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(71) Applicant: **Electrolux Home Products Corporation N.V.**
1930 Zaventem (BE)

(72) Inventor: **Quaroni, Riccardo**
33098 Arzene (PN) (IT)
(74) Representative: **Nardoni, Andrea et al**
Electrolux Italia S.p.A.
Corso Lino Zanussi, 30
33080 Porcia (PN) (IT)

(54) **Filtering cartridge for home laundry driers and home laundry drier provided with said filtering cartridge**

(57) A filtering cartridge (1) for home laundry driers (2) consisting of a supporting plate (20) which is made of plastic material and is structured for being insertable in easy removable manner into a slit (3b) formed in the peripheral edge of the laundry loading/unloading opening (3a) of the laundry drier (2) so as to completely close said slit (3b), and of a substantially bag-shaped hollow shell (21) which overhangingly protrudes from the rear face of the supporting plate (20) so as to extend inside a section (9b) of the air recirculating conduit (9) of the laundry drier (2); the hollow shell (21) being realized in one piece with

the supporting plate (20) via an injection molding process, and being divided into two complementary valve-like pieces (22a, 22b) which are laterally hinged to one another; the filtering cartridge (1) being also provided with a first annular gasket (24) which is made of thermoplastic elastomer and is over-injected on the whole peripheral edge of the supporting plate (20), and/or with a second annular gasket (25) which is made of thermoplastic elastomer and is over-injected along the whole coupling peripheral edge of at least one of the two valve-like pieces (22a, 22b).

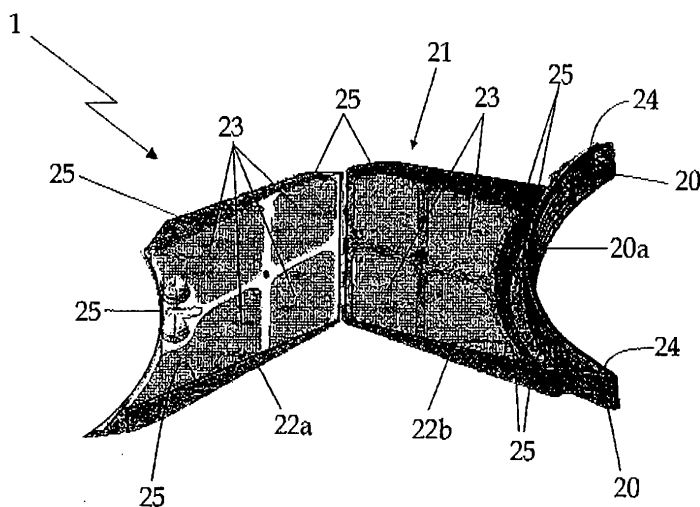


Fig. 2

Description

[0001] The present invention relates to a filtering cartridge for home laundry driers.

[0002] More specifically, the present invention relates to a filtering cartridge for rotary-drum home laundry driers with a heat-pump type closed-circuit, hot-air generator, to which the following description refers purely by way of example.

[0003] As is known, present rotary-drum home laundry driers generally comprise a substantially parallelepiped-shaped outer box casing; a cylindrical bell-shaped 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 revolving drum; and an electric motor assembly for rotating the drum about its longitudinal axis inside the casing.

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

[0005] In most recently marketed rotary-drum laundry driers, the closed-circuit, hot-air generator comprises an air recirculating conduit having its two ends connected to the revolving drum, on opposite sides of the latter; an electric centrifugal fan located along the recirculating conduit to produce, inside the latter, an airflow which flows through the revolving drum; and finally a heat-pump assembly having its two heat exchangers located one after the other, along the air recirculating conduit. The first air/refrigerant heat exchanger of the heat-pump assembly provides for rapidly cooling the airflow arriving from the revolving drum to condense the surplus moisture in the airflow; whereas the second air/refrigerant heat exchanger of the heat-pump assembly provides for rapidly heating the airflow arriving from the first heat exchanger and directed back to the revolving drum, so that the airflow re-entering into the revolving drum is heated rapidly to a temperature higher than or equal to that of the air flowing out of the revolving drum.

