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(54) Improved extractable filter for dishwashing machines

Verbesserter, herausnehmbarer Filter für Geschirrspüler

Filtre extractible, amélioré pour des machines à laver la vaisselle

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(56) References cited:
DE-B- 1 158 942 **DE-C- 3 426 661**
FR-A- 1 418 707 **FR-A- 2 378 493**

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Description

The present invention relates to an extractable filter for dishwashing machines, as defined in the preamble of the appended claim 1.

Dishwashing machines are known that are provided with filters for avoiding that the residues removed from the dishes be placed in circulation with the washing liquid and deposited again on the dishes. Such filters are normally composed of two filtering elements; one being made of a fine mesh for withholding the small particles of residues, while a second filtering element of a larger mesh being extractable for cleaning purposes, has the task of withholding the larger particles, i.e. pieces of meat, tooth picks or the like, so as to inhibit that such particles go on to block the drainage pump.

This kind of second filter, made up of a large mesh for avoiding the hinderance and blockage of the drainage of the washing liquid, is substantially of cylindrical shape and made of plastic material for ease and construction economy.

It is open at its superior extremity whilst it may be closed at its inferior extremity having outlets in its cylindrical body.

The inferior section can be made closed so as to avoid large residues such as tooth picks or the like, passing through the outlets and being drawn by the drainage pump with the risk of blockage, the consequence of which being drainage hinderance, overheating of the pump's motor, which could also cause it to burn out.

This solution providing for the inferior section to be closed, brings into evidence the inconvenience that the small particles of residues are deposited on this surface, which having no outlets for allowing the direct drainage of such residues with the washing water, results in the fact that such residues can be placed in circulation during the rinsing phase and be deposited on the washed dishes.

There are known various examples of realisation for avoiding such inconveniences, that call for the utilisation of many components for constructing the filter.

In this way however, the filter becomes more complex, expensive and more difficult to clean, as when extracted it is possible that the various components become dismantled, thus causing difficulties for the user that may have problems in its reassembly.

For instance, from FR-A-2 378 493 an extractable filter of the above type is disclosed, provided with apertures in the lower part and with a downwardly open chamber in the upper part, with the aim of preventing, during the draining phases of the washing liquid, the backflow of small residues, which could therefore deposit of the fine mesh filter and be recirculated by the washing liquid during a successive washing phase. The embodiments described in FR-A-2 378 493, which are of complex and expensive realization, do not however avoid the possible passage of toothpicks or small bones through the filter, which could cause the blockage of the

drain pump, or the falling of the retained residues, during the removal of the filter.

From DE-B-1 158 942 is also known a dishwashing machine which is provided with a filtering device arranged in the lower portion of the washing chamber of the machine; said filtering device is formed by a plurality of linked concentric rings which define a series of drain opening, the dimensions of which can be varied upon a command, for two different operating conditions. Also the filtering device disclosed in DE-B-1 158 942 drastically presents the risk of passage of residues being thin but sufficiently long to hinder the correct operation of the drain pump, which can be horizontally conveyed by the washing liquid through said rings; this is due to the fact that the sump of the dishwashing machine does not have a sufficiently restricted section, which would avoid this residues to assume said horizontal position.

The aim of the present invention is to indicate a filter for dishwashing machines that does not present the inconveniences of the type known.

To allow for such aims the present invention has as its object an extractable filter for dishwashing machines, as defined by the characterising features of the independent claim 1. Other improvements and embodiments of the invention are indicated in the dependent claims

Further aims and advantages of the present invention will become clear from the detailed description that follows and from the annexed drawings, supplied as a non-limiting example, wherein:

- figure 1 represents a sectioned side view of a filter for dishwashing machines according to the invention;
- figure 2 represents the plan view of a filter for dishwashing machines according to the invention;
- figure 3 represents a partial sectioned side view of a filter for dishwashing machines according to a variant of the invention;
- figure 4 represents a sectioned side view of the bottom of a filter for dishwashing machines according to a further variant of the invention.

In the figures that represent an extractable type filter for washing machines realised according to the details of the present invention, reference number 1 indicates the filter, realised in stamped plastic material, where outlets 2 are obtained in the cylindrical section due to a plurality of uprights, which allow for the lateral drainage of the washing water; reference number 3 represents protruding wings that allow for the extraction of the filter for cleaning purposes and its placing in a working position; reference number 4 indicates two known means for holding the filter in place during washing; with the reference number 5 the filter bottom in the form of an upturned cone is indicated, made up of a series of concentric flat rings positioned at various levels and held in place with a plurality of uprights, as in the cylindrical section, thus creating a number of outlets 7 that allow

for the drainage of the washing water at the lower section.

