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(54) **Household laundry washing and drying machine**

(57) Laundry washing and drying machine (1) comprising: an outer casing (2); a hollow washing tub (3) housed inside said casing (2); a air heating device (7) attached onto the washing tub (3) and comprising a tubular body (12), structured for being crossed by an airflow, and an air-heating device (13). The tubular body (12) comprises at least two hemi-shells (21, 22) reciprocally coupled to compose/form said tubular body (12), and an intermediate sealing gasket (23) interposed between the at least two hemi-shells (21, 22) to seal the hemi-shells (21, 22) one another. At least one of the two or more hemi-shells (21, 22) comprises one or more protruding elements (30) adapted to mate with one or more corresponding seats (31) provided in a portion of the intermediate sealing gasket (23), so as to set the reciprocal position of the at least one of the two or more hemi-shells (21, 22) and the intermediate sealing gasket (23).

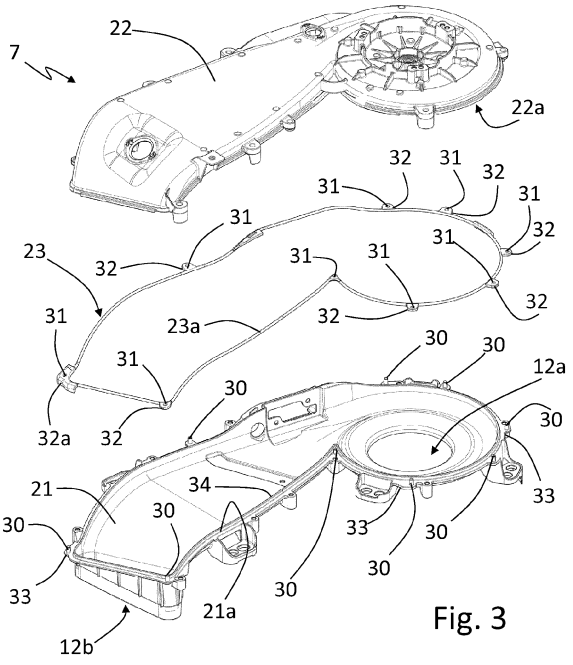

Fig. 3

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Description

[0001] The present invention relates to a household laundry washing and drying machine.

[0002] As is known, today's front-loading laundry washing and drying machines generally comprise: a substantially parallelepiped-shaped outer boxlike casing, typically structured for resting on the floor; a substantially bell-shaped washing tub which is generally suspended in floating manner inside the casing via a number of coil springs and shock-absorbers, with the front opening/mouth directly facing a laundry loading/unloading pass-through opening provided in the front wall of the casing; a substantially cylindrical elastically-deformable bellows which connects in watertight manner the front mouth/opening of the bell-shaped washing tub to the laundry loading/unloading opening on front wall of the casing; and a porthole door which is hinged to the front wall of the casing to rotate to and from a closing position in which the door rests on the front face of the casing to close the laundry loading/unloading on the front wall and substantially watertight seal the washing tub.

[0003] The front-loading laundry washing and drying machines of the above type furthermore comprise: a substantially bell-shaped, cylindrical revolving drum which is structured for housing the laundry to be washed and/or dried, and is housed in axially rotating manner inside the washing tub for rotating about its longitudinal reference axis; an electric motor assembly which is located outside of the washing tub, and is structured for driving into rotation the revolving drum about its longitudinal reference axis inside the washing tub; and a, preferably closed-circuit, air duct assembly which is structured to circulate inside the washing tub a stream of hot air having a low moisture content, and which flows through the revolving drum and over the laundry inside the drum to dry the laundry.

[0004] The air duct assembly is structured for gradually drawing air from the washing tub; cooling down the air arriving from the washing tub so to extract and retain the surplus moisture in the air; heating the dehumidified air to a predetermined temperature, normally higher than the temperature of the air arriving from the washing tub; and feeding the heated, dehumidified air back into the washing tub, where it flows over the laundry stored inside the revolving drum to dry the laundry.

[0005] In several models of known front-loading laundry washing and drying machines, the cooling down and dehumidification of the air drawn from the washing tub is performed inside cold-air duct, e.g. a cold-water condenser which is attached/ integrated to/on the back of the washing tub, obviously inside the boxlike casing, and which uses the cold tap water of the water mains as refrigerant.

[0006] In some known front-loading laundry washing and drying machines the heating up of the dehumidified air coming out of the cold-water condenser is performed inside an air heating device which is rigidly attached to the top of the washing tub so as to have a first end in direct communication with the cold-water condenser and a second end in direct communication with the washing tub close to the front mouth of the latter, and which internally houses the electric centrifugal fan that circulates the air across the washing tub and the resistor that heats up the dehumidified air directed back into the washing tub.

[0007] W02010/100114 discloses an air duct assembly of the type referred above; in particular W02010/100114 discloses a laundry drying machine comprising a drying passage (i.e. an air heating device) including a base and a cover joined to the base. Each edge of the base and the cover is provided with a receiving groove of a certain depth. A sealing strip, made of an elastic material, for sealing the junction of the base and the cover is received within the receiving grooves. A plurality of notches is disposed inside the receiving groove, and a plurality of bosses is correspondingly disposed on the periphery of the sealing strip. During assembly, each boss of the sealing strip is received into a corresponding notch of the groove.

[0008] However the solution disclosed in W02010/100114 seems not so effective in preventing an incorrect positioning of the sealing strip with respect to the drying passage, and moreover the assembly of the sealing strip to the drying passage seems to be not so ergonomic and functional.

