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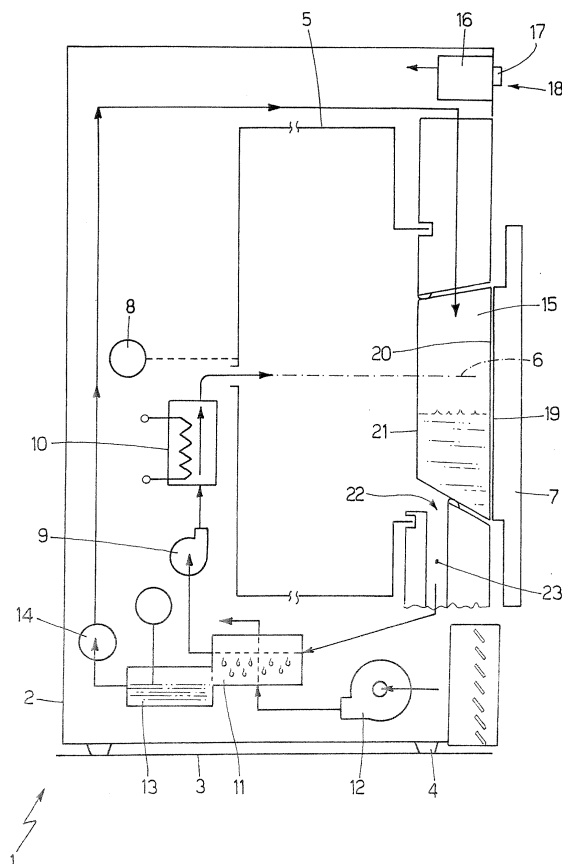
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(54) **Laundry drier with a door-mounted condensation tank**

(57) A laundry drier (1) having: a revolving laundry drum (5) having a front access opening; a door (7) hinged to a front wall of a casing (2) of the laundry drier (1); a fan (9) for feeding drying air into the drum (5); a condenser (11) for dehumidifying the moist drying air from the drum (5); and a condensation tank (15) fitted to the door (7) and for collecting the condensation produced by the condenser (11); when the door (7) is in the closed position, an inner wall (21) of the condensation tank (15) acts as a door cap to retain the laundry inside the drum (5).



Description

TECHNICAL FIELD

[0001] The present invention relates to a laundry drier, preferably for home use.

BACKGROUND ART

[0002] A standard home laundry drier condenses a stream of hot air blown into a drying drum and which removes moisture from the laundry; and the front access to the drum is closed by a hinged panel-type front door. More specifically, a known laundry drier comprises a ventilation system (i. e. usually a blower comprising a fan and an electric fan motor) and a heating arrangement, which draw air from the outside and, via an appropriate conduit arrangement, heat and blow the air into and through the laundry drying drum. The hot drying air is then either exhausted directly from the drier or fed to condensing means to condense the moisture collected in the hot air. The condensation is collected in a removable tank; and, when the condensation tank is full, the drier is stopped and the tank must be removed and emptied by the user.

[0003] For reasons of space, to make the best use of the limited volume available, and to permit easy access to the tank, the trend is towards laundry driers with a removable, door-mounted condensation tank housed removably in the space formed by the loading opening.

[0004] EP0789105A1 discloses a laundry drier with a panel-type front door, and a removable condensation tank housed removably in a cassette housing formed in the front door together with a fluff and down filter removable separately from the tank; and an open nozzle on the laundry-loading opening feeds the condensation tank through a filler on the tank, which faces the nozzle and simultaneously acts as a vent. A perforated cover is interposed between the removable tank and the drum, and forms a diaphragm separating the inside of the drum from the removable tank, to prevent contact between the laundry being dried and the removable tank when the drier is running.

[0005] EP0555703A1 discloses a condensation laundry drier, in which the condensation container is located in the door or loading opening area, and is only accessible when the door is open. And a perforated cover is interposed between the condensation container and the drum, and forms a diaphragm separating the inside of the drum from the condensation container to prevent contact between the laundry being dried and the condensation container when the drier is running.

DISCLOSURE OF INVENTION

[0006] It is an object of the present invention to provide a laundry drier that is cheap and easy to produce, and which also provides for improved drying performance.

[0007] According to the present invention, there is provided a laundry drier as claimed in the accompanying Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawing, which shows a schematic side view of a laundry drier in accordance with the present invention.

PREFERRED EMBODIMENTS OF THE INVENTION

[0009] Number 1 in the attached drawing indicates as a whole a laundry drier comprising a casing 2 resting on a floor 3 on a number of feet 4. Casing 2 supports a revolving laundry drum 5 which rotates about a horizontal rotation axis 6 (in alternative embodiments not shown, rotation axis 6 may be tilted or vertical), and front access to which is closed by a door 7 hinged to a front wall of casing 2. Drum 5 is rotated by an electric motor 8, and is fed through with a stream of drying air fed into drum 5 by a centrifugal fan 9 and heated by heating elements 10.

