating sub-step, the revolution speed in the spin sub-step of said drying cycle being preferably comprised between 1,100 rpm and 1,300 rpm, said spin sub-step having a duration preferably comprised between 8 min and 12 min, in particular of approx. 9 min.;

c) a second operating sub-step, wherein a revolution speed of said drum is lower than the revolution speed in the spin sub-step of said drying cycle, said second operating sub-step having a duration preferably comprised between 25 min and 60 min, in particular of approx. 35 min..

Preferably, said main step is carried out through said first operating sub-step and/or said second operating sub-step.

Preferably, in said second operating sub-step, the revolution speed of said drum is variable between a first value and a second value, greater than said first value, said second value being preferably greater than said first value by 10-20%, in particular by approx. 15%.

Preferably, in said first and/or second operating sub-steps, the drum is moved according to a repetition of substantially equal patterns, each one of said patterns comprising:

a) a first rotation, preferably lasting between 15 s and 25 s, at a speed equal to said second value, said first rotation preferably occurring in the same direction as during the spin sub-step of said drying cycle;

b) a plurality of rotations, each one in a direction opposite to that of the previous and/or next rotation, each one preferably lasting between 10 s and 20 s, at a speed equal to said first value, in particular alternated at intervals preferably lasting between 1 s and 5 s, wherein said drum remains substantially still.

Preferably, said first rotation is separated from the previous and/or next rotations by intervals during which said drum remains substantially still, said intervals having a duration preferably comprised between 1 s and 5 s.

Preferably, said machine is a washing/drying machine further comprising:

a) a hydraulic circuit, associated with said drum for supplying to said drum a wash liquid and for removing the latter according to preset work cycles;

b) a first heating device for heating said wash liquid.

Preferably, said drying system comprises:

i. a second heating device, for heating air that must flow through said drum;

ii. an operating member, for promoting the circulation of said air through said drum;

Preferably, said method further comprises the execution of at least one wash and rinse cycle through said hydraulic circuit, prior to said drying cycle.

Preferably, said second heating device is activated during said at least one wash and rinse cycle.

Preferably, said wash and rinse cycle comprises a wash step, said wash step comprising:

a) an operating sub-step, wherein a revolution speed of said drum is preferably comprised between 35 rpm and 45 rpm, said operating sub-step having a duration

preferably comprised between 10 min and 15 min, in particular of approx. 12 min for a load of approx. 2 kg;

b) a spin sub-step, wherein a revolution speed of said drum is higher than the revolution speed in said operating sub-step, the revolution speed in said spin sub-step being preferably comprised between 550 rpm and 650 rpm, said spin sub-step having a duration preferably comprised between 2 min and 5 min, in particular of approx. 3 min..

Preferably, said second heating device is active during said spin sub-step.

Preferably, when said second heating device is active during said at least one wash and rinse cycle, said operating member is also activated.

Preferably, said wash and rinse cycle comprises a rinse step, said rinse step comprising:

a) an operating sub-step, wherein a revolution speed of said drum is preferably comprised between 35 rpm and 45 rpm, said operating sub-step having a duration preferably comprised between 5 min and 10 min, in particular of approx. 7 min for a load of 2 kg;

b) a spin sub-step, wherein a revolution speed of said drum is higher than the revolution speed in the operating sub-step of said rinse step, the revolution speed in the spin sub-step of said rinse step being preferably comprised between 1,100 rpm and 1,300 rpm, said spin sub-step having a duration preferably comprised between 8 min and 12 min, in particular of approx. 9 min..

Preferably, the revolution speed in the spin sub-step of said rinse step is higher than the revolution speed in the spin sub-step of said wash step.

It is a further object of the present invention a machine adapted to carry out at least one drying cycle, comprising:

a) a drum mounted on a frame and rotatable relative to said frame by an actuator, said drum being adapted to house laundry to be dried;

b) a drying system for drying laundry items loaded in said drum;

c) a control unit associated with at least said drum and said drying system for executing said method.

[BRIEF DESCRIPTION OF THE DRAWINGS]

Further features and advantages will become more apparent from the detailed description of a preferred but not exclusive embodiment.

Such description is provided hereafter, by way of non-limiting example, with reference to

the attached figures, the latter also being provided by way of non-limiting example, wherein:

- figure 1 shows a block diagram representative of a washing/drying machine, according to the present invention;
- figure 2 shows a diagram representative of some magnitudes used in the method according to the present invention;
- figure 3 shows a detail of figure 2.

The figures show different aspects and embodiments of the present invention and, where appropriate, structures, components, materials and/or similar elements in different figures are designated by the same reference numerals.

