

(19)



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(11)

EP 0 755 652 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.01.1997 Bulletin 1997/05

(51) Int Cl.6: A47L 15/48

(21) Application number: 96830404.8

(22) Date of filing: 23.07.1996

(84) Designated Contracting States:
DE ES FR GB SE

(72) Inventor: Bertazzoni, Roberto
Guastalla (IT)

(30) Priority: 26.07.1995 IT MI951623

(74) Representative: Adorno, Silvano et al
c/o SOCIETA' ITALIANA BREVETTI S.p.A.
Via Carducci, 8
20123 Milano (IT)

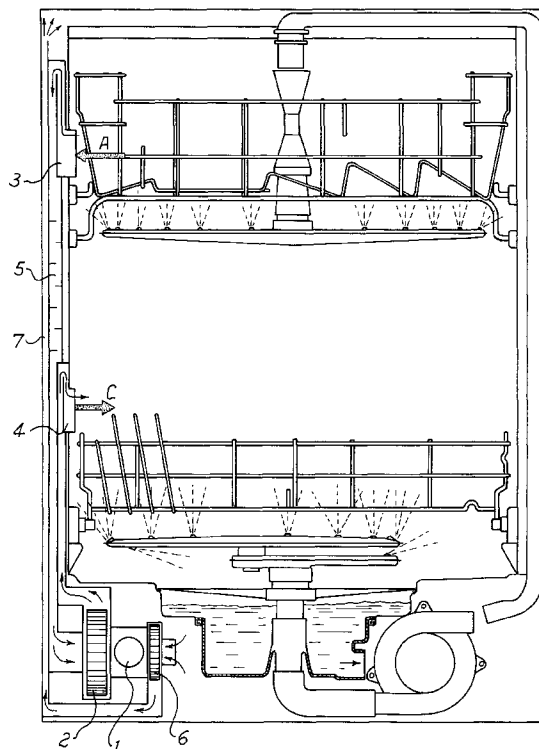
(71) Applicant: SMEG S.p.A.
Guastalla (Reggio Emilia) (IT)

(54) Steam-condensation drying device applied to a dishwashing machine

(57) A device for drying the dishes in a dishwashing machine includes an electric motor (1) driving a fan (2) which drains away the moist air from the dishwasher tank through an upper mouth (3) and reintroduces it into the tank through a lower mouth (4), the duct (5) included between the drain mouth (3) and the fan (2) acting as a condensation duct arranged adjacent to the tank, and further includes a second duct (7) for cooling which has

a wall in common with said condensation duct (5), as well as a sucking means which sucks up fresh air from the room and sends it along said second duct (7) for cooling. Said sucking means consists of a second fan (6) mounted onto the same shaft of the motor (1) as the draining fan (2). The cooling of the wall of the condensation duct (5) assures greater effectiveness of the device.

Fig.1



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Description

The present invention relates to drying devices used in dishwashing machines, and in particular to a steam-condensation drying device.

It is known that many dishwashers for domestic use have washing cycles including a final drying phase which provides the user with dishes which are almost dry and ready for use. This drying phase may be based on different methods, possibly combining more of them.

A first method consists in overheating the air inside the washing tank through current pulses directed to the water-heating resistor. In this case there is the drawback of a significant increase in energy consumption. A second method is based on the removal of the moist saturated air from the tank and its introduction into the room. However, this method has the drawback of remarkably increasing the humidity of the room wherein the dishwasher is located.

Other two methods are based on the condensation of the steam present inside the tank. In a first case this is achieved by cooling some areas of the tank, by using cold water from the water network, so as to favour the condensation of steam on said areas. However, this method implies an increase in water consumption and has a poor effectiveness. In a second case, the air removed from the tank is circulated in ducts adjacent thereto and then reintroduced into the tank. It is clear that this method avoids increases in the consumption of energy or water, as well as the introduction of moist air in the room, but the condensation ducts adjacent to the tank have a temperature not much lower than that of the tank, whereby only a small amount of steam condenses therein. For this reason, the air which is reintroduced into the tank still has a significant degree of humidity, resulting in dishes which are not properly dried and/or in the necessity of extending the drying cycle.

Therefore the object of the present invention is to provide a device suitable to overcome the above-mentioned drawbacks.

This object is achieved by means of a device having the characteristics cited in claim 1.

The essential advantage of the present device is the remarkable increase in the effectiveness of the circulation-condensation, which is obtained by decreasing the temperature of the walls of the condensation duct. In this way, the temperature difference (ΔT) between the almost saturated moist air and the duct leads to a greater steam condensation.

A second advantage of the present device is that it does not require additional members with respect to the known method of circulation-condensation, and does not imply greater energy consumption, thanks to the use of the electric motor already present for the removal of air from the tank and its reintroduction therein.

These and other advantages and characteristics of the device according to the present invention will be clear to those skilled in the art from the following detailed

description of an embodiment thereof, with reference to the only drawing, annexed as fig. 1, which shows a front vertical cross-sectional view of a dishwasher including the present device.

As shown in said figure, the drying device includes an electric motor 1 driving a fan 2 which drains away the moist air from the tank through an upper mouth 3 (arrow A) and reintroduces it into the tank through a lower mouth 4 (arrow C). The duct 5 included between the drain mouth 3 and fan 2 acts as a condensation duct. It is arranged vertically adjacent to the tank at a short distance therefrom, so as to reduce the dishwasher width.

The innovation of the present device consists in a second fan 6 which sucks up fresh air from the lower area of the dishwasher below the tank and sends it along a second duct 7. The inner wall of this cooling duct 7 coincides with the outer wall of the condensation duct 5, whereby the fresh air flowing through the former carries out a cooling of the outer wall of the condensation duct 5. In this way, the intended object of increasing the ΔT between duct 5 and the saturated moist air flowing therein is achieved, thus obtaining a greater condensation of steam. The cooling air is then reintroduced into the room at the top of duct 7, without having absorbed humidity but just with a small increase in temperature.

It should also be noted that the cooling fan 6 is mounted on the same shaft of motor 1 as the draining fan 2, whereby there is no need of an additional motor with the relevant increase in cost and consumption.

It is clear that the above-described and illustrated embodiment of the device according to the invention is just an example susceptible of various modifications. In particular, the shape and arrangement of the condensation duct 5 and of the cooling duct 7 may be freely adapted according to specific requirements, as long as said ducts are contiguous so that the required cooling can take place. Similarly, fan 6 may be replaced by any other equivalent sucking means, even not directly connected to motor 1.

Claims

1. A device for drying the dishes in a dishwashing machine, including an electric motor (1) driving a fan (2) which drains away the moist air from the dishwasher tank through a first mouth (3) and reintroduces it into the tank through a second mouth (4), the duct (5) included between the drain mouth (3) and the fan (2) acting as a condensation duct arranged adjacent to the tank, characterized in that it further includes a second duct (7) which has a wall in common with said condensation duct (5), as well as a sucking means which sucks up fresh air from the room and sends it along said second duct (7).
2. A device according to claim 1, characterized in that the sucking means consists of a second fan (6)

mounted onto the shaft of the motor (1).

3. A dishwashing machine characterized in that it includes a drying device according to claim 1 or 2.

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Fig. 1