[0006] To avoid fluff and/or lint particles to reach and clog up the centrifugal fan and the two heat exchangers, the hot-air generator also comprises at least one filtering element which is placed along the air recirculating conduit, upstream of the centrifugal fan which, in turn, is usually located upstream of the first air/refrigerant heat exchanger.

[0007] In particular, the intake portion of the air recirculating conduit is generally divided into two consecutive sections the first of which is integrated in the door of the laundry drier, and the hot-air generator is provided with

two independent filtering elements located along, respectively, the first and the second section of the intake portion of the air recirculating conduit.

[0008] More specifically, the first section of the intake portion of the air recirculating conduit extends through the door of the laundry drier, and the first filtering element generally consists of a net septum which covers the inlet of the first section realized on the rear face of the door. Whereas the second section of the intake portion of the air recirculating conduit extends into the drier casing from a slit formed in the peripheral edge of the laundry loading/unloading opening, and the second filtering element generally consists of a wedge-like filtering cartridge which is fitted into a slit formed in the peripheral edge of the laundry loading/unloading opening.

[0009] Obviously the door of the rotary-drum laundry drier is structured so to align, when placed in the closing position, the first section of the intake portion of the air recirculating conduit to the second section of the intake portion of the air recirculating conduit, thus allowing the airflow arriving from the revolving drum to freely flow towards the heat-pump assembly.

[0010] GB-2116068 discloses a wedge-like filtering cartridge for laundry driers which comprises a bag-shaped rigid shell having a V-shaped cross section, and which is dimensioned for being inserted into the slit formed in the peripheral edge of the laundry loading/unloading opening. Along its longitudinal middle plane, the rigid shell is divided into two identical valve-like pieces which are laterally hinged to one another, so that the rigid shell is openable in a book-like manner. The bottom wall of each valve-like piece is provided with two large throughout openings each of which is completely covered with a close-mesh net capable to restrain fluff and/or lint particles within the bag-shaped rigid shell.

[0011] Along the coupling peripheral edge of each valve-like piece, the filtering cartridge also comprises an outwardly projecting peripheral web flap which is designed to overlap the outwardly projecting peripheral web flap of the other valve-like piece so as to form a sort of labyrinth seal.

[0012] Unfortunately the labyrinth seal realized along the coupling peripheral edge of the two valve-like pieces is not so efficient in stopping the smallest fluff and/or lint particles, therefore these particles can reach the first air/refrigerant heat exchanger, deposit therein and impair the rapid cooling of the airflow arriving from the revolving drum.

[0013] To eliminate this drawback, some laundry driers features a third filtering element which is located along the air recirculating conduit, immediately upstream of the first air/refrigerant heat exchanger to stop the smallest fluff and/or lint particles. Usually this additional filtering element is housed in a drawer-like element located beneath the revolving drum, and which can be pulled out of the casing to allow the user to clean the filter.

[0014] Despite being very efficient, this solution is however complicated in design and expensive to produce,

with all the drawbacks this entails in terms of production cost of the laundry drier.

[0015] Aim of the present invention is therefore to provide a home laundry drier featuring a simple and more efficient air filtering system, capable of significantly reducing laundry-driers production costs.

[0016] According to the present invention, there is provided a filtering cartridge for home laundry driers as claimed in Claim 1 and preferably, though not necessarily, in any one of the dependent Claims.

According to the present invention, there is also provided a home laundry driers as claimed in Claim 9 and preferably, though not necessarily, in any one of the dependent Claims.

[0017] 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 section view, with parts removed for clarity, of a rotary-drum home laundry drier provided with a filtering cartridge realized in accordance with the teachings of the present invention; and
- Figures 2 and 3 show two perspective views of the filtering cartridge used in the Figure 1 laundry drier.

[0018] With reference to Figures 1, number 1 indicates as a whole a wedge-like filtering cartridge suitable to be used in a home laundry drier 2 which comprises: a preferably, though not necessarily, parallelepiped-shaped outer box casing 3; a preferably, though not necessarily, cylindrical, bell-shaped revolving drum 4 for housing the laundry to be dried, and which is fixed in axially rotating manner inside casing 3, directly facing a laundry loading/unloading opening 3a formed in the front face of casing 3; and a door 5 hinged to the front face of casing 3 to rotate to and from a closing position in which door 5 rests completely against the casing to close opening 3a in the front face of the casing to seal revolving drum 4.

