(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 377 989 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
19.10.2011 Bulletin 2011/42

(51) Int Cl.:
D06F 58/28 *(2006.01)*

(21) Application number: **10159796.1**

(22) Date of filing: **13.04.2010**

(84) Designated Contracting States:
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 SE SI SK SM TR
Designated Extension States:
AL BA ME RS

(71) Applicant: **Electrolux Home Products Corporation N.V.**
1130 Brussel (BE)

(72) Inventors:
- **Costantin, Marco**
  33080 Porcia (PN) (IT)
- **Sartor, Luciano**
  33080 Porcia (PN) (IT)

(74) Representative: **Nardoni, Andrea et al**
Electrolux Italia S.p.A.
Corso Lino Zanussi, 30
33080 Porcia (PN) (IT)

(54) Method of assembling the drum of a laundry drier and drum for laundry driers

(57) Method of assembling the rotatable drum (3) of a laundry drier (1) in which the rotatable drum (3) comprises a substantially cylindrical and hollow body (5) and a slip ring (20) fitted onto this body (5) so as to be substantially coaxial to the longitudinal axis (L) of the body (5); the method comprises:

— the step of providing, on the outer cylindrical surface (5b) of the body (5), a substantially cylindrical sleeve (25) which is made of an electrically insulating and elastic material;

— the step of force fitting, onto the sleeve (25), a substantially cylindrical ring (24) made of electrically-conductive material, so that the ring (24) radially compresses the sleeve (25).

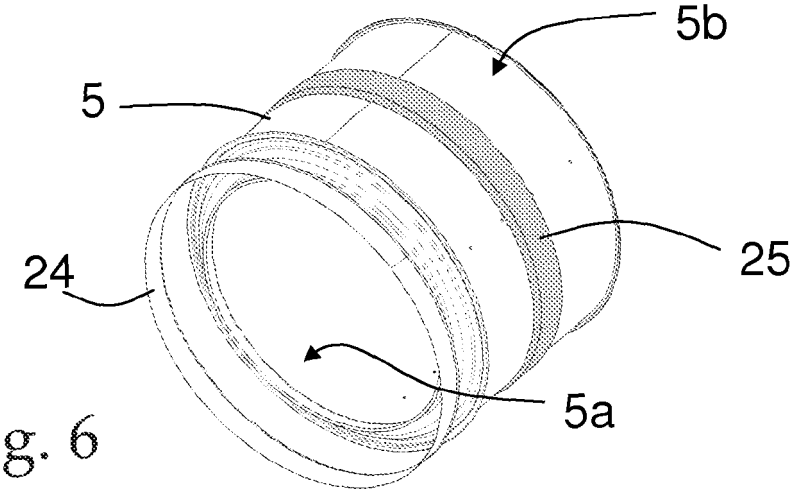

Fig. 6

EP 2 377 989 A1

Description

[0001] The present invention relates to a method of assembling the drum of a laundry drier, to a drum for laundry drier, and to a laundry drier provided with such drum.

[0002] As is known, present front-loading, rotary-drum, laundry driers generally comprise a substantially parallelepiped-shaped outer box casing; a cylindrical hollow drum for housing the laundry to be dried, and which is housed in axially rotating manner inside the casing to rotate about its horizontally-oriented longitudinal axis, directly facing a laundry loading/unloading opening formed in the front face of the casing; a door hinged to the front face of the casing to rotate to and from a closing position in which the door rests completely against the casing to close the opening in the front face of the casing and seal the rotatable drum; and an electric motor assembly for rotating the drum about its longitudinal axis inside the casing.

[0003] Laundry driers of the above type are also provided with a hot-air supply circuit which is designed to circulate inside the rotatable drum a stream of hot air which flows through the rotatable drum and the laundry contained therein, so as to dry the laundry; and with an electronic control unit which controls the functions of the drier.

[0004] In a laundry dryer a very important feature is the ability to appropriately measure the degree of dryness of the clothes in order to adjust the duration of the drying cycle accordingly. To this purpose, some known laundry driers are generally provided with an electric circuit adapted to measure the residual moisture content in the clothes based on such parameter as the electric conductivity or resistance.

[0005] Such circuit provided to carry out these moisture measurements generally comprises an electrically conductive contact strip supported on the external surface of the annular cylindrical wall of the rotatable drum. The contact strip is electrically insulated from the drum by an electrically non-conductive sheet bonded to the drum and interposed between the strip and the drum. On the other hand, the strip itself is electrically connected to the internal region of the drum, i.e. the region where the clothes to be dried are placed, via the clothes rising ribs, or lifters, disposed on the internal surface of the cylindrical wall of the drum. A scanning arm carrying a brush is mounted on the machine casing such that the brush is able to engage the conductive strip. The brush itself is electrically connected to a control unit, which is also in contact with an electric terminal in electrical communication with the internal region of the drum. When an electric current is supplied to this circuit, this current flows through the wet clothes being dried, and the control unit can calculate the resistance and/or the conductivity of these clothes (depending on their degree of dryness), thereby determining the appropriate duration of the drying cycle being performed.

[0006] For example EP 1 914 341 discloses a drying machine comprising an electric circuit for determining the resistance and/or conductivity of the laundry contained in a rotating drum, the electric circuit comprising at least one electrode adapted to contact the laundry, a conductive contact member electrically connected to the electrode and extending around an external annular surface of the drum, a sliding contact adapted to slide along the conductive contact member in constant galvanic connection therewith when the drum is rotating. The conductive contact member and the electrode are electrically insulated from the drum, and a control unit that is electrically connected between the sliding contact and the drum, for measuring an electrical quantity depending on the residual moisture content in the laundry; an electrically insulating adhesive layer is provided between the external annular surface of the drum and the conductive contact member to secure the member to the drum.

