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(54) **HOUSEHOLD DRYING APPLIANCE WITH IMPROVED INLET SECTION OF THE DRYING FLUID IN THE CONDENSER**

HAUSHALTSTROCKENGERÄT MIT VERBESSERTEM EINLASSBEREICH FÜR DAS TROCKENMEDIUM IN EINEM KONDENSATOR

APPAREIL MÉNAGER DE SÉCHAGE AVEC UNE SECTION D'ADMISSION AMELIORÉE POUR LE FLUIDE DE SÉCHAGE DANS LE CONDENSATEUR

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Description

[0001] The present invention relates to a household drying appliance, in particular of the condensation type.

[0002] Household appliances are known for drying linen, which have a drum inside which the linen is inserted intended to be dried and an external box body that acts as a casing for the household appliance. The drum is rotatably housed within the box body and is accessible through a door. As is known, household appliances for drying linen have a hot air circuit within which a flow of air is processed for drying the linen contained within the drum. In such machines, the air is processed by a fan that sends it towards an electric resistance responsible for heating the air itself; after being heated, the air is introduced into the drum, where it comes into contact with the garments to be dried by removing the moisture from them. The air leaving the drum therefore has a higher moisture content than the air flow coming into the drum. The moisture content of the flow of hot air leaving the drum can be evacuated from the machine substantially in two ways: in the form of steam or in the form of condensation.

[0003] Dryers that evacuate moisture in the form of steam are defined as "expulsion" or "evacuation" dryers since the hot and moist air leaving the drum is evacuated, for example through a flexible drain hose, directly to the outside of the dryer and usually directly to the outside of the room in which the dryer is installed.

[0004] Dryers that evacuate moisture in the form of condensation are defined as "condensation" dryers. Such machines, as well as the hot air circuit, provide for the presence of a cold air circuit and a condenser within which heat exchange takes place between the flow of hot air leaving the drum and a flow of cold air and condensation is formed. In other words, in "condensation" type machines, the flow of hot and moist air leaving the drum is conveyed into a condenser, where it exchanges heat with a flow of air at a lower temperature (the aforementioned cold air, which is usually at ambient temperature); such heat exchange causes the condensation of the moisture present in the flow of hot and moist air. The condensation is then collected within the machine through a container, such as a tank or a bottle, which must be periodically emptied by the user.

[0005] In such machines, the condenser is usually placed in the lower part of the household appliance below the drum and defines a substantially parallel advancement direction of the drying fluid within it, or however defined at a lower height, with respect to the advancement direction of the drying fluid within the drum. Since the aforementioned two advancement directions of the drying fluid are defined at different heights of the household appliance, the flow of hot and moist air leaving the drum undergoes one or more diversions in order to be conveyed into the condenser. For example, in some known condensation dryers, the drying fluid leaving the drum undergoes a diversion substantially at a right angle downwards (towards the condenser), advances in the vertical direction for a certain length, and subsequently undergoes another diversion to be conveyed into the condenser itself (necessary diversion since the advancement direction of the fluid within the condenser is substantially horizontal). Such diversions, as is known, are the cause of notable load losses in the drying air circuit, also added to the load losses distributed along the actual conduits and the concentrated losses, connected for example to any filters that may be provided upstream of the condenser or other components of the drying air circuit.

[0006] High losses are particularly disadvantageous since, as the load losses increase, there is, for the same fan head, a lower fluid flow rate processed by the fan, with a consequent loss of efficiency thereof; as the flow rate of cold air processed by the fan is reduced, the heat exchange at the condenser is also less efficient, with a consequent lower formation of condensation. Due to the reduced condensation efficiency, the flow of hot air leaving the condenser has a higher moisture content than it would have had in more efficient operating conditions. Therefore, the flow of drying air leaving the condenser, after being heated, is introduced into the drum still with a high moisture content and consequently, to obtain the same degree of drying of the garments, the drying times are longer or, for the same drying cycle duration, the degree of moisture in the linen at the end of the cycle is higher than it would be with more efficient condensation.

[0007] Therefore, in general, high load losses in the hot air circuit lead to low efficiency of the fan, the condenser and therefore the household appliance. Such non-optimal working conditions of the household appliance can lead to worse performance of the machine and increased consumptions.

[0008] DE 196 44 711 discloses an appliance for drying laundry having a process air circuit with a drying space, a means of introducing heated air into the space, a heat exchanger, and a gas duct for leading moisture-laden air from the drying space to the heat exchanger. The gas duct has at least one entry opening, at least one exit opening and a flow space connecting the two. At least one flow space part is curved and the curved part incorporates at least one flow guide body for equalizing the flow at the exit opening.

[0009] EP 2565321 discloses a dryer having an exhaust air duct provided with a supply air duct that is arranged between drying chamber and cross-flow heat exchanger. The exhaust air duct and cross-flow heat exchanger are provided such that the process air flows with respect to the cooling flow inlet of the cross-flow heat exchanger by the exhaust air duct, with greater proportion. The flow guidance portion in the exhaust air duct is provided in the flow against the region of the cross-flow heat exchanger.

[0010] In light of the above, a principal object of the present invention is to resolve one or more of the problems found in the prior art.

[0011] An object of the present invention is to reduce

the load losses in the drying fluid circuit of the household appliance.

[0012] A further object of the present invention is to optimise the operating conditions and efficiency of the condenser and the fan of the household drying appliance, improving the machine performance.

[0013] These objects and others, which will appear more clearly from the following description, are substantially reached by a household drying appliance in accordance with what is expressed in one or more of the appended claims and/or the following aspects, taken alone or in combination with one another or in combination with any one of the appended claims and/or in combination with any one of the further aspects or characteristics described below.

[0014] In a 1st aspect, a household drying appliance (1) is envisaged comprising:

- an external box body (2);
- a drum (3) housed inside the box body (2) and destined to receive garments to be dried;
- a condenser (6) comprising a first inlet (61) and a first outlet (62) for a drying fluid and a second inlet (63) and a second outlet (64) for a cooling fluid;
- a first circuit configured for circulating the drying fluid from the drum towards the first inlet (61) of the condenser (6) and from the first outlet (62) of the condenser (6) towards the drum (3);
- a second circuit configured for circulating the cooling fluid from a suction aperture of the cooling fluid in the box body (2) to the second inlet (63) of the condenser (6) and from the second outlet (64) of the condenser (6) to a draining portion of the cooling fluid from the box body (2);

wherein the household appliance (1) comprises, upstream the first inlet (61) of the condenser (6), a plurality of deflectors (16) configured for directioning the drying fluid towards the first inlet (61) of the condenser (6).

[0015] In a 2nd aspect in accordance with the 1st aspect, a household drying appliance (1) is provided wherein:

- the condenser (6) comprises a plurality of inlet openings (610) at the first inlet (61);
- the deflectors (16) delimit a plurality of inlets (160) for the drying fluid,

and wherein the deflectors (16) define a plurality of fluid-tight channels (17) developing interposed between, and fluidically connecting, the inlets (160) and the inlet openings (610) of the condenser (6).

[0016] In a 3rd aspect in accordance with the 2nd aspect, one or more channels (17) are defined interposed between two contiguous deflectors (16).

[0017] In a 4th aspect in accordance with the 2nd or 3rd aspect, there is the same number of inlets (160) as inlet openings (610).

[0018] In a 5th aspect in accordance with the 2nd or 3rd or 4th aspect, the inlets (160) comprise inlets (160) with fluid-passage net cross-sections different from each other.

[0019] In a 6th aspect in accordance with any one of the aspects from the 2nd to the 5th, each deflector (16) extends continuously between the inlets (160) and the inlet openings (610) of the condenser (6).

[0020] In a 7th aspect in accordance with any one of the preceding aspects, one or more deflectors (16) has an at least partially curvilinear trend, in particular defining an arc of a circle.

[0021] In an 8th aspect in accordance with any one of the aspects from the 2nd to the 7th, the ratio of the fluid-passage net cross-section of one or more inlets (160) to the fluid-passage net cross-section of the respective inlet opening (610) of the condenser (6) is smaller than or equal to 1.

[0022] In a 9th aspect in accordance with the preceding aspect, one or more channels (17) have a fluid-passage net cross-section that increases, in particular, linearly, from the respective inlet (160) to the respective inlet opening (610) of the condenser (6).

[0023] In a 10th aspect in accordance with any one of the preceding aspects, each deflector (16) extends by a different length with respect to the other deflectors (16), said length being defined along the advancement direction of the drying fluid. In a 11th aspect in accordance with any one of the preceding aspects, the deflectors (16) are configured to divert the drying fluid by an angle of about 90°.

[0024] In a 12th aspect in accordance with any one of the preceding aspects, the deflectors (12) are configured to divert the drying fluid between a substantially vertical inlet direction and an outlet direction from the deflectors (16) substantially horizontal or inclined with respect to a horizontal plane.