[0019] More specifically, in the example shown revolving drum 4 rests horizontally inside casing 3 on a number of horizontal supporting rollers 6 which are fitted to casing 3 to let revolving drum 4 freely rotate about its longitudinal axis L.

[0020] Casing 3, revolving drum 4, door 5 and supporting rollers 6 are commonly known parts in the industry, and therefore not described in detail.

[0021] With reference to Figure 1, laundry drier 2 also comprises a motor assembly 7 for rotating, on command, revolving drum 4 about its longitudinal axis L inside casing 3; and a closed-circuit, hot-air generator 8 housed inside casing 3 and designed to circulate through revolving drum 4 a stream of hot air having a low moisture level, and which flows over and rapidly dries the laundry inside drum 4.

[0022] More specifically, closed-circuit, hot-air generator 8 provides for gradually drawing air from revolving drum 4; extracting surplus moisture from the hot air drawn from revolving drum 4; heating the dehumidified air to a

predetermined temperature, normally higher than the temperature of the air from revolving drum 4; and feeding the heated, dehumidified air back into revolving drum 4, where it flows over, to rapidly dry, the laundry inside the drum.

[0023] In other words, hot-air generator 8 provides for continually dehumidifying and heating the air circulating inside revolving drum 4 to rapidly dry the laundry inside the drum, and substantially comprises:

- an air recirculating conduit 9, the two ends of which are connected to revolving drum 4 on opposite sides of the latter;
- an electrically powered centrifugal fan 10, or other type of air circulating pump, located along recirculating conduit 9 to produce, inside recirculating conduit 9, an airflow f which flows through revolving drum 4 and over the laundry inside drum 4;
- cooling means located along recirculating conduit 9 and able to rapidly cool the airflow f coming out from revolving drum 4 for condensing the surplus moisture in the airflow f; and finally
- heating means located along recirculating conduit 9, downstream of the airflow cooling means, and able to rapidly heat the airflow f returning back into revolving drum 4, so that the airflow entering into revolving drum 4 is heated rapidly to a temperature higher than or equal to that of the same air flowing out of the drum.

[0024] More specifically, in the example shown hot-air generator 8 is preferably, though not necessarily, provided with a heat-pump assembly 11 which is able to both rapidly cool the airflow f coming out from revolving drum 4 for condensing the surplus moisture in the airflow f, and to rapidly heat the airflow f returning back into revolving drum 4, so that the airflow entering into revolving drum 4 is heated rapidly to a temperature higher than or equal to that of the same air flowing out of the drum.

[0025] With reference to Figure 1, heat-pump assembly 11 operates in the same way as a traditional heat-pump - which is capable of transferring heat from one fluid to another using an intermediate gaseous refrigerant subjected to a closed thermodynamic cycle, the thermodynamic principles of which are widely known and therefore not described in detail - and comprises:

- an electrically powered refrigerant compressing device 12 which subjects a gaseous refrigerant to compression (e.g. adiabatic compression) so that refrigerant pressure and temperature are much higher at the outlet than at the inlet of compressing device 12;
- a first air/refrigerant heat exchanger 13 (i.e. the airflow cooling means) which is located along recirculating conduit 9 - preferably, though not necessarily, downstream of centrifugal fan 10 - and is designed so that the airflow f from revolving drum 4 and the refrigerant flowing to the inlet of compressing device

12 flow through it simultaneously, allowing the refrigerant having a temperature lower than that of the airflow f, to absorb heat from the airflow f thus causing condensation of the surplus moisture in the airflow f;

