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(54) **Fluff filter for a laundry drying machine**

(57) A laundry dryer machine (100) is disclosed. The laundry dryer machine (100) comprising a fluff filter (140) for filtering drying air from fluff lost by laundry during the laundry dryer machine operation. The fluff filter (140) comprises an input opening (145) for receiving the drying air and a first filtering portion (150) and a second filtering portion (155) for outputting drying air filtered from fluff. The first filtering portion (150) includes a first frame struc-

ture (170) and the second filtering portion (155) includes a second frame structure (160). The fluff filter further comprises hinge elements (178) for pivotally coupling the first frame structure (170) with the second frame structure (160). The fluff filter still further comprises a filtering surface (190) supported by the first and second frame structures (170, 160). Said filtering surface joins the first frame structure (170) with the second frame structure (160).

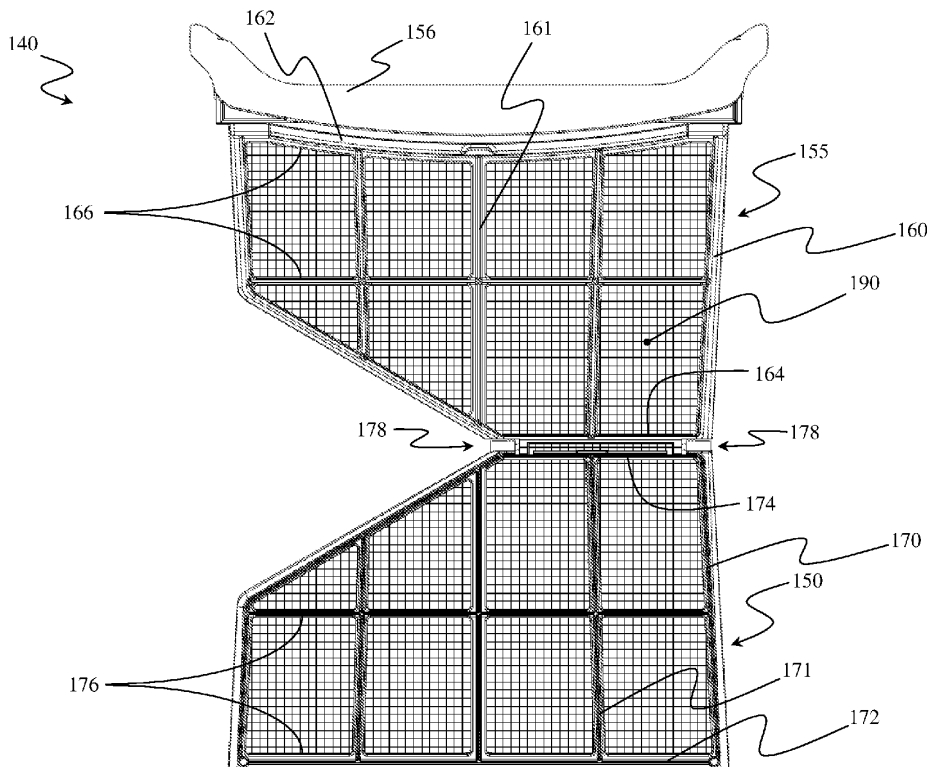


FIG. 2B

Description

Field of the Invention

[0001] The present invention relates to laundry drying machines, such as laundry dryers and washer/dryers, for example tumble dryers. Particularly, the invention relates to a fluff filter for a laundry drying machine.

Description of the Related Art

[0002] As known, tumble dryers typically comprise a cabinet substantially parallelepiped-shaped; the cabinet accommodates a rotatable drum apt to contain the laundry to be dried, as well as the electrical, electronic, mechanical, and hydraulic components necessary for the operation of the tumble dryer. A front panel of the cabinet has a loading opening to access the rotatable drum for loading/unloading the laundry, and a door is provided for closing the loading opening, particularly during the tumble dryer operation.

[0003] In operation, the laundry is dried by causing warm, dry air to flow through the drum while the latter is rotated, so that the laundry is tumbled.

[0004] During the drying process, the clothes inside the rotating drum typically loose lint particles or fluff. Said fluff is light and tiny so it can be brought by the hot air flow into the drying air circuit. Once the fluff enters the drying air circuit, it can obstruct it or affect the fan operation, to the extent of possibly cause the latter to stop; in general, this has a detrimental effect on the dryer functioning. Moreover, an excessive presence of fluff within the drying circuit is really dangerous, since it may cause the trigger of fire.

[0005] Therefore, fluff (or "de-fluff") filters have been designed suitable to retain the fluff so as to prevent it from damaging the dryer's components. Briefly, a fluff filter is provided with an input opening and (output) filtering portions adapted to allow the passage of air but to impede the passage of fluff. The input opening is configured to receive hot air carrying fluff lost by the clothes from the drum. The air is forced to exit from the fluff filter by passing through the filtering portions. In this way, the fluff retained by the filtering portions remains confined within the fluff filter.

[0006] The fluff filter needs to be periodically cleaned to avoid it to get clogged; to this purpose, the fluff filter is removably accommodated in a filter seat, for example located at the front of the cabinet, adjacent the loading opening and in fluid communication with the drying air circulation circuit.

[0007] Various types of fluff filters are known in the art.

[0008] For example, EP 0106289 discloses a filter comprising two complementary frames formed of a suitable insulating material and enclosing each a metallic filtering surface of a fine mesh structure. The two frames are hingedly connected to one another along adjacent edges, so that the filter can be opened in the manner of

a book for cleaning and lint removal. The opposite free edge portions of the two frames are formed with mutually engageable means for retaining the two frames in a partially closed position, in which they form an acute angle between themselves, so as to maintain a certain distance between the filtering surfaces.

[0009] The US patent US 3,378,934 discloses a lint trap comprising first and second sides having the major part thereof of foraminous. The sides are hinged together at the bottom thereof, provide a generally U-shaped cross-sectional configuration in a first relationship, and are pivotable to a second relationship in which the surfaces forming the inside of said U-shaped cross-section are easily and independently accessible. When said sides are in said first relationship, the trap is insertable in an exhaust duct (of a clothes dryer) through which heated air flows. The lint trap includes means at the top of said sides cooperatively effective with a duct inlet opening to retain said trap at said opening with said sides extending generally in the direction of flow. The lint trap further includes means closing the ends of said U-shaped configuration so that air flows into said trap at the top of said U-shaped configuration and flows out of said trap only through the foramina formed therein.