[0007] In some known laundry driers the above mentioned contact strip consists in a strip of electrically conductive metal material which is winded onto the periphery of the drum like a belt, immediately above the electrically non-conductive sheet bonded to the drum, and which is permanently tighten onto the cylindrical wall of the drum via the mutual seam folding and/or clinching of the two ends of the strip on one another.

[0008] Despite allowing a cheap and cost-effective assembly of the slip ring onto the rotatable drum, this solution has the drawback that the sliding brush, while crossing the joint between the two ends of the metal material strip, tends to momentarily detach from the slip ring (i.e. to make a small jump while crossing the joint) causing noise and the rapid erosion of the sliding brush; in fact the mutual seam folding and/or clinching of the two ends of the strip produces, in the joint area, a small step or wrinkle on the surface of the strip.

[0009] Aim of the present invention is therefore to provide a method for producing a drum for laundry driers which eliminates these drawbacks, and which additionally allows reducing the production costs of the drum.

[0010] In compliance with the above aim, according to the present invention there is provided a method of assembling the rotatable drum of a laundry drier in which the rotatable drum comprises a substantially cylindrical and hollow body and a slip ring fitted onto the body so as to be substantially coaxial to the longitudinal axis of the body; the method comprising:

- the step of providing, on the outer cylindrical surface of the body, a substantially cylindrical sleeve which is made of an electrically insulating and elastic material;
- the step of force fitting, onto the sleeve, a substantially cylindrical ring made of electrically-conductive material, so that the ring radially compresses the sleeve.

[0011] Preferably, during the force fittings, the ring ori-

ents itself substantially coaxially to the longitudinal axis (L) of the hollow body of the rotatable drum.

[0012] Advantageously the step of providing the sleeve on the outer cylindrical surface of the hollow body may comprise the step of winding and attaching to the outer cylindrical surface of the hollow body a strip of electrically-insulating and elastic material, so as to obtain the sleeve.

[0013] In a further embodiment the step of providing the sleeve on the outer cylindrical surface of the hollow body may comprise the step of over injecting or foaming the sleeve onto the outer cylindrical surface of the hollow body.

[0014] Advantageously before the force fitting of the electrically-conductive ring onto the sleeve, the method may comprise the step of cylindrically bending a strip of electrically-conductive material, and of side-to-side fixing one another the two ends of the strip so as to form the electrically-conductive ring.

[0015] Opportunely, the two ends of the strip may be side-to-side fixed one another by welding; preferably the two ends of the strip may be side-to-side fixed one another by LASER-welding.

[0016] In a further embodiment the sleeve is made of a polyolefin-matrix foam or of an EPDM Polyethylene foam.

[0017] In a preferred embodiment the electrically-conductive ring is made of metal.

[0018] Advantageously the electrically-conductive ring may be made of steel.

[0019] In an advantageous embodiment the substantially cylindrical sleeve has a tapered truncated-cone profile so to facilitate the force fitting of the electrically-conductive ring.

[0020] Advantageously the substantially cylindrical sleeve may be provided with stopping means adapted to engage the cylindrical ring during its fitting onto the sleeve, so as to facilitate its correct positioning onto the sleeve.

[0021] Preferably, these stopping means comprise an annular rim protruding radially from the surface of the sleeve opposite to the outer cylindrical surface of the hollow body, and in proximity of a second circular side edge of the sleeve.

[0022] The invention concern also a rotatable drum for laundry driers comprising a substantially cylindrical and hollow body and a slip ring fitted onto this body so as to be coaxial to the longitudinal axis (L) of the body; the slip ring comprises:

- a substantially cylindrical sleeve which is made of electrically-insulating elastic material, and which is attached to the outer cylindrical surface of the hollow body;
- a substantially cylindrical ring which is made of an electrically-conductive material, and is force fitted onto the electrically-insulating sleeve so as to radially compress the latter.

[0023] Preferably, in the rotatable drum according to the invention, the ring is force fitted onto the sleeve so as to extend substantially coaxially to the longitudinal axis (L) of the hollow body of the rotatable drum.

[0024] Opportunely, in the rotatable drum according to the invention the electrically-insulating sleeve may be made of a polyolefin-matrix foam or of an EPDM Polyethylene foam.

[0025] Advantageously, in the rotatable drum according to the invention, the side edge of the sleeve may have a tapered, truncated-cone profile.

[0026] Opportunely, in the rotatable drum according to the invention the substantially cylindrical sleeve may be provided with stopping means adapted to engage the cylindrical ring during its fitting onto the sleeve, so as to facilitate its correct positioning onto the sleeve.

[0027] Preferably, in the rotatable drum according to the invention these stopping means may comprise an annular rim protruding radially from the surface of the sleeve opposite to the outer cylindrical surface of the hollow body, and in proximity of a second circular side edge of the sleeve.

[0028] In a preferred embodiment of the rotatable drum according to the invention the thickness of the sleeve is lower than 10 millimeters.

[0029] In an advantageous embodiment of the rotatable drum according to the invention the electrically-conductive ring is made of metal.

[0030] The present invention concern also a laundry drier comprising a rotatable drum for housing the laundry to be dried, the rotatable drum comprising a substantially cylindrical and hollow body and a slip ring fitted onto this body so as to be coaxial to the longitudinal axis (L) of the body; the slip ring comprises:

- a substantially cylindrical sleeve which is made of electrically-insulating elastic material, and which is attached to the outer cylindrical surface of the hollow body;
- a substantially cylindrical ring which is made of an electrically-conductive material, and is force fitted onto the electrically-insulating sleeve so as to radially compress the latter.

