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(71) Applicant : **SMEG S.p.A.**
Via Circonvallazione Nord, 36
Guastalla (Reggio Emilia) (IT)

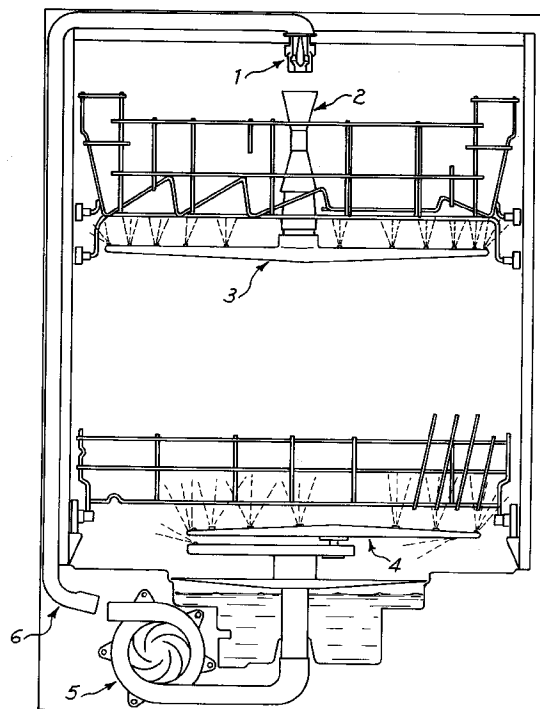
(72) Inventor : **Bertazzoni, Roberto**
Via Maldotti, 2
Guastalla (Reggio Emilia) (IT)

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

(54) **Dishwashing machine provided with a water flow division device.**

(57) A dishwashing machine provided with a device for the division of the water flow between the upper and lower sprinkler (3,4), consisting in a nozzle (1) of variable flow rate preferably achieved by the relative motion of two members of said nozzle so as to change the water flow cross-section.

Fig.1



The present invention concerns a dishwashing machine provided with a device for the division of the water flow between the upper and lower sprinkler, consisting in a nozzle of variable flow rate preferably achieved by the relative motion of two members of said nozzle so as to change the water flow cross-section.

In presently available dishwashing machines it is only possible an intervention to decrease the washing cycle duration for reduced loads, or the overall flow of the machine, yet without the possibility of changing the division of the flow between the upper and lower sprinkler.

The object of the present invention is to provide a dishwashing machine capable of carrying out the above-mentioned division of the flow by means of a variable section nozzle, wherein the adjustment of the flow is preferably carried out by means of the relative motion of two members of said nozzle so as to change the water flow cross-section.

Since the overall flow supplied by the dishwashing machine pump remains constant, the change of the flow rate of one nozzle involves an opposite change in the flow rate of the other nozzle, whereby it is possible to differentiate the flow and pressure of the water reaching the upper sprinkler and the lower one by acting on one nozzle only.

Therefore, the dishwashing machine according to the present invention has the advantage that it is possible to direct a water stream of greater intensity towards the most soiled dishes, or a stream of lower intensity towards the less soiled ones or those requiring a less vigorous washing because they are more fragile and/or more delicate.

This and other advantages and features of the dishwashing machine according to the present invention will be apparent from the following detailed description of a preferred embodiment thereof, reported as non-limiting example, referring to the annexed drawings, wherein:

Fig. 1 is a partially sectional schematic front view of the present dishwashing machine, wherein the front door has been removed to expose the inner elements;

Fig. 2 is a longitudinal cross-sectional view of an embodiment of an adjustable nozzle incorporated in said machine, illustrated in the maximum flow position; and

Fig. 3 is a view similar to the preceding one with the nozzle in the minimum flow position.

Referring to fig. 1, there is seen the positioning of the variable flow nozzle 1 on the roof of the washing space to feed the upper sprinkler 3; this position facilitates its adjustment by the user, but the same nozzle 1 could be alternatively positioned on the base of the space to feed the lower sprinkler 4.

As already mentioned above, the constant capacity pump 5 supplies the water feeding the upper

sprinkler 3 and the lower one 4; the change in the cross-section of nozzle 1 causes a change in the feed flow to sprinkler 3 proportional to said cross-section change, and consequently an opposite change in the flow to sprinkler 4, not considering the flow resistance in the upper supply duct 6.

In this way, the use of the dishwashing machine is more flexible since, for example, it is possible to put the dishes soiled some hours before in the upper rack and those just soiled in the lower rack, and then increase the cross-section of nozzle 1 to make a stronger washing of the dishes on which dirt had time to stick more firmly, and this without any need to extend the washing cycle with greater water, power and detergent consumption.