Summary of the invention

[0010] Both the aforementioned solutions provides for a filter comprising two separated filtering portions, each one having respective filtering surfaces. In order to manufacture such filters, the two portions are fabricated independently, and then connected to one another by means of hinge structures.

[0011] The Applicant has found that manufacturing fluff filters using the abovementioned method is not efficient, in terms of time and cost. Indeed, the known solutions require to repeat the same phases for each one of the two separated filtering portions, and specifically the generation of at least one filtering surface, the generation of frames structures adapted to bear said filtering surfaces during the filter operation, and the installation of the filtering surfaces within the frame structures.

[0012] Moreover, the applicant has observed that both the two aforementioned filters are affected by a further drawback: the section of such filters corresponding to the junction between the two portions - *i.e.*, the section thereof wherein the hinge structures are located - lacks of any filtering element, being instead formed by the junction of frame elements supporting the respective filtering surfaces. The junction between such frame elements may give rise to an open slit through which fluff may exit from the filter and reach the drying air circuit.

[0013] The Applicant has considered that it would be possible to exploit a single filtering surface acting as a filtering surface for both the two filtering portions as well as a junction between the two portions, removing the hinge structures. This kind of fluff filter could be expediently produced in a single step, *e.g.*, by over-injecting the

frames on the filtering surface in a single injection molding step. Moreover, a fluff filter of this type would avoid any undesired passage of fluff through the junction between the frames, since such junction would be provided with a filtering element, too. However, the filtering surfaces are relatively fragile, being formed by nets or sieves. Therefore, such single filtering surface may break along the section thereof wherein the two filtering portions are joint together even after few openings and closings of the fluff filter. Moreover, a fluff filter of this kind results to be more prone to torsional stresses, since the two filtering portions may twist to one another.

[0014] The Applicant has found that the abovementioned drawbacks can be solved by having a filtering surface to be supported by the frames of both the filtering portions, at the same time providing that the frames of the filtering portions are coupled to one another by means of hinge elements. Such filtering surface extends from one filtering portion to the other one filtering portion, joining the former with the latter.

[0015] An aspect of the present invention provides for a laundry dryer machine. The laundry dryer machine comprises a fluff filter for filtering drying air from fluff lost by laundry during the laundry dryer machine operation. The fluff filter comprises an input opening for receiving the drying air and a first filtering portion and a second filtering portion for outputting drying air filtered from fluff. The first filtering portion includes a first frame structure and the second filtering portion includes a second frame structure. The fluff filter further comprises hinge elements for pivotally coupling the first frame structure with the second frame structure. The fluff filter still further comprises a filtering surface supported by the first and second frame structures; said filtering surface joins the first frame structure with the second frame structure.

[0016] Thanks to its peculiar structure, the proposed fluff filter may be manufactured by carrying out a single molding step. Compared to the known solutions, the proposed fluff filter results to be simpler, and less expensive. Furthermore, the proposed fluff filter avoids any undesired passage of fluff through the junction between the frames, since such junction is provided with a fluff filtering element.

[0017] Moreover, thanks to the presence of hinge elements acting as a reinforcing structure for the portion of the filtering surface at the junction between the two filtering portions, the fluff filter results to be as structurally robust as the known fluff filters having separated filtering surfaces.

[0018] Each hinge element preferably comprises a pin connected to a first selected frame structure among the first frame structure and the second frame structure, and a corresponding seat connected to a second selected frame structure among the first frame structure and the second frame structure different from the first selected frame structure. The seat is adapted to rotatably house the pin.

[0019] In this way, the hinge elements are particularly

robust, and the whole structure results to be less prone to torsional stresses, since the hinge elements avoid the two filtering portions to twist to one another.

[0020] According to an embodiment of the present invention, the seat is a hollow cylinder provided with an internal longitudinal cavity extending from an opening located on a base of the cylinder; the cavity is adapted to rotatably house the corresponding pin.

[0021] According to a further embodiment of the present invention, the seat further include a longitudinal slit configured to allow the corresponding pin to be laterally snapped into the internal cavity.

[0022] The second frame structure is connected to an input face of the fluff filter wherein the input opening is located. The first frame structure is configured to rotate with respect to the second frame structure around the hinge elements from a closed filter configuration, wherein the first filtering portion is folded on the second filtering portion and engages the input face, to an opened filter configuration, wherein the first filtering portion is disengaged from the input face.

[0023] According to an embodiment of the present invention, the filtering surface is a single integral element extending from an edge of the first frame structure to an edge of the second frame structure.

[0024] According to another embodiment of the present invention, the filtering surface comprises at least two juxtaposed filtering surface portions.

[0025] Another aspect of the present invention relates to a method for manufacturing a fluff filter for a laundry dryer machine. The method comprises providing a filtering surface and molding a first frame structure, a second frame structure, and hinge elements - for pivotally coupling the first frame structure to the second frame structure - on the filtering surface in a single molding step.

[0026] Preferably, the step of molding the first frame, the second frame and the hinge elements in a single molding step includes arranging a single mold on a face of the filtering surface, injecting melted plastic inside the mold, and removing the mold when the plastic is hardened.

[0027] According to an embodiment of the present invention, said molding the hinge elements comprises molding for each hinge element a pin and a corresponding seat adapted to rotatably house the pin.

[0028] According to a further embodiment of the present invention, said molding the hinge elements comprises molding the hinge elements with the pins that result to be already housed in the corresponding seats.

[0029] According to another embodiment of the present invention said molding the hinge elements comprises molding the hinge elements with the pins that result to be disengaged from the corresponding seats, and inserting the pins in the corresponding seats.

Brief description of the drawings

[0030] These and other features and advantages of

the present invention will be made apparent by the following description of some exemplary and non limitative embodiments thereof; for its better intelligibility, the following description should be read making reference to the attached drawings, wherein:

Figure 1A is a perspective view of a tumble dryer wherein a fluff filter according to an embodiment of the present invention may be employed;

Figure 1B is a sectional view of the tumble dryer of **Figure 1A**;

Figure 2A is a perspective view of a fluff filter according to an embodiment of the present invention in the closed configuration;

Figure 2B is a view from the above of the fluff filter of **Figure 2A** in the opened configuration;

Figure 2C is a magnification view of a portion of **Figure 2B** wherein two filtering portions thereof are joined to one another;

Figure 3A is a side view of a hinge element according to an embodiment of the present invention;

Figure 3B is a cross sectional view of the hinge element of **Figure 3A**;

Figure 4A is a cross sectional view of a possible implementation of a portion of a mold for obtaining the hinge element of **Figures 3A** and **3B**;

Figure 4B is a cross sectional view of the mold of **Figure 4A** with the sections thereof that are detached to one another, and

Figures 5A and **5B** are perspective views of a hinge element according to a further embodiment of the present invention.