[0031] Preferably, in the laundry drier according to the invention, the ring is force fitted onto the sleeve so as to extend substantially coaxially to the longitudinal axis (L) of the hollow body of the rotatable drum.

[0032] Opportunely, in the laundry drier according to the invention, the electrically-insulating sleeve may be made of a polyolefin-matrix foam or of an EPDM Polyethylene foam.

[0033] Preferably, in the laundry drier according to the invention the side edge of the sleeve has a tapered, truncated-cone profile.

[0034] Opportunely, in the laundry drier according to the invention, the substantially cylindrical sleeve may be provided with stopping means adapted to engage the

cylindrical ring during its fitting onto the sleeve, so as to facilitate its correct positioning onto the sleeve.

[0035] Preferably, in the laundry drier according to the invention these stopping means may comprise an annular rim protruding radially from the surface of the sleeve opposite to the outer cylindrical surface of the hollow body, and in proximity of a second circular side edge of the sleeve.

[0036] Advantageously, in the laundry drier according to the invention the thickness of the sleeve is lower than 10 millimeters.

[0037] Preferably, in the laundry drier according to the invention the electrically-conductive ring is made of metal.

[0038] A non-limiting embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

- Figure 1 shows a schematic section view, with parts removed for clarity, of a laundry drier realized in accordance with the teachings of the present invention;
- Figure 2 shows a perspective view of the rotatable drum of the laundry drier of Figure 1;
- Figure 3 shows an enlarged lateral view of the upper portion of the cylindrical wall of the rotatable drum of Figure 2, with parts in section and parts removed for clarity; and
- Figures 4, 5 and 6 show schematically respective different stages of the assembly process of the rotatable drum of Figure 2.

[0039] With reference to Figure 1, number 1 indicates as a whole a laundry drier which comprises: a preferably, though not necessarily, parallelepiped-shaped outer box casing 2; a substantially cylindrical and hollow rotatable drum 3 for housing the laundry to be dried (not represented), and which is fixed in axially rotating manner inside the casing 2, directly facing a laundry loading/unloading opening 2a formed in the front face of casing 2; and a door 4 hinged to the front face of the casing 2 to rotate to and from a closing position in which door 4 rests completely against the front face of casing 2 to close the opening 2a and seal the rotatable drum 3.

[0040] In the example shown in the enclosed Figures, the rotatable drum 3 comprises a substantially cylindrical and hollow body 5 which is preferably made of metal material, and which rests, preferably, but not necessarily, horizontally inside the casing 2, preferably on a number of horizontal supporting rollers 6 which are fitted to the casing 2 in free rotatable manner to let the rotatable drum 3 freely rotate about its longitudinal axis L.

[0041] Casing 2, door 4, hollow body 5 and supporting rollers 6 are commonly known parts in the industry, and therefore not described in detail; moreover it is underlined that the laundry drier 1 illustrated in the enclosed figures is only a possible example of a laundry drier which may be provided with a rotatable drum obtained by using the method according to the invention.

[0042] With reference to the embodiment illustrated in Figure 1, inside casing 2 laundry drier 1 also preferably comprises an electric motor 7 which is mechanically coupled to the rotatable drum 3 preferably, though not necessarily, via a driving belt or similar so as to rotate, on command, the rotatable drum 3 about its longitudinal axis L inside casing 2; and a hot-air supply circuit 8 designed to circulate through the rotatable drum 3 a stream of hot air (schematically indicated by the arrows 9 in Figure 1) adapted for drying the laundry contained inside the drum 3.

[0043] The hot-air supply circuit 8 may be of the closed-circuit type (i.e. adapted to remove the moisture from the humid air exiting the drum, to heat it again, and to reintroduce this air into the drum) or of the opened-circuit type (i.e. adapted to discharge outside the drier the humid air exiting the drum); the hot-air supply circuit 8 may advantageously comprise heating means (for example an electric heater or a heat pump) adapted for heating the air before entering the drum 3, air conduits, one or more fans for circulating the air, one or more filters for collecting lint or fluff exiting from the laundry during the drying process, optionally a condensed and/or a heat exchanger for removing moisture from the air leaving the drum. However hot-air supply circuits of laundry driers are largely known in the art, and therefore they will not be described in more detail.

[0044] Advantageously the laundry drier 1 comprises also a electronic control unit 17 adapted to control the electrical and electronic components of the laundry drier 1 (for example the electric motor 7, the heating element and the fan of the hot-air supply circuit 8, the user interface of the drier 1, etc.), so as to allow the laundry drier 1 to perform a desired drying cycle.

[0045] Advantageously the electronic control unit 17 is configured so as to stop the drying process, i.e. the rotation of rotatable drum 3 and the circulation of hot air, when the laundry inside the rotatable drum 3 has reached a given degree of moisture (or, in other words, a given degree of dryness); preferably the degree of moisture of the laundry at which the drying process has to be interrupted may be set by a user via a control panel or user interface 18 located preferably, but not necessarily on the front face of the casing 2, advantageously above the laundry loading/unloading opening 2a.

[0046] To perform such operation (i.e. stopping the drying cycle when the laundry inside the rotatable drum 3 has reached a given degree of moisture), the electronic control unit 17 is associated to an electric circuit adapted to measure the residual moisture content in the laundry based on such parameter as the electric conductivity or resistance.

