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(54) **Home laundry drier**

(57) A home laundry drier (1) having an outer box casing (2), and a rotary laundry drum (4) for housing the laundry for drying, and which is mounted for rotation about its longitudinal axis (L) inside the box casing (2); the laundry drum (4) being substantially cylindrical; and the laundry drier (1) also having a jacket (6) fixed firmly, but in easily removable manner, to the inside of the laundry drum (4) to line and protect the surface of the cylindrical lateral wall (4b) of the laundry drum (4).

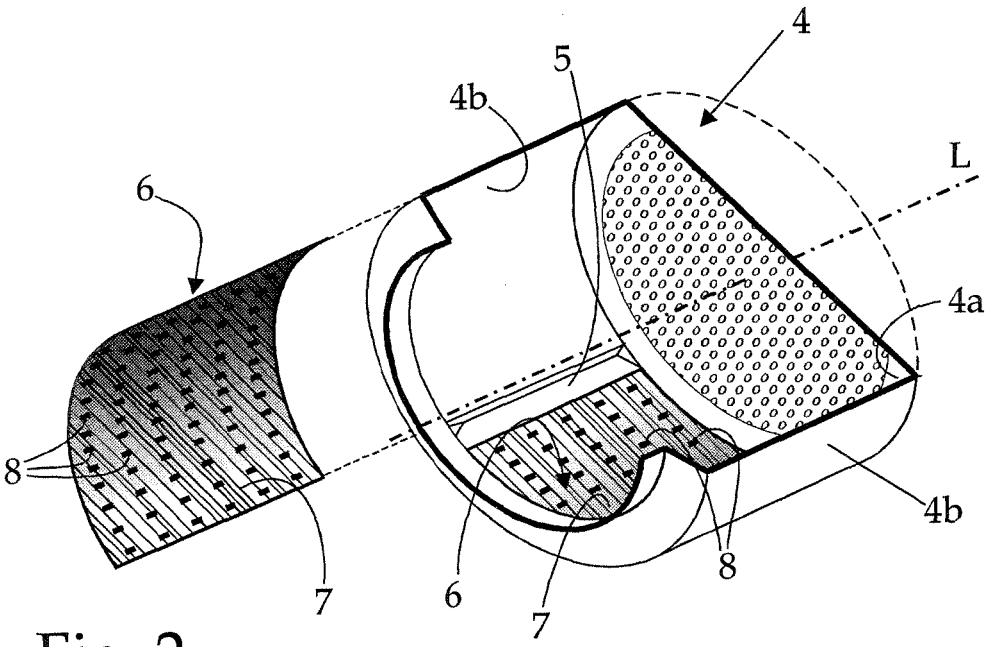

Fig. 2

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Description

[0001] The present invention relates to a home laundry drier.

[0002] More specifically, the present invention relates to a rotary-drum home laundry drier, to which the following description refers purely by way of example.

[0003] As is known, rotary-drum laundry driers substantially comprise a substantially parallelepiped-shaped outer box casing; a cylindrical laundry drum housed in axially rotating manner inside the box casing, directly facing a laundry loading and 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 work position closing the opening in the front face of the casing to seal the laundry drum; and an electric motor for rotating the laundry drum about its longitudinal axis inside the casing.

[0004] Rotary-drum laundry driers of the above type also comprise a closed-circuit, hot-air generator designed to circulate inside the laundry drum a stream of hot air with a low moisture content and which flows through the laundry drum and over the laundry inside the drum to rapidly dry the laundry.

[0005] Though highly efficient, the high noise level of rotary-drum laundry driers in certain operating conditions has been the object of frequent criticism over the past few years.

[0006] More specifically, in recent years, users of rotary-drum laundry driers have voiced complaints about the annoying tinkling sound produced by metal parts in the laundry continually striking the cylindrical wall of the laundry drum, which has always been made of metal.

[0007] The reason for this lies in the fact that the noise produced by metal parts in the laundry striking the cylindrical wall of the laundry drum has normally higher acoustic frequencies than the other noises produced when the household appliance is running, and very often falls within the acoustic frequency spectrum to which the human ear is more sensitive, thus making it particularly annoying.

[0008] Moreover, the acoustic frequencies of the noise produced by metal parts in the laundry striking the cylindrical wall of the laundry drum are normally amplified by the casing, which acts as a resonator, with all the drawbacks this entails.

[0009] It is an object of the present invention to provide a home laundry drier designed to eliminate the aforementioned drawbacks.

[0010] According to the present invention, there is provided a home laundry drier as claimed in Claim 1 and preferably, though not necessarily, in any one of the Claims depending directly or indirectly on Claim 1.