Detailed description of the invention

[0031] **Figures 1A** and **1B** are partially cutaway views of a portion of a tumble dryer, hereinafter simply referred to as dryer. **Figure 1A** is a perspective view of the tumble dryer, depicted without laundry loading door, while **Figure 1B** is a sectional view of the tumble dryer taken along line I-I, depicted with the laundry loading door closed.

[0032] The tumble dryer, denoted as **100** in the drawings, comprises a cabinet **105**, for example parallelepiped-shaped. The cabinet accommodates a rotatable drum **110** adapted to contain the laundry to be dried, as well as the electrical, electronic, mechanical, and hydraulic components necessary for the operation of the tumble dryer (not shown in figures since they are well known in the art). A front panel **115** of the cabinet has a loading opening **120** to access the rotatable drum **110** for loading/unloading the laundry to be dried. The loading opening **120** has a border **125**, preferably substantially annular, in which door hinges **130** as well as door locking means (not shown) are arranged for, respectively, hinging and locking a door **135**. Said door **135** is adapted for sealably closing said loading opening **120** during the tumble dryer operation. A fluff filter **140** is housed in a fluff filter seat formed in correspondence of the front panel **115** adjacent

to the loading opening **120** and behind the annular border **125**.

[0033] As it is well known to those skilled in the art, the dryer **100** (typically, the rear side thereof) is provided with openings (not shown) for the suction of air which is conveyed within the rotatable drum **110** by way of an inlet duct provided with at least one electric heater element or heat pump (not shown). Once reached the rotatable drum **110**, the heated air is conveyed to an outlet opening (not shown) by means of an output air duct having a motor-driven blower installed therein (not shown). In the dryers of the so-called recirculation type, instead of being conveyed to an outlet opening, the heated air is conveyed back to the inlet duct, after being cooled and dehumidified by means of a condenser located in the output air duct.

[0034] The fluff filter seat is located at, or in proximity to, the entrance of the output air duct in such a way that the heated air is forced by the blower to enter the fluff filter **140** from an input opening **145** located on the upper side of the filter. Passing through a frontal filtering portion **150** (facing toward the front panel **115**) and through an opposite rear filtering portion **155** (facing toward the interior of the dryer), the heated air exits from the fluff filter **140** and reaches the output air duct. The filtering portions **150** and **155** are provided with filtering surfaces adapted to allow the passage of air but to impede the passage of fluff. The fluff lost by the clothes located in the rotatable drum **110** during the dryer **100** operation, being retained by the filtering surfaces of the filtering portions **150** and **155**, remains confined within the fluff filter **140**. Therefore, the air reaching the output air duct results to be substantially free from any foreign matter capable of obstructing or affecting the operation of the blower located therein and/or setting fires. An example of air flow entering the input opening **145** and exiting from the filtering portions **150** and **155** of the fluff filter is schematically depicted in **Figure 1B** by means of dashed arrows.

[0035] In order to avoid that the fluff filter **140** gets clogged, the fluff filter **140** is configured to be easily removed from its seat for being cleaned from the fluff collected during the dryer **100** operation. Once removed from the seat, the fluff filter **140** is further configured to be opened so as to allow an user of the dryer to easily remove the fluff. For this purpose, the filtering portions **150** and **155** are pivotally hinged together at their bottoms so as to allow the fluff filter **140** to switch from a closed configuration, wherein the two filtering portions **150** and **155** are folded to one another so as to form an acute angle between themselves, to an opened configuration, in which the two filtering portions **150** and **155** form a substantially straight angle.

[0036] A detailed view of a fluff filter **140** according to an embodiment of the present invention is shown in **Figures 2A**, **2B** and **2C**. **Figure 2A** is a perspective view of the fluff filter **140** in the closed configuration, with the frontal filtering portion **150** in the close up, **Figure 2B** is a view from the above of the fluff filter **140** in the opened configuration, and **Figure 2C** is a magnification view of

the portion of **Figure 2B** wherein the two filtering portions **150** and **155** are joined to one another.

[0037] The fluff filter **140** comprises an upper face **156** wherein the input opening **145** is located. Preferably, the input opening **145** comprises a grid structure that prevents clothes or foreign matters from accessing the fluff filter **140** itself and the air duct downstream the fluff filter **140**. The upper face **156** is, in this particular embodiment, curved, and it is capable of adapting itself to the peripheral rim of the annular border **125**, once the fluff filter **140** is correctly housed in its seat (see **Figure 1A**).

[0038] The rear filtering portion **155** comprises a frame **160** (e.g., made of plastic material) including a perimeter section which surrounds a plurality of rod elements **161**. The perimeter section of the frame **160** has an upper edge **162** connected to the upper face **156**, and an opposite lower edge **164** hingedly coupled to the filtering portion **150**. Two lateral edges connect the upper edge **162** with the lower edge **164**. The rod elements **161** are arranged so as to define a plurality of windows **166** (eight in the example at issue). According to an embodiment of the present invention, the rear filtering portion **155** is integral to the upper face **156**.

[0039] Similarly, the frontal filtering portion **150** comprises a frame **170** (made in a plastic material) including a perimeter section surrounding a plurality of rod elements **171**. The perimeter section of the frame **170** has an upper edge **172** adapted to engage the upper face **156** when the fluff filter **140** is in the closed configuration, and an opposite lower edge **174** hingedly coupled to the filtering portion **155**. Two lateral edges connect the upper edge **172** with the lower edge **174**. The rod elements **171** are arranged so as to define a plurality of windows **176** (eight in the example at issue).