[0047] This electric circuit advantageously comprises one or more surface electrodes 19 which are located on the inner cylindrical surface 5a of the hollow body 5 of the rotatable drum 3, preferably, though not necessarily, evenly spaced one another, adapted to contact the laundry during the drying process, so as to establish an elec-

tric contact with the laundry.

[0048] In the example shown in Figure 2, each surface electrode 19 is preferably, though not necessarily, located on the top of a respective transversal rib or lifter 22 which projects from the inner cylindrical surface 5a of the substantially cylindrical hollow body 5 of the rotatable drum 3 towards the center of the latter, so as to lift the laundry during rotation of the rotatable drum 3.

[0049] Advantageously the electric circuit also comprises an external slip ring 20, electrically connected (e.g. by an externally insulated electric cable, not illustrated, contained in the lifter 22 and passing through the cylindrical hollow body 5, so as to connect the electrode 19 and the slip ring 20) to the one or more surfaces electrodes 19; the external slip ring 20 is fitted onto the outer cylindrical surface 5b of the hollow body 5 with the interposition of a suitable sheet or sleeve 25 made of electrically insulating and elastic material. The slip ring 20 of the rotatable drum 3 is, in turn, electrically connected to the control unit 17 via one ore more brushes 21 (one of which is schematically indicated in Figure 1) arranged in such a way to slide on the slip ring 20.

[0050] With reference to Figures 2 and 3, differently from known rotatable drums, the slip ring 20 of the rotatable drum 3 comprises a substantially cylindrical ring 24, preferably substantially flat, made of electrically conductive material, preferably a metal material or a rigid and low-friction conductive plastic material, which is force fitted onto a substantially cylindrical sleeve 25 of electrically insulating elastic material, for example a polymeric-material foam having an open- or closed-cell structure, which in turn is attached, for example glued/stuck, on the outer cylindrical surface 5b of the hollow body 5 of the rotatable drum 3.

[0051] In addition to the above, the inner diameter D0 of the electrically-conductive cylindrical ring 24 approximates downwards the outer diameter of the electrically-insulating cylindrical sleeve 25, so that the cylindrical ring 24, after force fitting, radially compresses, substantially uniformly, the electrically-insulating cylindrical sleeve 25 and extends coaxial to the longitudinal axis L of the drum, i.e. to the longitudinal axis L of the hollow body 5.

[0052] Preferably, but not necessarily, the thickness of the electrically-insulating cylindrical sleeve 25 is lower than 10 millimeters and preferably, though not necessarily, ranges between 3 and 6 millimeters.

[0053] In addition to the above, in the example shown a first circular side edge 25a of the electrically-insulating cylindrical sleeve 25 has preferably, though not necessarily, a tapered truncated-cone profile, so to facilitate the force fitting of cylindrical flat ring 24 onto the sleeve 25.

[0054] Advantageously, but not necessarily, the sleeve 25 is provided with stopping means adapted to engage the cylindrical ring 24 during its fitting onto the sleeve 25, so as to facilitate its correct positioning on the sleeve 25; for example, with reference to the enclosed Figures, these stopping means may comprise an annular rim 26 protruding radially from the surface of the sleeve 25 opposite to the outer cylindrical surface 5b of the hollow body 5, and in proximity of a second circular side edge 25b of the sleeve 25.

[0055] Therefore, in the example of Figure 3, the tapered truncated-cone profile of the first circular side edge 25a of the sleeve 25 helps the fitting of the cylindrical ring 24 on the sleeve 25, while the annular rim 26 arrests the axial movement of the cylindrical ring 24 during the fitting procedure.

[0056] With reference to the example of Figures 2, 3, 4 and 6, the electrically-conductive cylindrical ring 24 preferably, though not necessarily, comprises a strip, preferably, but not necessarily, of metal material (for example a strip of AISI steel), which, before being fitted to the drum 1, is cylindrically bended and afterwards side-to-side welded, preferably LASER-welded, at its two ends, so as to form a substantially perfectly cylindrical element; therefore, differently from the above described known metal material strips, the conductive cylindrical ring 24 according to the invention isn't provided with the joint area a step which causes the jump of the brushes 21 crossing the joint.

[0057] In a further embodiment, not illustrated, the conductive cylindrical ring 24 may be obtained by the extrusion or the molding of a suitable conductive material, so as to obtain a continuous ring without any joint area on its lateral surface.

[0058] It is however underlined that, differently from the conductive contact strip of the above described prior-art laundry driers, in the present invention the ring 24 is associated to the sleeve 25 after the assembly/production of this ring 24 (i.e. in a condition in which the ring 24 is a closed circular ring).

[0059] Advantageously, in the example shown, the electrically-insulating cylindrical sleeve 25 preferably, though not necessarily, comprises a strip of electrically insulating polymeric-material foam having an open- or closed-cell structure, which is winded and at the same time attached, preferably glued/stucked, onto the outer cylindrical surface 5b of the substantially cylindrical, hollow body 5 of the rotatable drum 3, preferably by a suitable adhesive so as to form a substantially perfectly cylindrical sleeve 25.

[0060] For example the electrically-insulating polymeric-material foam is preferably, though not necessarily, a polyolefin-matrix foam, more preferably a Polyethylenic-matrix foam, or even more preferably an EPDM Polyethylene (acronym of ethylene propylene diene Monomer (M-class) Polyethylene) foam.

