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(54) **Dishwasher**

Geschirrspülmaschine

Lave-vaisselle

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Description

[0001] The invention refers to a dishwasher with a rinsing container with a fine filter outlet in which is placed a removable coarse filter and which has a water collecting trough around the fine filter outlet with connection branches for a circulation pump and a drainage pump, in which the pot shaped coarse filter in the casing wall has horizontal slit-shaped openings for soft food particles.

[0002] A dishwasher of this type is known from DE 34 26 661 C1. In this known dishwasher, there are areas with small hole openings in the base and/or casing of the lower area of the coarse filter with a mesh size which retains the detergent granules which enter the coarse filter. The mesh size is thus selected to be approx. 1 mm. The coarse filter retains not only heavy small particles but also voluminous coarse particles able to be sucked out. This very quickly leads to the small openings becoming blocked so that their intended function is lost and only the horizontally aligned slit-shaped openings for soft food particles remain effective. In this way, the voluminous coarse particles which are able to be sucked out remain in the coarse filter and also close these openings which finally leads to faults in the circulation and drainage operations.

[0003] The task of the invention is to improve the function of the coarse filter in a dishwasher as mentioned at the start in such a way that heavy small particles are kept back but voluminous light coarse particles are able to pass the coarse filter and soft food particles can be sucked out from the coarse filter without any danger of the filter openings being blocked.

[0004] This is solved by the invention in that, the lower area of the casing wall connected with the base of the coarse filter (10) has at least one layer of slit-shaped openings (14) for soft food particles and has, above this apposite to the base, large outlet openings (15) for coarse particles with a specific gravity of less than 1 which are able to be sucked out, the lower part of the coarse filter up to the outlet openings (15) forming a retaining chamber for small particles with a specific gravity of more than 1.

[0005] In designing the coarse filter in this way, small openings for retaining detergent granules are intentionally avoided as these granules practically dissolve completely in circulation and thereafter hardly ever occur in the rinse water in extraction. With the large openings in the casing wall, a main directional flow is created in the coarse filter for the extraction of voluminous coarse particles removable by suction with a specific gravity less than 1 without retaining small particles with a specific gravity greater than 1 in the retaining chamber above the base of the coarse filter. The danger of blocking the coarse filter is thus greatly reduced.

[0006] The extraction of soft food particles from the coarse filter is eased by there also being suction openings in the base of the coarse filter for soft food particles

removable by suction. In this, the outlet openings are designed as rectangular openings of 6 x 3 mm.

[0007] It is additionally planned for the coarse filter to be supported by a band at the entrance to the fine filter outlet and for this band to have slits and a retaining ring to be shaped on the band using vertical supports which both protrude into the rinsing container; large inlet openings to be formed to the coarse filter between the supports to improve the flow through the gap between the coarse filter and the fine filter.

[0008] The removal of the coarse filter for cleaning is simplified by there being a gap in the fine filter of the fine filter outlet surrounding the coarse filter.

[0009] The invention will be described in more detail using an embodiment as shown in the figures. These show the following:

Fig. 1 a coarse filter in accordance with the invention shown as a perspective view and

Fig. 2 and 3 two longitudinal sections through the coarse filter along lines II-II and III-III in figure 1, offset by 90°

[0010] The figures show the structure of a pot-shaped coarse filter 10 which, as shown in Figures 2 and 3, is removably placed in a fine filter outlet 20 of a dishwasher. In this, the fine filter outlet 20 has small openings 21 and surrounds an area of the coarse filter 10 connected to a band (11). There is a gap 22 to the casing wall of the coarse filter 10.

[0011] The fine filter outlet 20 is built into the base of a rinsing container which is not shown and in such a way that the rinsing water is always fed to the coarse filter 10 placed in the fine filter outlet 20, both in circulation and extraction modes.

[0012] Around the fine filter outlet 20 a water collecting trough is arranged which has connection supports for a circulation and extraction pump.

[0013] Above the provided band 11 with slits 13, the coarse filter 10 has four vertical supports 18 which are closed off from it by a retaining ring 17. The supports 18 with the retaining ring 17 form a handle so that the coarse filter 10 can be grasped and is able to be removed easily from the fine filter outlet 20. The supports 18 and the retaining ring 17 therefore protrude into the rinsing container.