[0040] The lower edge **164** of the frame **160** is pivotally coupled with the lower edge **174** of the frame **170** by means of hinge elements **178** (two, in the example at issue). Each hinge element **178** includes a pin **180** and a seat **182** adapted to rotatably house the pin **180**. Making reference to the illustrated example, each pin **180** is supported by a respective supporting element **184** that is connected to the lower edge **164** of the frame **160**, while each seat **182** is connected to the lower edge **174** of the frame **170**. Similar considerations apply in case the pins **180** (and the supporting elements) are located on the frame **170** and the seats **182** on the frame **160**. Mixed solutions are also contemplated, wherein at least one hinge element **178** has the pin **180** located on the frame **170** and the corresponding seat **182** on the frame **160** and at the same time at least one further hinge element **178** has the pin **180** located on the frame **160** and the corresponding seat **182** on the frame **170**. Since in the considered embodiment the supporting elements **184** protrude from the edge **164** toward the edge **174**, in order not to obstacle the folding movement of the filtering portions **150**, **155** during the opening/closing of the fluff filter **140**, the lower edge **174** of the frame **170** is provided with suitably shaped recesses **186**, each one facing a respec-

tive supporting element **184**.

[0041] According to an embodiment of the present invention, both the frame **160** and the frame **170** support a same filtering surface **190** which extends from the upper edge **162** to the upper edge **172** passing through the portion of the fluff filter **140** wherein the hinge elements **178** are located, joining the frame **160** with the frame **170**. In the present description, the filtering surface **190** has to be considered as the part of the fluff filter **140** having fluff filtering capabilities. For example, such filtering surface **190** may include a net made in nylon, a metallic sieve, or any kind of septum adapted to allow the passage of air but to impede the passage of fluff and to retain the latter. Therefore, in operation, the air entered from the input opening **145** is forced to exit from the fluff filter **140** by passing through the portions of the filtering surface **190** delimited by the windows **166**, **176** defined by the frames **160**, **170**.

[0042] According to an embodiment of the present invention, the filtering surface **190** is a single integral (*i. e.*, in one piece) element - e.g., a single piece of net - extending from the edge **172** to the edge **162**. According to another embodiment of the present invention, the filtering surface **190** is instead formed by two or more juxtaposed filtering surface portions - e.g., two or more juxtaposed pieces of net joined to one another by means of the frames. Advantageously, the filtering surface **190** is present at the junction between the lower edge **164** of the frame **160** and the lower edge **174** of the frame **170**, *i. e.*, the lowermost portion of the fluff filter **140** when the latter is housed in its fluff filter seat.

[0043] According to an embodiment of the present invention, the upper face **156**, the filtering portions **150**, **155**, as well as the components of the hinge elements **178** - such as the pins **180** and the seats **182** -, are jointly formed on said filtering surface **190** at the same time in a single molding step.

[0044] According to an embodiment of the present invention, the fluff filter **140** is manufactured in the following way.

[0045] The first step comprises providing a sheet made of a proper filtering material, such as a nylon net.

[0046] Then, the sheet is cut in such a way to substantially assume the shape of the desired filtering surface **190**.

[0047] Both the upper face **156**, the filtering portions **150**, **155** and the components of the hinge elements **178** are then directly molded on a face of the filtering surface **190** in a single molding step exploiting a same mold. For example, the mold is arranged on a face of the filtering surface **190**, and then melted plastic is injected inside the mold. When the plastic cools and hardens, the mold is removed, and the filtering portions **150**, **155** results to be firmly attached to the filtering surface **190**.

[0048] Compared to the known solutions, the fluff filter according to the present invention may be manufactured in a faster and easier way, being sufficient carrying out a single molding step on a single filtering surface.

[0049] Furthermore, the fluff filter according to the present invention avoids any undesired passage of fluff through the junction between the lower edges of the frames, since such junction is provided with a fluff filtering element. This feature is quite advantageous, since said junction is located in the lowermost portion of the filter, wherein fluff largely cumulates because of the force of gravity.

[0050] It has to be appreciated that the presence of hinge elements acts as a reinforcing structure for the portion of the filtering surface at the junction between the two filtering portions. Should the filtering surface brake because of a repeated opening/closing of the fluff filter, the filtering portions would correctly remain pivotally attached to one another thanks to the presence of the hinge elements. Moreover, the whole structure results to be less prone to torsional stresses, since the hinge elements substantially avoid the two filtering portions to twist to one another, allowing only a rotation around the rotation axis of the hinge elements themselves.

[0051] According to an embodiment of the present invention, the mold used to mold the upper face 156, the filtering portions 150, 155 and the components of the hinge elements 178 on the filtering surface is shaped so that the pins 180 results to be already housed within the corresponding seats 182, not requiring any further assembling step. According to a further embodiment of the present invention, the mold is instead configured so that the hinge elements 178 are molded with the pins 180 that are still disengaged from the corresponding seats 182; therefore, the pins 180 are inserted in the seats 182 in a subsequent phase. In this latter case, the mold is arranged so that each resulting pin/seat pair is formed with the pin 180 that is sufficiently far from the seat 182 to facilitate the insertion operations; additionally, the length of the filtering surface 190 obtained from the starting filtering material sheet may be slightly oversized so as to further facilitate the insertion operations.

[0052] According to an embodiment of the present invention, the seat 182 of the hinge elements 178 is a bushing, i.e. a hollow cylinder provided with an internal longitudinal cavity extending from an opening located on a base of the cylinder to an opening located on the opposite base, which cavity is adapted to rotatably house the corresponding pin 180. According to a further embodiment of the present invention, instead of having two opposite openings, the internal longitudinal cavity may be closed at one of the two bases of the cylinder. A side view of a hinge element 178 according to said embodiment of the invention is illustrated in Figure 3A, while a cross sectional view thereof is illustrated in Figure 3B. Figure 4A illustrates a cross sectional view of a possible implementation of a portion of such mold corresponding to a hinge element 178. In the considered embodiment, said portion of the mold comprises an upper section 410, a lower section 420 and a lateral section 430, which together define a cavity 440 to be filled with the melted plastic for obtaining the hinge element 178. Since a space between the

external lateral surface of the pin 180 and the internal surface of the seat 182 is required for allowing the pin to rotate inside the seat, the lateral section 430 is shaped so as to include a corresponding spacing element 450, having the shape of a protruding hollow cylinder. Figure 4B illustrates the same mold portion of Figure 4A with the sections 410, 420 and 430 that are detached to one another, after that the melted plastic injected into the cavity 450 is hardened.

[0053] According to a further embodiment of the present invention illustrated in Figures 5A and 5B, the seat 182 of the hinge elements 178 has a shape similar to that of the bushing of the embodiment illustrated in Figures 3A and 3B, with the addition of a longitudinal slit 500 allowing the pin 180 to be laterally snapped into the internal cavity of the seat 182.