[0009] Aim of the present invention is to provide an alternative solution to obtain a more effective and ergonomic way for ensuring the correct positioning of a sealing gasket with respect to the air heating device of a laundry washing and drying machine.

[0010] Another object of the present inventions is simplifying and speeding up the assembly of the washing and drying machine.

[0011] Applicant has found that by providing at least one of two or more hemi-shells composing the tubular body of the air heating device of a laundry washing and drying machine with one or more protruding elements adapted to mate with one or more corresponding seats provided in a portion of an intermediate sealing gasket interposed between the hemi-shells to seal them one another, it is possible to obtain an easy, effective, and ergonomic reciprocal positioning of the hemi-shell and the intermediate sealing gasket. This allows reducing the complexity of the assembly of the air heating device, and therefore the time and the costs required for such an assembly, which has a positive effect on the overall costs of the laundry machine.

[0012] In particular, the above-mentioned aim and objects, as well as others that will become better apparent hereinafter, are achieved by a laundry washing and drying machine comprising: an outer casing; a hollow washing tub housed inside the casing; a air heating device attached onto the washing tub and comprising a tubular body, structured for being crossed by an airflow, and an air-heating device. The tubular body comprises at least

two hemi-shells reciprocally coupled to compose/form the tubular body, and an intermediate sealing gasket interposed between the at least two hemi-shells to seal the hemi-shells one another. At least one of the two or more hemi-shells comprises one or more protruding elements adapted to mate with one or more corresponding seats provided in a portion of the intermediate sealing gasket, so as to set the reciprocal position of the at least one of the two or more hemi-shells and the intermediate sealing gasket.

[0013] In an advantageous embodiment the intermediate sealing gasket comprises a main body arranged in such a way to be interposed between the two or more hemi-shells when the two or more hemi-shells are coupled one another.

[0014] Preferably, the intermediate sealing gasket comprises one or more lugs or wings protruding from the main body and provided with at least one of the one or more of seats for receiving the one or more protruding elements.

[0015] More preferably, a plurality of lugs or wings is spaced along the main body.

[0016] Advantageously, at least one of the one or more lugs or wings protrudes, in the assembled condition of the tubular body, externally from the tubular body, in such a way to locally protect the tubular body from the bumps.

[0017] In a further advantageous embodiment, one or more of the seats for receiving the protruding elements are provided directly on the main body.

[0018] Preferably, a plurality of seats is spaced along the main body.

[0019] In an advantageous embodiment, the protruding element comprises one or more pins protruding from one of the two or more hemi-shells, the one or more pins being positioned in such a way to be housed into a corresponding seat of the intermediate sealing gasket.

[0020] Advantageously, the one of the two or more hemi-shells comprising the one or more protruding elements comprises one or more protrusion, comprising the one or more protruding elements, and arranged in such a way to be positioned in correspondence of the one or more seats of the intermediate gasket.

[0021] In an advantageous embodiment, the intermediate sealing gasket is made of an elastomeric material.

[0022] Preferably, the hemi shell comprising the one or more protruding elements is provided with one or more ribs protruding from its peripheral edge and adapted to provide a guide/support for the positioning of the intermediate sealing gasket.

[0023] In a further advantageous embodiment, the peripheral edge of at least one of the hemi-shells is provided with a longitudinal grove or seat, and the main body of the sealing gasket is shaped/dimensioned so as to be at least partly recessed into the longitudinal grove or seat.

[0024] In an advantageous embodiment, the main body of the intermediate sealing gasket is substantially annular in shape.

[0025] In a further advantageous embodiment the main body of the intermediate sealing gasket is open in shape.

[0026] 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 is a perspective view, with parts removed for clarity, of a front-loading laundry washing and drying machine in accordance with the teachings of the present invention;
- Figure 2 is an enlarged perspective view, with parts removed for clarity, of the air heating device of the Figure 1 laundry washing and drying machine; whereas
- Figure 3 is a partly exploded perspective view, with parts removed for clarity, of the air heating device of Figure 2;
- Fig. 4 is a plan view of intermediate sealing gasket of the air heating device of Figure 2;
- Fig. 5 is a plan view, with parts removed for clarity, of one of the hemi shells composing the tubular element of the air heating device of Figure 2;
- Fig. 6 is a plan view of the intermediate sealing gasket of Figure 4 assembled to the hemi shell of Figure 5.

[0027] It is underlined that in the enclosed figures there is illustrated a front-loading washing and drying machine; however it is clear that the present invention can be applied as well to a top-loading washing and drying machine.

[0028] With reference to Figure 1, reference number 1 indicates as a whole a laundry washing and drying machine 1 that preferably comprises:

- a preferably, though not necessarily, substantially parallelepiped-shaped outer boxlike casing 2 which is preferably structured for resting on the floor;
- a preferably, though not necessarily, substantially cylindrical, bell-shaped, hollow washing tub 3 which is suspended in floating manner inside the casing 2 with its front opening or mouth, not illustrated, directly facing a laundry loading/unloading pass-through opening provided in the front wall 2a of the boxlike casing 2; and
- a substantially cylindrical, bell-shaped revolving drum (not shown) which is structured for housing the laundry to be washed, and is housed in axially rotating manner inside the washing tub 3 so as to be able to freely rotate about its longitudinal reference axis (L).

[0029] In the example shown, washing tub 3 is advantageously suspended in floating manner inside casing 2, preferably via a suspension system preferably comprising a number of coil springs (not shown) and vibration dampers (not shown); and the front opening/mouth of washing tub 3 is preferably connected in watertight man-

ner to the laundry loading/unloading opening on front wall 2a via a substantially cylindrical, elastically-deformable bellows (not shown).

