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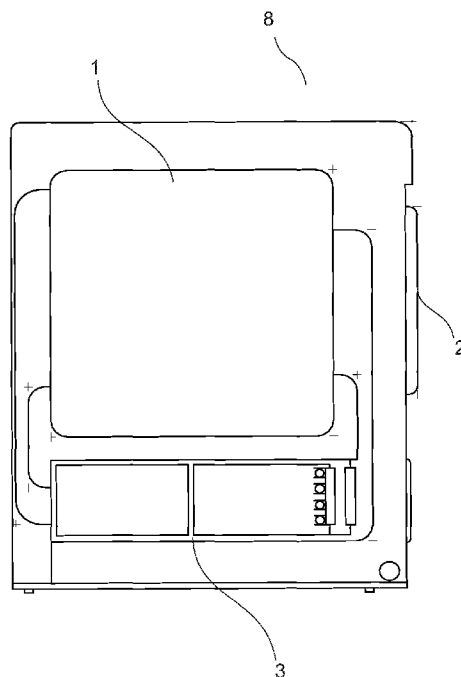
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(54) Title: MODULAR FILTER IN WASHER-DRYERS

Figure 1



(57) Abstract: In practice, the present invention relates to a modular evaporator filtering structure enabling removal of hair, cat and/or dog fur from an evaporator in case such particles released from a textile treated in dryers or washer-dryers adhere thereon. More clearly, according to the present invention, a machine with drying function is suggested, having an evaporator, a drum, a kickplate area and a front door.

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- *with information concerning incorporation by reference of missing parts and/or elements (Rule 20.6)*

MODULAR FILTER IN WASHER-DRYERS

Description

[0001] TECHNICAL FIELD OF THE INVENTION

[0002] The present invention relates to a modular evaporator filtering structure enabling removal of hair, cat and/or dog fur from an evaporator in case such particles released from a textile treated in dryers or washer-dryers adhere thereon.

[0003] BACKGROUND OF THE INVENTION/PRIOR ART

[0004] Currently, laundry items are known to be dried in domestic type dryers essentially by passing heated air through the laundry items and the humidity of the laundry items being transmitted/diffused to the hot air.

[0005] Based on their drying system, laundry dryers are divided into three types, namely, vented, condenser and heat pump dryers.

[0006] In vented dryers, the process air is heated by being passed through a heater. The heated air then contacts the damp laundry items in a drum, and humidity of the laundry items is transmitted to the air. Afterwards, the humid air is discharged to the outer environment by means of a vent. The fibers (lint) separated from the laundry items are collected in a filter provided in a front bearing of the machine. Said filter needs to be cleaned after completion of the dryer's cycle.

[0007] The operational principle of the condenser type dryers is similar to the vented type. However, instead of discharging the humid and warm air, the waste heat is utilized by means of a present heat exchanger.

[0008] According to the operational principle of a heat pump dryer, humidity is condensed by passing the humid circulation air through an evaporator, or in a condenser type dryer humidity is condensed by cooling the circulation air by means of cold air received from the environment. Condensed humidity is pumped to a water collection tank of the machine by means of a pump.

[0009] Besides drying, dryers can also be used to ventilate laundry items, or it may have the function of mal-odor removal from or giving a pleasant perfume to laundry items while drying in low heat.

[0010] Instead of washing, a user may prefer to ventilate a product without stains,

in order not to damage the textile. In addition, a user may wish to remove without washing, hair and cat and/or dog fur on a textile product.

[0011] In machines capable of drying laundry items, various components are used to retain particles appearing due to drying. The particles are retained by various filter structures and said filters are periodically cleaned.

However, such filtering may be insufficient over time, creating accumulation of hair, cat and/or dog fur, or pilling on the evaporator. This reduces the performance of the appliance, causes collection of lint on undesired areas thereof, making it difficult to clean. Since an evaporator is a bulky and complicated component, it is challenging to clean.

[0012] The present invention relates to removal of hair, cat and/or dog fur from an evaporator in machines capable of drying.

[0013] A patent publication of technical interest which may be referred to is KR100947223. Said patent publication notes a movable and removable filter placed on a process line in dryers. The fibers accumulating on the filter during drying are enabled to be collected in a chamber by being scraped from the filter surface, thanks to the filter structure with scrapers.

[0014] Another patent publication of technical interest which may be referred to is US 7,913,415. Said patent publication mentions a box in dryers, in which the fibers on a filter are collected. The box consists of two interconnected parts. The box can be removed and cleaned by a user.

[0015] Whereas, the embodiment in the present invention relates to a modular evaporator filtering structure.

