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(54) Combined machine for washing and drying laundry.

(57) A combined washing and drying machine comprises a tub (4), a drum (5) mounted for rotation within the tub (4) and adapted to contain the laundry to be washed and dried, a dampening mass (6) for the dynamic equilibration of the oscillating system formed by said tub (4) and drum (5), a fan (7), and heater elements (8) for generating a flow of heated air and circulating the heated air through said laundry. According to the invention, the dampening mass (6) comprises a plate of a material having a high specific weight and is designed to form a seat for mounting the fan (7), provided with a first opening (14) for receiving a first duct (16) communicating with the tub (4), and a heat-insulated chamber (25) for containing the heater elements (8), said chamber communicating with the outlet of the fan on one side, and with a second duct (9) connected to the tub (4) on the other.

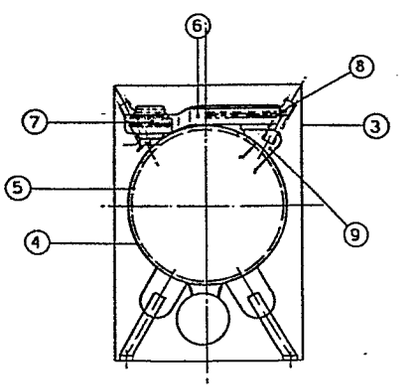

Fig. 1

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Combined Machine for Washing and Drying Laundry

Description

This invention relates to a combined machine for washing laundry and subsequently drying it by continuously circulating heated air therethrough.

Machines of this type are conventionally provided with a washing assembly and in addition with at least one fan and associated heater elements for generating a stream of hot air flowing within the drum of the washing assembly and the laundry contained therein. The washing assembly itself is provided with at least one dampening mass for its equilibration during rotation of the drum, particularly during the centrifuging phases.

For ensuring the stability of a machine of this type in any of its operating conditions it is thus necessary to suitably dimension and mount the assembly formed of said fan and said heater elements as well as said at least one dampening mass within the frame of the machine.

Conventionally, the assembly formed by the fan and the heater elements is enclosed in a separate housing mounted within the frame of the machine and provided with suitable heat-insulation for ensuring efficient heating of the air employed for drying.

Due to the relatively great dimensions of the assembly formed by the fan, the heater elements and the associated ducting, its accommodation within the frame of the machine in addition to the at least one dampening mass and the remaining functional components presents considerable difficulties and results in a complicated overall construction of the machine.

It is therefore an object of the present invention to avoid the above-noted difficulties and to provide a combined washing and drying machine comprising a reduced number of functional components the mounting of which within the frame of the machine can be carried out in a simple and effective manner.

This and other objects are attained according to the invention by a combined washing and drying machine, comprising a tub, a drum mounted for rotation within said tub and adapted to contain the laundry to be washed and dried, a dampening mass for equlibrating the oscillating system formed of said tub and drum, a fan, and heater elements for gen rating a flow of heated air and for circulating the heated air through said laundry.

A machine of the above specified type is characterized in that said dampening mass consists of a plate of a material having a high specific weight and designed to form a seat for mounting said fan, provided with a first opening for receiving a first duct communicating with said tub, and a heat-insulated chamber for containing said heater elements, said chamber communicating with the outlet of said fan on the one side, and with a second duct connected to said tub on the other.

The characteristics of the invention will become evident from the following description of an exemplary and non-limiting embodiment with reference to the accompanying drawings, wherein:

fig. 1 shows a diagrammatic front view of a combined washing and drying machine incorporating a dampening mass and associated components in a preferred embodiment of the invention, and

fig. 2 shows a longitudinal sectional view of the dampening mass and associated components of the machine of fig. 1.

A combined washing and drying machine shown in fig. 1 generally comprises a frame 3, a wash tub 4 resiliently mounted within said frame in a per se known manner, a drum 5 adapted to contain the laundry disposed within the tub and adapted to be rotated by a (not shown) motor, and conventional functional components (not shown) for controlling the operation cycles of the machine.

The machine shown in the drawings is in addition provided with a dampening mass in the form of a plate 6 formed of a material having a high specific weight, preferably cast iron, and mounted fixedly on said tub 4 for equilibrating the assembly formed of the tub and the drum.