- a second air/refrigerant heat exchanger 14 (i.e. the airflow heating means) which is located along recirculating conduit 9, downstream of air/refrigerant heat exchanger 13, and is designed so that the airflow f directed to revolving drum 4 and the refrigerant from the outlet of compressing device 12 flow through it simultaneously, allowing the refrigerant having a temperature greater than that of the airflow f to release heat to the airflow f, thus rapidly heating the airflow f to a temperature higher than of the airflow f coming out of the air/refrigerant heat exchanger 13, and preferably, though not necessarily, also higher or equal to the temperature of the airflow f coming out of revolving drum 4; and
- a throttling valve or similar refrigerant expansion device 15 which subjects the refrigerant flowing from the second air/refrigerant heat exchanger 14 to the first air/refrigerant heat exchanger 13 to a rapid expansion, so that pressure and temperature of the refrigerant entering in air/refrigerant heat exchanger 13 are much lower than pressure and temperature of the refrigerant coming out from air/refrigerant heat exchanger 14, thus completing the closed thermodynamic cycle in opposition to the compressing device 12, which provides for rapidly compressing the refrigerant.

[0026] Heat-pump assembly 11 finally comprises a number of suitable connecting pipes which connect refrigerant compressing device 12, air/refrigerant heat exchanger 13, air/refrigerant heat exchanger 14 and refrigerant expansion device 15 one to the other, so as to form a closed circuit allowing the refrigerant coming out from the outlet of compressing device 12 to flow, in sequence, through heat exchanger 14, refrigerant expansion device 15 and heat exchanger 13, before returning to the inlet of compressing device 12.

[0027] In addition to the above, hot-air generator 8 is finally provided with filtering means which are placed along air recirculating conduit 9, upstream of heat exchangers 13 and preferably also of centrifugal fan 10, and are structured to avoid fluff and/or lint particles to reach and clog up at least heat exchangers 13 and 14.

[0028] In particular, with reference to Figure 1, in the example shown, the end wall 4a of revolving drum 4 is perforated, or at any rate permeable to air, so to permit air entry into drum 4, and the outlet of the air recirculating conduit 9 is coupled in airtight manner directly to the end wall 4a of revolving drum 4. The inlet of air recirculating conduit 9, instead, is located on an annular frame delimiting the laundry loading/unloading opening 3a, i.e. on the peripheral edge of the laundry loading/unloading opening 3a formed in the front face of casing 3.

[0029] In addition to the above, electric centrifugal fan 10 is located preferably, though not necessarily, upstream of heat exchanger 13, and is structured to produce an airflow f which flows, along air recirculating conduit 9, in sequence across door 5, heat exchanger 13, heat exchanger 14 and the end wall 4a of revolving drum 4; and the filtering means of hot-air generator 8 are placed along the air recirculating conduit 9, upstream of centrifugal fan 10.

[0030] In particular, in the example shown, door 4 is structured so to airtight seal the laundry loading/unloading opening 3a on casing 3, without however completely obstructing the inlet of the air recirculating conduit 9 located on the annular frame delimiting opening 3a, so that the airflow f arriving from revolving drum 4 can freely enter into the air recirculating conduit 9 and flow towards the heat-pump assembly 11; and the filtering means of hot-air generator 8 comprises at least the wedge-like filtering cartridge 1, which is inserted in easy-removable manner into the slit 3b formed in the annular frame delimiting the laundry loading/unloading opening 3a, i.e. in the peripheral edge of the laundry loading/unloading opening 3a formed in the front face of casing 3.

[0031] With reference to Figures 1, 2 and 3, the filtering cartridge 1 comprises a substantially flat supporting plate 20 made of rigid plastic material, which is structured for being insertable in easy removable manner into the slit 3b formed in the peripheral edge of the laundry loading/unloading opening 3a, so as to completely close slit 3b; and a substantially bag-shaped hollow shell 21 made of rigid plastic material, which overhangingly protrudes from the rear face of supporting plate 20 so as to extend inside the starting section of air recirculating conduit 9.

[0032] Hollow shell 21 is realized in one piece with supporting plate 20 via an injection molding process, and is divided into two complementary flat valve-like pieces 22a and 22b, which are laterally hinged to one another preferably, though not necessarily, on the opposite side of supporting plate 20, so that hollow shell 21 is openable in a book-like manner (see Figure 2).