[0030] The revolving drum is preferably arranged inside washing tub 3 so that the drum front opening is directly faced/aligned to the laundry loading/unloading opening on front wall 2a, and so that the rotation axis of the drum is preferably locally substantially coincident with the substantially horizontally-oriented, longitudinal reference axis L of washing tub 3.

[0031] With reference to Figure 1, the front-loading laundry washing and drying machine 1 preferably furthermore comprises:

- a porthole door 4 which is preferably hinged to the front wall 2a of casing 2 to rotate about a preferably, though non necessarily, vertically-oriented reference axis to and from a closing position in which the peripheral border of the porthole door 4 rests completely on front wall 2a for closing the laundry loading/unloading opening and watertight sealing the washing tub 3;
- an electric motor assembly (not shown) which is structured for driving into rotation the revolving drum about its longitudinal reference axis L inside the washing tub 3; and
- a water and detergent supplying assembly (not shown) which is structured for selectively feeding into the washing tub 3, according to the selected washing cycle, a given amount of detergent, softener and/or other washing agent suitably mixed with the fresh water arriving from the water mains, or simply a given amount of fresh water arriving from the water mains.

[0032] The laundry washing machine 1 is provided with a, preferably closed-circuit, air duct assembly 5 which is structured to circulate inside the washing tub 3 a stream of hot air having a low moisture content, and which flows through the revolving drum and over the laundry located inside the drum to dry the laundry.

[0033] The air duct assembly 5 is preferably structured for gradually drawing air from washing tub 3; cooling down the air arriving from washing tub 3 so to extract and retain the surplus moisture in the air; heating the dehumidified air to a predetermined temperature preferably higher than that of the air arriving from washing tub 3; and finally feeding the heated, dehumidified air back into the washing tub 3, where it flows over the laundry stored inside the revolving drum to rapidly dry the laundry.

[0034] The air duct assembly 5 is advantageously housed inside the boxlike casing 2 and advantageously comprises:

- an air cooling device 6 which is preferably attached to the back of washing tub 3, is fluidly connected to washing tub 3, preferably on the bottom of the latter, and is structured to cool down the air arriving from washing tub 3 so to extract the surplus moisture in the air drawn from washing tub 3; and
- an air heating device 7 which is preferably rigidly attached to the washing tub 3, is fluidly connected to both the washing tub 3 and the air cooling device 6 to allow the dehumidified air to flow from the air cooling device 6 to the washing tub 3, and is structured to heat up the dehumidified air arriving from the air cooling device 6 before this air returns back into washing tub 3.

[0035] In the example shown, the air cooling device 6 preferably comprises a cold-water condenser 6 which is attached/integrated to/on the back of washing tub 3, and which uses a rain/shower of cold water arriving from the water mains to cool down the moist air that arrives from washing tub 3 and flows upwards on the back of washing tub 3 up to the top of the later.

[0036] The air heating device 7 is preferably rigidly attached to the top of washing tub 3.

[0037] Advantageously the air heating device 7 comprises:

- a tubular body 12 which is preferably structured for being firmly fixed to washing tub 3, preferably on the top of the latter; the tubular body 12 preferably comprises a first opening or mouth 12a fluidly connected to, i.e. in direct communication with, the air cooling device 6, and a second opening or mouth 12b fluidly connected to, i.e. in direct communication with, the inside of a bellows (not shown, preferably provided for connecting the washing tub 3 to the laundry loading/unloading opening on front wall 2a of casing 2), or fluidly connected directly to the inside of washing tub 3, preferably close to the front opening of washing tub 3;
- a resistor 13 (only partially illustrated in Figure 2, and not illustrated in the other figures) or other air-heating device, which is housed inside tubular body 12, and is structured to heat up, when electrically powered, the air that flows across tubular body 12;
- an electric centrifugal fan 14 or other air-pumping device which is preferably housed inside tubular body 12, preferably upstream of resistor 13, and is structured to circulate across tubular body 12 an airflow that subsequently flows across the washing tub 3 and the air cooling device 6 for finally returning back to tubular body 12.

[0038] Centrifugal fan 14, is preferably recessed on a portion of tubular body 12 suitably shaped to form the outer volute or impeller housing of centrifugal fan 14.

[0039] Preferably, though not necessarily, the air heating device 7 furthermore comprises one or more temperature sensors 17 which are located inside, or faced to the inside of, tubular body 12 and are structured for measuring the temperature of the air flowing inside tubular body 12, preferably close to the second opening or mouth

12b of the tubular body 12.

[0040] With reference to Figures 2 and 3, tubular body 12 comprises at least two complementary hemi-shells 21 and 22 having their peripheral edges 21a and 22a structured for being reciprocally coupled to compose/form the tubular body 12, and an intermediate sealing gasket 23 which is structured for being interposed between the hemi-shells 21 and 22 (preferably between the peripheral edges 21a and 22a of the latter) to seal in substantially airtight manner the hemi-shells 21 and 22 one another.

[0041] Advantageously at least one of the two or more hemi-shells 21, 22 comprises one or more protruding elements 30 adapted to mate with one or more corresponding seats 31 provided in a portion of the intermediate sealing gasket 23, so as to set (or fix, constrain) the reciprocal position of the respective hemi-shells 21 or 22, and the intermediate sealing gasket 23.

[0042] At least one of the hemi-shells 21, 22 is furthermore preferably structured for being rigidly fixed to the washing tub 3.