[0025] In a 13th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein the first circuit comprises:

- a conduit (14) for the drying fluid interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser (6) and configured to convey the drying fluid towards the first inlet (61) of the condenser (6),
- a filter (13) housed at least partially within the conduit (14), the filter (13) having a shorter length than a length of the conduit (14),

between a lower end portion of the filter (13) and an outlet end of the drying fluid from the conduit (14) a flow uniforming distance (D) being defined.

[0026] In a 14th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein the first circuit comprises a conduit (14) for the drying fluid interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser

(6) and configured to convey the drying fluid towards the first inlet (61) of the condenser (6), between a lower end portion of the filter (13) and an upper end of the deflectors (16) a flow uniforming distance (D) being defined.

[0027] In a 15th aspect in accordance with any one of the preceding aspects, the condenser (6) comprises a head (60) positioned upstream of the first inlet (61) and defining said plurality of deflectors (16).

[0028] In a 16th aspect in accordance with the preceding aspect, the deflectors (16) are integrally moulded with the head (60).

[0029] In a 17th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein:

- the condenser (6) comprises a head (60) positioned upstream of the first inlet (61),
- the deflectors (16) delimit a plurality of inlets (160) for the drying fluid, the inlets of the deflectors (16), under conditions of use of the household appliance (1), being placed at substantially the same or a lower height (Y1) with respect to a maximum height (Y2) of the head (60).

[0030] In an 18th aspect in accordance with the preceding aspect, the deflectors (16) are embedded in the head (60).

[0031] In a 19th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein the first circuit comprises a conduit (14) for the drying fluid interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser (6) and configured to convey the drying fluid towards the first inlet (61) of the condenser (6), said deflectors (16) extending at least partially into said conduit (14).

[0032] In a 20th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein:

- the first circuit comprises a conduit (14) for the drying fluid interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser (6) and configured to convey the drying fluid towards the first inlet (61) of the condenser (6),
- the deflectors (16) delimit a plurality of inlets (160) for the drying fluid,

the inlets (160) are placed at substantially the same height (Y1) with respect to a height (Y3) defined by a terminal outlet portion of the drying fluid from the conduit (14).

[0033] In a 21st aspect in accordance with any one of the preceding aspects, the condenser (6) comprises a head (60) positioned upstream of the first inlet (61) and each deflector (16) comprises a first and a second portion, said first portion being defined at said conduit (14), in particular at a terminal outlet portion of the drying fluid from said conduit (14), and said second portion being defined at said head (60).

[0034] In a 22nd aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein:

- the condenser (6) comprises a plurality of inlet openings (610) at the first inlet (61);
- the deflectors (16) delimit a plurality of inlets (160) for the drying fluid and define a plurality of fluid-tight channels (17) developing interposed between, and fluidically connecting, the inlets (160) and the inlet openings (610) of the condenser (6),

the condenser (6) further comprising a head (60) positioned upstream of the first inlet (61) and defining said plurality of deflectors (16), the head (60) comprising two bulkheads (602) opposite one another with reference to a width of the condenser (6), said bullheads (602) laterally delimiting said channels (17) in a fluid-tight way.

[0035] In a 23rd aspect in accordance with any one of the preceding aspects, the condenser (6) is removably mounted inside the box body.

[0036] In a 24th aspect in accordance with the preceding aspect, the condenser (6) comprises a head (60) positioned upstream of the first inlet (61), the head (60) comprising an extraction handle of the condenser (6) from the box body (2).

[0037] In a 25th aspect in accordance with the 23rd or the 24th aspect, the condenser (6) is extractable in the transversal, preferably normal, direction with respect to a front wall (22) of the box body (2).

[0038] In a 26th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein:

- the condenser (6) has a plurality of inlet openings (610) at the first inlet (61), a plurality of outlet openings (620) at the first outlet (62) and a plurality of drying fluid advancing conduits (612) developing between, and fluidically connecting, the inlet openings (610) and the outlet openings (620),
- the condenser (6) also comprises, interposed between two contiguous drying fluid advancing conduits (612), a cooling fluid advancing conduit (634),
- the condenser (6) comprises a head (60) positioned upstream of the first inlet (61) and defining said plurality of deflectors (16),

the head (60) comprising at least one occlusion element (601) configured to close a respective cooling fluid advancing conduit (634).

[0039] In a 27th aspect in accordance with any one of the preceding aspects, the first circuit comprises a filter (13) interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser (6).

[0040] In a 28th aspect in accordance with the preceding aspect, the filter (13) is arranged, at least partially, in particular completely, within said conduit (14).

[0041] In a 29th aspect in accordance with any one of the preceding aspects, a household drying appliance (1) is provided wherein the deflectors (16) are manually or automatically adjustable.

[0042] In a 30th aspect in accordance with the preceding aspect, a household drying appliance (1) is provided wherein deflectors (16) are configured to be automatically adjustable through a dedicated mechanism configured to change the orientation of the deflectors (16) or a portion thereof, in particular of an upper end portion of the deflectors (16), so as to split and/or obstruct the flow at the channels (17) defined by the deflectors (16) themselves according to one or more operating parameters of the household appliance (1), for example, selected from the following list:

- temperature of the drying fluid measured at any point within the first circuit,
- temperature of the cooling fluid measured at any point within the second circuit,
- moisture of the drying fluid measured at any point within the first circuit, for example between the drum (3) and the condenser (6),
- rotation speed of the first fan (11) and/or the second fan (15),
- weight or volume of the garments to be dried,
- duration or effectiveness of the pre-chosen drying cycle.

[0043] There now follows, by way of non-limiting example, a detailed description of one or more preferred embodiments of the invention, in which:

figure 1 represents a schematic sectional view of a dryer, for example of the condensation type;
figure 2 represents a perspective view of the base of the dryer;
figure 3 represents a sectional view of the base of the dryer of figure 2, with some elements removed;
figure 4 represents an axonometric view of the condenser of the dryer in accordance with one embodiment of the present invention;
figure 5 represents a view from above of the condenser of figure 4;
figure 6 represents a section of the condenser of figure 5 realised according to the sectioning plane VI-VI.

[0044] With reference to figure 1, 1 indicates a household appliance, for example, a dryer of the condensation type, in accordance with the present invention.

[0045] The dryer comprises an external box body 2 and a drum 3 destined to receive garments to be dried. The drum 3 is housed within the box body 2 and is for example rotatably engaged to the latter.

[0046] The box body 2 has an overall parallelepiped shape and comprises a lateral wall having sides, a front wall 22 transversal to each side, a rear wall 23 parallel to the front wall 22 and transversal to the sides, and an upper wall 24 transversal to the lateral wall. At the bottom the box body 2 may be at least partially open. It should be noted that, although the box body 2 is normally parallelepiped shaped, other shapes are not excluded in principle.

[0047] With respect to the drum 3, it is configured to rotate about a horizontal axis and is accessible from the outside of the box body 2 through a door 4 arranged and hinged at the front wall 22 of the box body 2. In an alternative embodiment, not illustrated, the drum 3 can be made accessible by a door hinged at the upper wall 24.

[0048] In the examples illustrated, the box body 2 further comprises a base 5 (see figure 2), which has at least a front portion 51 that frontally closes the household appliance 1, below the drum 3. The base 5 (or parts thereof, for example the front portion 51) may be removable; for example, it may be disengaged from the box body 2 for maintenance operations of some components housed internally to the box body 2 such as for example, as will be described in detail below, a condenser, a fan and yet other organs.

[0049] To allow the linen to dry, the condensation dryer comprises a first drying circuit intended to process a drying fluid, usually comprising appropriately heated air (also called "hot air" in the present description), a second cooling circuit intended to process a cooling fluid, usually comprising air at ambient temperature (also called "cold air" in the present description), and a condenser 6 that places a length of the first and of the second circuit in thermal communication.

[0050] The condenser 6 is arranged at a lower portion of the household appliance 1, below the drum 3 and is for example positioned behind the front wall 22 of the box body 2. The condenser 6 allows thermal exchange between the drying fluid and the cooling fluid in order to reduce the humidity of the drying fluid downstream of the drum 3; for that purpose the condenser 6 has a first inlet 61 and a first outlet 62 for the drying fluid and a second inlet 63 and a second outlet 64 for the cooling fluid.