[DETAILED DESCRIPTION OF THE INVENTION]

With reference to the attached figures, 1 generally indicates a machine adapted to carry out at least one drying cycle, according to the present invention.

The machine 1 may be a drying machine or a washing/drying machine.

The machine 1 (figure 1) comprises a frame 100, on which a drum 10, adapted to house laundry to be dried, is rotatably mounted. The drum 10 is rotatable relative to said frame 100 through an actuator 30, for example an electric motor.

The drum 10 is preferably mounted inside a tub 20.

Preferably, in the context of the present invention, a mixed load is inserted into the drum 10, comprising for example cotton items and synthetic fabric items (such as polyester).

Preferably, such load has a weight comprised between 1.5 kg and 2.5 kg, for example substantially equal to 2 kg; however, it must be noticed that loads having a different weight may be also inserted.

The machine 1, in the case of a washing/drying machine, comprises a hydraulic circuit 40, associated with the drum 10 for supplying to said drum 10 a wash liquid and for removing the latter according to preset work cycles. By way of example, the hydraulic circuit 40 may comprise, in a per se known manner, connections to the home water supply network, connection to a discharge network, valves for the management of input/output flows of/from the tub 20, a pump for the recirculation of the wash liquid, a pump for promoting the elimination of the wash liquid by means of said connections to the discharge network, etc.

Depending on the type of operation that must be executed, the wash liquid may comprise

water and/or one or more cleaning agents or substances for the treatment of fabrics.

In the case of a washing/drying machine, a circuit for the elimination of moisture removed from the load is provided. Such circuit is per se known in the art, therefore no further description will be provided.

The machine 1, in the case of a washing/drying machine, also comprises a first heating device 50, realised for example as an electric resistor, conveniently supplied, for heating the wash liquid. Such resistor may be positioned inside the tub 20, for example in a lower portion of the same tub, i.e. in proximity to the bottom edge of the tub.

The machine 1 also comprises a drying system 60 for drying the laundry loaded in the drum 10. Conveniently, the drying system 60 comprises:

i. a second heating device 61, for heating air that must flow through the drum 10; and

ii. an operating member 62, for promoting the circulation of air (also called drying air) through the drum 10.

By way of example, the second heating device 61 may be realised as an electric resistor, conveniently supplied, and positioned so as to intercept the air flow that is expected to flow through the drum 10 during the drying operation.

The operating member 62 may be realised as a fan or a blower, capable of generating an air flow which, after intercepting the second heating device 61, flows through the drum 10 for executing the drying operation.

The machine 1 also comprises a control unit 70, associated with the drum 10 and with the drying system 60, to manage the operation of the machine 1 and, in particular, for executing the method described hereafter.

In the case of a washing/drying machine, the control unit 70 is preferably active also on the hydraulic circuit 40 and on the first heating device 50.

The machine 1 also comprises a condenser (not shown) adapted to condense the moisture present in the air flow coming, during the drying step, from the drum 10.

According to the invention, a drying cycle C is executed.

Conveniently, for executing such drying cycle C said drying system 60 is used.

The drying cycle C comprises a main step, wherein:

a) the drum 10 is rotatable in a manner such that the laundry loaded therein will stay in a suspended condition for a predetermined time;

b) during said predetermined time, said drying system 60 is activated in order to promote a flow of drying air through said drum 10.

Preferably, in said main step, the rotation of the drum 10 exerts a centrifugal force of approx. 14 N to approx. 34 N on the laundry loaded in the drum 10.

In particular, said centrifugal force can be comprised between approx. 20 N and approx. 30 N.

The Applicant has found that, by applying a force of this nature, it is possible to maintain the laundry in a so-called suspended condition, such that the load is "opened" by the higher intensity rotations (revolution speed equal to the second value V2, which will be described hereafter) and then maintained in a suspended condition from the subsequent rotations at a lower speed (first value V1, which will be described hereafter).

The Applicant observes that the load, in this way, is distributed on the inner surface of the drum 10, without being however pressed against such surface. In this way, the load may be optimally arranged and moved, so as to facilitate the drying of laundry, and to prevent the formation of creases.

The Applicant also observes that the suspended condition of load is substantially different compared to the so-called satellite load condition, wherein said load is not rotatably dragged by the inner surface of the drum 10.

Preferably, the drying cycle C has a duration comprised between approx. 50 min. and approx. 70 min.; by way of example, said cycle may have a duration of approx. 60 min., preferably with a load of approx. 2 kg.