[0043] The intermediate sealing gasket 23 preferably comprises a flexible main body 23a, preferably substantially cable-shaped, which is advantageously made of an elastomeric material and is advantageously bended/profiled so as to match with the shape of the peripheral edges 21a and 22a of hemi-shells 21 and 22, so to be interposed between and compressed by the peripheral edges 21a, 22a of the two hemi-shells 21 and 22 when the hemi-shells 21 and 22 are coupled one another.

[0044] In the example shown, the cross-section of the cable-shaped main body 23a is preferably substantially circular in shape.

[0045] Advantageously the main body 23a of the sealing gasket 23 can be closed (i.e. having a closed or annular perimeter or profile), as in the embodiment illustrated in enclosed figures, such that if forms a sealing ring; in another embodiment, not illustrated, the main body 23a of the sealing gasket 23 can be open (i.e. having an open perimeter or profile).

[0046] Preferably, but not necessarily, the intermediate sealing gasket 23 comprises one or more lugs or wings 32 protruding from the main body 23a, and provided with at least one seat 31 for receiving a protruding element 30.

[0047] Preferably a plurality of lugs or wings 32 is spaced along the main body 23a.

[0048] Advantageously at least one of the one or more lugs or wings (for example the one numbered 32a in encloses Figure 3) protrudes, in the assembled condition of the tubular body 12, externally from the tubular body 12, in such a way to locally protect the tubular body 12 from the bumps (in other word they act as shock absorbing elements); advantageously these protruding lugs or wings (like the one numbered 32a) are arranged in such a way that they are positioned between the tubular body 12 and the outer casing 2, so as to locally protect the tubular body 12 from the bumps (collisions, impacts) against the outer casing 2 (and clearly also to locally protect the outer casing 2 from the bumps of the tubular body 12).

[0049] In another advantageous embodiment, one or more of the seats 31 for receiving the protruding elements 30 are provided directly on the main body 23a of the intermediate sealing gasket 23. In this case a plurality of seats 31 may be advantageously spaced along the main body 23a of the intermediate sealing gasket 23.

[0050] In a further advantageous embodiment, the intermediate sealing gasket may be provided with one or more seats 31 provided directly in its main body 23a, and with one or more seats 31 provided in one or more lugs or wings 32 protruding from the main body 23 a.

[0051] Advantageously, the protruding elements 30 comprise one or more pins (like in the embodiment illustrated in enclosed figures) protruding from one of the two or more hemi-shells 21, 22 and positioned in such a way to be housed into a corresponding seat 31 of the intermediate sealing gasket 23.

[0052] Preferably, but not necessarily, the hemi-shells comprising the protruding elements 30 (for example the hemi shell one numbering 21 in enclosed Figures) comprises one or more protrusion 33 comprising, on their turn, one or more protruding elements 30; advantageously protrusions 33 are arranged in such a way to be positioned in correspondence of the one or more seats 31 of the intermediate gasket 23, preferably in correspondence of the lugs or wings 32, so that the latter may be positioned on the protrusions 33.

[0053] Preferably, the hemi shell 21 comprising the protruding elements 30 is provided with one or more ribs 34 (e.g. a single continuous perimeter rib, like in the example of Figure 3, or a plurality of ribs, separated one another) protruding from the peripheral edge 21a of the hemi shell 21 and adapted to provide a guide or support for the positioning of the body 23a of the intermediate sealing gasket 23. In this case, during the assembly of the tubular body 12, the intermediate sealing gasket 23 may be positioned on the hemi shell 21 in such a way that its body 23a lays against the one or more ribs 34, while the positioning of the protruding elements 30 into the corresponding seats 31 ensures the correct reciprocal positioning.

[0054] In a further embodiment, not illustrated, at least one of the hemi-shells 21, 22 is provided with a longitudinal grove or seat, not illustrated, and the main body of the sealing gasket is shaped/dimensioned so as to be at least partly recessed into this longitudinal grove or seat.

[0055] The tubular body 12 is preferably composed by a substantially basin-shaped, lower hemi-shell 21 which is structured for being rigidly fixed to the top of the washing tub 3 preferably via a number of anchoring screws 18, and by a substantially lid-shaped, upper hemi-shell 22 which is shaped/dimensioned to rest in abutment on the annular upper rim 21a of hemi-shell 21 to completely close the basin-shaped lower hemi-shell 21.

[0056] The basin-shaped lower hemi-shell 21 is furthermore preferably provided with two coupling col-

lars/manifolds which protrude downwards from the bottom of the hemi-shell 21 and are shaped/dimensioned to fit/couple in substantially airtight manner respectively with the air escape mouth of the air cooling device 6 and with an auxiliary pass-through opening provided either on the cylindrical bellows, not illustrated, connecting washing tub 3 to the laundry loading/unloading opening on front wall 2a, or directly on the body of washing tub 3.

[0057] Preferably the substantially basin-shaped, lower hemi-shell 21 is furthermore shaped/dimensioned so to directly house the resistor 13.

[0058] The substantially lid-shaped, upper hemi-shell 22, is preferably, though not necessarily, structured/shaped to directly support the temperature sensors 17 preferably aligned immediately above the coupling collar/manifold that connects the hemi-shell 21 directly or indirectly to the inside of washing tub 3.

[0059] A first half of the outer volute of centrifugal fan 14 is furthermore preferably, though not necessarily, provided directly on the substantially basin-shaped, lower hemi-shell 21 locally substantially coaxial to the coupling collar/manifold structured to be fitted/coupled to the air escape mouth of the air cooling device 6, whereas a second complementary half of the outer volute of centrifugal fan 14 is provided on the lid-shaped upper hemi-shell 22, so that the complete outer volute of centrifugal fan 14 is composed when the upper and lower hemi-shells 21 and 22 are coupled to one another.