[0051] The first inlet 61 and the first outlet 62 are defined at a first pair of opposite walls of the condenser 6 along a prevalent extension direction of the condenser; the drying fluid advancing conduits 612 extend interposed between the first inlet 61 and the first outlet 62 (see figure 6). The first inlet 61 comprises a plurality of inlet openings 610 and the first outlet comprises a plurality of outlet openings 620; each inlet opening 610 is fluidically connected with a respective drying fluid advancing conduit 612 and with a respective outlet opening 620 (see figure 3 and figure 6). The second inlet 63 and the second outlet 64 are defined at a second pair of opposite walls of the condenser 6 normal to the walls of the first pair of walls (see figure 4); the cooling fluid advancing conduits 634 extend interposed between the second inlet 63 and the second outlet 64.

[0052] The condenser 6 is of the "air-air" type, preferably cross-flow, and therefore the drying fluid advancing

conduits 612 and the cooling fluid advancing conduits 634 respectively define two bunches of advancement directions of the respective fluids within the condenser 6 developing respectively between the first inlet 61 and the first outlet 62 and between the second inlet 63 and the second outlet 64 and perpendicular to one another.

[0053] From a construction point of view, the cooling fluid advancing conduits 634 and the drying fluid advancing conduits 612 are alternatively arranged within the condenser 6 in a vertical direction (see figure 6).

[0054] The dryer may further comprise a condensation collection sump 7 placed below the condenser 6, a condensation collection tank 8 arranged for example at an upper front portion of the household appliance and a pump 9 configured to send the condensation, through an appropriate delivery pipe 10, from the sump 7 to the collection tank 8. The collection sump 7 and the collection tank 8 may also be fluidically connected through a return pipe 20, which is placed at the lateral wall of the collection tank 8 at a height defining an overflow condition of the tank 8. When the level of condensation within the collection tank 8 exceeds such overflow height, the excess condensation returns towards the collection sump 7 by means of the return pipe 20.

[0055] The collection tank 8 is accessible for example from the front wall 22 of the dryer to be extracted and periodically emptied. Preferably, the pump 9 is controlled by an appropriate control system for having continuous operation under operating conditions of the household appliance.

[0056] With regard to the first drying circuit, it comprises a first fan 11, a heating element 12, such as an electric resistance, and a filter 13. The filter 13 may be housed within a conduit 14 (otherwise known as "air duct") arranged upstream of the first inlet 61 of the condenser 6. The filter 13 may be embedded within the conduit 14 and in particular has a shorter length defined in the vertical direction than the length of the conduit 14, as illustrated in the section of figure 3. The conduit 14 may also act as a frame for the filter 13.

[0057] Under operating conditions of the dryer, the first fan 11 circulates the drying fluid within the first circuit into the drum 3 in order to dry the garments contained therein. The drying fluid, crossing the rotating drum 3, enters into contact with the garments at least partially removing the moisture; after crossing the drum 3, the drying fluid leaves it with a higher moisture level with respect to that contained when it enters. The hot and moist air at the outlet from the drum 3 is then filtered through the filter 13 to remove fluff or other undesired particles potentially present in the flow of drying air. The filter 13 is usually arranged at a front portion of the household appliance 1, below the access door 4 to the drum 3, as illustrated in figure 1. Downstream of the filter 13 the conduit 14 extends that conveys the hot and moist air into the condenser 6 at the first inlet 61. Such air flow, crossing the condenser 6, exchanges heat with the cooling fluid, causing the condensation of the moisture contained in the drying fluid. In the heat exchange, the flow of hot air is cooled, while the flow of cold air is heated. After crossing the condenser 6, the drying fluid is heated by means of the heating element 12 before being conveyed and then re-introduced into the drum 3.

[0058] The first circuit is preferably a closed circuit, within which the air leaves the drum 3 hot and moist and is then re-introduced into the drum hot and dry, i.e. with a lower moisture level than the moisture contained by the hot air leaving the drum 3.

[0059] The cooling fluid is in turn processed within the second circuit, which comprises a second fan 15 configured to aspirate the cooling fluid from the environment in which the dryer is installed. For this purpose, the second circuit envisages a suction aperture of the cooling fluid into the box body 2 and a draining portion of the cooling fluid coming out of the box body 2.

[0060] Preferably, the second fan 15 is of the centrifugal type and aspirates the cooling fluid through the suction aperture of the box body 2, processes it along the direction of the axis of the impeller centrifuging it and sends it towards the second inlet 63 in the condenser 6. In the condenser 6 the cooling fluid is processed at the respective conduits 634, then leaving the condenser 6 through the second outlet 64 and being drained into the environment in which the dryer is installed through the draining portion of the box body 2.

[0061] With regard to the condenser 6, it may comprise a head 60 positioned upstream of the first inlet 61, as illustrated for example in figure 3 and in figure 6. Advantageously, the head 60 may be configured to allow the extraction of the condenser 6 from the box body 2; for that purpose, the head 60 may comprise an extraction handle of the condenser 6. The condenser 6 is removably mounted within the box body 2 and is extractable (for example by means of the aforementioned extraction handle afforded at the head 60) in the transversal direction, preferably normal, with respect to a front wall 22 of the box body 2.

[0062] The household appliance 1 further comprises one or more deflectors 16 arranged in the first circuit upstream of the first inlet 61 of the condenser 6, in particular between the filter 13 and the first inlet 61, as illustrated in figure 3. The deflectors 16 delimit a plurality of inlets 160 for the drying fluid (see figure 5 and figure 6) and are configured for directioning the drying fluid going into the condenser 6 towards the drying fluid advancing conduits 612.

[0063] As illustrated for example in figure 6, there are as many inlets 160 as inlet openings 610; however, embodiments are not excluded wherein there is a different number of them from that of the inlet openings 610.

[0064] The inlets 160 define a drying fluid inlet direction extending at least partially in the transversal direction, in particular normal, with respect to the prevalent extension direction of the drying fluid advancing conduits 612. For that purpose, the deflectors 16 have an at least partially curvilinear trend, as illustrated in figures 3 and 6. Such

curvilinear conformation acts as a connection between the substantially vertical advancement direction of the drying fluid within the conduit 14 and the substantially horizontal advancement direction (or inclined with respect to a horizontal plane) that the drying fluid describes within the condenser 6 through the advancing conduits 612. The deflectors 16 therefore prevent the drying fluid describing sudden changes of direction along its advancement path. In other words, the deflectors 16 are configured to divert the drying fluid between two directions angularly staggered by about 90° along a substantially curvilinear connected path, defined by the actual curvilinear trend of the deflectors 16. The deflectors 16 hence allow load losses to be minimised within the first circuit, in particular in the portion of the first circuit comprised between the filter 13 and the condenser 6.

[0065] The deflectors 16 extend continuously between the inlets 160 and the inlet openings 610 of the condenser 6 and define a plurality of fluid-tight channels 17 adapted to convey the drying fluid into the condenser 6. The channels 17 are defined between continuous deflectors 16 and fluidically connect the inlets 160 and the inlet openings 610 of the condenser 6 (see figure 3 and figure 6); more in detail, each channel 17 is fluidically connected with a respective drying fluid advancing conduit 612, as illustrated in figure 6.

[0066] The channels 17 are fluid-tight to prevent the drying fluid being drawn towards the cooling fluid advancing conduits 634 interposed between the drying fluid advancing conduits 612 along the height of the condenser 6. For that purpose, the condenser 6 comprises at least one occlusion element 601 configured to close a respective cooling fluid advancing conduit 634; preferably, the condenser 6 may comprise a plurality of occlusion elements 601 of the same number as the cooling fluid advancing conduits 634 (see figure 6). The occlusion elements 601 may be defined at the head 60 or at a terminal portion of the deflectors 16 facing the first inlet 61.

[0067] The channels 17 have a constant fluid-passage net cross-section along the advancement direction of the drying fluid within the channel 17 or that increases, in particular linearly, from the respective inlet 160 to the respective inlet opening 610 of the condenser 6. In the case of channels 17 with a constant fluid-passage net cross-section the ratio of the fluid-passage net cross-section of the inlets 160 and the fluid-passage net cross-section of the respective inlet openings 610 of the condenser 6 is substantially equal to 1, while in the case of channels 17 whose fluid-passage net cross-section increases along the advancement direction of the drying fluid within the channel (from the respective inlet 160 to the respective inlet opening 610 of the condenser 6), the ratio of the fluid-passage net cross-section of the inlets 160 to the fluid-passage net cross-section of the respective inlet openings 610 of the condenser is less than 1. The increase in cross-section of the channels 17 may regard a single channel 17 or a plurality of channels 17, in particular all the channels 17. Providing a constant fluid-passage net cross-section or that increases along one or more channels 17 from the respective inlet 160 to the respective inlet opening 610 of the condenser 6 allows the fluid not to encounter constrictions or cross-section reductions along its advancement path within the channels 17 upstream of the first inlet 61 of the condenser 6. Such constrictions would be particularly undesirable since they would "hinder" the advancement of the fluid, increasing the drying fluid load losses to which it is subject along the first circuit. Furthermore, providing channels 17 whose fluid-passage net cross-section increases linearly also allows sudden cross-section enlargements to be avoided which are particularly undesirable due to the concentrated load losses they imply.