[0054] Although in the present description reference has been made to a tumble dryer, the concepts of the present invention may be applied to other laundry drying machines, such as for example washing/drying machines.

Claims

1. Laundry dryer machine (100) comprising a fluff filter (140) for filtering drying air from fluff lost by laundry during the laundry dryer machine operation, the fluff filter (140) comprising:
 - an input opening (145) for receiving the drying air;
 - a first filtering portion (150) and a second filtering portion (155) for outputting drying air filtered from fluff, the first filtering portion (150) including a first frame structure (170) and the second filtering portion (155) including a second frame structure (160),

characterized in that
the fluff filter further comprises:

 - hinge elements (178) for pivotally coupling the first frame structure (170) with the second frame structure (160), and
 - a filtering surface (190) supported by the first frame structure (170) and by the second frame structure (160), said filtering surface joining the first frame structure (170) with the second frame structure (160).
2. The laundry dryer machine (100) of claim 1, wherein the hinge elements (178) are configured to substantially avoid that the first filtering portion (150) and the second filtering portion (160) twist to one another.
3. The laundry dryer machine (100) of claim 2, wherein each hinge element (178) comprises:
 - a pin (180) connected to a first selected frame

- structure among the first frame structure (170) and the second frame structure (160), and
 - a corresponding seat (182) connected to a second selected frame structure among the first frame structure (170) and the second frame structure (160) different from the first selected frame structure, the seat (182) being adapted to rotatably house the pin (180).
4. The laundry dryer machine (100) of claim 3, wherein the seat (182) is a hollow cylinder provided with an internal longitudinal cavity extending from an opening located on a base of the cylinder, the cavity being adapted to rotatably house the corresponding pin (180).
5. The laundry dryer machine (100) of claim 4, wherein the seat (182) further include a longitudinal slit (500) configured to allow the corresponding pin (180) to be laterally snapped into the internal cavity.
6. The laundry dryer machine (100) of any one among the preceding claims, wherein the second frame structure (160) is connected to an input face (156) of the fluff filter (140), the input opening being located on the input face (156), the first frame structure (170) being configured to rotate with respect to the second frame structure (160) around the hinge elements (178)
- from a closed filter configuration, wherein the first filtering portion (170) is folded on the second filtering portion (160) and engages the input face (156),
 - to an opened filter configuration, wherein the first filtering portion (170) is disengaged from the input face (156).
7. The laundry dryer machine (100) of any one among the preceding claims, wherein the filtering surface (190) is a single integral element extending from an edge (172) of the first frame structure (170) to an edge (162) of the second frame structure (160),
8. The laundry dryer machine (100) of any one among claims 1 to 6, wherein the filtering surface (190) comprises at least two juxtaposed filtering surface portions.
9. Method for manufacturing a fluff filter (140) for a laundry dryer machine (100), the method comprising:
- providing a filtering surface (190), and
 - molding:
 - a first frame structure (170),
 - a second frame structure (160), and
 - hinge elements (178) for pivotally coupling the first frame structure (170) to the second frame
- structure (160)
 on the filtering surface (190) in a single molding step.
10. The method according to claim 9, wherein the step of molding the first frame (170), the second frame (160) and the hinge elements (178) in a single molding step includes:
- arranging a single mold on a face of the filtering surface (190);
 - injecting melted plastic inside the mold, and
 - removing the mold when the plastic is hardened.
11. The method according to claim 9 or 10, wherein said molding the hinge elements (178) comprises molding for each hinge element (178) a pin (180) and a corresponding seat (182) adapted to rotatably house the pin (180).
12. The method according to claim 11, wherein said molding the hinge elements (178) comprises:
- molding the hinge elements (178) with the pins (180) that result to be already housed in the corresponding seats (182).
13. The method according to claim 11, wherein said molding the hinge elements (178) comprises:
- molding the hinge elements (178) with the pins (180) that result to be disengaged from the corresponding seats (182), and
 - inserting the pins (180) in the corresponding seats (182).