Similarly, to wash particularly delicate dishes such as, for example, light crystal goblets or plates with non-resistant decorations, it is possible to reduce the cross-section of nozzle 1 to decrease the intensity of the stream hitting said dishes.

Referring now to figs. 2 and 3, there is illustrated an embodiment of the variable section nozzle, wherein a fixed nozzle 7, mounted at the outlet of the upper supply duct 6 in fig. 1, is integral with a central body 8 connected thereto through one or more radial fins extending between said body 8 and nozzle 7; an adjustment nut 9 is mounted on said nozzle 7 so as to shift axially with respect thereto, for example by means of a threading, and is internally shaped so that the area of the flow cross-section included between said nut 9 and body 8 changes between a maximum value with the nut completely forward (fig. 2) and a minimum value with the nut completely back (fig. 3).

It should be noted that this minimum value could be nothing, as a limit, so as to direct the whole flow from the pump to the other sprinkler. Moreover, the coupling between nozzle 7 and nut 9 also includes a end stop for the limitation of the maximum flow rate, which depends, however, on the pump supply capacity.

It should also be noted that the connecting fins between body 8 and nozzle 7 are useful also for straightening the water flow so that it is less turbulent and therefore the least possible dispersion is achieved in the passage between nozzle 1 and collector 2 of the upper sprinkler 3 (fig. 1).

Finally, it should be noted that the above described device for changing the nozzle cross-section may be replaced by a similar device, for example a bored transverse central body which is rotated to change the passage port, without the operation of the present machine being altered.

Claims

1. A dishwashing machine characterized in that it includes an adjustable nozzle (1) changing the di-

vision of the water flow between the upper sprinkler (3) and the lower sprinkler (4).

2. A dishwashing machine according to claim 1, characterized in that said adjustable nozzle (1) comprises an adjustment nut (9) for the relative motion of two members of said nozzle (1). 5
3. A dishwashing machine according to claim 2, characterized in that said adjustment nut (9) of nozzle (1) shifts with respect to a fixed nozzle (7) by means of a threading, said fixed nozzle (7) containing therein a central body (8). 10
4. A dishwashing machine according to claim 1, characterized in that said nozzle (1) is positioned on the roof of the washing space of said machine. 15
5. A dishwashing machine according to claim 4, characterized in that nozzle (1) includes members suitable to reduce the turbulence of the water flow being directed to a collector (2) of the upper sprinkler (3). 20

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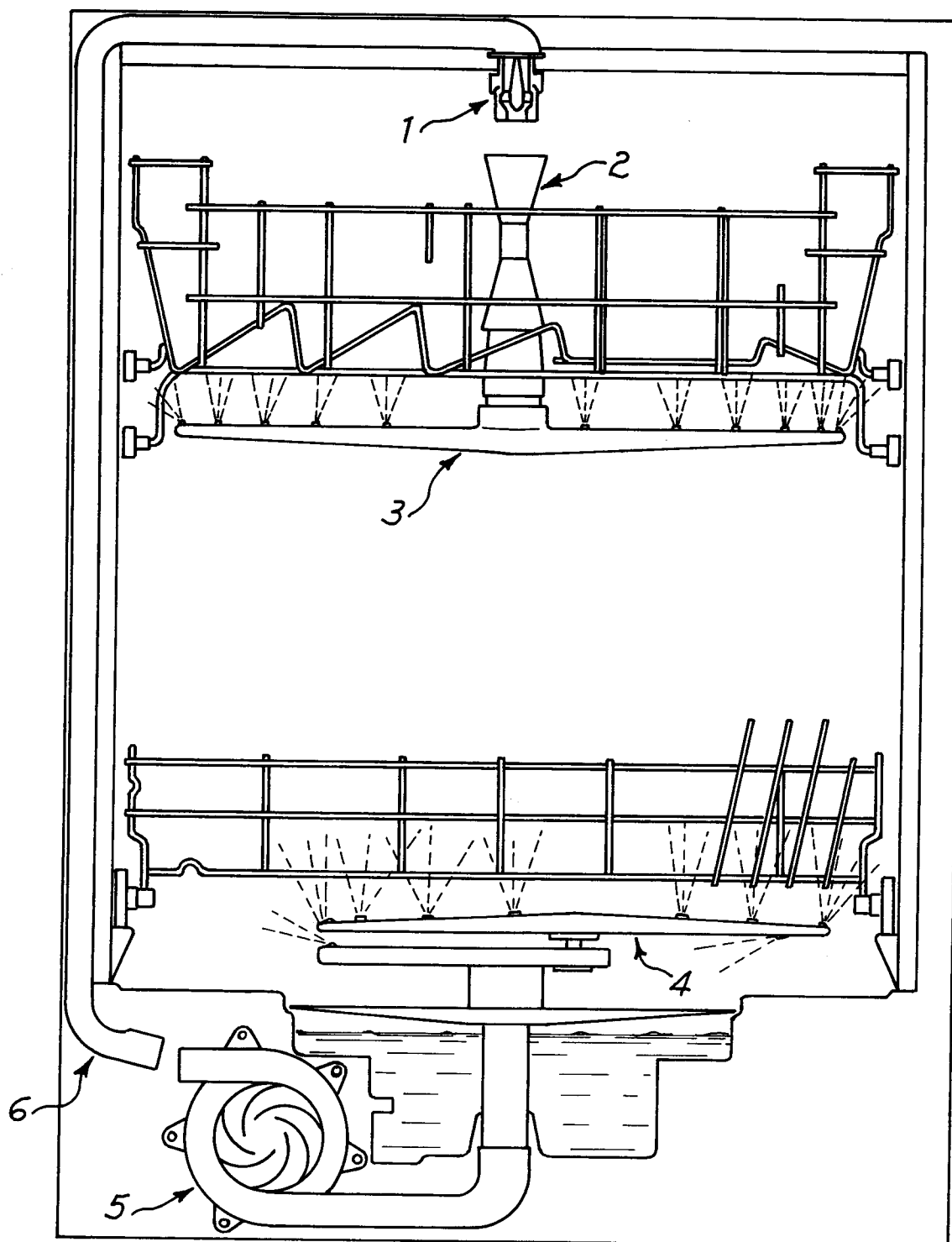
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Fig. 1