[0068] With regard to the inlet openings 610 of the condenser 6, they comprise above placed openings 611 and below placed openings 612 (see figure 3), whose position is defined with reference to the conditions of use of the household appliance 1. In other words, the above placed openings 611 are fluidically connected with the upper hot rows of the condenser 6 and the below placed openings 612 are fluidically connected with the lower hot rows of the condenser 6. In the context of the present description, hot rows of the condenser 6 means the conduits of the condenser 6 at which the drying fluid is processed; in other words, the hot rows of the condenser 6 correspond to the drying fluid advancing conduits 612.

[0069] With regard to the head 60, it may comprise two bulkheads 602 opposite one another with respect to a width of the condenser 6 and laterally delimiting the channels 17 in a fluid-tight way.

[0070] From a structural point of view, the deflectors 16 may be afforded in the head 60; preferably, the deflectors 16 can be integrally moulded with the head 60. In that case, the deflectors 16 are integrated into the head 60.

[0071] With regard to the inlets 160 defined by the deflectors 16, they may have different fluid-passage net cross-sections from one another according to the upper or lower inlet opening 610 with which they are fluidically connected. In particular, the inlets 160 of the channels 17 fluidically connected with the above placed openings 611 have a larger fluid-passage net cross-section than a fluid-passage net cross-section of the inlets 160 of the channels 17 connected with the below placed openings 612.

[0072] This ratio of fluid-passage net cross-sections of the above placed openings 611 to the below placed openings 612 is particularly advantageous since the top rows of the condenser 6 are usually the most "penalised" rows, i.e. they receive a lower flow rate than the bottom rows. In technical jargon, such "penalised" rows are also defined as "rows with underflow". In particular, this underflow is due to the fact that the drying flow leaves the drum 3 horizontally and is forced to describe a change of direction downwards (towards the condenser 6), being conveyed in a substantially vertical direction at the conduit 14. Due to such a change of direction, the drying

fluid tends by inertia to lean on the conduit wall 14 at which the flow impacts as it changes direction, describing a substantially right-angled curve. Since the deflectors 16 are facing an outlet portion of the drying fluid from the conduit 14, the fluid tends by inertia to maintain a trajectory shifted towards the inlets 160 fluidically connected with the hot lower rows of the condenser 6, into which a higher flow rate flows with respect to that flowing at the upper rows. As well as being due to the trajectory, the underflow at the upper rows is due to the velocity field that is created in the conduit 14. Such velocity field is characterised by lower speeds of the drying fluid flowing in the top rows than the speeds of the drying fluid intended to be processed at the lower rows. The velocity field of the drying fluid is a result of the aforementioned inertial trajectory.

[0073] In light of this, providing one or more inlets 160 of the channels 17 connected with the above placed openings 611 having a higher fluid-passage net cross-section than a fluid-passage net cross-section of the inlets 160 of the channels 17 connected with the below placed openings 612 allows the mass of fluid flowing at the above placed openings 611 to be increased, making up for the aforementioned lower fluid speed, in order to guarantee a uniform flow rate between the above placed openings 611 and the below placed openings 612. In this way the drying fluid advancing conduits 612 fluidically connected with the below placed openings 612 have a comparable flow rate, which allows the condenser 6 to operate with a heat exchange efficiency at the top rows comparable to that at the bottom rows, consequently improving the efficiency of the condenser 6.

[0074] Under operating conditions of the household appliance 1, immediately downstream of the filter 13 the drying flow is particularly turbulent; however, excessive flow turbulence is undesirable since it compromises the efficiency of the deflectors 16. In light of this, to guarantee lower flow turbulence downstream of the filter 13 a certain distance D may be defined between a lower end portion of the filter 13 and an upper end of the deflectors 16 (see figure 3); such distance D is adapted to uniform the flow, allowing it to reduce its turbulence. The value of the distance D depends on the type, the shape and the size of the filter 13, the flow rate of the drying fluid and other typical parameters of the household appliance 1. For example, in the case of filters 13 with a fine mesh (i.e. filters having high efficiency or filtering effect) the value of the distance D may be higher than filters with a lower filtering effectiveness (for example filters with a wider mesh), since filters with a finer mesh imply downstream higher turbulence in the fluid crossing them with respect to filters with wider mesh, therefore a longer free length is necessary to allow their turbulence to be reduced.

[0075] With regard to the positioning of the deflectors 16, the top ends of the deflectors 16, and therefore the inlets 160, may all be positioned at a same height Y1; alternatively, deflectors 16 may also be provided whose upper end portion extends at a higher height with respect to the height of the end portions of the other deflectors 16, for example until it reaches into the conduit 16.

[0076] Figure 3 illustrates for example deflectors 16 whose top ends (and therefore the inlets 160 defined therein) are all positioned at the same height Y1, while a terminal outlet portion of the drying fluid from the conduit 14 is defined at a height Y3, which may be substantially equal to the height Y1. The height Y1 is defined between the top end of the deflectors 16 and a lower (or rest) surface of the condenser 6 or the base 5 or with respect to a rest surface of the household appliance 1. The height Y3 may in turn be defined between a terminal outlet portion of the drying fluid from the conduit 14 and a lower (or rest) surface of the condenser 6 or of the base 5 or with respect to the rest surface of the household appliance 1.

[0077] Providing for heights Y1 and Y3 to be substantially equal means that the deflectors 16 extend substantially flush with the outlet end of the drying fluid from the conduit 14; such solution is particularly advantageous since it provides for the deflectors 16 to "tease" the drying flow immediately downstream of the conduit 14 where there is a less turbulent flow (with respect to higher heights within the conduit 14 itself) due to the flow uniforming distance D, splitting it between the various hot rows of the condenser 6. In accordance with such an embodiment, the inlets 160 of the deflectors 16, under conditions of use of the household appliance 1, are placed at a height Y1 substantially equal to or lower than a maximum height Y2 of the head 60. In other words, the deflectors 16 are external to the conduit 14 and face one another at an end outlet of the drying fluid from the conduit 14, as illustrated for example in figure 3.

[0078] The height Y2 may be defined between a maximum height of the head 60 and one of its lower (or rest) surfaces of the condenser 6, or with respect to the rest surface of the household appliance 1.

[0079] In the case in which the inlets 160 of the deflectors 16 are placed at a lower height Y1 with respect to the maximum height Y2 of the head 60, the deflectors 16 are embedded into the head 60.

[0080] In accordance with a non-illustrated variant, the deflectors 16 may extend at least partially into the conduit 14. In such a variant, the height Y1 is higher than the height Y3. To allow the extraction of the condenser 6 in the transversal, preferably normal, direction with respect to a front wall 22 of the box body 2, the portion of the deflectors 16 that extends into the conduit 14 may be made of flexible and/or elastically deformable material. In such a variant, the deflectors 16 extend continuously from the first inlet 61 into the conduit 14.

[0081] In accordance with a further non-illustrated variant, each deflector 16 comprises a first and a second portion. The first portion is defined at the conduit 14, in particular at or in proximity to a terminal outlet portion of the drying fluid from the conduit 14, and the second portion is defined at the head 60. In other words, the first portion of the deflectors 16 may be arranged or integrated

into the conduit 14 (for example integrally moulded with the conduit 14) and the second portion may be arranged or integrated into the head 16 (for example integrally moulded with the head 16).

[0082] The deflectors 16 may further be configured to be manually adjustable. Alternatively, the deflectors 16 may be automatically adjustable through a dedicated mechanism (not illustrated) and configured to change the orientation of the deflectors 16 or a portion thereof (for example an upper end portion) so as to split and/or obstruct the flow at the channels defined by the deflectors 16 themselves, for example, according to one or more operating parameters of the household appliance 1. Such parameters may be for example: the temperature of the drying fluid measured at any point within the first circuit, the temperature of the cooling fluid measured at any point within the second circuit, the moisture of the drying fluid measured at any point within the first circuit (for example between the drum 3 and the condenser 6), the rotation speed of the first fan 11 and/or of the second fan 15, the weight and volume of the garments to be dried, the duration or effectiveness of the pre-chosen drying cycle.

[0083] Such mechanism under operating conditions of the household appliance 1 may for example provide for the splitting or closure of one or more channels 17 as the linen are dried and therefore reduces the moisture contained in the drying fluid (in a terminal step of the drying cycle).

[0084] The present invention makes it possible to obtain one or more of the following advantages and to resolve one or more of the problems encountered in the prior art.

[0085] First of all, the invention allows load losses to be reduced in the drying fluid circuit between the filter and the condenser inlet.

[0086] Furthermore the deflectors of the household appliance in accordance with the present invention allow the drying flow into the condenser to be uniformly split between the hot rows, consequently improving the efficiency of the condenser.