[0014] Between the vertical supports 18, there are large inlet openings 19 through which the circulated or extracted water can pass unhindered into the coarse filter 10. The slits 13 in the band 11 therefore improve the flow through the gap 22 between the coarse filter 10 and the fine filter outlet 20.

[0015] On the band 11 of the coarse filter there are horizontally aligned slit-shaped openings 14 in the upper area of the casing wall which are sized at 5mm x 30 to 40mm so that soft food particles able to be removed by suction can pass through the coarse filter 10.

[0016] One layer of this type of opening 14 is also connected over the base of the coarse filter 10. Over this layer of openings 14, four large outlet openings 15, approx. 12mm x 30mm, are arranged in the casing wall around the circumference. The base of the coarse filter 10 has rectangular extraction openings 16, approx. 3mm x 6mm, through which soft food particles can be sucked out. The lower part of the coarse filter 10 up to the outlet opening 15 forms a retaining chamber for small particles with a specific gravity greater than 1 whilst voluminous coarse particles with a specific gravity less than 1 which can be removed by suction can pass through the outlet openings 15 of the coarse filter 10.

[0017] These slits 13, openings 14, outlet openings 15 and extraction openings 16 achieve an improved flow through the coarse filter 10 in circulation and extraction mode without having to sacrifice the retention of heavy small particles which cannot be removed by suction in the coarse filter 10. These functions of the coarse filter 10 are important for the trouble-free operation of the dishwasher. The retention of detergent granules in the coarse filter 10 has been avoided intentionally as during the extraction mode hardly any significant amount of detergent granules is present in the rinse water as these have already been practically completely dissolved in the previous circulation mode.

[0018] There is a retaining element 12 formed in the base of the coarse filter 10 using which the coarse filter 10 can additionally be locked in the fine filter outlet 20 or the outlet trough. The coarse filter 10 can be easily loosened for cleaning and removed from the fine filter outlet 20.

Claims

1. Dishwasher with a rinsing container with a fine filter outlet and with a pot-shaped coarse filter said pot-shaped coarse filter being removably placed within said fine filter outlet and with a water collecting arrangement surrounding the fine filter outlet said water collecting arrangement being provided with connection supports for a circulation and extraction pump said pot-shaped coarse filter having a casing wall and a base said casing wall being connected to the base the casing wall having horizontal slit-shaped openings for soft food particles, **characterised in that** the lower area of the casing wall connected with the base of the coarse filter (10) has at least one layer of slit-shaped openings (14) for soft food particles and has, above this opposite to the base, large outlet openings (15) for coarse particles with a specific gravity of less than 1 which are able to be sucked out, the lower part of the coarse filter up to the outlet openings (15) forming a retaining chamber for small particles with a specific gravity of more than 1.

2. Dishwasher in accordance with claim 1, **characterised in that** the base of the coarse filter (10) is provided with extraction openings (16) for soft food particles
3. Dishwasher in accordance with claim 2, **characterised in that** the outlet openings (16) are formed as rectangular openings of 6mm x 3mm.
4. Dishwasher in accordance with one of the claims 1 to 3, **characterised in that** the coarse filter (10) is supported by a band (11) at the entrance to the fine filter outlet (20) and that there are slits (13) in this band (11).
5. Dishwasher in accordance with claim 3, **characterised in that** there is a retaining ring (17) formed above vertical supports (18) on the band (11) whereby both the retaining ring (17) and the vertical supports (18) protrude into the rinsing container and that between the supports (18) large inlet openings (19) are formed in the coarse filter.
6. Dishwasher in accordance with one of the claims 1 to 5, **characterised in that** the fine filter of the fine filter outlet (20) surrounds the coarse filter (10) with a gap (22).