Preferably, the drying cycle C may comprise:

a) a first operating sub-step C1, wherein the revolution speed of the drum 10 is preferably comprised between 50 rpm and 80 rpm, said first operating sub-step C1 having a duration preferably comprised between 8 min. and 20 min., in particular of approx. 10 min.;

b) a spin sub-step C2, wherein the revolution speed of said drum is higher than the revolution speed in said first operating sub-step C1; preferably, the revolution speed in this spin sub-step C2 is comprised between 1,100 rpm and 1,300 rpm, in particular it may be equal to approx. 1,200 rpm, said spin sub-step C2 having a duration preferably comprised between 8 min. and 12 min., in particular of approx. 9 min.;

c) a second operating sub-step C3, wherein the revolution speed of the drum 10 is

lower than the revolution speed in the spin sub-step C2 of the drying cycle C, said second operating sub-step C3 having a duration preferably comprised between 25 min. and 60 min., in particular of approx. 35 min.;

d) a cooling sub-step C4 having a duration of approx. 340 s, wherein the drum 10 is kept in the same revolution mode as in the second operating sub-step C3.

Preferably, in the first and/or second operating sub-steps C1, C3, the revolution speed of the drum 10 is variable between a first value V1 and a second value V2, greater than said first value V1; in particular, the second value V2 may be preferably greater than said first value V1 by 10-20%, in particular by approx. 15%.

By way of example, the first value V1 is comprised between 55 rpm and 75 rpm, whereas the second value V2 may be comprised between 70 rpm and 90 rpm; in particular, the first value V1 may be equal to approx. 67 rpm and the second value V2 may be equal to 77 rpm.

Preferably, in the first and/or second operating sub-steps C1, C3, the drum 10 is moved according to a repetition of substantially equal patterns, each one of said patterns P comprising (figure 3):

a) a first rotation, preferably lasting between 15 s and 25 s, at a speed equal to said second value V2, said first rotation preferably occurring in the same direction as during the spin sub-step of said drying cycle;

b) a plurality of rotations, each one preferably lasting between 10 s and 20 s, at a speed equal to said first value V1, alternated at intervals, preferably lasting between 1 s and 5 s, wherein said drum 10 remains substantially still.

Preferably, the first rotation is separated from the previous and/or next rotations by intervals during which said drum remains substantially still. Said intervals preferably having a duration comprised between 1 s and 5 s, for example substantially equal to approx. 2 s.

By way of example, the Applicant has verified that, if the drum 10 has a diameter equal to approx. 480 mm, and the load weight is between 1.5 kg and 2.5 kg, the revolution speed is equal to 77 rpm or 67 rpm, depending on whether the rotation is executed at a higher or slower speed.

Preferably, the above-mentioned main step is obtained by carrying out the first and/or the second operating sub-step C1, C3.

In other words, thanks to the movement of the drum 10, described with reference to the first and/or second operating sub-step C1, C3, it is possible to maintain the load in the above-mentioned suspended condition.

Preferably, during the second operating sub-step C3, a quantity of water is loaded which is not supplied to the tub 20, but it is directed to the above-mentioned condenser, so as to eliminate the moisture inside the tub.

Preferably, the second operating sub-step C3 is divided in:

a first stage, wherein the second heating device 61 is controlled with a target temperature of approx. 135°C, the duration of said first stage being of approx. 11 min. for a load of approx. 2 kg;

a second stage, wherein the second heating device 61 is controlled with a target temperature of approx. 102°C, the duration of said second stage being of approx. 12 min. for a load of approx. 2 kg;

a third stage, wherein the second heating device 61 is controlled with a target temperature of approx. 82°C, the duration of said third stage being of approx. 13 min. for a load of approx. 2 kg.

Advantageously, the second heating device 61, during the second and third stages, is controlled according to the teachings described in the European Patent EP 2516719 B1.

In the cooling sub-step C4, the second heating device 61 is kept turned off, while continuing water supply to the condenser.

Advantageously, the residual moisture of the load at the end of the drying cycle C may be comprised between 5% and 15%; for example, it may be substantially equal to approx. 12%.

Preferably, in the case of a washing/drying machine, the method according to the invention can begin with the execution of at least one wash and rinse cycle A,B through said hydraulic circuit 40 (figure 2), said wash and rinse cycle A,B being prior to said drying cycle C.

Advantageously, the first heating device 50 may also be used for heating, when necessary, the wash liquid.

In figure 2, the curve X1 represents the revolution speed of the drum 10, the curve X2 represents the temperature of the second heating device 61, the curve X3 represents the temperature inside the tub 20, and the curve X4 represents the quantity of water loaded in

the tub 20.

Preferably, the wash and rinse cycle A,B comprises a wash step A, and a rinse step B.