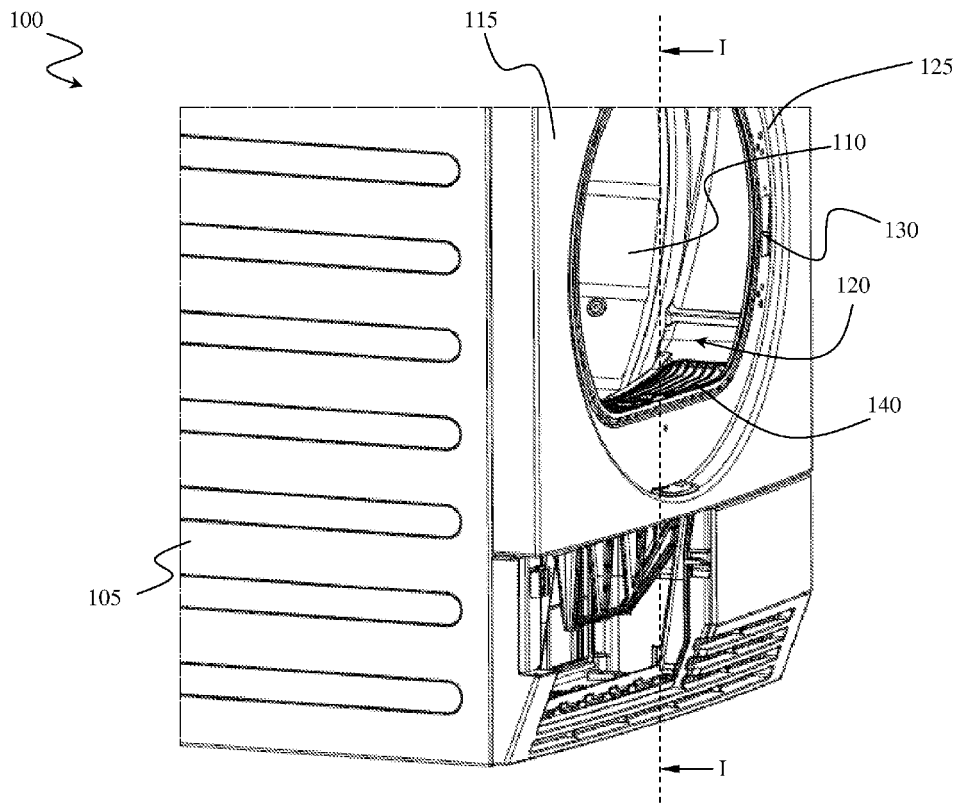


FIG.1A

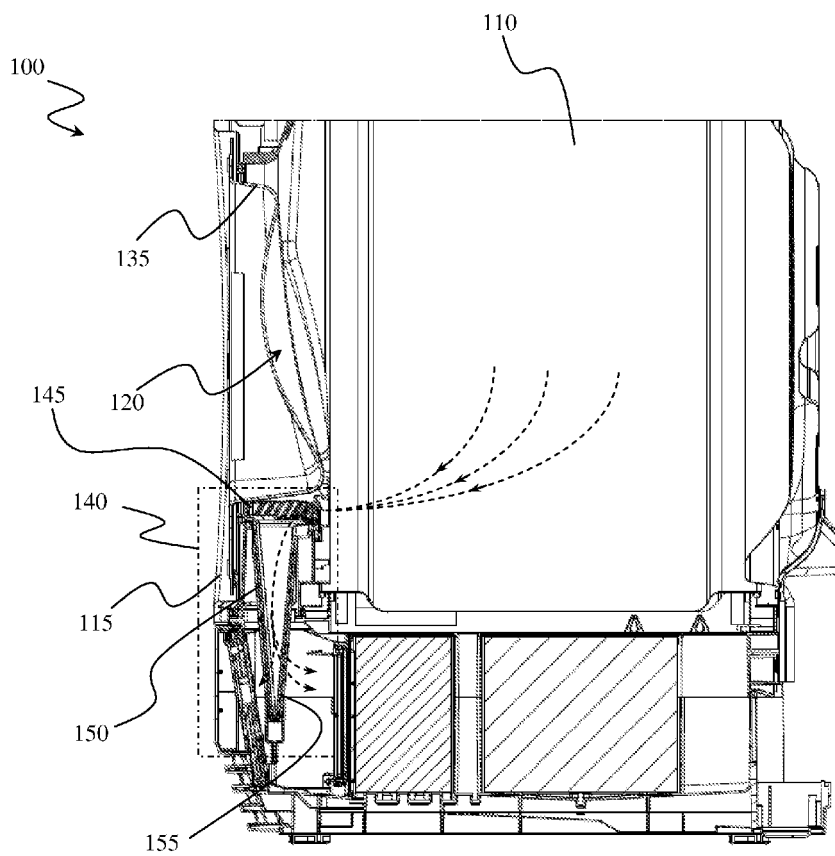


FIG.1B

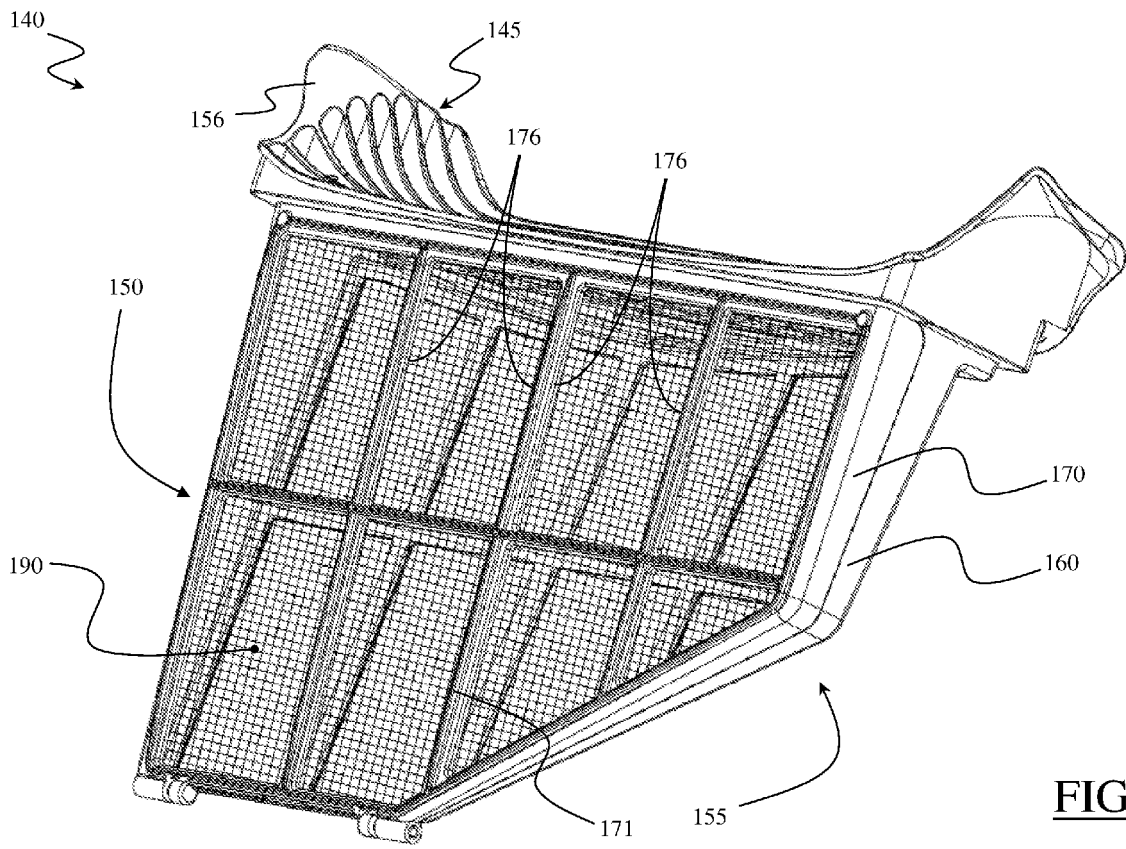


FIG.2A

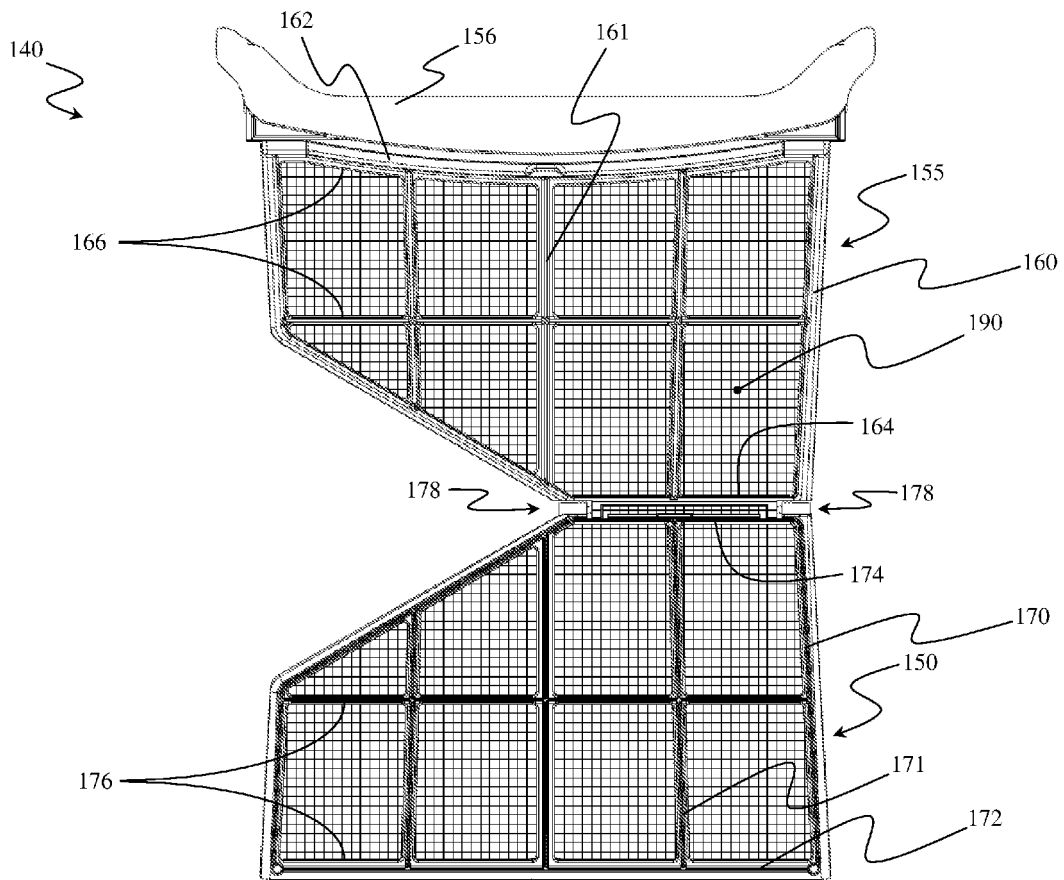


FIG.2B