[0010] The moisture in the laundry in drum 5 is released by evaporation to the stream of hot drying air; and the moist hot air from drum 5 is piped to a condenser 11, which is cooled by a stream of relatively cold air drawn in from the outside by a centrifugal aspirator 12.

[0011] In condenser 11, the vapour in the stream of hot air is condensed to liquid by cooling, and collects in a condenser reservoir 13; the dry air from condenser 11 is drawn by fan 9 and fed back into drum 5, subject to reheating by heating elements 10; and the outside air used for condensation is exhausted.

[0012] The condensation collected in condenser reservoir 13 is pumped by a pump 14 into a condensation tank 15 located at a higher level than condenser reservoir 13; and, when condensation tank 15 is full, a known level sensor (not shown) is activated to stop drier 1. Operation of the drier is controlled by a programmer 16 operated by buttons or knobs 17 on a front control panel 18.

[0013] Condensation tank 15 is fitted to door 7 closing the loading opening of drum 5, and contacts an inner wall 19 of door 7. More specifically, door 7 may comprise a housing removably housing condensation tank 15. An outer wall 20 of condensation tank 15 contacts inner wall 19 of door 7, and, when door 7 is in the closed position, an inner wall 21 of condensation tank 15 acts as a door cap to retain the laundry inside drum 5. In other words, when door 7 is in the closed position, inner wall 21 of condensation tank 15 closes the front access opening to drum 5 to retain the laundry inside drum 5, so that tank 15 acts as both a water container and the so-called door cap for retaining the laundry inside drum 5.

[0014] It is important to point out that an inner surface of inner wall 21 of condensation tank 15 is in direct contact with the hot water inside condensation tank 15, and an

outer surface of inner wall 21 is in direct contact with the laundry inside drum 5, so that part of the heat of the hot water inside condensation tank 15 is transferred to the laundry inside drum 5 to further heat and improve drying of the laundry. In other words, having one wall (inner wall 21 of condensation tank 15) separating the hot water in condensation tank 15 from the laundry in drum 5, part of the heat of the hot water in condensation tank 15 is recovered by being transferred to the laundry in drum 5. In one embodiment, inner wall 21 of condensation tank 15 has a high heat-transmission coefficient to improve heat exchange between the hot water in condensation tank 15 and the laundry in drum 5.

[0015] Condensation tank 15 does not entirely close the front access opening to drum 5, so as to define an outflow opening 22 of an exhaust conduit 23, by which the moist drying air is fed from the inside of drum 5 to condenser 11. Along exhaust conduit 23 and close to outflow opening 22 (and therefore close to condensation tank 15), a removable filter may be provided to catch laundry-shed fluff and down.

[0016] Laundry drier 1 as described above has numerous advantages, by being cheap and easy to implement, and by providing for improved drying performance.

[0017] More specifically, having one wall (inner wall 21 of condensation tank 15) separating the hot water in condensation tank 15 from the laundry in drum 5, part of the heat of the hot water in condensation tank 15 is recovered by being transferred to the laundry in drum 5.

3. A laundry drier (1) as claimed in Claim 1 or 2, wherein an outer wall (20) of the condensation tank (15) contacts an inner wall (19) of the door (7).

5 4. A laundry drier (1) as claimed in Claim 1, 2 or 3, wherein the condensation tank (15) does not entirely close the front access opening to drum (5), so as to define an outflow opening (22) of an exhaust conduit (23), by which the moist drying air is fed from the inside of the drum (5) to the condenser (11).

Claims

1. A laundry drier (1) comprising:

a revolving laundry drum (5) having a front access opening;