[0087] A further advantage of the present invention is represented by the maintenance simplicity of the condenser, which can be extracted frontally from the household appliance.

[0088] The invention is moreover convenient to use, easy to implement and simple and economical to construct.

Claims

1. Household drying appliance (1) comprising:

- an external box body (2);
- a drum (3) housed inside the box body (2) and destined to receive garments to be dried;
- a condenser (6) comprising a first inlet (61) and a first outlet (62) for a drying fluid and a second inlet (63) and a second outlet (64) for a cooling fluid;
- a first circuit configured for circulating the drying fluid from the drum (3) towards the first inlet (61) of the condenser (6) and from the first outlet (62) of the condenser (6) towards the drum (3);
- a plurality of inlet openings (610) at the first inlet (61);
- a second circuit configured for circulating the cooling fluid from a suction aperture of the cooling fluid in the box body (2) to the second inlet (63) of the condenser (6) and from the second outlet (64) of the condenser (6) to a draining portion of the cooling fluid from the box body (2); and
- a plurality of deflectors (16) upstream the first inlet (61) of the condenser (6) and configured for directioning the drying fluid towards the first inlet (61) of the condenser (6), the deflectors (16) delimiting a plurality of inlets (160) for the drying fluid;

wherein the deflectors (16) define a plurality of fluid-tight channels (17) developing interposed between, and fluidically connecting, the inlets (160) and the inlet openings (610) of the condenser (6);
wherein each of the channels (17) has a substantially constant fluid-passage net cross-section or a substantially increasing fluid-passage net cross-section along an advancement direction of the drying fluid within a respective channel (17) from a respective inlet (160) to a respective inlet opening (610) of the condenser (6), **characterised in that** the condenser (6) comprises at least one occlusion element (601) configured to close a respective cooling fluid advancing conduit (634)
and **in that** the condenser is removably mounted within the box body (2) and is extractable in the transversal direction, preferably normal, with respect to a front wall (22) of the box body (2).

2. Household appliance (1) according to claim 1, wherein:

- the increasing fluid-passage net cross-section of the channels (17) increases substantially linearly; and/or
- one or more of the channels (17) have an increasing fluid-passage net cross-section, while the remaining one or more channels (17) have a constant fluid-passage net cross-section; or
- all of the channels (17) have an increasing fluid-passage net cross-section.

3. Household appliance (1) according to any one of the preceding claims, wherein the inlets (160) have fluid-passage net cross-sections different from each other.

4. Household appliance (1) according to any one of the preceding claims, wherein the inlet openings (610) of the condenser (6) comprise openings (611) above placed and openings (612) below placed in use condition of the household appliance (1), the inlets (160) of the channels (17) fluidically communicating with the above placed openings (611) having a fluid-passage net cross-section greater than a fluid-passage net cross-section of the inlets (160) of the channels (17) fluidically communicating with the below placed openings (612).

5. Household appliance (1) according to any one of the preceding claims, wherein the ratio of the fluid-passage net cross-section of the inlet (160) to the fluid-passage net cross-section of the respective inlet opening (610) of the condenser (6) is smaller than or equal to 1.

6. Household appliance (1) according to any one of the preceding claims, wherein each deflector (16) has an at least partially curvilinear trend.

7. Household appliance (1) according to any one of the preceding claims, wherein the condenser (6) comprises a head (60) positioned upstream the first inlet (61) and defining said plurality of deflectors (16), said deflectors (16) being integrally moulded with the head (60).

8. Household appliance (1) according to any one of the preceding claims, wherein:

- the condenser (6) has a plurality of inlet openings (610) at the first inlet (61), a plurality of outlet openings (620) at the first outlet (62) and a plurality of drying fluid advancing conduits (612) developing between, and fluidically connecting, the inlet openings (610) and the outlet openings (620),

the inlets (160) defining an inlet direction of the drying fluid, developing at least partially in a transversal direction, particularly normal, to the prevalent development direction of said conduits (612).

9. Household appliance (1) according to any one of the preceding claims, wherein:

- the first circuit comprises a conduit (14) for the drying fluid, interposed between an outlet portion of the drum (3) and the first inlet (61) of the condenser, and configured for conveying the drying fluid towards the first inlet (61) of the condenser (6),

said deflectors (16) being external to the conduit (14) and facing an outlet end of the drying fluid from the conduit (14).

10. Household appliance (1) according to any one of the preceding claims, wherein the condenser (6) comprises an extraction handle from the box body (2) in a transversal direction, preferably normal, to a front wall (22) of the box body (2).

Patentansprüche

1. Haushaltstrocknungsvorrichtung (1), umfassend:

- einen externen Gehäusekörper (2);
- eine Trommel (3), welche in dem Gehäusekörper (2) aufgenommen ist und dazu bestimmt ist, zu trocknende Kleidungsstücke aufzunehmen;
- einen Kondensator (6), umfassend einen ersten Einlass (61) und einen ersten Auslass (62) für ein Trocknungsfluid und einen zweiten Einlass (63) und einen zweiten Auslass (64) für ein Kühlfluid;
- einen ersten Kreislauf, welcher dazu eingerichtet ist, das Trocknungsfluid von der Trommel (3) zu dem ersten Einlass (61) des Kondensators (6) und von dem ersten Auslass (62) des Kondensators (6) zu der Trommel (3) zirkulieren zu lassen;
- eine Mehrzahl von Einlassöffnungen (610) an dem ersten Einlass (61);
- einen zweiten Kreislauf, welcher dazu eingerichtet ist, das Kühlfluid von einer Saugöffnung des Kühlfluids in dem Gehäusekörper (2) zu dem zweiten Einlass (63) des Kondensators (6) und von dem zweiten Auslass (64) des Kondensators (6) zu einem Ablaufabschnitt des Kühlfluids von dem Gehäusekörper (2) zirkulieren zu lassen; und
- eine Mehrzahl von Deflektoren (16), welche dem ersten Einlass (61) des Kondensators (6) vorgeschaltet und dazu eingerichtet sind, das Trocknungsfluid zu dem ersten Einlass (61) des Kondensators (6) zu leiten, wobei die Deflektoren (16) eine Mehrzahl von Einlässen (160) für das Trocknungsfluid abgrenzen;

wobei die Deflektoren (16) eine Mehrzahl von fluiddichten Kanälen (17) definieren, welche sich dazwischen eingefügt ausbilden und die Einlässe (160) und die Einlassöffnungen (610) des Kondensators (6) fluidisch verbinden;
wobei jeder der Kanäle (17) einen im Wesentlichen konstanten Fluiddurchlass-Nettoquerschnitt oder einen im Wesentlichen zunehmenden Fluiddurchlass-Nettoquerschnitt entlang einer Förderungsrichtung des Trocknungsfluids innerhalb eines jeweiligen Kanals (17) von einem jeweiligen Einlass (160) zu einer jeweiligen Einlassöffnung (610) des Kondensators

(6) aufweist,
dadurch gekennzeichnet, dass der Kondensator (6) wenigstens ein Verschlusselement (601) umfasst, welches dazu eingerichtet ist, eine jeweilige Kühlfluidförderleitung (634) zu verschließen,
und dadurch, dass der Kondensator lösbar innerhalb des Gehäusekörpers (2) montiert ist und in der Querrichtung, vorzugsweise normal in Bezug auf eine Vorderwand (22) des Gehäusekörpers (2) ausziehbar ist.

2. Haushaltsvorrichtung (1) nach Anspruch 1, wobei:

- der zunehmende Fluiddurchlass-Nettoquerschnitt der Kanäle (17) im Wesentlichen linear zunimmt; und/oder
- einer oder mehrere der Kanäle (17) einen zunehmenden Fluiddurchlass-Nettoquerschnitt aufweisen, während der übrige oder die übrigen mehreren Kanäle (17) einen konstanten Fluiddurchlass-Nettoquerschnitt aufweisen; oder
- alle der Kanäle (17) einen zunehmenden Fluiddurchlass-Nettoquerschnitt aufweisen.

3. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei die Einlässe (160) sich voneinander unterscheidende Fluiddurchlass-Nettoquerschnitte aufweisen.

4. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei die Einlassöffnungen (610) des Kondensators (6) oberhalb platzierte Öffnungen (611) und unterhalb platzierte Öffnungen (612) in einem Verwendungszustand der Haushaltsvorrichtung (1) umfassen, wobei die Einlässe (160) der Kanäle (17) mit den oberhalb platzierten Öffnungen (611) in Fluidkommunikation stehen, welche einen Fluiddurchlass-Nettoquerschnitt aufweisen, welcher größer als ein Fluiddurchlass-Nettoquerschnitt der Einlässe (160) der Kanäle (17) ist, welche mit den unterhalb platzierten Öffnungen (612) in Fluidkommunikation stehen.

5. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei das Verhältnis des Fluiddurchlass-Nettoquerschnitts des Einlasses (160) zu dem Fluiddurchlass-Nettoquerschnitt der jeweiligen Einlassöffnung (610) des Kondensators (6) kleiner oder gleich 1 ist.

6. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei jeder Deflektor (16) einen wenigstens partiell gekrümmten Trend aufweist.

7. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei der Kondensator (6) einen Kopf (60) umfasst, welcher dem ersten Einlass (61) vorgeschaltet positioniert ist und die Mehrzahl der Deflektoren (16) definiert, wobei die Deflektoren (16) integral mit dem Kopf (60) geformt sind.

8. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei:

- der Kondensator (6) eine Mehrzahl von Einlassöffnungen (610) an dem ersten Einlass (61), eine Mehrzahl von Auslassöffnungen (620) an dem ersten Auslass (62) und eine Mehrzahl von Trocknungsfluid-Förderleitungen (612) aufweist, welche sich dazwischen ausbilden, und die Einlassöffnungen (610) und die Auslassöffnungen (620) fluidisch verbinden,

wobei die Einlässe (160) eine Einlassrichtung des Trocknungsfluids definieren, welche sich wenigstens teilweise in einer Querrichtung, vorzugsweise normal zu der vorwiegenden Ausbildungsrichtung der Leitungen (612) ausbildet.

9. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei:

- der erste Kreislauf eine Leitung (14) für das Trocknungsfluid umfasst, welche zwischen einem Auslassabschnitt der Trommel (3) und dem ersten Einlass (61) des Kondensators eingefügt und dazu eingerichtet ist, das Trocknungsfluid zu dem ersten Einlass (61) des Kondensators (6) zu fördern,

wobei die Deflektoren (16) außerhalb des Kreislaufs (14) sind und einem Auslassende des Trocknungsfluids von dem Kreislauf (14) zugewandt sind.

10. Haushaltsvorrichtung (1) nach einem der vorhergehenden Ansprüche, wobei der Kondensator (6) einen Ausziehgriff aus dem Gehäusekörper (2) in einer Querrichtung, vorzugsweise normal zu einer Vorderwand (22) des Körpergehäuses (2) umfasst.

Revendications

1. Appareil ménager de séchage (1) comprenant :

- un corps de boîtier externe (2) ;
- un tambour (3) logé à l'intérieur du corps de boîtier (2) et destiné à recevoir les vêtements à sécher ;
- un condenseur (6) comprenant une première entrée (61) et une première sortie (62) destinées à un fluide de séchage et une seconde entrée (63) et une seconde sortie (64) destinées à un fluide de refroidissement ;
- un premier circuit configuré pour la circulation du fluide de séchage depuis le tambour (3) vers

la première entrée (61) du condenseur (6) et depuis la première sortie (62) du condenseur (6) vers le tambour (3) ;
- une pluralité d'ouvertures d'entrée (610) en correspondance de la première entrée (61) ;
- un second circuit configuré pour la circulation du fluide de refroidissement depuis une ouverture d'aspiration du fluide de refroidissement dans le corps de boîtier (2) vers la seconde entrée (63) du condenseur (6) et depuis la seconde sortie (64) du condenseur (6) vers une partie de drainage du fluide de refroidissement depuis le corps de boîtier (2) ; et
- une pluralité de déflecteurs (16) en amont de la première entrée (61) du condenseur (6) et configurés pour diriger le fluide de séchage vers la première entrée (61) du condenseur (6), les déflecteurs (16) délimitant une pluralité d'entrées (160) pour le fluide de séchage ;

où les déflecteurs (16) définissent une pluralité de canaux hermétiques au fluide (17) développant interposés entre, et raccordant fluidiquement, les entrées (160) et les ouvertures d'entrée (610) du condenseur (6) ;
où chacun des canaux (17) présente une section transversale nette de passage de fluide substantiellement constante ou une section transversale nette de passage de fluide augmentant substantiellement le long d'un sens de progression du fluide de séchage à l'intérieur d'un canal respectif (17) depuis une entrée respective (160) vers une ouverture d'entrée respective (610) du condenseur (6),
caractérisé en ce que le condenseur (6) comprend au moins un élément d'obturation (601) configuré pour fermer un premier conduit d'avancement de fluide de refroidissement respectif (634)
et **en ce que** le condenseur est monté amovible à l'intérieur du corps de boîtier (2) et peut être extrait dans le sens transversal, préférablement perpendiculaire, par rapport à une paroi avant (22) du corps de boîtier (2).

2. Appareil ménager (1) selon la revendication 1, dans lequel :

- la section transversale nette de passage de fluide croissante des canaux (17) augmente substantiellement de manière linéaire ; et/ou
- un ou plusieurs des canaux (17) présentent une section transversale nette de passage de fluide croissante, tandis que lesdits canaux restants (17) présentent une section transversale nette de passage de fluide constante ; ou
- tous les canaux (17) présentent une section transversale nette de passage de fluide croissante.

3. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel les entrées (160) présentent des sections transversales nettes de passage de fluide différentes l'une de l'autre.

4. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel les ouvertures d'entrée (610) du condenseur (6) comprennent des ouvertures (611) placées au-dessus et des ouvertures (612) placées en-dessous dans les conditions d'utilisation de l'appareil ménager (1), les entrées (160) des canaux (17) communiquant fluidiquement avec les ouvertures placées au-dessus (611) ayant une section transversale nette de passage de fluide supérieure à une section transversale nette de passage de fluide des entrées (160) des canaux (17) communiquant fluidiquement avec les ouvertures placées en-dessous (612).

5. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel le rapport de la section transversale nette de passage de fluide de l'entrée (160) à la section transversale nette de passage de fluide de l'ouverture d'entrée respective (610) du condenseur (6) est inférieur ou égal à 1.

6. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel chaque déflecteur (16) présente au moins une tendance partiellement curviligne.

7. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel le condenseur (6) comprend une tête (60) positionnée en amont de la première entrée (61) et définissant ladite pluralité de déflecteurs (16), lesdits déflecteurs (16) étant moulés intégralement avec la tête (60).

8. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel :

- le condenseur (6) présente une pluralité d'ouvertures d'entrée (610) en correspondance de la première entrée (61), une pluralité d'ouvertures de sortie (620) en correspondance de la première sortie (62) et une pluralité de conduits de progression de fluide de séchage (612) se développant entre, et connectant fluidiquement, les ouvertures d'entrée (610) et les ouvertures de sortie (620),

les entrées (160) définissant un sens d'entrée du fluide de séchage, se développant au moins partiellement dans un sens transversal, particulièrement perpendiculaire, au sens de développement prévalent desdits conduits (612).

9. Appareil ménager (1) selon l'une quelconque des

revendications précédentes, dans lequel :

- le premier circuit comprend un conduit (14) pour le fluide de séchage, interposé entre une partie de sortie du tambour (3) et la première entrée (61) du condenseur, et configuré pour transporter le fluide de séchage vers la première entrée (61) du condenseur (6),

lesdits déflecteurs (16) étant externes au conduit (14) et faisant face à une extrémité de sortie du fluide de séchage depuis le conduit (14).

10. Appareil ménager (1) selon l'une quelconque des revendications précédentes, dans lequel le condenseur (6) comprend une poignée d'extraction depuis le corps de boîtier (2) dans un sens transversal, préférablement perpendiculaire, à une paroi avant (22) du corps de boîtier (2).