Preferably, the wash step A comprises:

a) an operating sub-step A1, wherein the revolution speed of the drum 10 is preferably comprised between 35 rpm and 45 rpm, said operating sub-step A1 having a duration preferably comprised between 10 min and 15 min., in particular of approx. 12 min for a load of approx. 2 kg;

b) a spin sub-step A2, wherein a revolution speed of the drum 10 is higher than the revolution speed in said operating sub-step A1 of the wash step A; in said spin sub-step A2, the revolution speed of the drum 10 is preferably comprised between 550 rpm and 650 rpm, said spin sub-step A2 having a duration preferably comprised between 2 min and 5 min, in particular of approx. 3 min..

In the operating sub-step A1 of the wash step A, the revolution mode of the drum 10 may comprise a sequence of revolutions, each of one lasting approximately 26-30 seconds, alternated at intervals lasting approx. 1-5 seconds, wherein the drum 10 remains substantially still. Preferably, every time the drum 10 stops, the direction of rotation of said drum 10 is inverted.

By way of example, in the operating sub-step A1 of the wash step A, the drum is rotatable at 40 rpm with intervals of 28 s, separated by intervals of 2 s, wherein the drum 10 remains substantially still.

In the operating sub-step A1 of the wash step A, a quantity of water of approx. 8-12 litres, for example of approx. 10 litres (approx. 5 litres for each kg of load) is preferably loaded inside the tub 20.

In the operating sub-step A1 of the wash step A, the wash liquid, comprising said quantity of water, is maintained at a temperature of approx. 30°C.

During at least one part of the wash and rinse cycle A,B, and in particular in the spin sub-step A2 of the wash step A, the second heating device 61 is kept turned on.

In this way, the assembly constituted by the drum 10 and by the laundry loaded in it, is maintained at a sufficiently high temperature to facilitate the subsequent drying operation.

It must be noticed that, while the second heating device 61 is active, the first heating device 50 is turned off.

Preferably, while the second heating device 61 is active during the spin sub-step A2 of the wash step A, the operating member 62 of the drying system 60 is also activated.

Preferably the rinse step B comprises:

a) an operating sub-step B1, wherein the revolution speed of the drum 10 is preferably comprised between 35 rpm and 45 rpm, said operating sub-step B1 having a duration preferably comprised between 5 min and 10 min, in particular of approx. 7 min for a load of approx. 2 kg;

b) a spin sub-step B2, wherein the revolution speed of the drum 10 is higher than the revolution speed in the operating sub-step B1 of said rinse step B; the revolution speed in this spin sub-step B2 being preferably comprised between 1,100 rpm and 1,300 rpm, in particular it may be equal to 1,200 rpm, said spin sub-step B2 having a duration preferably comprised between 8 min and 12 min, in particular of approx. 9 min..

Preferably, the revolution speed in the spin sub-step B2 of the rinse step B is higher than the revolution speed in the spin sub-step A2 of said wash step A.

Preferably, during the spin sub-step B2 of the rinse step B, the temperature inside the tub 20 in maintained at a value of approx. 35°C-45°C, for example substantially equal to approx. 40°C, by means of the first heating device 50.

Preferably, during the rinse step B a quantity of water of approx. 15-25 litres, for example of approx. 20 litres (approx. 10 litres for each kg of load) is preferably loaded inside the tub 20.

By way of example, the overall consumption of water during the wash and rinse steps A,B can be of approx. 30 litres.

Advantageously, the overall duration of the wash and rinse cycle and of the drying cycle is less than approx. 100 minutes, and preferably less than or equal to approx. 90 minutes.

The invention achieves important advantages.

First of all, the drying of the load is performed in a quick and efficient way.

Furthermore, the subsequent ironing of laundry is facilitated, for both the controlled quantity of residual moisture in the load at the end of the treatment and the maintenance of the load in a suspended condition during the drying step, that allows to minimise the formation of creases.

In addition to the above, with reference to the complete wash, rinse and drying operations, the invention allows to significantly reduce time compared to the cycles

known in the art.

CLAIMS

1. Method for controlling a machine adapted to carry out at least one drying cycle, said machine comprising:

a) a drum (10) mounted on a frame (100) and rotatable relative to said frame by an actuator (30), said drum (10) being adapted to house laundry to be dried;

b) a drying system (60) for drying laundry items loaded in said drum (10);

wherein said method comprises a drying cycle (C) comprising a main step wherein:

a) said drum (10) is rotated in a manner such that the laundry loaded therein will stay in a suspended condition for a predetermined time;

b) during said predetermined time, said drying system (60) is activated in order to promote a flow of drying air through said drum (10).

2. Method according to claim 1, wherein the rotation of said drum (10) exerts a centrifugal force comprised between 14 N and 34 N on said laundry.