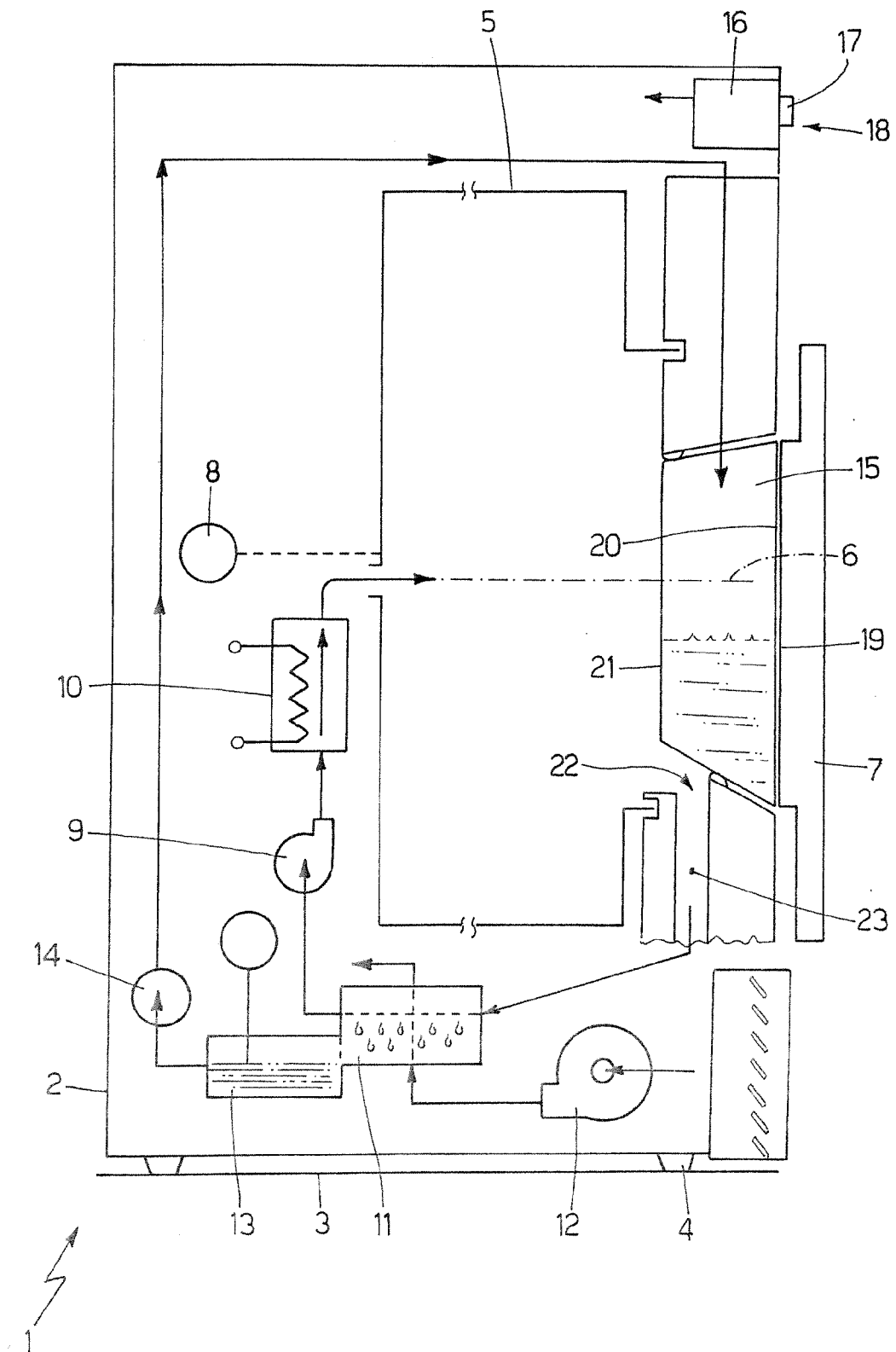
a door (7) hinged to a front wall of a casing (2) of the laundry drier (1);

a fan (9) for feeding drying air into the drum (5); a condenser (11) for dehumidifying the moist drying air from the drum (5); and

a condensation tank (15) fitted to the door (7) and for collecting the condensation produced by the condenser (11);

the laundry drier (1) is **characterized in that**, when the door (7) is in the closed position, an inner wall (21) of the condensation tank (15) acts as a door cap to retain the laundry inside the drum (5); an inner surface of the inner wall (21) of the condensation tank (15) is in direct contact with the hot water in the condensation tank (15); and an outer surface of the inner wall (21) is in direct contact with the laundry in the drum (5).

2. A laundry drier (1) as claimed in Claim 1, wherein the inner wall (21) of the condensation tank (15) has a high heat-transmission coefficient.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 12 1576

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	EP 0 555 703 A (BAUKNECHT HAUSGERAETE [DE]; WHIRLPOOL EUROP [NL]) 18 August 1993 (1993-08-18)	1,3,4	INV. D06F58/24
A	* column 3, line 22 - line 26 * * column 5, line 11 - line 14; claims 1,10,11; figure 4 *	2	
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A,D	EP 0 789 105 A1 (CANDY SPA [IT]) 13 August 1997 (1997-08-13) * claim 1; figure 1 *	1,3,4	
A	EP 0 254 018 A (ZANUSSI A SPA INDUSTRIE [IT]) 27 January 1988 (1988-01-27) * abstract; figures 1,3 *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
Place of search		Date of completion of the search	Examiner
The Hague		8 February 2007	Courrier, Gilles
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 12 1576

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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08-02-2007

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- EP 0555703 A1 [0005]