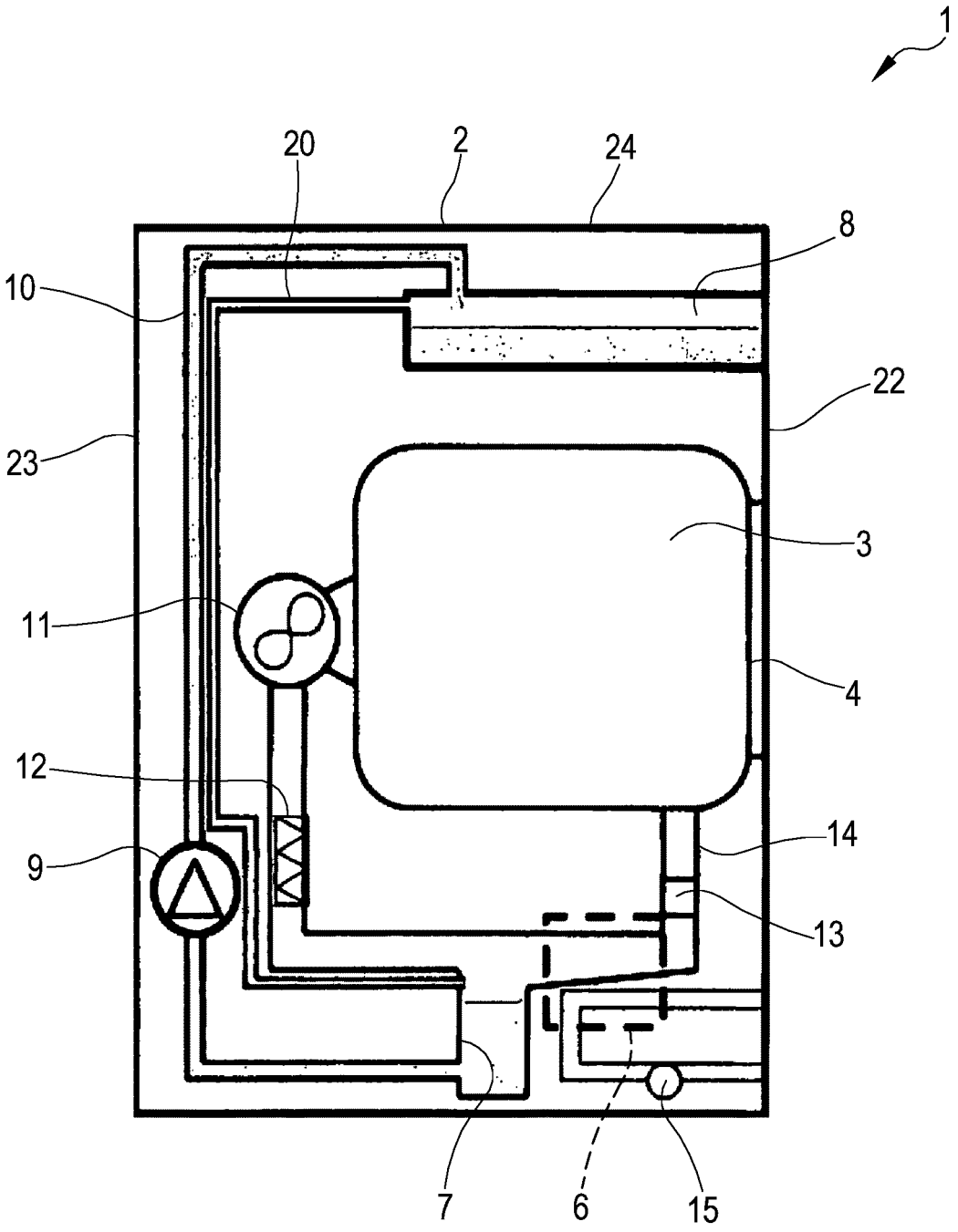


FIG.1

FIG.2

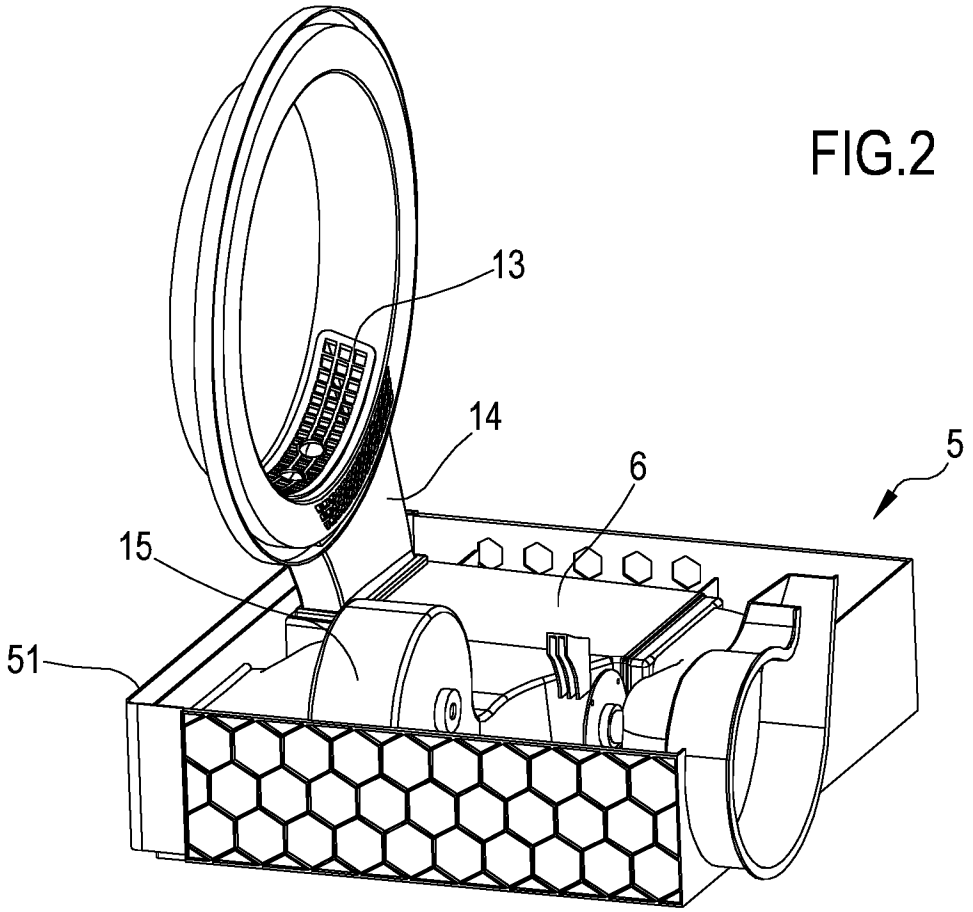
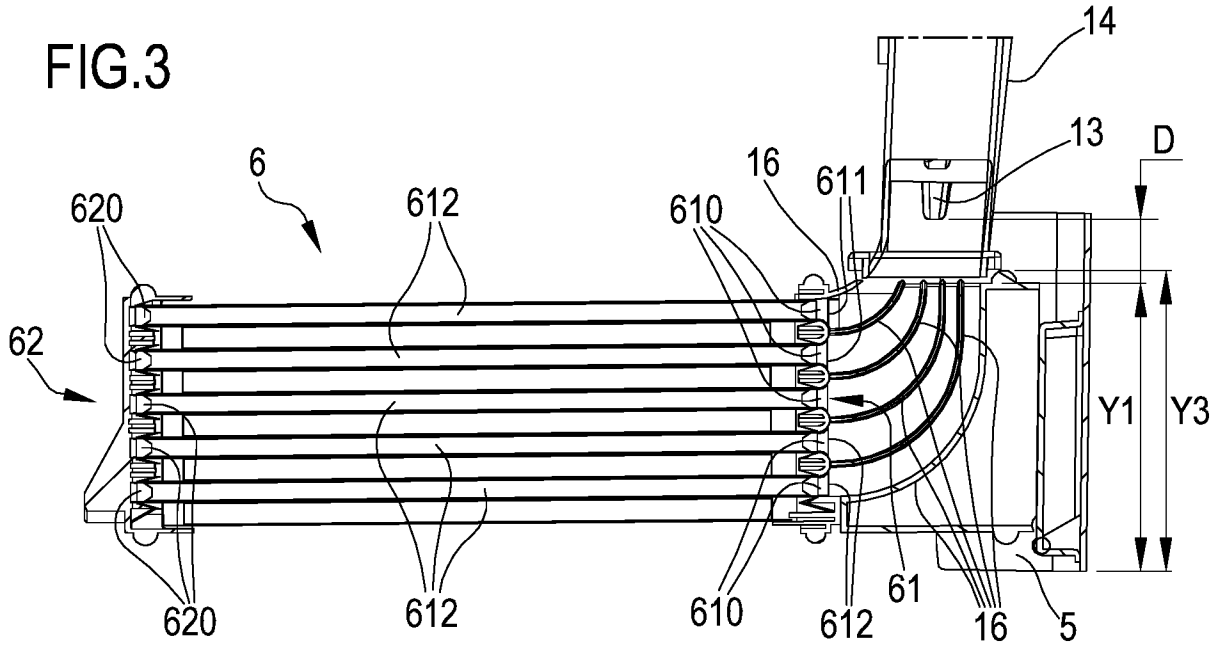