[0016] In other terms, the system proposed according to the present invention relates to preventing evaporator pores in machines with drying function from being clogged to an uncleanable extend.

[0017] OBJECTS OF THE INVENTION

[0018] The primary aim of the present invention relates to preventing evaporator pores from being clogged to an uncleanable extend.

[0019] Another aim of the present invention is to enable machines with drying function to maintain their initial performance capacity.

[0020] Addressing the problem of evaporators in machines with drying function, being difficult to clean due to their large size, a further aim of the present

invention is to enable such an evaporator to be cleanable by a user thanks to the modular structure.

[0021] DETAILED DESCRIPTION OF THE INVENTION

[0022] In general, the machine with drying function of the invention, comprises a front door, a drum, and the components required for drying. Said machine with drying function may be of the vented, condenser or heat pump type.

[0023] The energy efficiency of heat exchanger groups provided in machines with drying function, decrease as a result of being contaminated and clogged over time due to lint escaping from a standard filter. Excessive energy consumption is averted by means of a modular filter developed for this area.

[0024] As can be seen in Figure 1, the lint coming from said drum are collected using a cleanable region disposed behind a kickplate region. The small particles and lint escaping from the laundry items are collected in a standard filter provided in the front bearing of the machine with drying function. The lint escaping from this region for various reasons, fill into the ducts of an evaporator and evaporator tubes to an uncleanable extend.

[0025] To filter again the air filtered by means of a standard filter structure displayed in Figure 2, a modular filter is fixed on the evaporator tubes at the inlet region of the evaporator, retaining said particles in a second region. After removing said standard filter, the modular filter provided on the evaporator can be removed from the same region, and energy efficiency can be maintained by cleaning thereof. Said modular filter is modularly removable.

[0026] In an embodiment of the invention, a machine structure with drying function is suggested, having an evaporator, a drum, a kickplate area and a front door.

[0027] According to another embodiment of the invention, said evaporator comprises a modular filter which can be placed thereon.

[0028] According to another embodiment of the invention, said modular filter comprises evaporator tube connections through which it is mounted on said evaporator.

[0029] According to another embodiment of the invention, said modular filter

comprises brushes capable of retaining the particles escaping from a standard filter.

[0030] According to another embodiment of the invention, said modular filter is of removable structure.

[0031] According to another embodiment, the invention is characterized by the modular filter's brushes capable of retaining the particles escaping from a standard filter, extending along a longitude smaller than the longitudinal axis of the standard filter.

[0032] According to another embodiment, the invention is characterized by the modular filter's brushes capable of retaining the particles escaping from a standard filter, extending along the modular filter in an individually configured and equally spaced structure.

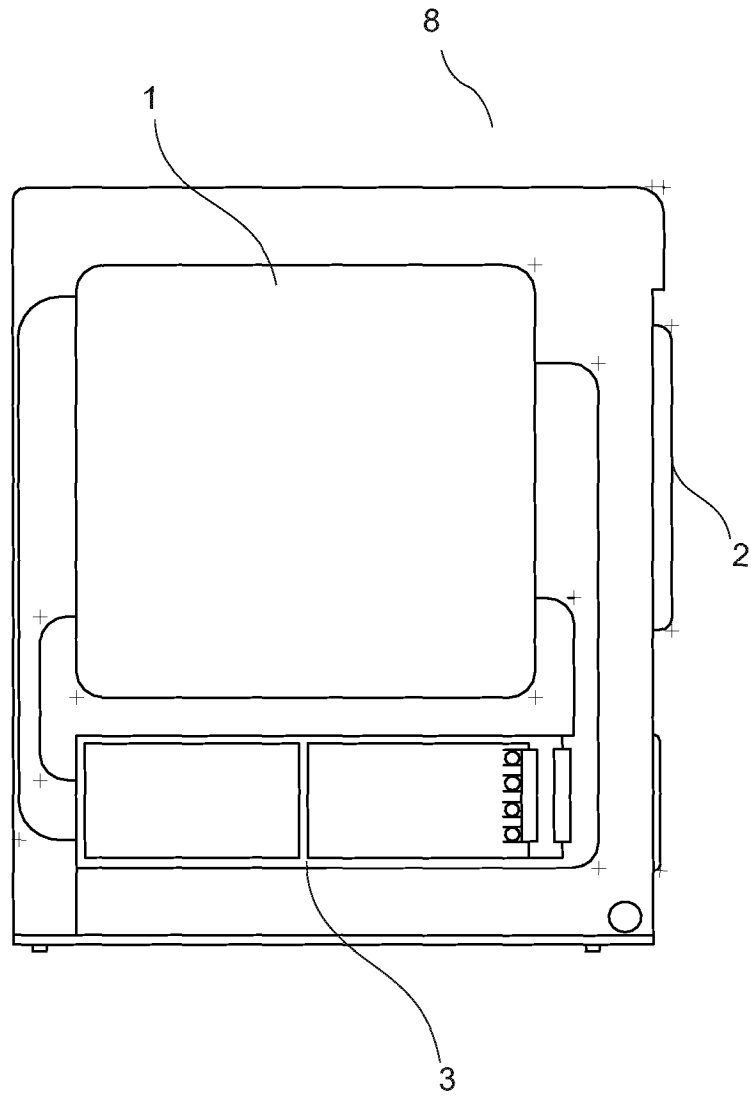
[0033] As a result, the main advantage provided by the present invention lies in preventing hair and/or pet fur adhered to a textile being treated from damaging an evaporator and enhancing energy efficiency by means of a modular filter which can be used in machines with drying function.