[0061] For example, the polymeric-material foam may be an EPDM Polyethylene foam having a closed-cell structure and with a Compression set ranging between 3% and 10% and preferably, though not necessarily, equal to more or less 5%; a Tensile strength ranging between 2 and 5 Kg/cm2 (about 200-500 kPa) and preferably, though not necessarily, equal to more or less 3.5 Kg/cm2 (about 350 kPa); and a hardness ranging be-

tween 15 and 20 Shore.

[0062] In a further embodiment, not illustrated, the cylindrical sleeve 25 may be advantageously over injected or foamed (i.e. applied as a foam which solidifies onto the outer cylindrical surface 5b) onto the outer cylindrical surface 5b of the substantially cylindrical hollow body 5.

[0063] General operation of home laundry drier 1 is clearly inferable from the above description, with no further explanation required.

[0064] Instead, with reference to Figures 4, 5 and 6, the assembly of the slip ring 20 onto the substantially cylindrical, hollow body 5 of the rotatable drum 3 comprises the steps of providing, on the outer cylindrical surface 5b of the body 5, a substantially cylindrical sleeve 25 which is made of an electrically insulating and elastic material; this step may be carried out, for example, by winding a strip 25' of electrically-insulating material, for example a strip of EPDM Polyethylene foam, directly on the outer cylindrical surface 5b of the hollow body 5 of rotatable drum 3, while at the same time attaching (for example gluing/sticking) the strip 25' to the outer cylindrical surface 5b, preferably, but not necessarily, via a suitable adhesive, so as to form, on the hollow body 5, the cylindrical electrically-insulating and elastic outer sleeve 25.

[0065] In a further embodiment this step may be carried out by over-injecting of foaming the sleeve 25 directly on the outer cylindrical surface 5b of the body 5.

[0066] The assembly of the slip ring 20 onto the hollow body 5 comprises also the step of force fitting a substantially cylindrical ring 24 of electrically-conductive material onto the sleeve 25, so that the ring 24 substantially uniformly radially compresses the electrically-insulating sleeve 25; advantageously, during its force fitting onto the sleeve 25, the ring 24 orients itself substantially coaxial to the longitudinal axis L of the hollow body 5 of rotatable drum 3.

[0067] Advantageously, but not necessarily, with reference to the example illustrated in the enclosed Figures, in which a first circular side edge 25a of the electrically-insulating cylindrical sleeve 25 has a tapered truncated-cone profile, the force fitting step may start by positioning the ring 24 in front of the truncated-cone profiled first circular side edge 25a, and successively pushing the ring 24 in a direction substantially parallel to the longitudinal axis (L) of the hollow body 5 of the rotatable drum 2; the truncated-cone shape of the first circular side edge 25a facilitates the insertion of the ring 24 onto the sleeve 25.

[0068] Since the inner diameter D0 of the ring 24 approximates downwards the outer diameter of the electrically-insulating cylindrical sleeve 25, during the fitting of the ring 24 onto the sleeve 25 the latter is elastically radially compressed; in the example illustrated in the enclosed Figures, the pushing of the ring 24 is interrupted when the ring 24 engages the annular rim 26. Because of its elasticity, the sleeve 25 tends to expand radially towards the ring 24, generating a pressure on the ring 24 which contributes to keep it firm with respect to the sleeve 25 and to the hollow body 5.

[0069] Moreover, before the force fitting of the ring 24 onto the electrically-insulating sleeve 25, the assembly of the rotatable drum 3 preferably, though not necessarily, also comprises the step of cylindrically bending a strip (not shown) of electrically-conductive material, preferably a strip of AISI steel, and of side-to-side welding one another, preferably by LASER-welding, the two ends of this strip so as to form the substantially cylindrical ring 24.

[0070] The assembly of the rotatable drum 1 advantageously comprises also the positioning of one or more surface electrodes 19 (supported or not by ribs or lifters 22) on the inner cylindrical surface 5a of the hollow body 5 and the electrical connection of these electrodes 19 to the slip ring 20.

[0071] The advantages connected to the particular structure of slip ring 20 are large in number.

[0072] First of all, there are no more steps or wrinkles on the peripheral surface of the slip ring 20 which may cause momentarily detachment (i.e. jumping) of the sliding brush 21 during the rotation of the drum 3. Laundry drier 1 is therefore much more silent than traditional rotary-drum home laundry driers.

[0073] In addition to the above, assembly of slip ring 20 on hollow body 5 of rotatable drum 3 via force fitting is less expensive and slightly faster than the mutual seam folding and/or clinching of the two ends of the strip one another.

[0074] Clearly, changes may be made to the home laundry drier 1 and/or to rotatable drum 3 and/or to the method of assembling rotatable drum 3 as described herein without, however, departing from the scope of the present invention.

Claims

1. Method of assembling the rotatable drum (3) of a laundry drier (1) in which the rotatable drum (3) comprises a substantially cylindrical and hollow body (5) and a slip ring (20) fitted onto said body (5) so as to be substantially coaxial to the longitudinal axis (L) of the body (5); the method being **characterized by** comprising:

   — the step of providing, on the outer cylindrical surface (5b) of said body (5), a substantially cylindrical sleeve (25) which is made of an electrically insulating and elastic material;
   — the step of force fitting, onto said sleeve (25), a substantially cylindrical ring (24) made of electrically-conductive material, so that said ring (24) radially compresses the sleeve (25).

2. Method according to Claim 1, wherein the step of providing said sleeve (25) on the outer cylindrical surface (5b) of the hollow body (5) comprises the step of winding and attaching to the outer cylindrical

surface (5b) of the hollow body (5), a strip (25') of electrically-insulating and elastic material, so as to obtain said sleeve (25).