[0060] In the example shown, both upper and lower hemi-shells 21 and 22 are preferably made of a metal (preferably aluminum).

[0061] In the examples shown, the intermediate sealing gasket 23 is preferably made of an elastomeric plastic material and is made in one piece via an injection molding process.

[0062] General operation of the front-loading laundry washing and drying machine 1 is clearly inferable from the above description, with no further explanation required.

[0063] During the assembly if the air heating device 7, the operator can easily correctly positioning the intermediate sealing gasket 23 to the hemi shell 21 by placing the protruding elements 30 into the seats 31; this process is particularly easy and ergonomic and allows reducing the assembly time, and therefore the overall costs of the machine.

[0064] Moreover, the mating of the protruding elements 30 with the seats 31 reduces the risk that once associated to the hemi shell 21, the intermediate sealing gasket 23 could accidentally be misplaced, for example due to the movement of the partially assembled entity hemi shell 21/intermediate sealing gasket 23.

[0065] Moreover the fact that some of the lugs or wings provided with the seats protrudes externally from the tubular body 12, in such a way to locally protect the tubular body 12 from the bumps effectively protects the air heating device from the bumps due for example to the shaking of the tub to which the air-duct assembly is attached, without increasing the complexity and the production costs of the machine.

[0066] Clearly, changes may be made to either the laundry washing and drying machine as described herein without, however, departing from the scope of the present invention.

Claims

1. Laundry washing and drying machine (1) comprising:

   - an outer casing (2),
   - a hollow washing tub (3) housed inside said casing (2),
   - a air heating device (7) attached onto said washing tub (3), comprising a tubular body (12), structured for being crossed by an airflow, and an air-heating device (13),

   wherein said tubular body (12) comprises at least two hemi-shells (21, 22) reciprocally coupled to compose/form said tubular body (12), and an intermediate sealing gasket (23) interposed between said at least two hemi-shells (21, 22) to seal said hemi-shells (21, 22) one another, **characterized in that**

   at least one of said two or more hemi-shells (21, 22) comprises one or more protruding elements (30) adapted to mate with one or more corresponding seats (31) provided in a portion of said intermediate sealing gasket (23), so as to set the reciprocal position of said at least one of said two or more hemi-shells (21, 22) and said intermediate sealing gasket (23).

2. Laundry washing and drying machine according to Claim 1, wherein said intermediate sealing gasket (23) comprises a main body (23a) arranged in such a way to be interposed between said two or more hemi-shells (21, 22) when said two or more hemi-shells (21, 22) are coupled one another.

3. Laundry washing and drying machine according to Claim 2, wherein said intermediate sealing gasket (23) comprises one or more lugs or wings (32) protruding from said main body (23a) and provided with at least one of said one or more of seats (31) for receiving said one or more protruding elements (30).

4. Laundry washing and drying machine according claim 3, wherein a plurality of lugs or wings (32) is spaced along said main body (23a).

5. Laundry washing and drying machine according to Claim 3 or 4, wherein at least one (32a) of said one or more lugs or wings (32) protrudes, in the assembled condition of said tubular body (12), externally

from said tubular body (12), in such a way to locally protect said tubular body (12) from the bumps.

6. Laundry washing and drying machine according to Claim 2, wherein one or more of said seats (31) for receiving said protruding elements (30) are provided directly on said main body (23a).

7. Laundry washing and drying machine according claim 6, wherein a plurality of said seats (31) is spaced along said main body (23a).

8. Laundry washing and drying machine according to one or more of previous claims, wherein said protruding element (30) comprises one or more pins (30) protruding from one of said two or more hemi-shells (21, 22), said one or more pins (30) being positioned in such a way to be housed into a corresponding seat (31) of said intermediate sealing gasket (23).

9. Laundry washing and drying machine according to one or more of the previous claims, wherein the one of said two or more hemi-shells (21, 22) comprising said one or more protruding elements (30) comprises one or more protrusion (33), comprising said one or more protruding elements (30), and arranged in such a way to be positioned in correspondence of said one or more seats (31) of said intermediate gasket (23).

10. Laundry washing and drying machine according to one or more of the previous claim, wherein said intermediate sealing gasket (23) is made of an elastomeric material.

11. Laundry washing and drying machine according to one or more of claims 2 to 10, wherein the hemi shell (21) comprising said one or more protruding elements (30) is provided with one or more ribs (34) protruding from its peripheral edge (21a) and adapted to provide a guide/support for the positioning of said intermediate sealing gasket (23).

12. Laundry washing and drying machine according to one or more of claims 2 to 10, wherein the peripheral edge (21a, 22a) of at least one of said hemi-shells (21, 22) is provided with a longitudinal grove or seat, and the main body (23a) of the sealing gasket (23) is shaped/dimensioned so as to be at least partly recessed into said longitudinal grove or seat.

13. Laundry washing and drying machine according to any one of claims 2 to 12, wherein the main body (23a) of the intermediate sealing gasket (23) is substantially annular in shape.

14. Laundry washing and drying machine according to one or more of claims 2 to 12, wherein the main body (23a) of the intermediate sealing gasket (23) is open in shape.

