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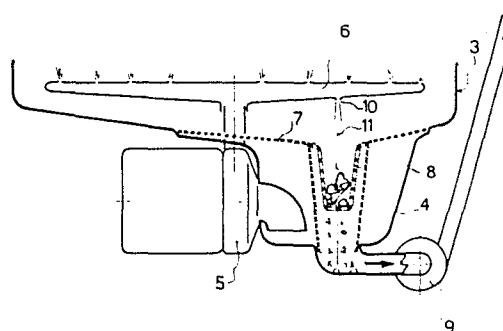
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54 Dishwashing machine with self-cleaning pump protection filter.

57 A dishwashing machine has a tub (3), a fine-mesh filter (7) disposed in the tub upstream of a circulation pump (5), and a coarse-mesh filter (8) seated within the fine-mesh filter upstream of a water discharge pump (9). The coarse-mesh filter is susceptible to clogging by coarse impurities of relatively soft consistency, necessitating frequent removal and cleaning of the filter. According to the invention, spray jet means is provided for directing a jet of water coaxially onto the coarse-mesh filter for cleaning it by the disintegration of soft matter collected therein. The spray jet means may take the form of an additional opening (10) in the bottom side of a rotatable irrigation arm, or of a jet nozzle (12) fixedly mounted in a horizontal position and cooperating with a deflector (13) for directing the water jet (11) issuing from the jet nozzle onto the coarse-mesh filter.



1 Description

The present invention relates to a dishwashing machine provided with a discharge pump protection filter adapted
5 to be automatically cleaned during operation of the machine.

Known dishwashing machines usually have a water collection well at the bottom of a washing tub, with the inlet of a
10 water circulation pump and the inlet of a water discharge pump connected to said well.

The water collection well houses a fine-mesh recirculation filter disposed in the flowpath of the water aspirated by
15 the circulation pump. The fine-mesh filter is formed with an opening directly connecting the interior of the tub with the inlet of the discharge pump. Disposed in this opening is a coarse mesh filter, referred to as a discharge pump protection filter and having as its main pur-
20 pose the retention of coarse impurities, such as bits of china or glass, bones and the like which might otherwise obstruct or even damage the impeller of the discharge pump.

The coarse-mesh pump protection filter will of course also
25 retain shreds and bits of softer materials, such as paper shreds, breadcrumbs, fatty matter and the like, which may in the long run obstruct the filter, as part of the water aspirated by the circulation pump also passes therethrough.

30 The usually dismountable coarse-mesh filter has therefore to be cleaned at relatively short intervals.

Already known from Italian Patent 952,947 is a dishwashing machine provided with stationary jet nozzles for automat-
35 ically cleaning the fine-mesh and coarse-mesh filters.

These jet nozzles are designed to produce jets of water substantially perpendicular to the axis of the coarse-mesh fil-

1 ter in proximity to the inlet side of the filter itself
(where the tangential water jet has practically no effect
at all), and in an intermediate zone, where the coarse-mesh
filter is surrounded by the fine-mesh filter which disperses
5 the water jet so as to render it ineffective with regard to
the coarse-mesh filter.

Also known, for instance from US Patent 3,810,480 are dish-
washing machines provided with rotating jet nozzles directed
10 perpendicularly to the fine-mesh filter in countercurrent
to the flow of the water aspirated by the circulation pump.

This construction does not provide a solution for the
problem of automatically cleaning the discharge pump prot-
15 ection filter.

From European Patent Application No. 0068974 there is
further known a dishwashing machine provided with rotating
jet nozzles directed obliquely onto the surface of the
20 fine-mesh recirculation filter so as to concentrate and
to convey to the interior of the coarse-mesh discharge
pump protection filter any particulate impurities collect-
ing on the recirculation filter.

25 In view of their inclined positions, the rotating jet
nozzles have no cleaning effect on the coarse-mesh filter,
resulting in the latter being all the more readily clogged
by the impurities.

30 It is an object of the present invention to provide a
dishwashing machine of simple construction and reliable
operation, which is provided with a discharge pump protect-
ion filter arranged to be automatically and efficiently
cleaned at the end at least of each dishwashing cycle.

35 This object is attained by a dishwashing machine compris-
ing a washing tub provided with a fine-mesh filter disposed
in the flowpath of water aspirated by a circulation pump

1 and formed with an opening directly connecting the interior of said tub with the water intake of a discharge pump, and a coarse-mesh filter seted in said opening.