3. Method according to claim 1 or 2, wherein said laundry has a weight comprised between 1.5 kg and 2.5 kg.

4. Method according to any one of the preceding claims, wherein said drum (10) has a diameter comprised between 450 mm and 500 mm, preferably substantially equal to 480 mm.

5. Method according to claim 4, wherein, for laundry having a weight of approx. 1.5 kg, a centrifugal force substantially equal to 14 N is exerted.

6. Method according to claim 4, wherein, for laundry having a weight of approx. 2 kg, a centrifugal force substantially equal to 24 N is exerted.

7. Method according to claim 4, wherein, for laundry having a weight of approx. 2.5 kg, a centrifugal force substantially equal to approx. 34 N is exerted.

8. Method according to any one of the preceding claims, wherein said drying cycle (C) comprises:

a) a first operating sub-step (C1), wherein a revolution speed of said drum (10) is preferably comprised between 50 rpm and 80 rpm, said first operating sub-step (C1) having a duration preferably comprised between 8 min and 20 min, in particular of approx. 10 min;

b) a spin sub-step (C2), wherein a revolution speed of said drum (10) is higher than the revolution speed in said first operating sub-step (C1), the revolution speed in the spin

sub-step (C2) of said drying cycle (C) being preferably comprised between 1,100 rpm and 1,300 rpm, said spin sub-step (C2) having a duration preferably comprised between 8 min and 12 min, in particular of approx. 9 min;

c) a second operating sub-step (C3), wherein a revolution speed of said drum (10) is lower than the revolution speed in the spin sub-step (C2) of said drying cycle (C), said second operating sub-step (C3) having a duration preferably comprised between 25 min and 60 min, in particular of approx. 35 min.

wherein said main step is carried out through said first operating sub-step (C1) and/or said second operating sub-step (C3).

9. Method according to claim 7 or 8, wherein, in said second operating sub-step (C2), the revolution speed of said drum (10) is variable between a first value (V1) and a second value (V2) greater than said first value (V1), said second value (V2) being preferably greater than said first value (V1) by 10-20%, in particular by approx. 15%.

10. Method according to claim 9, wherein, in said first and/or second operating sub-steps (C1, C3), the drum (10) is moved according to a repetition of substantially equal patterns (P), each one of said patterns (P) comprising:

a) a first rotation, preferably lasting between 15 s and 25 s, at a speed equal to said second value (V2), said first rotation preferably occurring in the same direction as during the spin sub-step (C2) of said drying cycle (C);

b) a plurality of rotations, each one in a direction opposite to that of the previous and/or next rotation, each one preferably lasting between 10 s and 20 s, at a speed equal to said first value (V1), in particular alternated at intervals preferably lasting between 1 s and 5 s, wherein said drum (10) remains substantially still.

11. Method according to claim 10, wherein said first rotation is separated from the previous and/or next rotations by intervals during which said drum (10) remains substantially still, said intervals preferably having a duration comprised between 1 s and 5 s.

12. Method according to any one of the preceding claims, wherein said machine (1) is a washing/drying machine further comprising:

a) a hydraulic circuit (40), associated with said drum (10) for supplying to said drum (10) a wash liquid and for removing the latter according to preset work cycles;

b) a first heating device (50) for heating said wash liquid;

wherein said drying system (60) comprises:

i. a second heating device (61), for heating air that must flow through said drum (10);

ii. an operating member (62), for promoting the circulation of said air through said drum (10);

wherein said method further comprises the execution of at least one wash and rinse cycle (A,B) through said hydraulic circuit (40), prior to said drying cycle (C);

wherein said second heating device (61) is activated during said at least one wash and rinse cycle (A, B).

13. Method according to claim 12, wherein said wash and rinse cycle comprises a wash step (A), said wash step (A) comprising:

a) an operating sub-step (A1), wherein a revolution speed of said drum (10) is preferably comprised between 35 rpm and 45 rpm, said operating sub-step (A1) having a duration preferably comprised between 10 min and 15 min, in particular of approx. 12 min for a load of approx. 2 kg;

b) a spin sub-step (A2), wherein a revolution speed of said drum (10) is higher than the revolution speed in said operating sub-step (A1), the revolution speed in said spin sub-step (A2) being preferably comprised between 550 rpm and 650 rpm, said spin sub-step (A2) having a duration preferably comprised between 2 min and 5 min, in particular of approx. 3 min.

14. Method according to claim 12 or 13, wherein said second heating device (61) is active during said spin sub-step (A2).

15. Method according to any one of claims 12 to 14, wherein, when said second heating device (61) is active during said at least one wash and rinse cycle (A,B), said operating member (62) is also activated.