3. Method according to Claim 1, wherein the step of providing said sleeve (25) on the outer cylindrical surface (5b) of the hollow body (5) comprises the step of over-injecting or foaming said sleeve (25) onto the outer cylindrical surface (5b) of said hollow body (5).

4. Method according to one or more of the foregoing claims, **characterized by** further comprising, before the force fitting of said electrically-conductive ring (24) onto said sleeve (25), the step of cylindrically bending a strip of electrically-conductive material, and of side-to-side fixing one another the two ends of said strip so as to form said electrically-conductive ring (24).

5. Method according to Claim 4, wherein said two ends of said strip are side-to-side fixed one another by welding.

6. Method according to Claim 5, wherein said two ends of said strip are side-to-side fixed one another by LASER-welding.

7. Method according to any one of the foregoing claims, wherein the sleeve (25) is made of a polyolefin-matrix foam or of an EPDM Polyethylene foam.

8. Method according to any one of the foregoing claims, wherein said electrically-conductive ring (24) is made of metal.

9. Method according to claim 8, wherein said electrically-conductive ring (24) is made of steel.

10. Method according to any one of the foregoing claims, wherein said substantially cylindrical sleeve (25) has a tapered truncated-cone profile so to facilitate the force fitting of said electrically-conductive ring (24).

11. Method according to any one of the foregoing claims, wherein said substantially cylindrical sleeve (25) is provided with stopping means adapted to engage said ring (24) during its fitting onto the sleeve (25), so as to facilitate its correct positioning onto said sleeve (25).

12. Rotatable drum (3) for laundry driers comprising a substantially cylindrical and hollow body (5) and a slip ring (20) fitted onto said body (5) so as to be coaxial to the longitudinal axis (L) of the body (5), **characterized in that** the slip ring (20) comprises:

— a substantially cylindrical sleeve (25) which is made of electrically-insulating elastic material, and which is attached to the outer cylindrical surface (5b) of the hollow body (5);

— a substantially cylindrical ring (24) which is made of an electrically-conductive material, and is force fitted onto said electrically-insulating sleeve (25) so as to radially compress the latter.

13. Rotatable drum according to Claim 12, **characterized in that** the electrically-insulating sleeve (25) is made of a polyolefin-matrix foam or of an EPDM Polyethylene foam.

14. Rotatable drum according to Claim 12 or 13, **characterized in that** a side edge (25a) of said sleeve (25) has a tapered, truncated-cone profile.

15. Rotatable drum according to Claim 12 or 13 or 14, **characterized in that** said substantially cylindrical sleeve (25) is provided with stopping means adapted to engage said cylindrical ring (24) during its fitting onto said sleeve (25), so as to facilitate its correct positioning onto said sleeve (25).