13
14
6
5
15
51

FIG.3


14
13
D
6
16
611
620
612
610
62
Y1
Y3
620
612
610
612
61
16
5

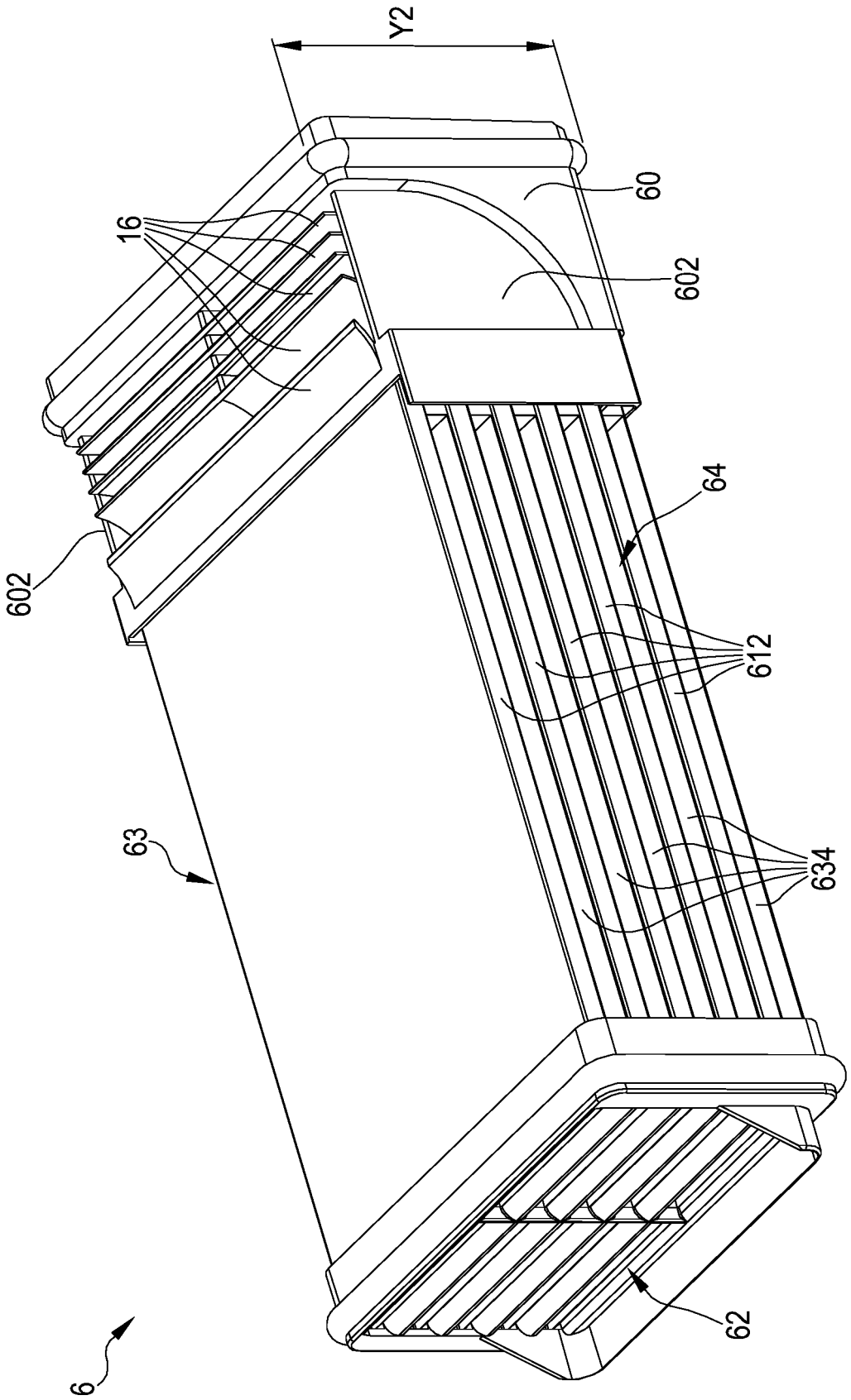


FIG.4

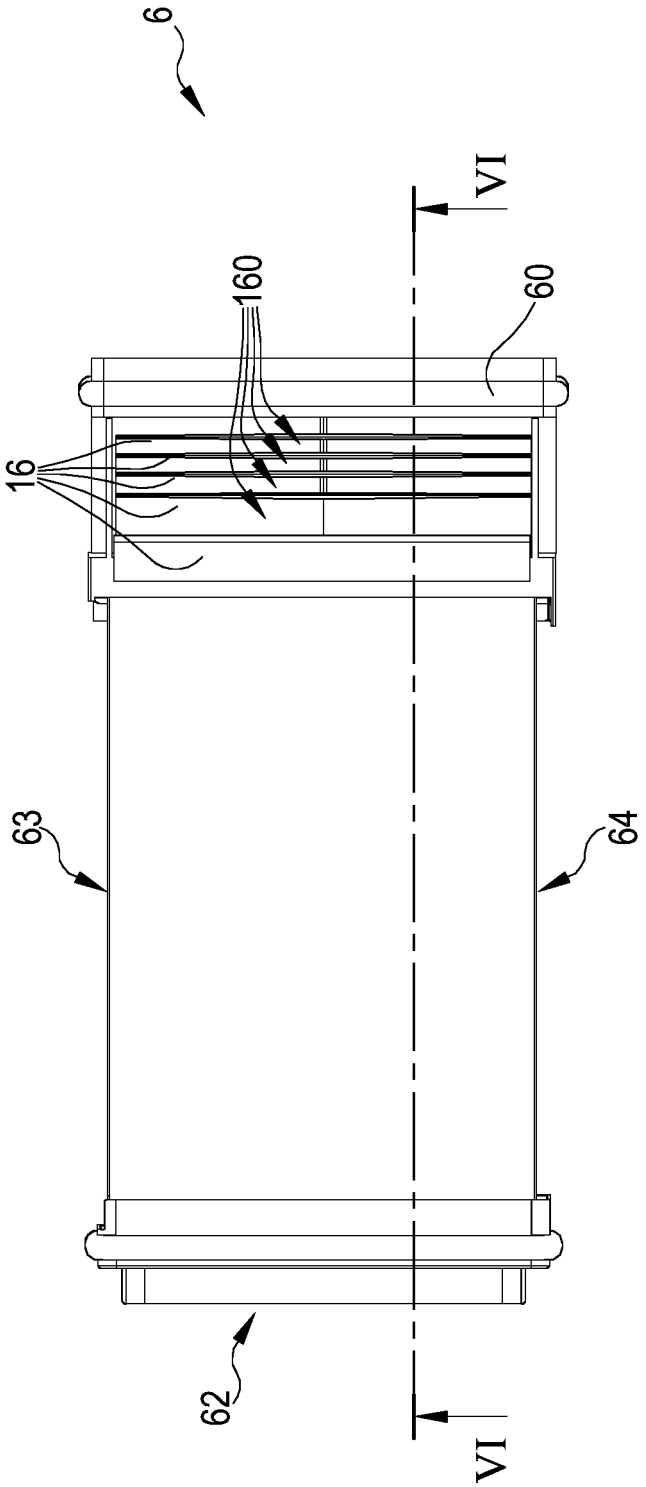

6
VI
160
60
16
63
64
62
VI

FIG.5

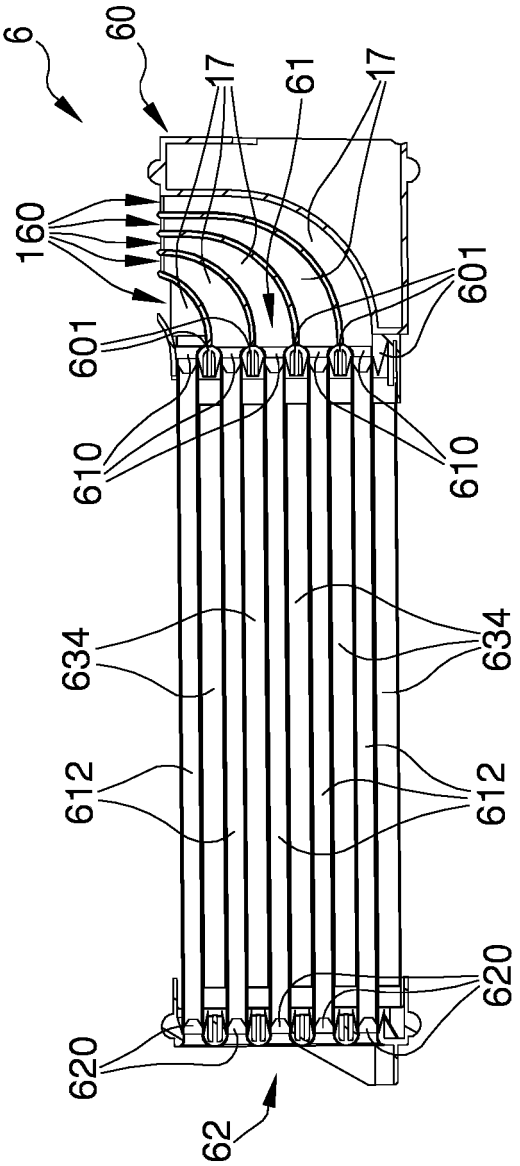

6
60
17
61
17
160
601
601
610
610
634
634
612
612
620
620
62

FIG.6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 19644711 **[0008]**
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