Said concentric rings are realised in such a way the outer circumference of one ring is the same as the internal circumference of the successive ring.

In such a way the passage of large food residues is prevented and above all the passage of toothpicks and small bones is prevented that could cause a blockage of the drainage pump, whilst allowing the drainage of the water from the bottom of the filter the cleaning of such is improved and the deposits of residues on the bottom is practically reduced to zero.

The characteristics of the filter become clear from the present description and annexed drawings.

The advantages of the filter object of the present invention also result in being clear from the present description.

In particular they are represented by the fact that:

- residue deposits do not collect on the bottom of the filter that could be placed in circulation during the rinsing phases and be newly deposited on the dishes that have just been washed;
- even with rather large outlets in the bottom, the filter prevents residues from passing that could damage the drainage pump;
- the filter is realised with one single component and its construction is extremely simple and economic.

It is clear that numerous variants are possible to the filter for dishwashing machines, object of the present invention, one of which could be that represented in figure 3 where the bottom of the filter can be realised in the form of a cone with its point facing upwards.

Another variant of the filter for dishwashing machines could be that represented in figure 4 in which the level of the concentric rings of the bottom are inclined towards the bottom, so as to facilitate the passage of the particles of residues and in preventing them from depositing, thoroughly, on the concentric rings.

Claims

1. An extractable filter (1) for dishwashing machines, comprising a tapered body with lateral walls and a bottom (5), said body (5) being obtained in a single piece in plastic material, said bottom (5) being provided with a plurality of openings (7), whereby said lateral wall of said body presents a plurality of apertures (2) and said bottom (5) has a substantially conical section characterized in that said bottom is directly connected to said lateral walls (2), said bottom (5) being obtained through a plurality of concentric rings (6) being fixed, flat and laying at different levels, the external circumference of a ring (6) being the same as the internal circumference of the successive ring, all said openings being almost perpendicular in respect of the vertical axis of the filter.

2. Extractable filter, according to claim 1, characterized in that the plane of said concentric rings (6), is inclined with respect the horizontal plane of the filter.

3. A dishwashing machine, comprising the extractable filter according to claim 1.

Patentansprüche

1. Herausnehmbarer Filter (1) für Geschirrspüler, der einen konischen Körper mit seitlichen Wänden und einem Boden (5) aufweist, wobei der Körper als ein Teil aus Kunststoffmaterial ausgebildet ist, der Boden (5) mit einer Vielzahl von Öffnungen (7) versehen ist, die seitliche Wand des Körpers eine Vielzahl von Öffnungen (2) aufweist und der Boden (5) einen im wesentlichen konischen Bereich hat, dadurch gekennzeichnet, daß der Boden direkt mit den seitlichen Wänden (2) verbunden ist, der Boden (5) durch eine Vielzahl von konzentrischen, ortsfesten, flachen und in verschiedenen Ebenen liegenden Ringen (6) gebildet ist, der äußere Umfang eines Rings (6) gleich dem inneren Umfang des auf ihm folgenden Rings ist, alle Öffnungen nahezu rechtwinklig in Bezug auf die vertikale Achse des Filters sind.
2. Herausnehmbarer Filter nach Anspruch 1, dadurch gekennzeichnet, daß die ebene Fläche der konzentrischen Ringe (6) in Bezug auf die horizontale Ebene des Filters geneigt ist.
3. Geschirrspülmaschine, welche einen herausnehmbaren Filter nach Anspruch 1 enthält.

Revendications

1. Filtre extractible (1) pour des machines à laver la vaisselle, comportant un corps conique avec des parois latérales et un fond (5), ledit corps (5) étant obtenu dans une seule pièce de matière plastique, ledit fond (5) étant pourvu de plusieurs ouvertures (7), ladite paroi latérale dudit corps présentant plusieurs ouvertures (2) et ledit fond (5) ayant une section sensiblement conique, caractérisé en ce que ledit fond est directement relié aux dites parois latérales (2), ledit fond (5) étant obtenu grâce à plusieurs bagues concentriques (6) qui sont fixes, plates et s'étendent à différents niveaux, la circonférence externe d'une bague (6) étant la même que la circonférence interne de la bague suivante, toutes lesdites ouvertures étant pratiquement perpendiculaires à l'axe vertical du filtre.
2. Filtre extractible selon la revendication 1, caractérisé en ce que le plan desdites bagues concentriques est incliné par rapport au plan horizontal du filtre.