Patentansprüche

1. Geschirrspülmaschine mit einem Spülbehälter mit Feinfilter-Ablauf, in den ein Grobfilter herausnehmbar eingesetzt ist, und mit einer den Feinfilter-Auslauf umgebenden Ablaufwanne, die mit Anschlußstutzen für eine Umwälz- und Absaugpumpe versehen ist, wobei das genannte, topfförmige Grobfilter einen Boden und eine mit dem Boden verbundene Mantelwand aufweist, die horizontal verlaufende, schirtartige Durchbrüche für weiche Speisereste aufweist.
dadurch gekennzeichnet,
dass der untere Bereich der Mantelwand im Anschluß an den Boden des Grobfilters (10) mindestens eine Lage schlitzartiger Durchbrüche (14) für weiche Speisereste und darüber zum Boden entgegengesetzt angeordnete, großflächige Austrittsöffnungen (15) für absaugfähige Grobteile mit einem spezifischen Gewicht kleiner als 1 aufweist, wobei der untere Teil des Grobfilters bis zu den Austrittsöffnungen einen Rückhalteraum für Kleinteile mit einem spezifischen Gewicht größer als 1 bildet.
2. Geschirrspülmaschine nach Anspruch 1,

dadurch gekennzeichnet,

dass der Boden des Grobfilters (10) mit Absaugöffnungen (16) für weiche Speisereste versehen ist.

3. Geschirrspülmaschine nach Anspruch 2,
dadurch gekennzeichnet,
dass die Ablauföffnungen (16) als rechteckförmige Durchbrüche mit 6 x 3 mm ausgebildet sind.
4. Geschirrspülmaschine nach einem der Ansprüche 1 bis 3,
dadurch gekennzeichnet,
dass das Grobfilter (10) mit einem Bund (11) am Eingang des Feinfilter-Ablaufs (20) abgestützt ist und
dass in diesen Bund (11) Schlitz (13) eingebracht sind.
5. Geschirrspülmaschine nach Anspruch 3,
dadurch gekennzeichnet,
dass an dem Bund (11) über vertikale Stützen (18) ein Haltering (17) angeformt ist, wobei der Haltering (17) und die vertikalen Stützen (18) in den Spülbehälter ragen, und
dass zwischen den Stützen (18) großflächige Einlauföffnungen (19) im Grobfilter (10) gebildet sind.
6. Geschirrspülmaschine nach einem der Ansprüche 1 bis 5,
dadurch gekennzeichnet,
dass das Feinfilter des Feinfilter-Ablaufs (20) das Grobfilter (10) mit Spalt (22) umschließt.

Revendications

1. Lave-vaisselle muni. d'un récipient de rinçage ayant une sortie à filtre fin et un filtre grossier en forme de pot, le filtre grossier en forme de pot étant disposé de façon amovible dans la sortie à filtre fin avec un arrangement collecteur d'eau qui entoure la sortie à filtre fin, l'arrangement collecteur d'eau ayant des supports de raccordement destinés à une pompe de circulation et d'extraction, le filtre grossier en forme de pot ayant une paroi de carter et une base, la paroi de carter étant raccordée à la base, la paroi de carter ayant des ouvertures horizontales en forme de fente destinées aux particules alimentaires tendres, **caractérisé en ce que**
la région inférieurs de la paroi de carter raccordée à la base du filtre grossier (10) a au moins une couche d'ouvertures (14) en forme de fente destinées à des particules tendres d'aliments et possède, au-dessus de celle-ci du côté opposé à la base, de grandes ouvertures de sortie (15) destinées aux grosses particules de densité supérieure à 1 et qui peuvent être aspirées vers l'extérieur, la partie inférieurs du filtre grossier jusqu'aux ouver-

tures de sortie (15) formant une chambre de retenue pour les petites particules de densité supérieure à 1.

2. Lave-vaisselle selon la revendication 1, **caractérisé en ce que** la base du filtre grossier (10) a des ouvertures d'extraction (16) de particules tendres d'aliments.
3. Lave-vaisselle selon la revendication 2,
caractérisé en ce que
les ouvertures de sortie (16) sont formées d'ouvertures rectangulaires de dimension 6 x 3 mm.
4. Lave-vaisselle selon l'une des revendications 1 à 3,
caractérisé en ce que
le filtre grossier (10) est supporté par une bande (11) placée à l'entrée de la sortie à filtre fin (20), et
trois fentes (13) sont disposées dans cette bande (11) .
5. Lave-vaisselle selon la revendication 3,
caractérisé en ce que
une bague de retenue (17) est formée au-dessus des supports verticaux (18) sur la bande (11) si bien que la bague restante (17) et les supports verticaux (18) dépassent dans le récipient de rinçage, et **en ce que**,
entre les supports (18) , de grosses ouvertures d'entrée (19) sont formées dans le filtre grossier.
6. Lave-vaisselle selon l'une des revendications 1 à 5,
caractérisé en ce que
le filtre fin de la sortie à filtre fin (20) entoure le filtre grossier (10) avec un espace (22) .