[0033] With reference to Figures 2 and 3, supporting plate 20 is centrally provided with a large throughout opening 20a through which the airflow f can enter into the hollow shell 21; whereas the bottom wall of each valve-like piece 22a, 22b of hollow shell 21 is provided with at least one large throughout opening 21a, which is completely covered with a grille or a close-mesh net or gauze patch 23 properly dimensioned for restraining fluff and/or lint particles within hollow shell 21.

[0034] In fact, with reference to Figure 1, after having entered into the hollow shell 21 through opening 20a on supporting plate 20, the airflow f bifurcates and comes out from hollow shell 21 through openings 21a on the two valve-like pieces 22a and 22b of hollow shell 21, leaving fluff and/or lint particles within hollow shell 21.

[0035] With reference to Figures 2 and 3, in the example shown, in particular, supporting plate 20 is substantially rectangular in shape, and is properly bend to match

the profile of the annular frame delimiting the laundry loading/unloading opening 3a, i.e. of the peripheral edge of the laundry loading/unloading opening 3a formed in the front face of casing 3; whereas opening 20a on supporting plate 20 is preferably, though not necessarily, completely covered by a grille made in one piece with the supporting plate 20 itself.

[0036] Hollow shell 21 instead has preferably, though not necessarily, a substantially V-shaped cross section, and the bottom wall of each valve-like piece 22a, 22b is provide with four adjoining throughout openings 21a, each of which is completely covered with a close-mesh net patch 23 properly dimensioned for restraining fluff and/or lint particles within the shell.

[0037] In addition to the above, with reference to Figures 1, 2 and 3, wedge-like filtering cartridge 1 is provided with a main annular gasket 24 made of thermoplastic rubber or similar thermoplastic elastomer (TPE) (having a hardness grade ranging preferably, though not necessarily, from 35 to 60 Shore A), which is over-injected on the whole peripheral edge of the supporting plate 20, and two additional annular gaskets 25 made of thermoplastic rubber or similar thermoplastic elastomer (TPE) (having a hardness grade ranging preferably, though not necessarily, from 35 to 60 Shore A), each of which is over-injected along the whole coupling peripheral edge of a respective valve-like piece 22a, 22b.

[0038] More specifically, in the example shown the main annular gasket 24 and/or the two additional annular gaskets 25 are made of Santoprene™, i.e. a thermoplastic elastomer mixture of EPDM rubber (ethylene propylene diene M-class rubber) and polypropylene, having a hardness grade ranging preferably, though not necessarily, from 35 to 60 Shore A.

[0039] When the coupling peripheral edges of valve-like pieces 22a and 22b come in abutment one against the other, the two annular gaskets 25 reciprocally press themselves so to form a substantially air-tight seal which is able to stop all kinds of fluff and/or lint particles, even the smallest.

[0040] In the same way, when the supporting plate 20 is inserted in slit 3b, annular gasket 24 comes in abutment against the lateral wall of the starting section of air recirculating conduit 9, and is compressed so as to form a second substantially air-tight seal which prevents airflow f from bypassing the wedge-like filtering cartridge 1.

[0041] General operation of wedge-like filtering cartridge 1 and of laundry drier 2 are clearly inferable from the above description, with no further explanation required.

[0042] The advantages connected to the particular structure of the wedge-like filtering cartridge 1 are evident. First of all, the presence of filtering cartridge 1 avoids the use of any additional filtering element located downstream of filtering cartridge 1, and dimensioned for retaining the smallest fluff and/or lint particles, thus allowing a reduction of the laundry-drier production costs.

[0043] Moreover, thanks to the over-injected annular

gaskets 24 and 25, filtering cartridge 1 is less expensive to produce than today's filtering cartridges.

[0044] Clearly, changes may be made to wedge-like filtering cartridge 1 as described herein without, however, departing from the scope of the present invention.

[0045] For example, the wedge-like filtering cartridge 1 may be provided with a sole annular gasket 25 made of thermoplastic rubber or similar thermoplastic elastomer (TPE), which is over-injected along the coupling peripheral edge of only one of the two valve-like pieces 22a and 22b.