5 According to the invention, a dishwashing of this type is essentially characterized by comprising spray jet means adapted to direct at least one water jet against said coarse-mesh filter in a substantially coaxial direction therewith for effecting the cleaning thereof.

10

The spray jet means preferably comprise at least one additional opening formed in at least one rotatable arm provided for irrigating the dishes.

15 In this manner, operation of the circulation pump automatically results in the disintegration of impurities collected in the discharge pump protection filter, which is usually disposed in a relatively quiescent zone of the washing tub. The coarse-mesh filter is thus always kept
20 sufficiently clean, its maintenance being limited to the infrequent necessity of removing coarse and relatively indestructible impurities, such as bits of china or glass, bones and the like, from the filter.

25 The characteristics and advantages of the invention will become more clearly evident from the following description, given by way of example with reference to the accompanying drawings, wherein:

fig. 1 and 2 show diagrammatic representations of dish-
30 washing machines in two functionally equivalent embodiments of the invention.

With reference to the drawings, a dishwashing machine comprises a washing tub 3 (only partially shown), the bottom
35 of which is formed as a well 4 for collecting the dishwashing and rinsing water. Disposed in communication with well 4 is a circulation pump 5 supplying at least one rotatable arm 6 for irrigating the dishes and the like to be

1 washed (not shown) in a per se known manner. Washing tub 3
contains a fine-mesh filter 7 disposed in the flowpath of
the water collecting in well 4 after having been sprayed
onto the dishes, and to be aspirated again by circulation
5 pump 5. Fine-mesh filter 6 is of a known configuration,
having a frustoconical portion for the insertion of a
removable coarse-mesh filter 8 of corresponding shape
disposed substantially in the flowpath of water from
well 4 to a discharge pump 9.

10

Coars-mesh filter 8 acts in a known manner as a discharge
pump protection filter.

According to the invention, the dishwashing machine in-
15 cludes spray jet means arranged to direct at least one
water jet onto filter 8 in a substantially coaxial direct-
ion thereof for automatically cleaning the filter by dis-
integrating low-consistency impurities collected therein.

20 In a preferred embodiment, the water jet may be produced
by providing an additional opening 10 at the bottom side
of rotatable irrigation arm 6 (fig. 1). In this case the
water jet 11 is effective to clean filter 8 in an inter-
mittent manner.

25

In an alternative embodiment, water jet 11 may be prod-
uced by a stationary jet nozzle 12 (fig. 2) connected to
the outlet of circulation pump 5, preferably on a horizontal
axis and associated with a deflector 13 for directing the
30 water jet towards the pump protection filter 8.

Deflector 13 may of course be mounted at any position con-
sidered most favourable. Also, water jet 11 may be produced
in any equivalent manner.

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In any case, and in contrast to known arrangements, the
discharge pump protection filter 8 will always have been
efficiently cleaned at the end of each operating cycle of
the dishwashing machine.

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20 Dishwashing Machine with Self-Cleaning
 Pump Protection Filter

Patent Claims

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1. A dishwashing machine comprising a washing tub pro-
 vided with a fine-mesh filter disposed in the flowpath of
 water aspirated by a circulation pump and formed with an
 opening directly connecting the interior of said tub with
30 the water intake of a discharge pump, and a coarse-mesh
 filter seated in said opening, characterized by comprising
 spray jet means adapted to direct at least one water jet
 (11) against said coarse-mesh filter (8) in a substantially
 coaxial direction therewith for effecting the cleaning
35 thereof.