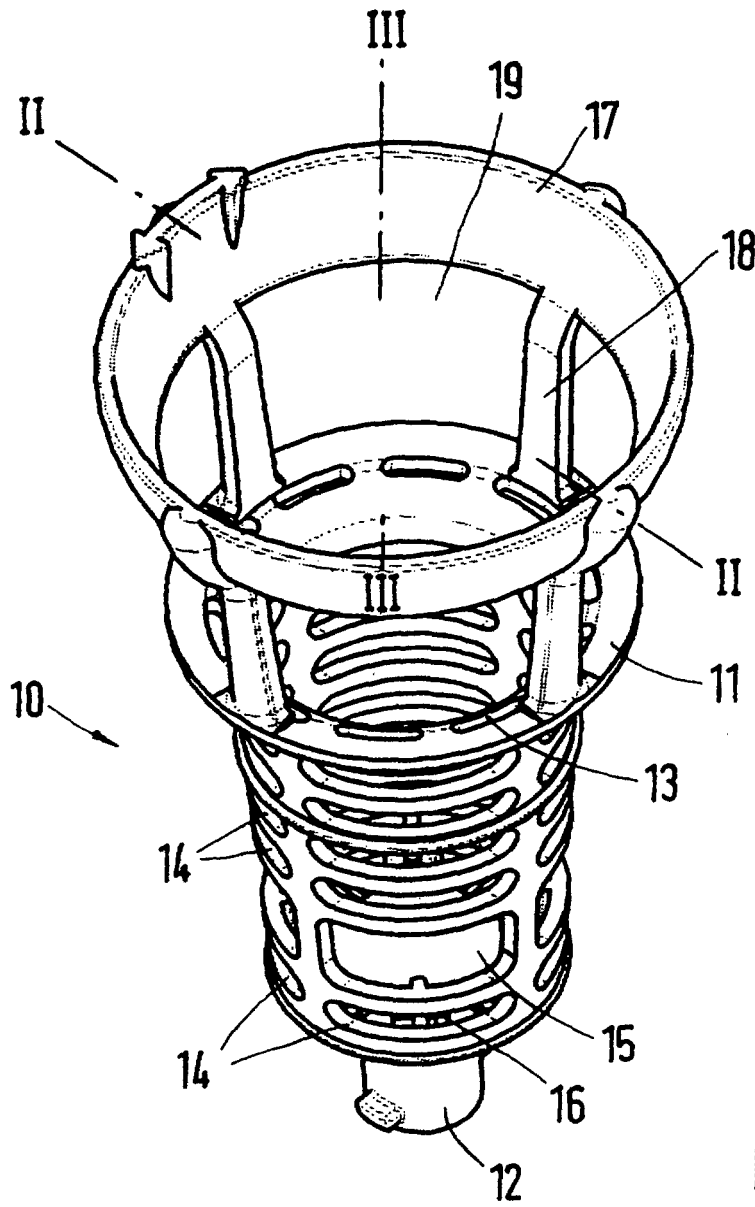


Fig. 1

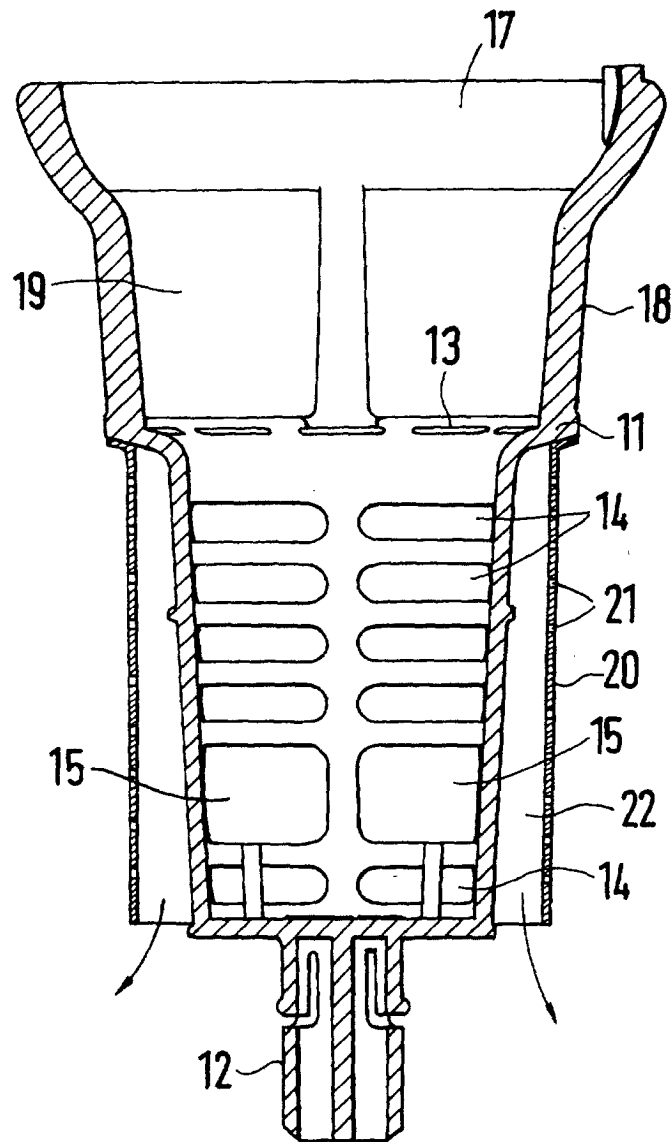