[0011] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which :

Figure 1 shows a view in perspective, with parts removed for clarity, of a rotary-drum laundry drier in accordance with the teachings of the present invention;

Figure 2 shows a view in perspective, with parts in section and parts removed for clarity, of a detail of the Figure 1 rotary-drum laundry drier.

[0012] Number 1 in Figure 1 indicates as a whole a home laundry drier substantially comprising a preferably, though not necessarily, parallelepiped-shaped outer box casing 2; an airtight, preferably, though not necessarily, cylindrical laundry drying tub or chamber (not shown) for housing the laundry to be dried, and which is fixed substantially horizontally inside casing 2, directly facing a laundry loading and unloading opening 2a formed in the front face of casing 2; a door 3 hinged to the front face of casing 2 to rotate to and from a work position closing opening 2a in the front face to seal the laundry drying tub; and a preferably, though not necessarily, cylindrical laundry drum 4 for housing the laundry for drying, and which is housed in axially rotating manner and preferably, though not necessarily, horizontally inside the drying tub.

[0013] More specifically, with reference to Figures 1 and 2, laundry drum 4 is mounted for rotation about its longitudinal axis L, which, in the example shown, coincides with the longitudinal axis of the drying tub; is made of metal; has an end wall 4a and possibly a cylindrical lateral wall 4b, which are perforated or at any rate permeable to air, to assist airflow into the drum; and preferably, though not necessarily, has a number of ribs or projections 5 projecting towards the centre of the drum from the surface of cylindrical lateral wall 4b.

[0014] In the example shown, projections 5 extend, substantially parallel to longitudinal axis L, along the surface of cylindrical lateral wall 4b, and are equally spaced angularly along the whole circumference of cylindrical lateral wall 4b.

[0015] Laundry drier 1 also comprises an electric motor (not shown) or similar, which, on command, rotates laundry drum 4 about longitudinal axis L inside the drying tub; and a closed-circuit, hot-air generator (not shown) housed inside casing 2 and designed to circulate inside the drying tub and laundry drum 4 a stream of hot air with a low humidity content, and which flows over, to rapidly dry, the laundry inside the drum.

[0016] Casing 2, the drying tub, door 3, laundry drum 4, the electric motor, and the hot-air generator are commonly known parts in the industry, and therefore not described in detail.

[0017] With reference to Figures 1 and 2, laundry drier 1 also comprises an internal jacket 6 of predetermined thickness, which is fixed firmly, but in easily removable manner, inside laundry drum 4 to line and protect the surface of cylindrical lateral wall 4b of laundry drum 4.

[0018] Jacket 6 substantially consists of a sheet 7 of soft lining material of appropriate thickness, which is shaped to line the surface of cylindrical lateral wall 4b of laundry drum 4, preferably, though not necessary, with the exception of the areas occupied by projections 5; and

of fastening means 8 designed to fix sheet 7 of lining material firmly, but in easily removable manner, to the surface of cylindrical lateral wall 4b.

[0019] In the example shown, sheet 7 of lining material is defined by a sheet 7 of plastic material of preferably, though not necessarily, 1 to 10 millimetre thickness, and is divided into a number of cylindrical sectors, each of which is shaped to completely line the surface of cylindrical lateral wall 4b of laundry drum 4 bounded laterally by two adjacent projections 5.

[0020] More specifically, with reference to Figure 2, sheet 7 of lining material in the example shown comprises a number of solid mats of open- or closed-cell plastic polymer foam (such as neoprene or polyurethane), each of which is 1 to 10 millimetres thick, is shaped to completely line the surface of cylindrical lateral wall 4b of laundry drum 4 bounded laterally by two adjacent projections 5, and has, embedded in it, a number of permanent magnets 8 for securing the plastic polymer foam mat magnetically to the surface of cylindrical lateral wall 4b of laundry drum 4.

[0021] Obviously, at least cylindrical lateral wall 4b of laundry drum 4 must be made of metal.

[0022] Permanent magnets 8 define the fastening means 8 of jacket 6, and must be so arranged along the whole plastic polymer foam mat 7 that the attraction force produced by interaction between the magnetic field generated by permanent magnets 8 and the metal body of laundry drum 4 is sufficient to ensure adhesion of the plastic polymer foam mat 7 to the surface of cylindrical lateral wall 4b of the drum.

[0023] In an alternative embodiment, sheet 7 of lining material may comprise one or more sheets of extruded plastic mesh or perforated material to facilitate airflow through cylindrical lateral wall 4b of laundry drum 4, if this wall is also perforated or at any rate permeable to air.

[0024] In this case too, the sheets of extruded plastic mesh or perforated material may be 1 to 10 millimetres thick, and permanent magnets 8 may be embedded in them to fix each sheet of extruded plastic material to the surface of cylindrical lateral wall 4b of laundry drum 4.