[0046] Further the wedge-like filtering cartridge 1 can be provided only with the annular gasket 24 or only with the annular gasket 25.

Claims

1. A filtering cartridge (1) for home laundry driers (2) **characterized by** comprising a supporting plate (20) which is made of plastic material and is structured for being insertable in easy removable manner into a slit (3b) formed in the peripheral edge of the laundry loading/unloading opening (3a) of the laundry drier (2) so as to completely close said slit (3b), and a substantially bag-shaped hollow shell (21) which overhangingly protrudes from the rear face of the supporting plate (20) so as to extend inside a section of the air recirculating conduit (9) of the laundry drier (2); the hollow shell (21) being realized in one piece with the supporting plate (20) via an injection molding process, and being divided into two complementary valve-like pieces (22a, 22b) which are laterally hinged to one another; the filtering cartridge (1) being also provided with a first annular gasket (24) which is made of thermoplastic elastomer and is over-injected on the whole peripheral edge of the supporting plate (20), and/or with a second annular gasket (25) which is made of thermoplastic elastomer and is over-injected along the whole coupling peripheral edge of at least one of the two valve-like pieces (22a, 22b).
2. A filtering cartridge as claimed in Claim 1, **characterized by** comprising two second annular gaskets (25) made of a thermoplastic elastomer, each of which is over-injected along the whole coupling peripheral edge of a respective valve-like piece (22a, 22b)
3. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** the two valve-like pieces (22a, 22b) of the hollow shell (21) are laterally hinged to one another on the opposite side of the supporting plate (20).
4. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** said supporting

- plate (20) is provided with a throughout opening (20a) through which the airflow (f) can enter into the hollow shell (21); and that the bottom wall of each valve-like piece (22a, 22b) of said hollow shell (21) is provided with at least one throughout opening (21a), which is completely covered with a grille or a close-mesh net or gauze patch (23) properly dimensioned for restraining fluff and/or lint particles within the hollow shell (21).
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5. A filtering cartridge as claimed in Claim 4, **characterized in that** the throughout opening (20a) on supporting plate (20) is covered by a grille made in one piece with the supporting plate (20) itself.
 6. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** the supporting plate (20) is substantially rectangular in shape, and is properly bend to match the profile of the peripheral edge of the laundry loading/unloading opening (3a) of the laundry drier (2).
 7. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** the hollow shell (21) has a substantially V-shaped cross section,
 8. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** the thermoplastic elastomer has a hardness grade ranging from 35 to 60 Shore A.
 9. A filtering cartridge as claimed in any one of the foregoing claims, **characterized in that** said first annular gasket (24) and/or said second annular gasket (25) is/are made of Santoprene™.
 10. A home laundry drier (2) comprising an outer box casing (3) and, inside the casing,
 - a rotatable drum (4) for housing the laundry to be dried, and which is fixed in axially rotating manner inside the casing (3), directly facing a laundry loading/unloading opening (3a) formed in the front face of the casing (3);
 - a door (5) hinged to the front face of the casing (3) to rotate to and from a closing position in which the door (5) rests completely against the casing to close the laundry loading/unloading opening (3a) and seal the revolving drum (4); and
 - a hot-air generator (8) for circulating a stream of hot air inside the laundry drying container (4); the hot-air generator (8), in turn, comprising
 - an air recirculating conduit (9) connected at both ends to the revolving drum (4);
 - ventilating means (10) able to produce, along the air recirculating conduit (9), an airflow (f) which flows through the revolving drum (4);
 - airflow cooling means (13) located along the air recirculating conduit (9) and able to rapidly cool the airflow (f) coming out from the revolving drum (4) for condensing the surplus moisture in the airflow (f);
 - airflow heating means (14) located along the air recirculating conduit (9), downstream of said airflow cooling means (13), and able to rapidly heat the airflow (f) returning back into the revolving drum (4); and
 - filtering means (1) which are placed along the air recirculating conduit (9), upstream at least of the airflow cooling means (13), and are structured to avoid fluff and/or lint particles to reach at least the airflow cooling means (13) and the airflow heating means (14);
 - the inlet of the air recirculating conduit (9) being defined by a slit (3b) formed in the peripheral edge of the laundry loading/unloading opening (3a); said home laundry drier (2) being **characterized in that** said filtering means (1) comprises a filtering cartridge (1) which is inserted in easy removable manner into the slit (3b) formed in the peripheral edge of said laundry loading/unloading opening (3a), and which is realized according to any one of Claims from 1 to 7.
 11. A home laundry drier as claimed in Claim 10, **characterized in that** said airflow cooling means (13) and said airflow heating means (14) consist respectively of a first (13) and a second air/refrigerant heat exchanger (14) of a heat-pump assembly (11) housed within the outer box casing (3).