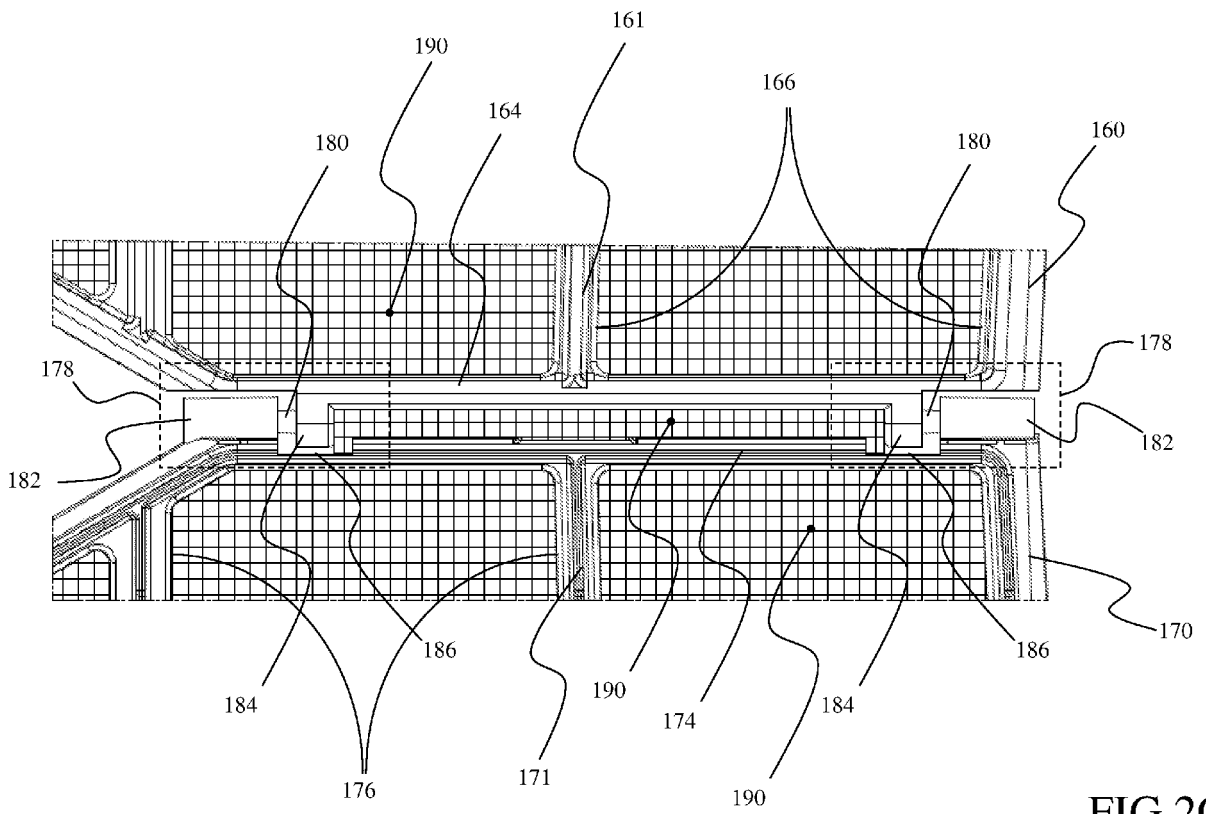
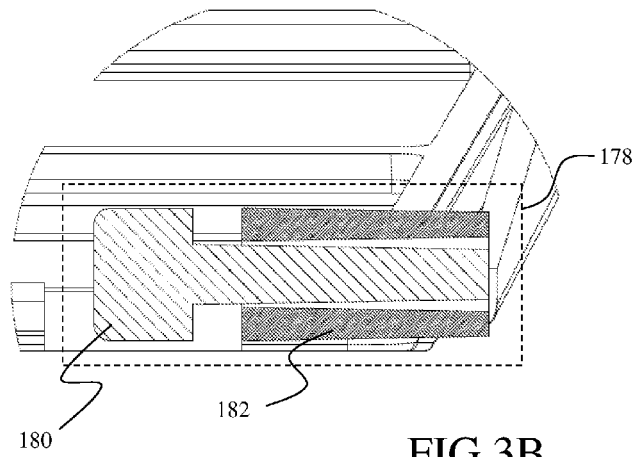
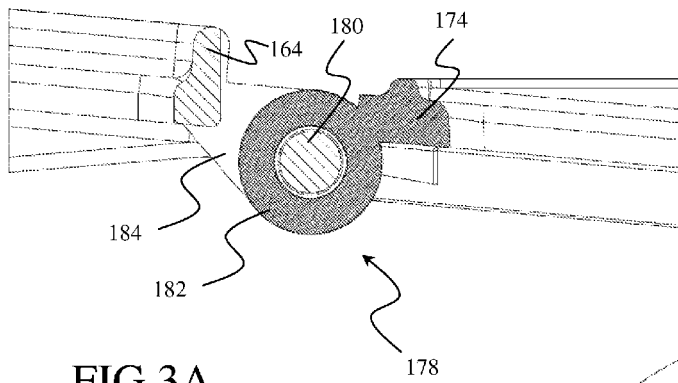
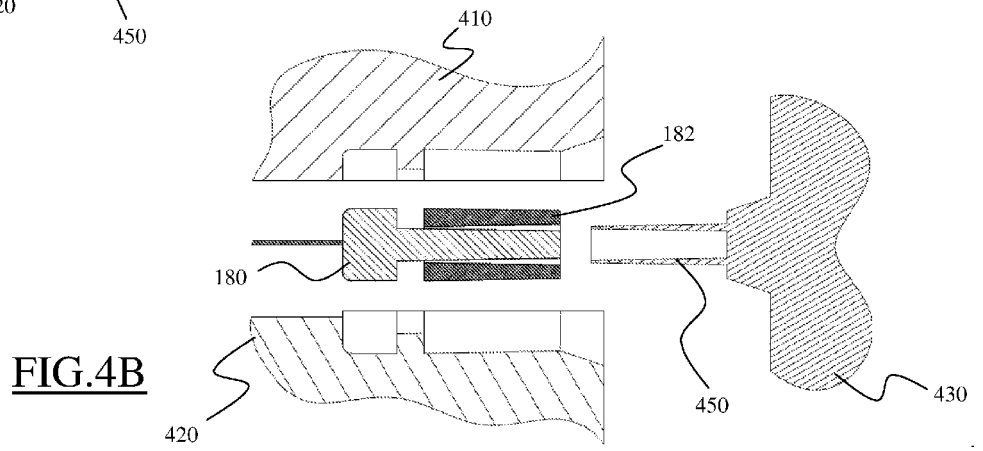
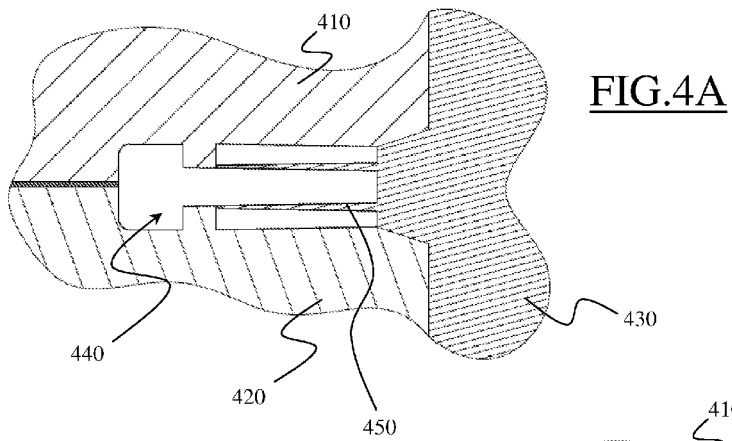