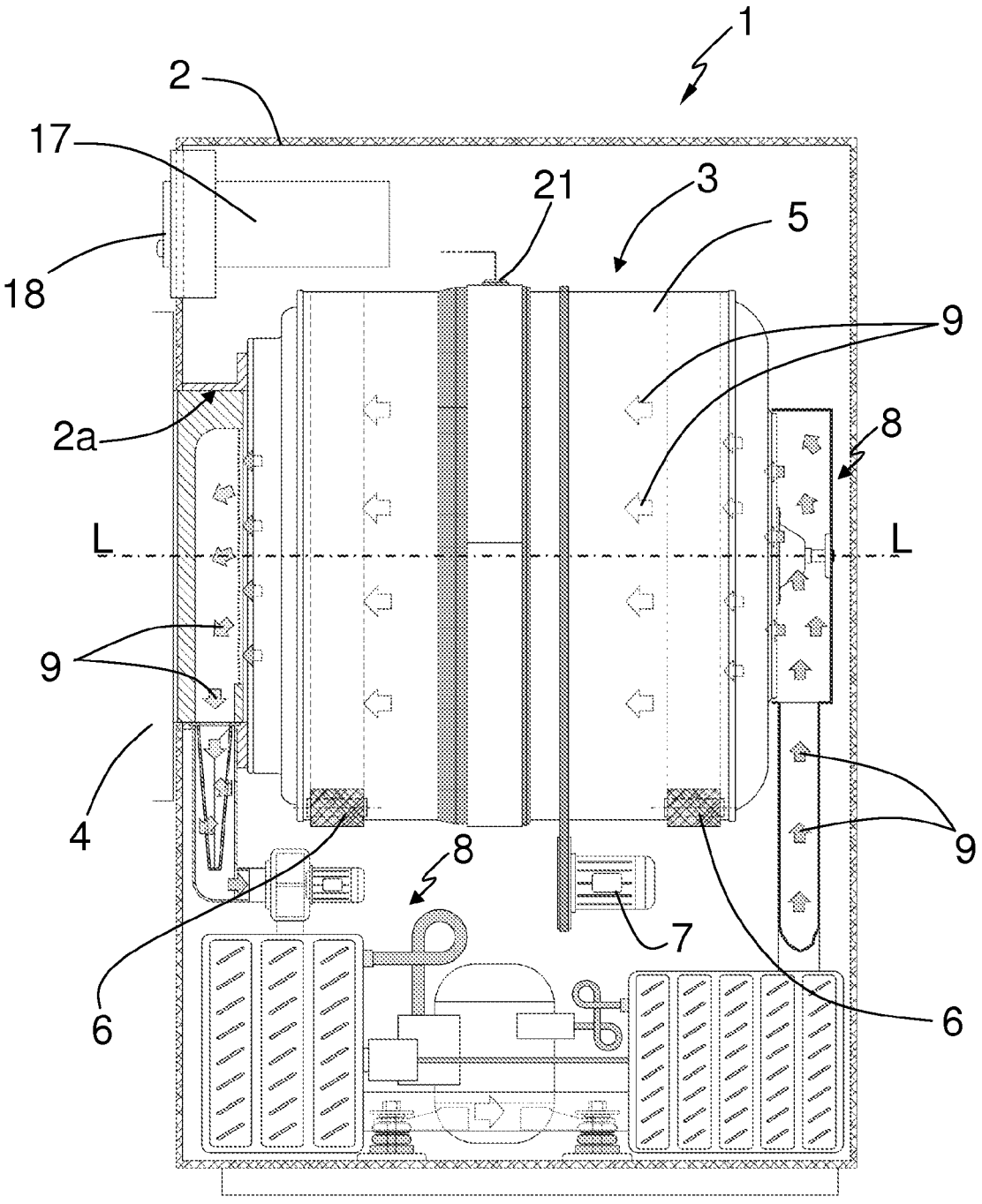

Fig. 1

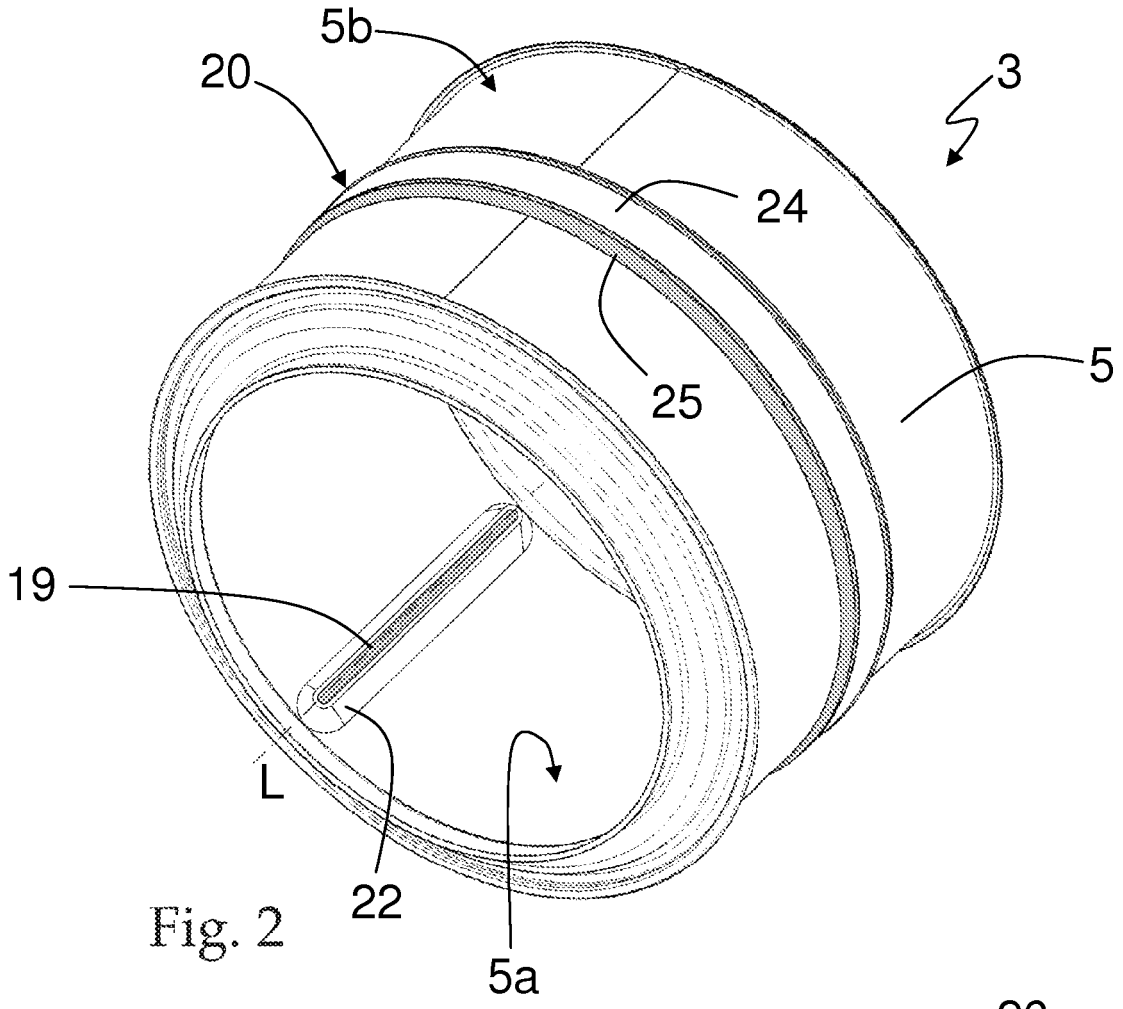

Fig. 2

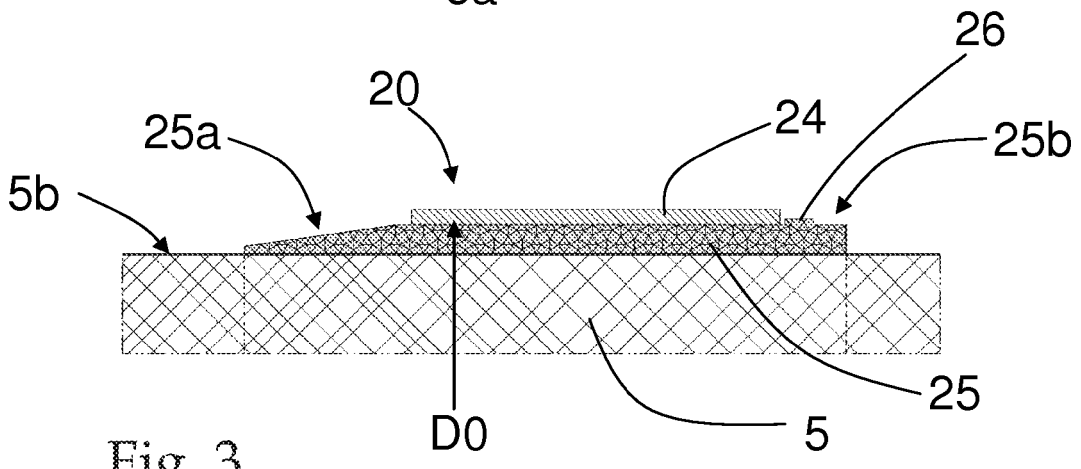

Fig. 3

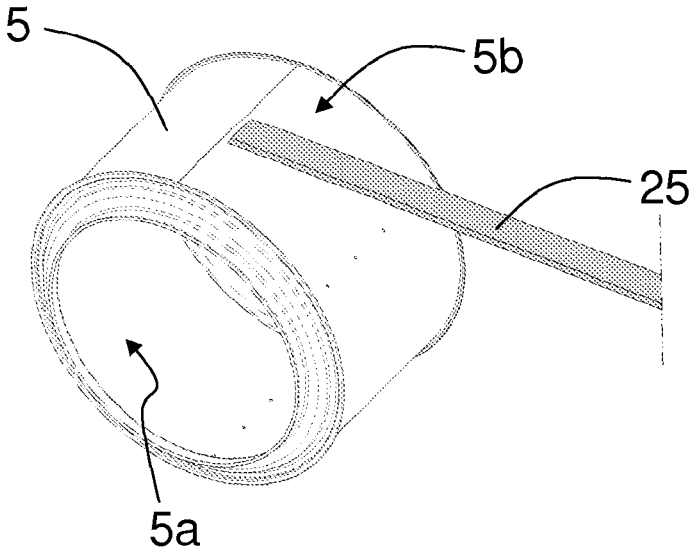

Fig. 4

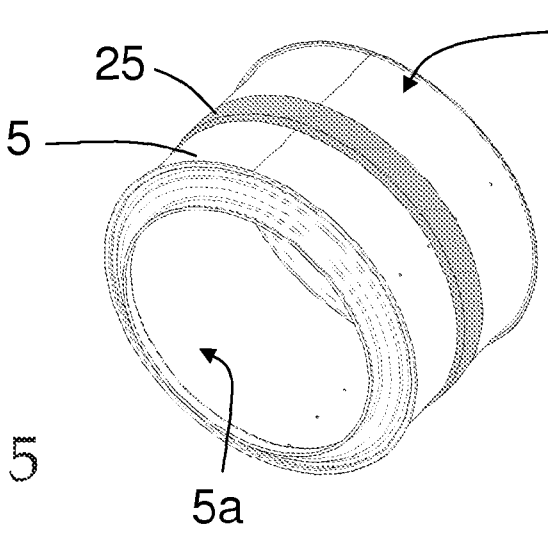

Fig. 5

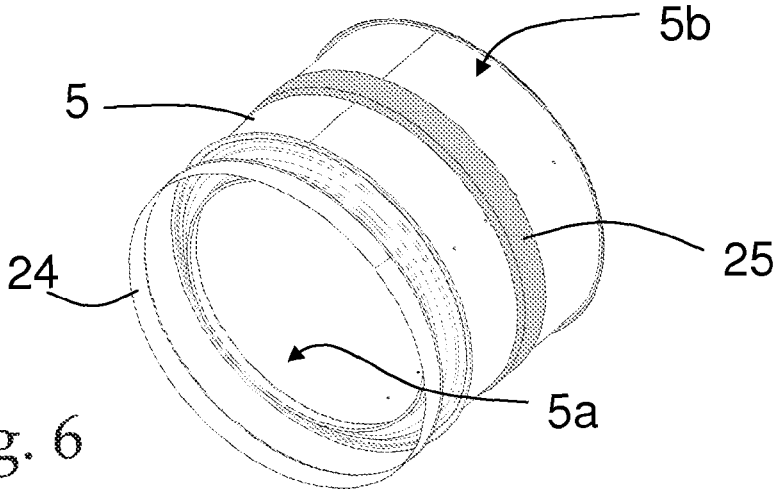

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 15 9796

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2005 015603 U1 (ELECTROLUX HOME PROD CORP [BE]) 8 December 2005 (2005-12-08) * paragraphs [0020], [0 22]; figure 1 *	1,2,8,9, 12	INV. D06F58/28
A	DE 197 37 340 A1 (AEG HAUSGERAETE GMBH [DE]) 4 March 1999 (1999-03-04) * abstract; figure 1 *	1-15	
A,D	EP 1 914 341 A1 (ELECTROLUX HOME PROD CORP [BE]) 23 April 2008 (2008-04-23) * paragraphs [0011], [0 12]; figure 2 *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)
D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 October 2010	Westermayer, Wilhelm

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

2

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 9796

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-10-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202005015603 U1	08-12-2005	AT 476542 T	15-08-2010
		EP 1770200 A2	04-04-2007
DE 19737340 A1	04-03-1999	NONE	
EP 1914341 A1	23-04-2008	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1914341 A **[0006]**