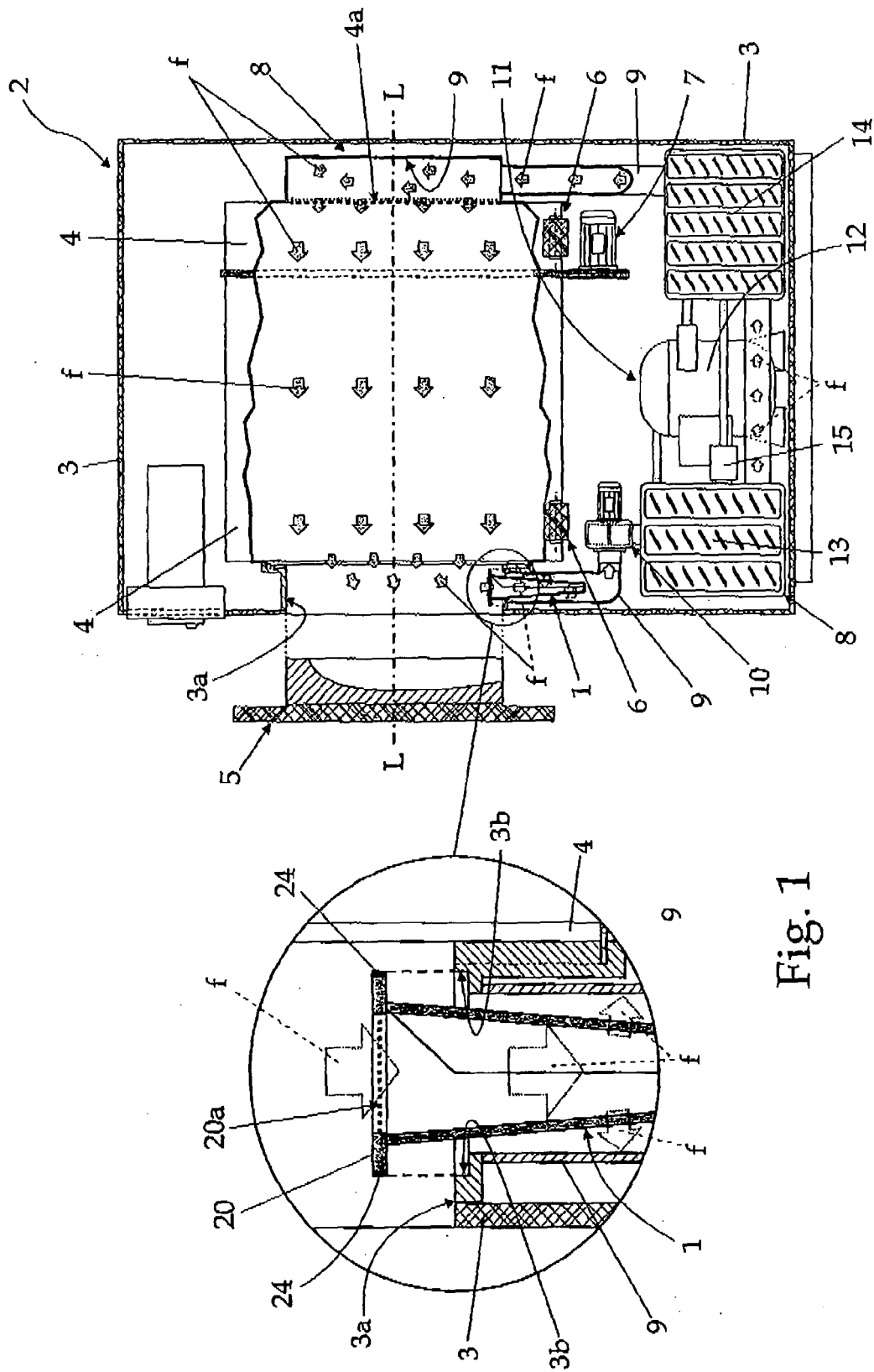


Fig. 1

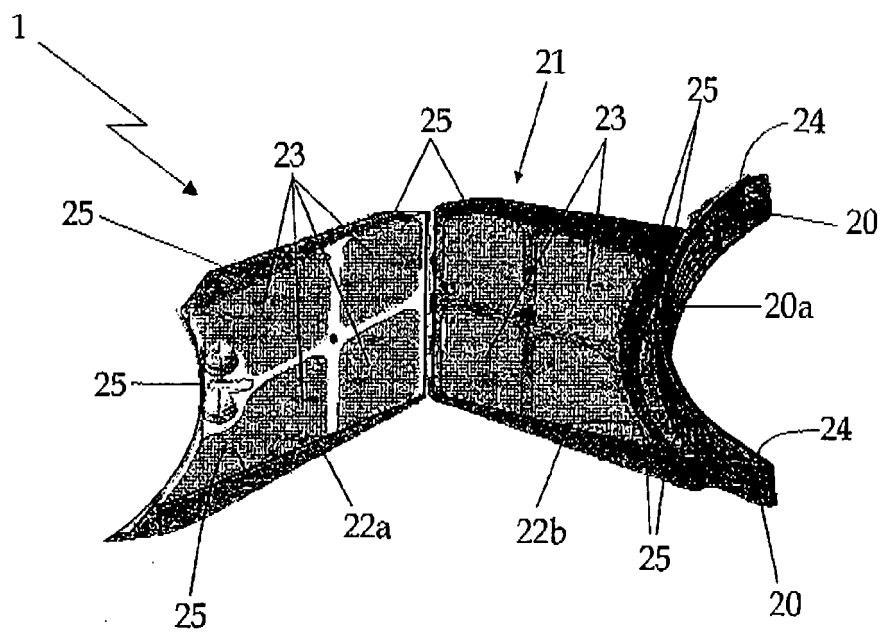


Fig. 2

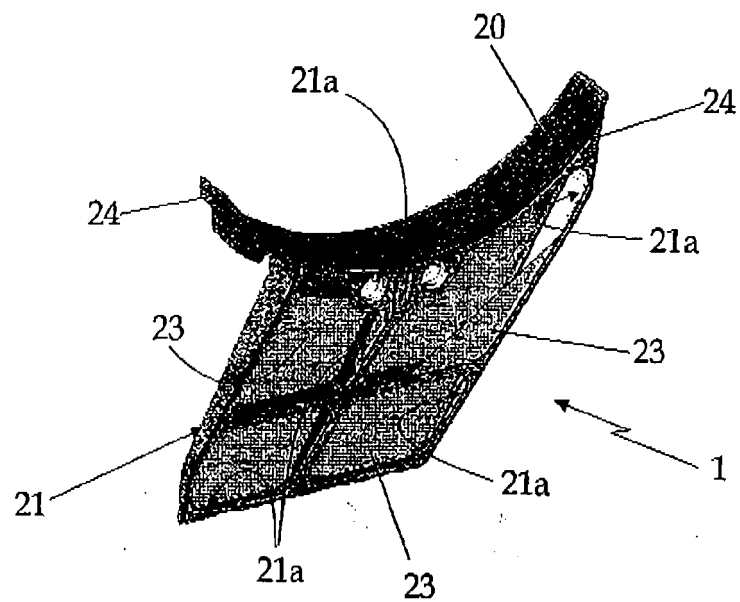


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 09 00 4020

DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 31 July 2009	Examiner Weinberg, Ekkehard
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 09 00 4020

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
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Patent documents cited in the description

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