According to the invention, plate 6 is designed to carry at least one fan 7 and associated electric heater elements 8 for generating a flow of heated air to be supplied to drum 5 via a conduit 9 connected to plate 6 for drying the laundry contained in drum 5.

As shown in fig. 2, plate 6 is formed with a bottom wall 10 surrounded by a peripheral wall 11. Bottom wall 10 itself includes two planar portions 12 and 13 connected to one another in parallel relationship and formed each with a through-opening 14 and 15, respectively.

Fan 7 is mounted in a per se known manner on planar portion 12, so that its inlet 16 is aligned with opening 14, while its outlet 17 is directed towards planar portion 13.

Disposed on planar portion 13 is a panel 18 formed of a thermally insulating material so as to cover the entire surface of planar portion 13 as well as the interior surface of the peripherall wall portion 11 surrounding it. Panel 18 is further formed with a through-opening 19 aligned with opening 15.

Heater elements 8 are disposed above planar portion 13 with their terminals 20 and 21 extending through peripheral wall 11 for connection to electric leads (not shown). Heater elements 8 are retained in position by suitable spacers 22 and 23 disposed between heater elements 8 and panel 18 on the one hand and a further panel 24 formed of a heat-insulating material and removably attached to plate 6, so that heater elements 8 are retained at a suitable distance from both panels 18 and 24.

There is thus formed an interior chamber 25 containg heater elements 8 and communicating on one side with the outlet 17 of fan 7, and on the other, with duct 9 via the aligned through-openings 15 and 19.

The provision of the heat-insulating panels permits efficient heating of the air flow generated by the fan and prevents the generated heat to be transmitted to other functional components of the machine located adjacent plate 6.

The heater elements 8 are enclosed in a protective sheath 26 of stainless steel or another suitable material, to prevent incandescent scales possibly set free by the heater elements from being carried into the drum and from damaging the laundry therein.

The plate forming the dampening mass thus provides seats for the fan and for the heater elements, eliminating the necessity of the formerly employed separate housing for this purpose.

The construction of the washing and drying machine is accordingly simplified, so that the mounting of the remaining functional components of the machine can be carried out in a simple and economical manner.

In addition, the fan and the heater elements are readily accessible in case of damage or malfunction and for normal maintenance work. It is of course possible to mount the fan and heater elements on the dampening plate, or the dampening plate itself with respect to the tub, in a different manner without leaving the scope of the present invention.

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EP 699

Combined Machine for Washing and Drying Laundry

Patent Claims

1. A combined washing and drying machine, comprising a tub, a drum mounted for rotation within said tub and adapted to contain the laundry to be washed and dried, a dampening mass for equilibrating the oscillating system formed of said tub and drum, a fan, and heater elements for generating a flow of heated air and for circulating the hot air through said laundry, characterized in that said dampening mass consists of a plate (6) of a material having a high specific weight and designed to form a seat for mounting said fan (7) provided with a first opening (14) for receiving a first duct (16) communicating with said tub (4), and a heat-insulated chamber (25) for

containing said heater elements (8), said chamber communicating with the outlet (17) of said fan on the one side, and with a second duct (15) connected to said tub on the other.

2. A combined washing and drying machine according to claim 1, characterized in that said plate (6) is mounted on top of said tub (4), and in that said chamber (25) containing said heater elements (8) in the form of armoured electric resistors is internally lined with a panel (18) formed of a heat-insulating material and has its top closed by a removable panel (24) formed of the same material.