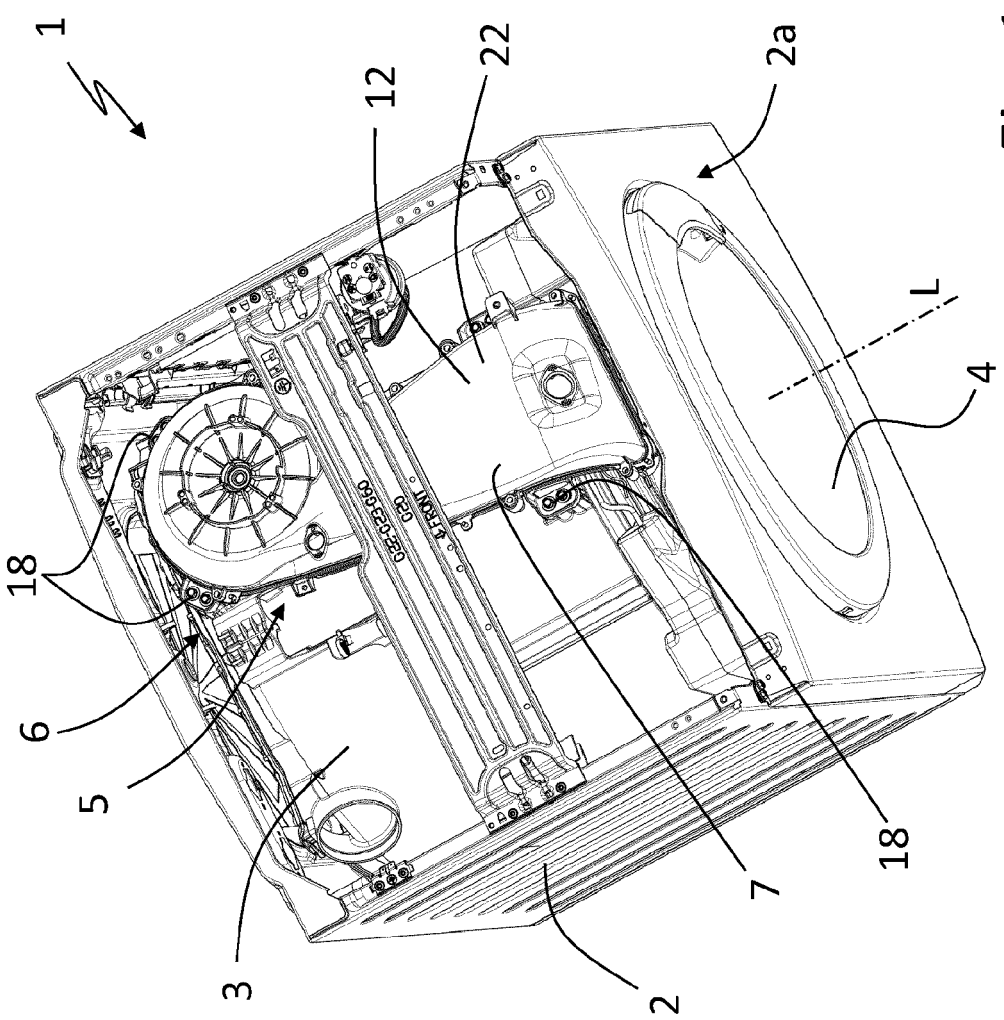

Fig. 1

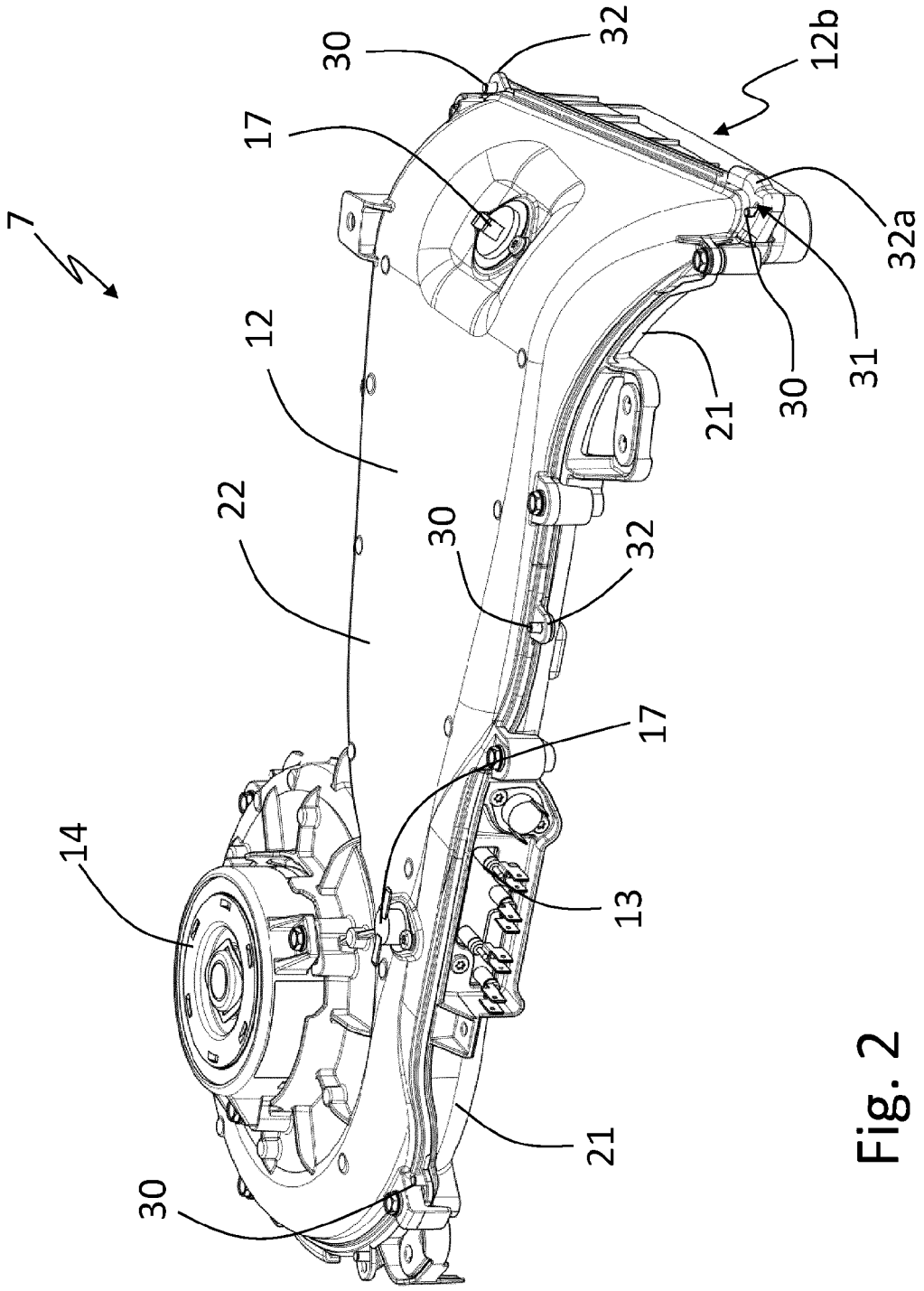

Fig. 2