16. Method according to any one of claims 12 to 15, wherein said wash and rinse cycle (A,B) comprises a rinse step (B), said rinse step (B) comprising:

a) an operating sub-step (B1), wherein a revolution speed of said drum (10) is preferably comprised between 35 rpm and 45 rpm, said operating sub-step (B1) having a duration preferably comprised between 5 min and 10 min, in particular of approx. 7 min for a load of 2 kg;

b) a spin sub-step (B2), wherein a revolution speed of said drum (10) is higher than

the revolution speed in the operating sub-step (B1) of said rinse step (B), the revolution speed in the spin sub-step (B2) of said rinse step (B) being preferably comprised between 1,100 rpm and 1,300 rpm, said spin sub-step (B2) having a duration preferably comprised between 8 min and 12 min, in particular of approx. 9 min.

17. Method according to claim 16, wherein the revolution speed in the spin sub-step (B2) of said rinse step (B) is higher than the revolution speed in the spin sub-step (A2) of said wash step (A).

18. Machine adapted to carry out at least one drying cycle, comprising:

a) a drum (10) mounted on a frame (100) and rotatable relative to said frame by an actuator (30), said drum (10) being adapted to house laundry to be dried;

b) a drying system (60) for drying laundry items loaded in said drum (10);

c) a control unit (70) associated with at least said drum (10) and said drying system (60) for executing the method according to any one of the preceding claims.