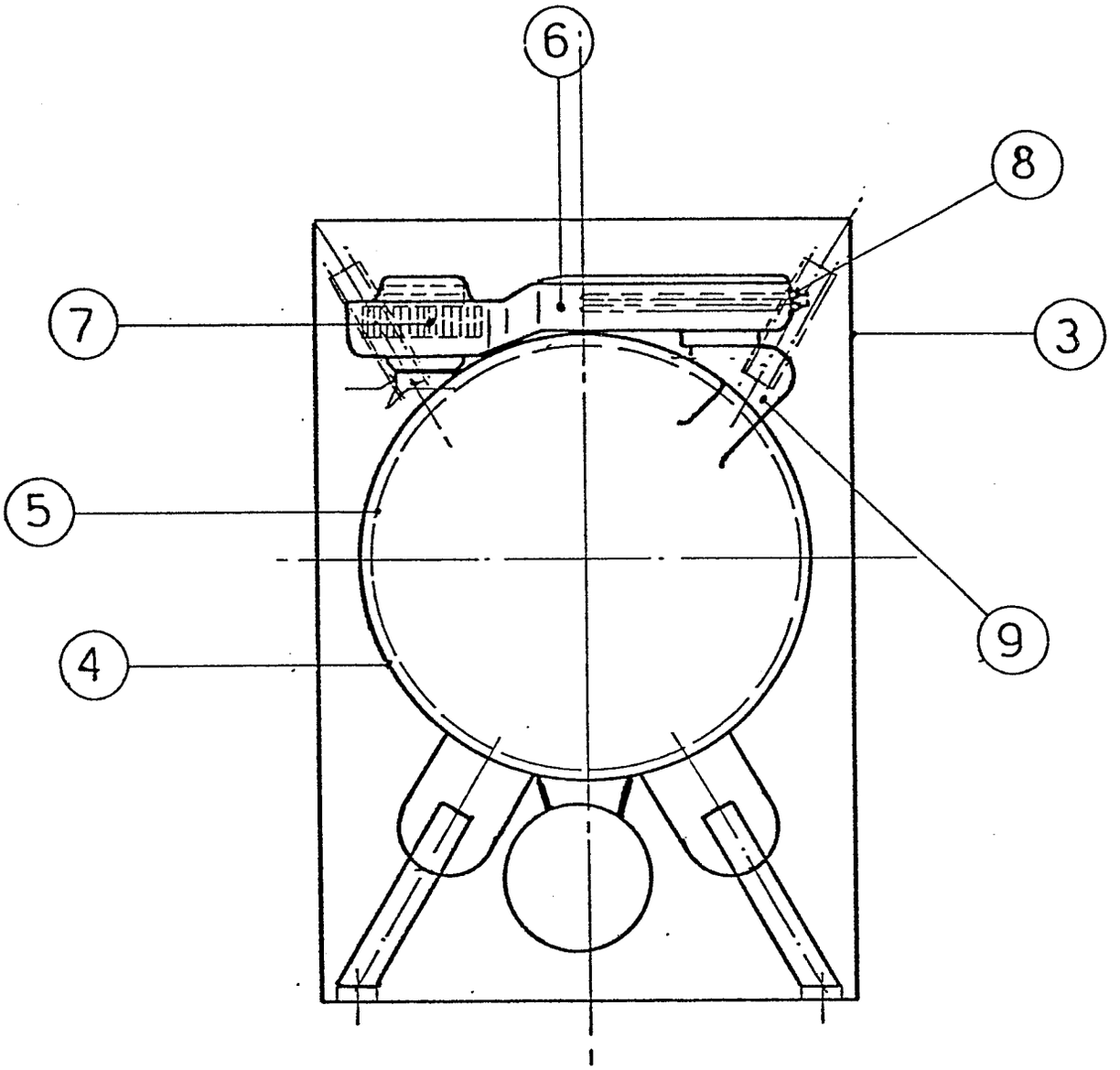

Fig. 1

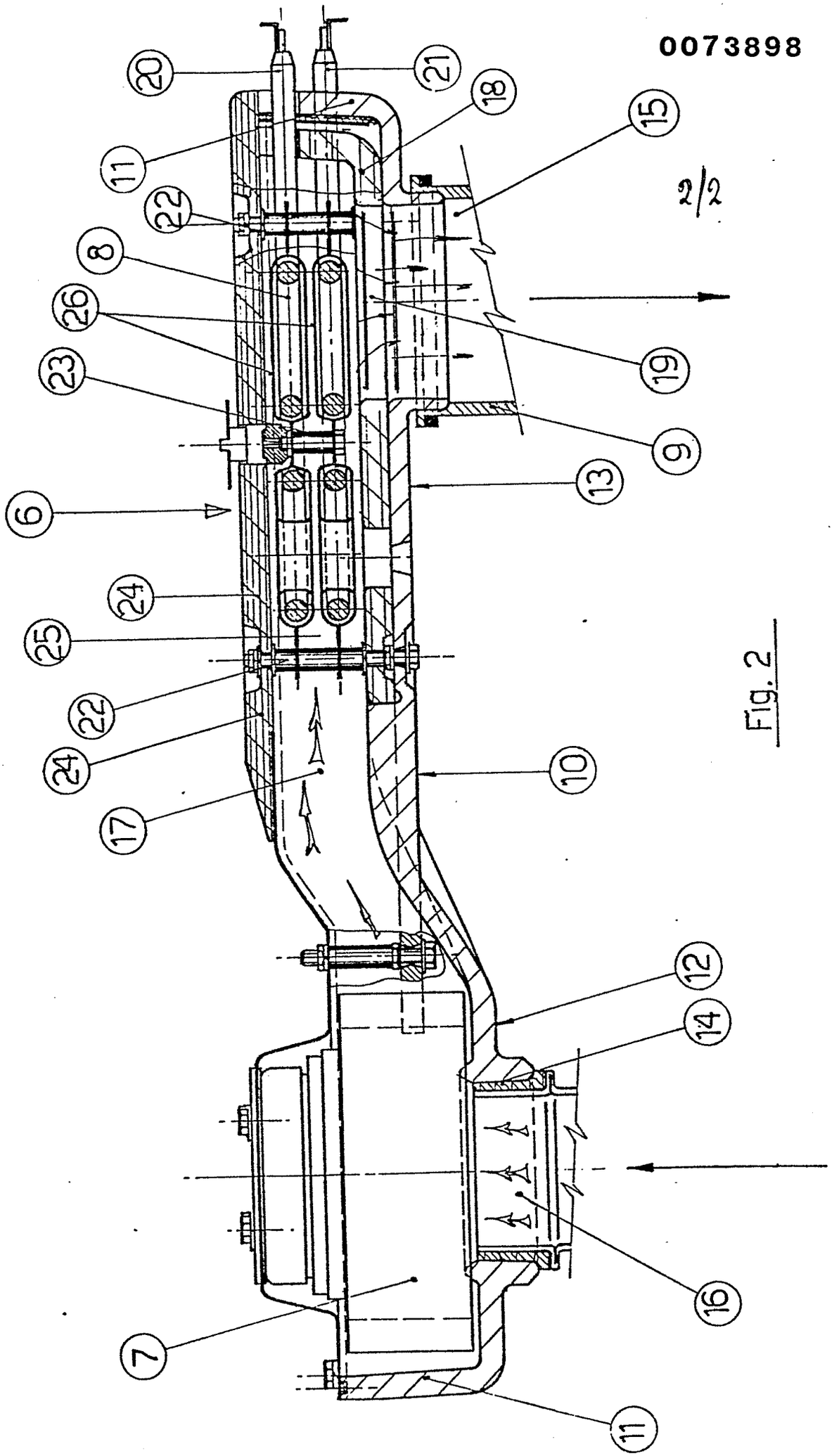

Fig. 2

European Patent Office

EUROPEAN SEARCH REPORT

0073898
Application number

EP 82 10 6133

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	US-A-3 089 327 (STILWELL) *Figures 33,39,47; column 6, lines 1-45*	1,2	D 06 F 25/00
A	GB-A-1 517 708 (SMEG ELETTRODOMESTICI) *Page 1, lines 59-89; page 2, lines 18-65*	1	
A	GB-A-2 044 297 (DOMAR)		
A	US-A-2 590 295 (CONSTANTINE)		
A	DE-C-2 545 795 (LEPPER)		TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
A	FR-A-1 282 279 (SLAMHER)		D 06 F
A	US-A-2 899 816 (JACOBSEN)		
A	GB-A-1 554 725 (HOTPOINT)		
A	GB-A-2 010 926 (ZANUSSI)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	08-12-1982	D HULSTER E.W.F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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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
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