[0025] Operation of laundry drier 1 will be clear from the foregoing description, with no further explanation required, other than to state that jacket 6 prevents the metal parts in the laundry rotating inside laundry drum 4 from directly contacting cylindrical lateral wall 4b of the drum, thus eliminating the noise typical of metal-on-metal impact.

[0026] Sheet 7 of lining material may also have soundproofing properties to further deaden the noise produced by metal parts in the laundry rotating inside laundry drum 4 striking jacket 6, thus further reducing the noise level of the household appliance.

[0027] Using permanent magnets 8 to fix sheet 7 of plastic material to the surface of cylindrical lateral wall 4b of laundry drum 4 is also highly versatile, and involves no change in the manufacturing process of metal laundry drum 4.

[0028] Using permanent magnets 8, jacket 6 can also be applied to the laundry drums of existing driers, with all the advantages this entails.

[0029] Clearly, changes may be made to laundry drier 1 as described herein without, however, departing from the scope of the present invention.

[0030] For example, laundry drier 1 is not provided with an airtight laundry drying tub or chamber, and the laundry drum 4 is mounted in axially rotating manner directly inside box casing 2. In this embodiment only end wall 4a of the laundry drum 4 is perforated or permeable to air, and the front opening of the laundry drum 4 directly faces the laundry loading and unloading opening 2a in the front face of box casing 2. Obviously, when placed in its work position, door 3 seals in airtight manner directly the front opening of laundry drum 4.

[0031] As concerns the internal jacket 6, in an alternative embodiment permanent magnets 8 may be replaced with press-studs or other click-on fastening devices, though these are obviously not so easy to use.

[0032] As regards laundry drum 4, cylindrical lateral wall 4b may be the only part of the drum made of metal.

Claims

1. A home laundry drier (1) comprising an outer box casing (2), and a rotary laundry drum (4) for housing the laundry for drying, and which is mounted for rotation about its longitudinal axis (L) inside said box casing (2); the laundry drum (4) being substantially cylindrical and said laundry drier (1) being **characterized by** also comprising a jacket (6) fixed firmly, but in easily removable manner, to the inside of the laundry drum (4) to line and protect the surface of the cylindrical lateral wall (4b) of said laundry drum (4).

2. A laundry drier as claimed in Claim 1, **characterized in that** said jacket (6) comprises a sheet (7) of soft lining material of predetermined thickness, which is shaped to line the surface of the cylindrical lateral wall (4b) of the laundry drum (4); and fastening means (8) designed to fix said sheet (7) of lining material firmly, but in easily removable manner, to the surface of said cylindrical lateral wall (4b).

3. A laundry drier as claimed in Claim 2, **characterized in that** said laundry drum (4) comprises a number of projections (5) projecting from the surface of the cylindrical lateral wall (4b) towards the centre of the laundry drum, and extending substantially parallel to the longitudinal axis (L) of said laundry drum; said sheet (7) of lining material being divided into a number of cylindrical sectors, each of which is shaped to completely line the surface of the cylindrical lateral wall (4b) of the laundry drum (4) bounded laterally by two adjacent projections (5).

4. A laundry drier as claimed in Claim 2 or 3, **characterized in that** said sheet (7) of lining material is a sheet (7) of plastic material of predetermined thickness.

5. A laundry drier as claimed in Claim 4, **characterized in that** said sheet (7) of plastic material is 1 to 10 millimetres thick.

6. A laundry drier as claimed in any one of Claims 2 to 5, **characterized in that** said sheet (7) of lining material comprises at least one mat (7) of open- or closed-cell plastic polymer foam.

7. A laundry drier as claimed in any one of Claims 2 to 5, **characterized in that** said sheet (7) of lining material comprises at least one sheet (7) of extruded plastic mesh or perforated material.

8. A laundry drier as claimed in any one of the foregoing Claims, **characterized in that** at least the cylindrical lateral wall (4b) of said laundry drum (4) is made of metal.

9. A laundry drier as claimed in Claim 8, **characterized in that** said fastening means (8) comprise a number of permanent magnets (8) arranged inside the sheet (7) of lining material to fix said sheet (7) of lining material magnetically to the surface of the cylindrical lateral wall (4b) of the laundry drum (4).

10. A laundry drier as claimed in any one of Claims 2 to 9, **characterized in that** said sheet (7) of lining material is made of soundproofing material.