3. Machine à laver la vaisselle, comportant le filtre extractible selon la revendication 1.

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FIG. 1

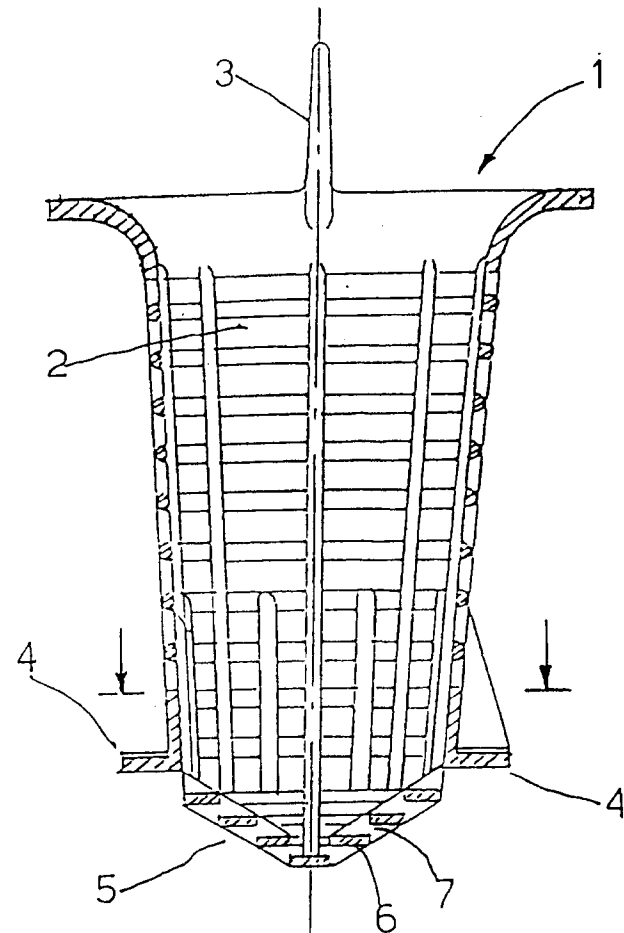


FIG. 2

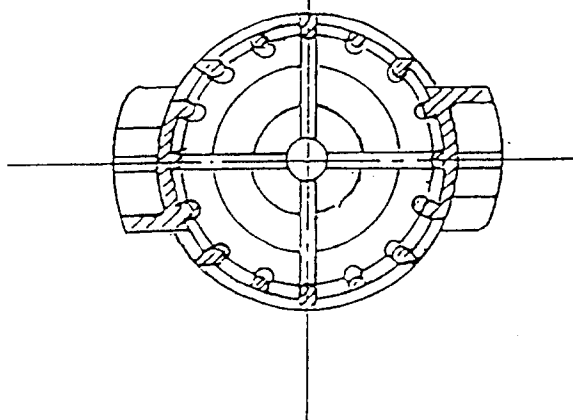


FIG. 3

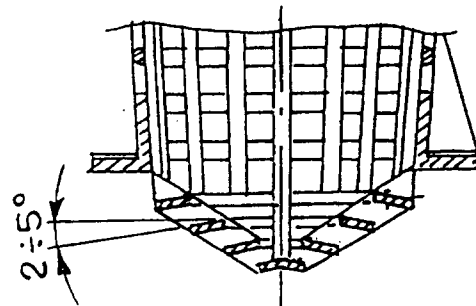
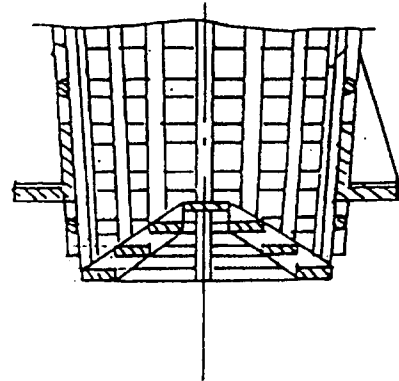


FIG. 4