Claims

1. Configuration of a machine with drying function comprising an evaporator, a drum, a kickplate area and a front door **characterized in that** said machine with drying function comprises
a modular filter which can be placed on said evaporator.
2. A machine with drying function according to claim 1, **characterized in that** said modular filter comprises evaporator tube connections through which it is mounted on said evaporator.
3. A machine with drying function according to claim 1, **characterized in that** said modular filter comprises brushes capable of retaining particles escaping from a standard filter.
4. A machine with drying function according to claim 1 or 2, **characterized in that** said modular filter is of removable structure.
5. A machine with drying function according to claim 1, **characterized in that** said modular filter's brushes capable of retaining the particles escaping from a standard filter, extend along a longitude smaller than the longitudinal axis of the standard filter.
6. A machine with drying function according to claim 1, **characterized in that** the modular filter's brushes capable of retaining the particles escaping from a standard filter, extend along the modular filter in an individually configured and equally spaced structure.

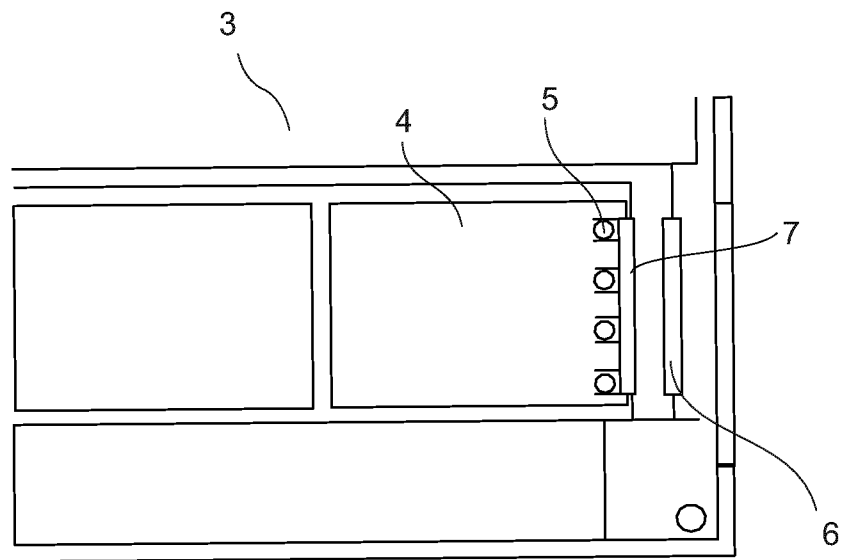
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Figure 1



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Figure 2



INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2018/086185

A. CLASSIFICATION OF SUBJECT MATTER
INV. D06F58/22
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CH 711 590 A2 (V-ZUG AG [CH]) 31 March 2017 (2017-03-31)	1,2,4
Y	paragraph [0030] - paragraph [0051]; figures	3,5,6

X	WO 2014/184707 A2 (GORENJE GOSPODINJSKI APARATI D D [SI]) 20 November 2014 (2014-11-20)	1,4
Y	page 2 - page 3; figures	3,5,6

X	EP 2 527 528 A1 (ELECTROLUX HOME PROD CORP [BE]) 28 November 2012 (2012-11-28)	1,4
Y	paragraph [0030] - paragraph [0052]; figures 1-2	3,5,6

Y	WO 2010/071355 A2 (LG ELECTRONICS INC [KR]; AHN SEUNG-PHYO [KR] ET AL.) 24 June 2010 (2010-06-24)	3,5,6
	paragraph [0093]; figures	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CH 711590	A2	31-03-2017	NONE
WO 2014184707	A2	20-11-2014	EP 2997188 A2 23-03-2016 SI 24366 A 28-11-2014 WO 2014184707 A2 20-11-2014
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