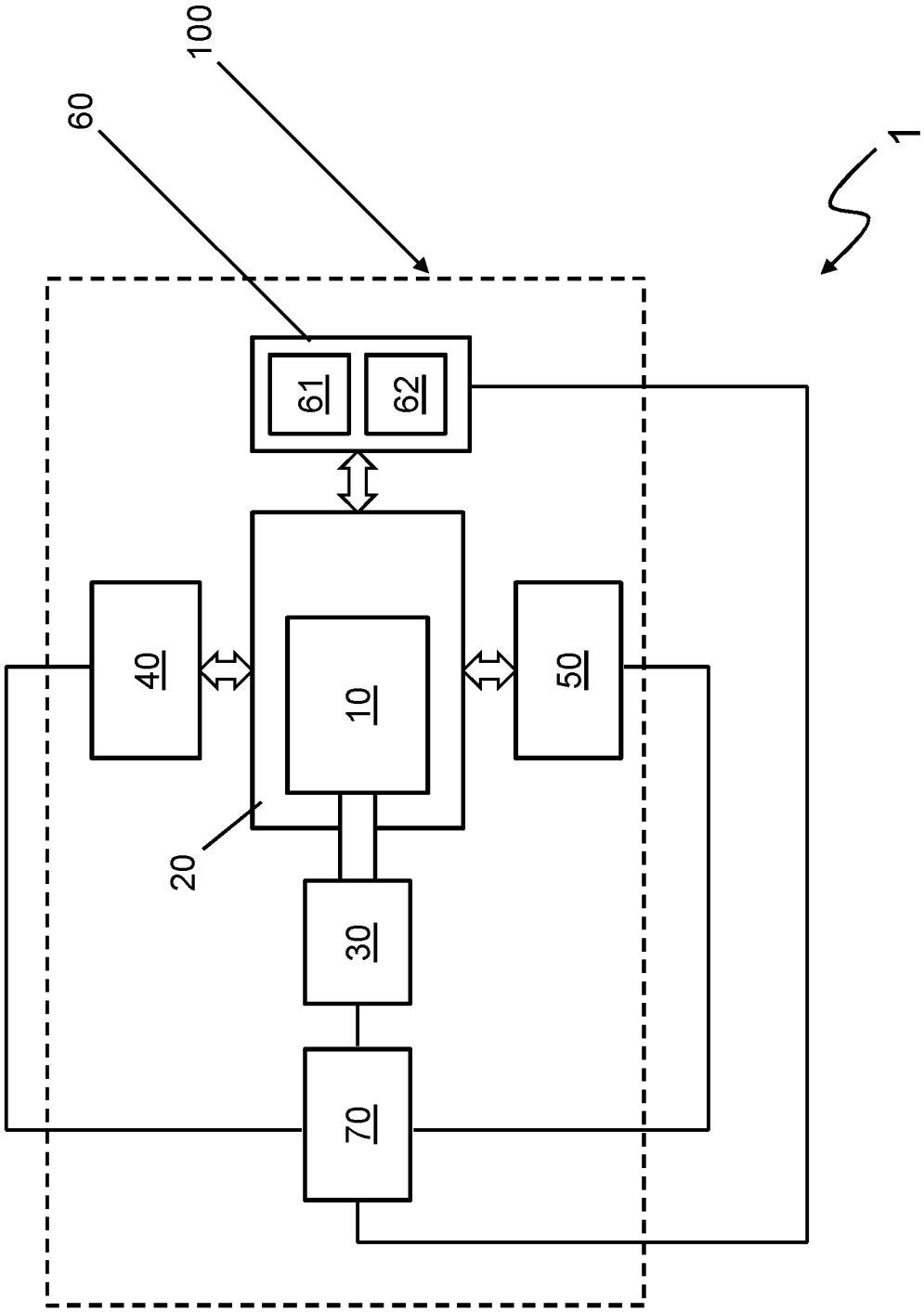


FIG. 1

FIG. 2

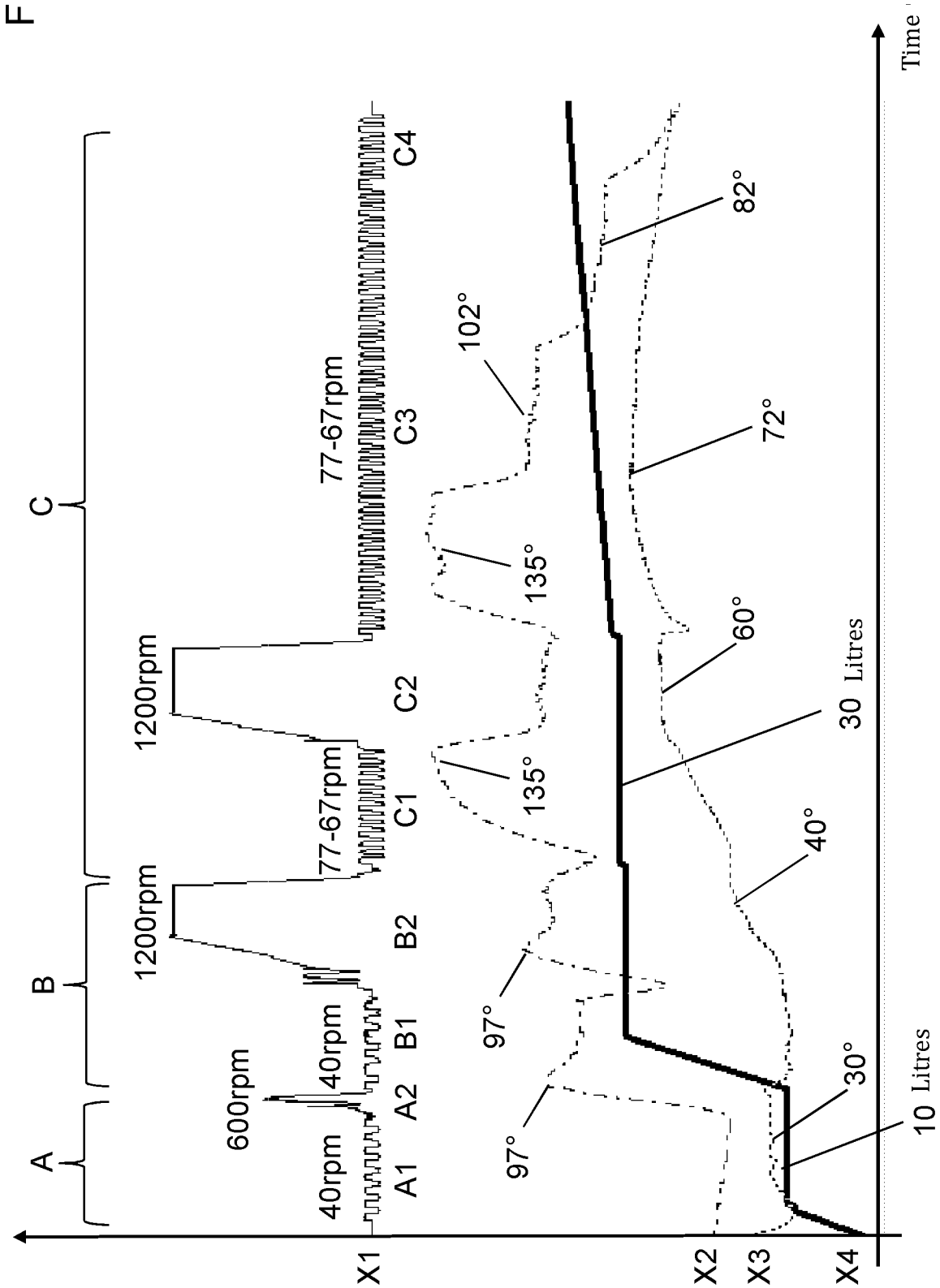
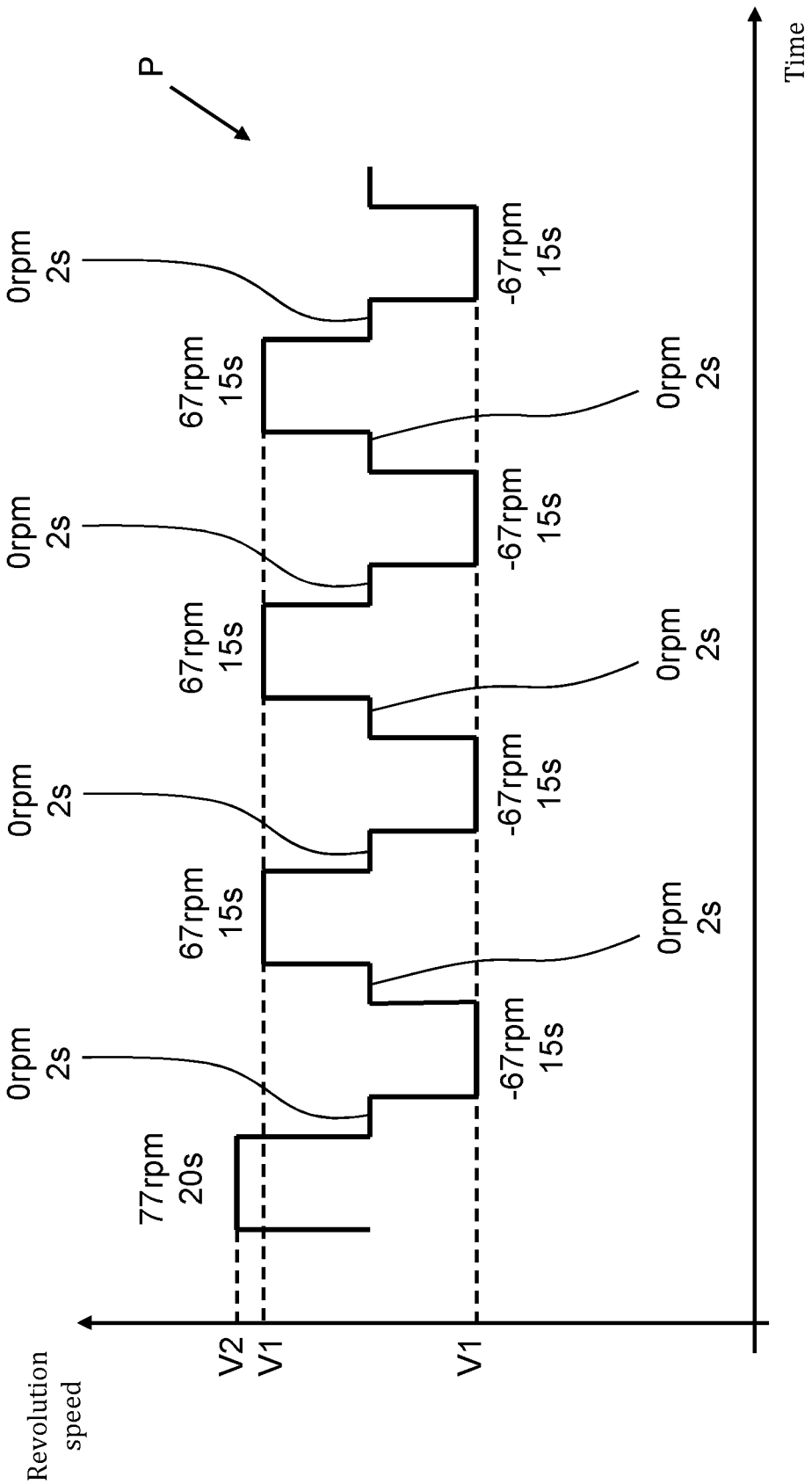

A
B
C
A1
A2
B1
B2
C1
C2
C3
C4
40rpm
600rpm
40rpm
1200rpm
77-67rpm
1200rpm
77-67rpm
X1
X2
X3
X4
Time
10 Litres
30 Litres
30°
40°
60°
72°
82°
97°
97°
135°
135°
102°

FIG. 3


P
Time
Revolution speed
V2
V1
V1
0rpm
2s
67rpm
15s
-67rpm
15s
77rpm
20s

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/059681

A. CLASSIFICATION OF SUBJECT MATTER
INV. D06F58/28 D06F25/00 D06F35/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	paragraph [0061] - paragraph [0065]; claims; figures	2-17

X	DE 198 58 385 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 21 June 2000 (2000-06-21)	1,18
A	the whole document	2-17

X	EP 2 458 076 A1 (ELECTROLUX HOME PROD CORP [BE]) 30 May 2012 (2012-05-30)	1,18
A	claims 1-2 paragraph [0045] - paragraph [0055]	2-17

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
10 March 2016	21/03/2016

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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