FIG.2C





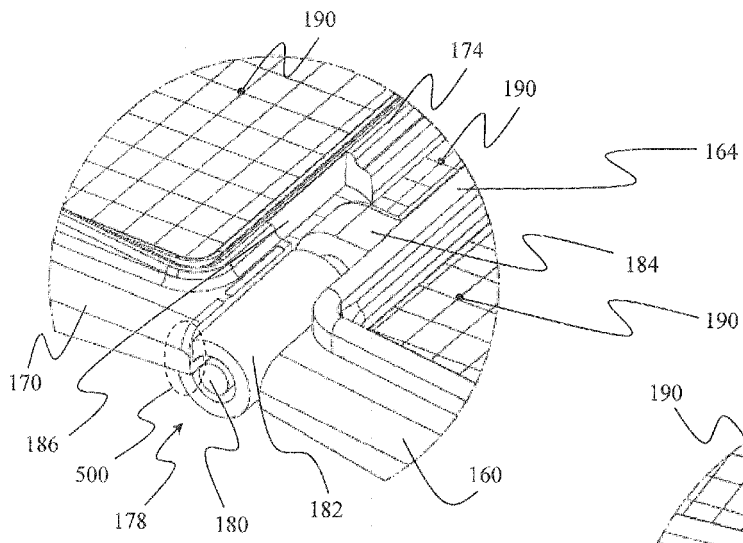


FIG. 5A

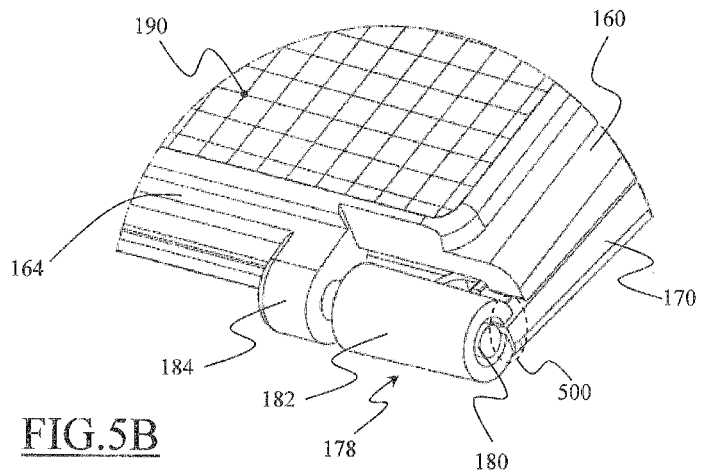


FIG. 5B



EUROPEAN SEARCH REPORT

Application Number
EP 11 18 1591

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Place of search Munich		Date of completion of the search 7 February 2012	Examiner Spitzer, Bettina
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