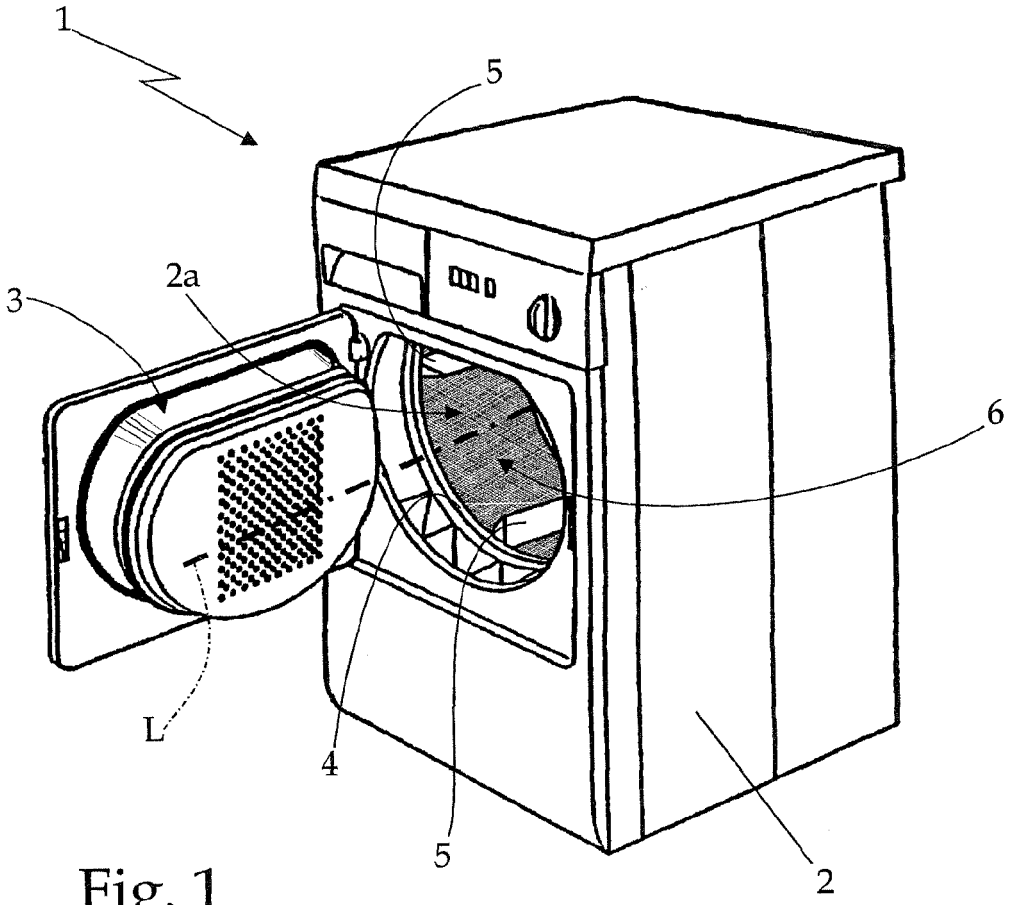

Fig. 1

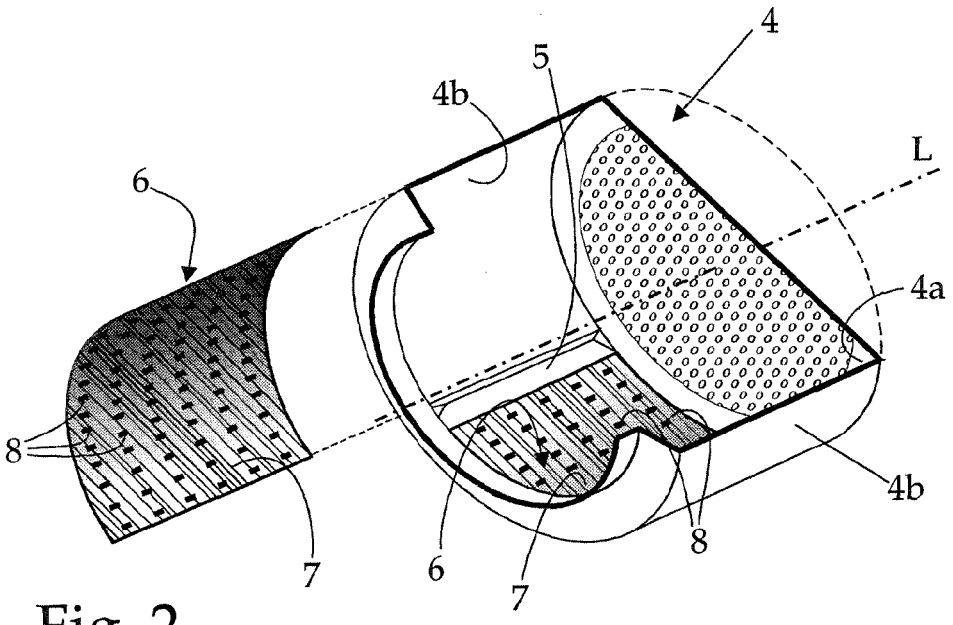

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 7260

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	22 October 2007	Jezierski, Krzysztof

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 10 7260

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