Fig.2

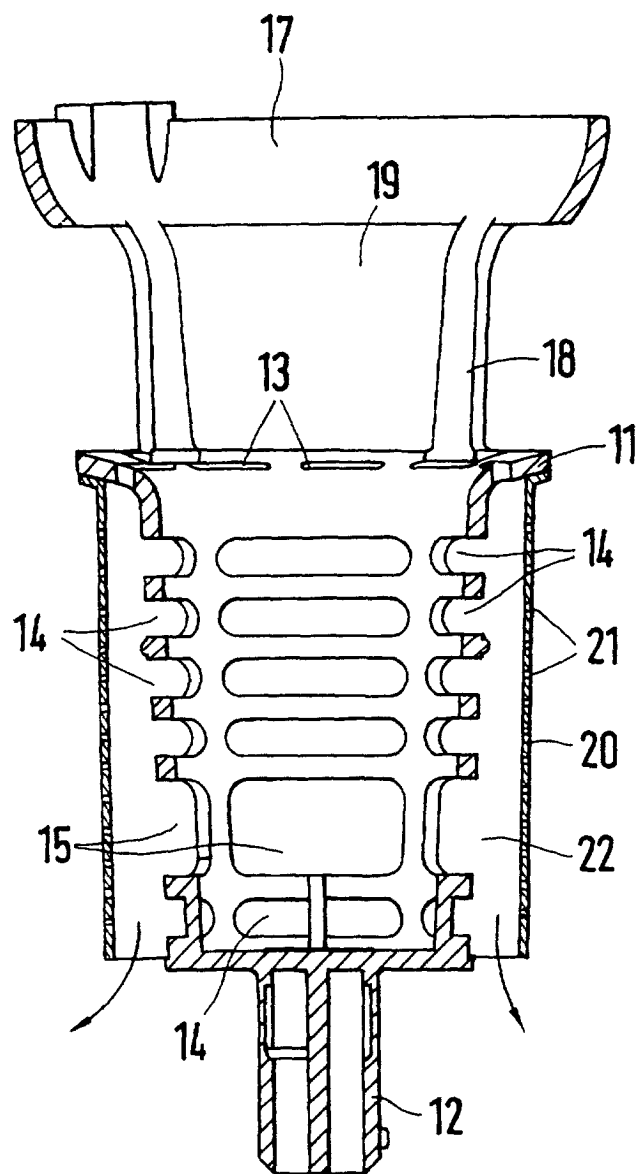


Fig.3