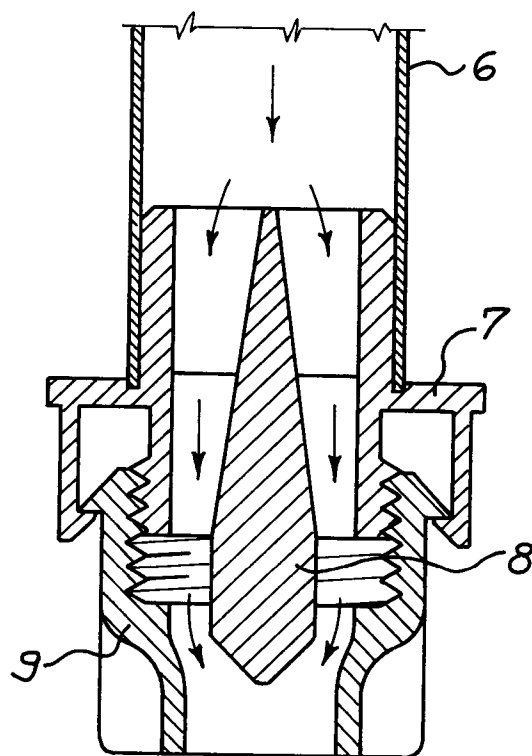


Fig. 2

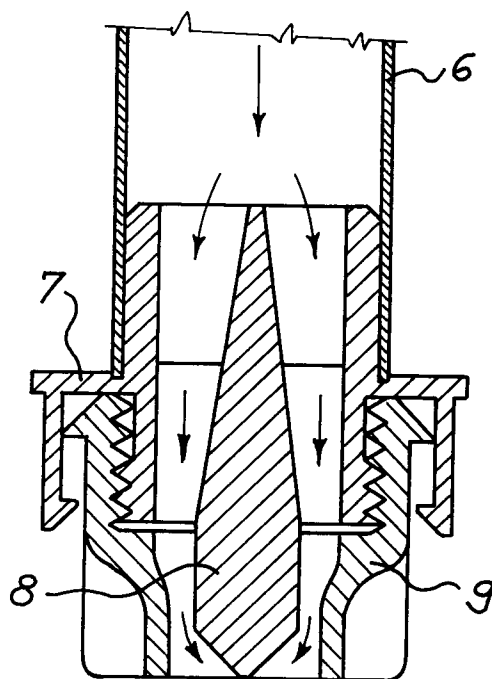


Fig. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0004

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.5)
X	DE-B-26 22 785 (EURO HAUSGERÄTE GMBH) * claim 1; figures * ---	1	A47L15/42
X	US-A-3 064 665 (MARTINIAK) * column 5, line 52 - column 6, line 3; claim 1; figures * ---	1	
X	DE-U-19 49 867 (PHILIPS PATENTVERWALTUNG GMBH) * claim 1; figure * ---	1	
X	FR-A-2 277 560 (N.V. PHILIPS' GLOEILAMPENFABRIEKEN) * claims 1,5,6; figures * ---	1	
A	AT-B-280 528 (ROBERT BOSCH HAUSGERÄTE GMBH) * claims 1,2; figure 1 * -----	1,5	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			A47L
Place of search		Date of completion of the search	Examiner
BERLIN		19 April 1994	Kanal, P
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