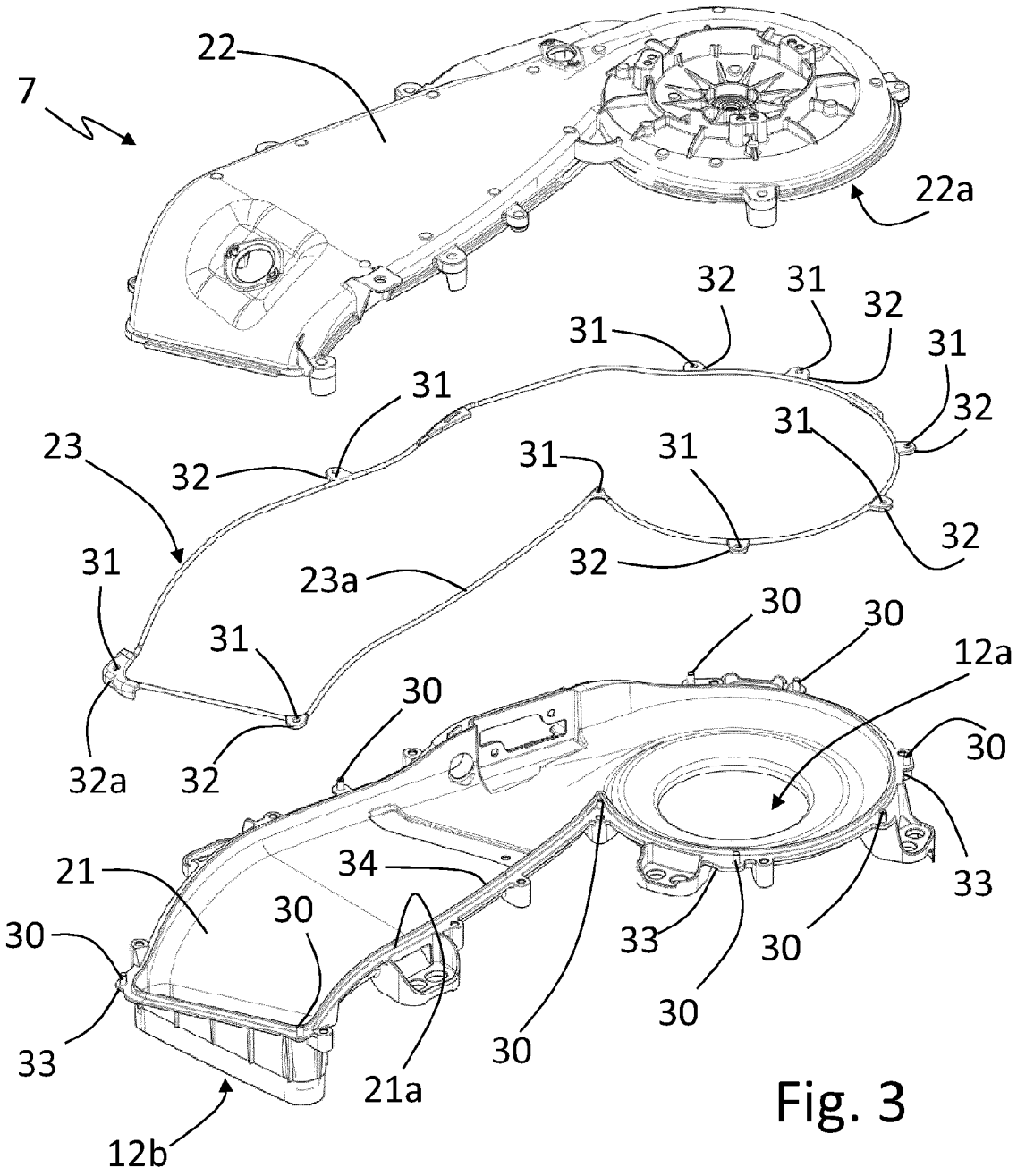
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Fig. 3