2. A dishwashing machine according to claim 1, wherein
 said circulation pump feeds at least one rotatable spray

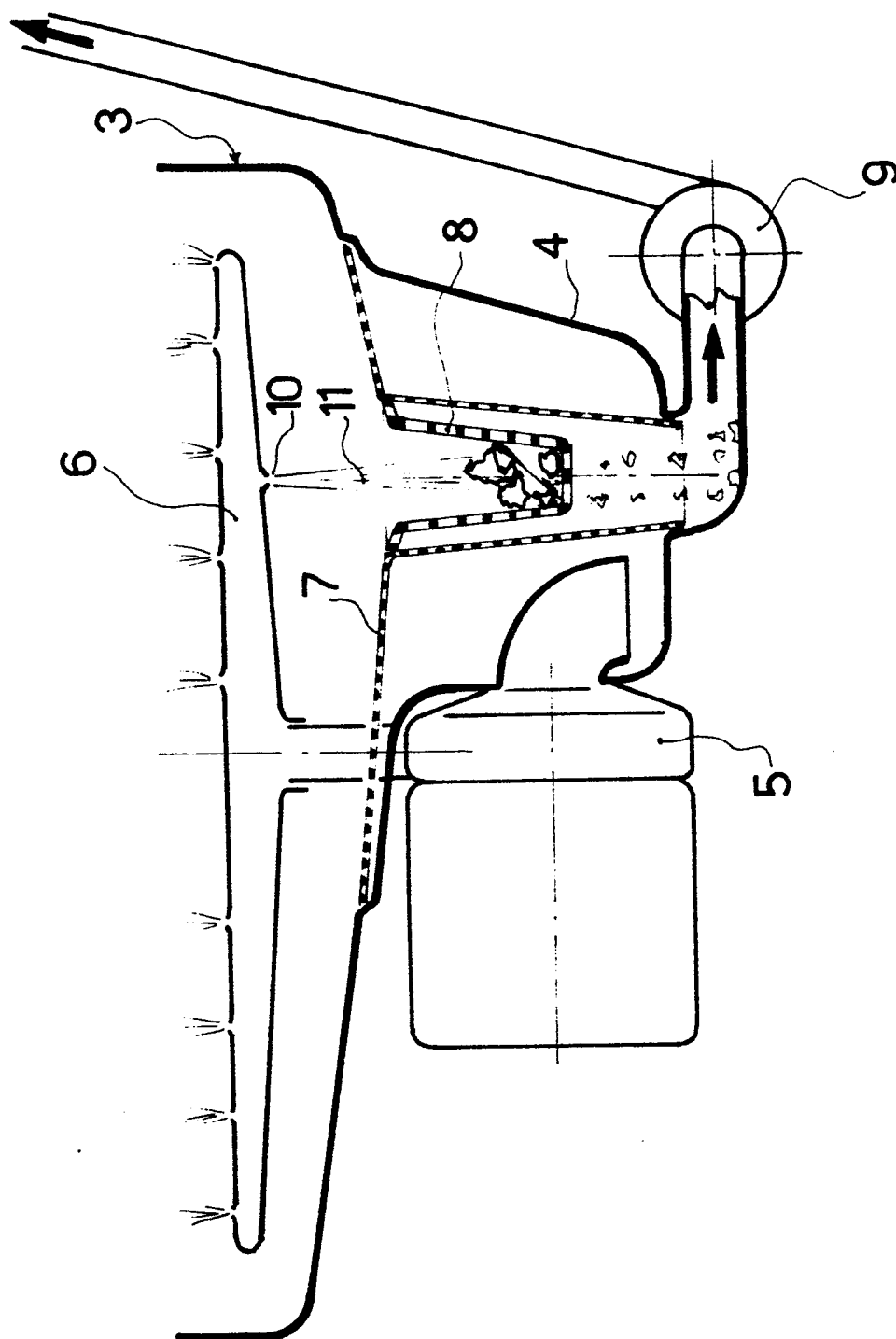
- 1 arm for spraying the dishes, characterized in that said
spray jet means comprise at least one additional opening
(10) formed in said rotatable arm (6).
- 5 3. A dishwashing machine according to claim 1,
characterized in that said spray jet means comprise at
least one stationary jet nozzle (12) connected to the
outlet of said circulation pump (5).
- 10 4. A dishwashing machine according to claim 3, where-
in the axis of said stationary jet nozzle extends substant-
ially transversely of the axis of said coarse-mesh filter,
characterized by comprising a deflector (13) adapted to
direct the water jet exiting from said stationary jet
15 nozzle (12) towards said coarse-mesh filter (8).

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$\frac{1}{2}$ fig. 1



European Patent
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EUROPEAN SEARCH REPORT

0150478

Application number

EP 84 11 6142

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.4)
D,A	EP-A-0 068 974 (ESSWEIN) * The whole document *	1,2	A 47 L 15/42
D,A	IT-A- 952 947 (INDESIT) * The whole document *	1,3	
A	EP-A-0 082 592 (THE HOBART CORP.) * Page 21, lines 20-26; figure 2 *	1,2	
A	FR-A-2 445 130 (THE HOBART CORP.) * Page 18, lines 29-36; figures 3,4 *	1,2	
A	DE-B-1 269 776 (BOELKOW) * The whole document *	1,3	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	GB-A- 286 092 (RENDLE) * The whole document *	1,3	A 47 L
A	GB-A- 490 913 (SEPARATOR) * Figure 1 *	3,4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27-03-1985	Examiner SCHARTZ J.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			