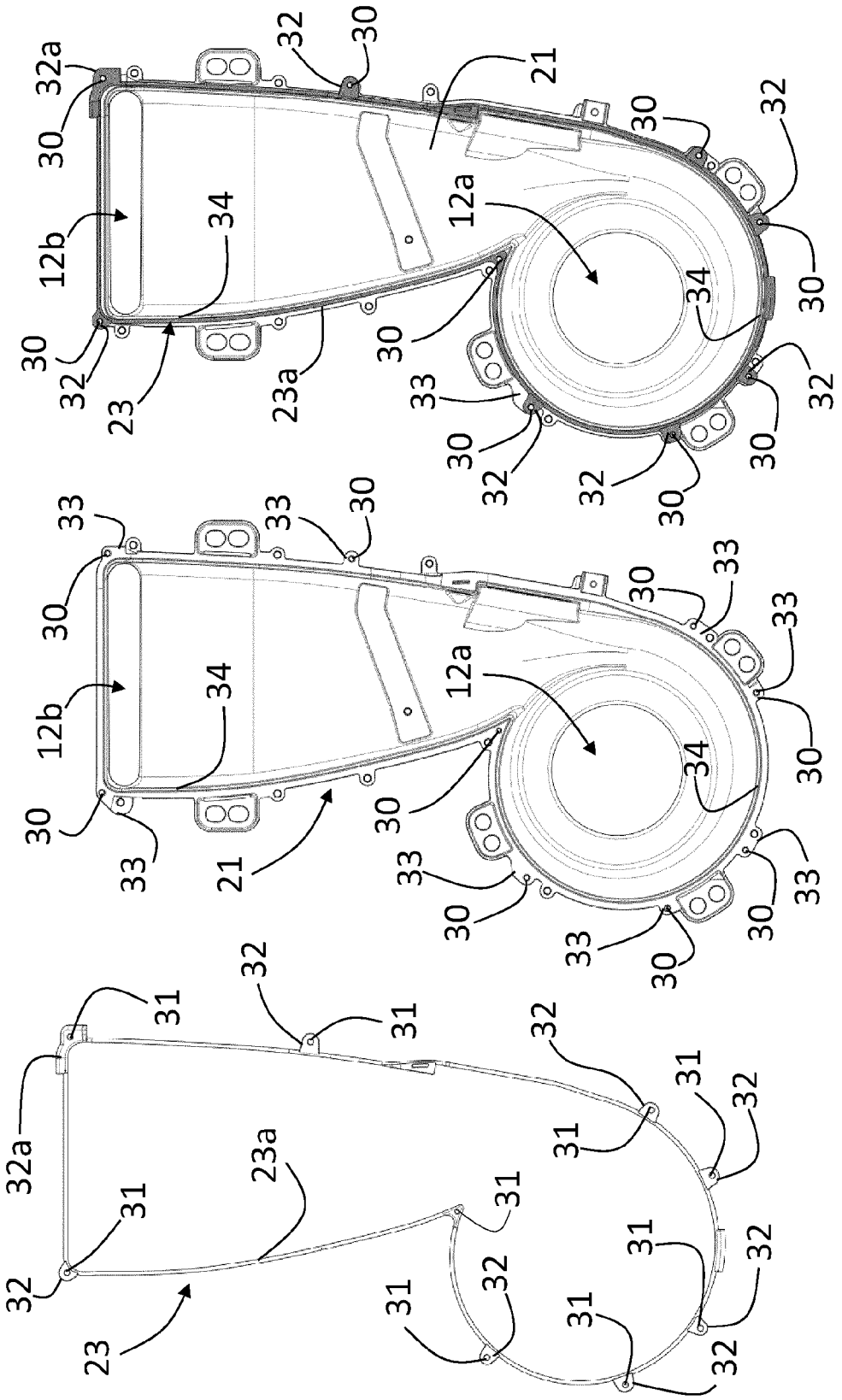

Fig. 6

Fig. 5

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 11 19 3961

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 Y	WO 2007/021134 A2 (LG ELECTRONICS INC [KR]; KIM MYOUNG-DEOK [KR]; KANG DONG-WOO [KR]; SHI) 22 February 2007 (2007-02-22) * paragraph [0071] - paragraph [0072]; figures 2-5,14 *	1,2, 6-10,12 1-4	INV. D06F58/26
Y	JP 2005 240988 A (YAMADA SEISAKUSHO KK) 8 September 2005 (2005-09-08) * abstract; figures 1-2,5-6 *	1-4	
A	DE 10 2010 029491 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 13 January 2011 (2011-01-13) * paragraph [0022]; figure 1 *	1-14	
A,D	WO 2010/100114 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]; LI JIHAO [CN]) 10 September 2010 (2010-09-10) * page 4, line 10 - page 6, line 12; figures 1-3 *	1-14	
			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	2 May 2012	Hannam, Martin

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
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 19 3961

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02-05-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007021134 A2	22-02-2007	AU 2006280592 A1	22-02-2007
		EP 1915480 A2	30-04-2008
		JP 4880689 B2	22-02-2012
		JP 2009504307 A	05-02-2009
		US 2008244922 A1	09-10-2008
		WO 2007021134 A2	22-02-2007
JP 2005240988 A	08-09-2005	JP 4462481 B2	12-05-2010
		JP 2005240988 A	08-09-2005
DE 102010029491 A1	13-01-2011	CN 201517173 U	30-06-2010
		DE 102010029491 A1	13-01-2011
WO 2010100114 A1	10-09-2010	CN 201354846 Y	02-12-2009
		WO 2010100114 A1	10-09-2010

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

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Patent documents cited in the description

- WO 2010100114 A **[0007] [0008]**