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(54) Dishwasher

(57) The invention refers to a dishwasher with a rinsing container with a fine filter outlet in which a coarse filter is removably placed and with an outlet trough surrounding the fine filter outlet with connection supports for a circulation and extraction pump, in which the pot shaped coarse filter in the casing wall has horizontal slit-shaped openings for soft food particles. The flow-through of the coarse filter with the retention of small particles with a specific gravity greater than 1 is improved in that in the lower area of the casing wall connected to the floor of the coarse filter there is at least one layer of slit shaped openings for soft food particles and large outlet openings above these for coarse particles which can be removed by suction with a specific gravity of less than 1 and a retention chamber for small particles with a specific gravity of more than 1.

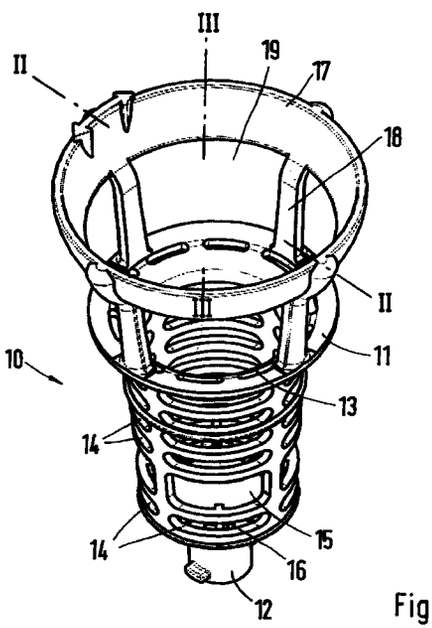

Fig.1

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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 task is solved by the invention in that in the lower area of the casing wall in connection with the base of the coarse filter and by means of at least one layer, there are slit-shaped openings for soft food particles and above these, large outlet openings for coarse particles with a specific gravity less than 1 removable by suction and a retaining chamber for small particles with a specific gravity greater 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 are 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 con-

nected 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 in which a coarse filter is removably placed and surrounding the fine filter outlet an outlet trough with connection supports for a circulation and extraction pump where the pot-shaped coarse filter in the casing wall has horizontal slit-shaped openings for soft food particles,

   2. 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, above this, large outlet openings (15) for coarse particles with a specific gravity of less than 1 which are able to be sucked out and a retaining chamber for small particles with a specific gravity of more than 1.

2. Dishwasher in accordance with claim 1, characterised in that

   there are also extraction openings (16) for soft food particles in the base of the coarse filter (10).

3. Dishwasher in accordance with claim 2, characterised in that

   the outlet openings (16) are formed as rectangular openings 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) and both protrude into the rinsing container
   and that between the supports (18) there are formed large inlet openings (19) to 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).

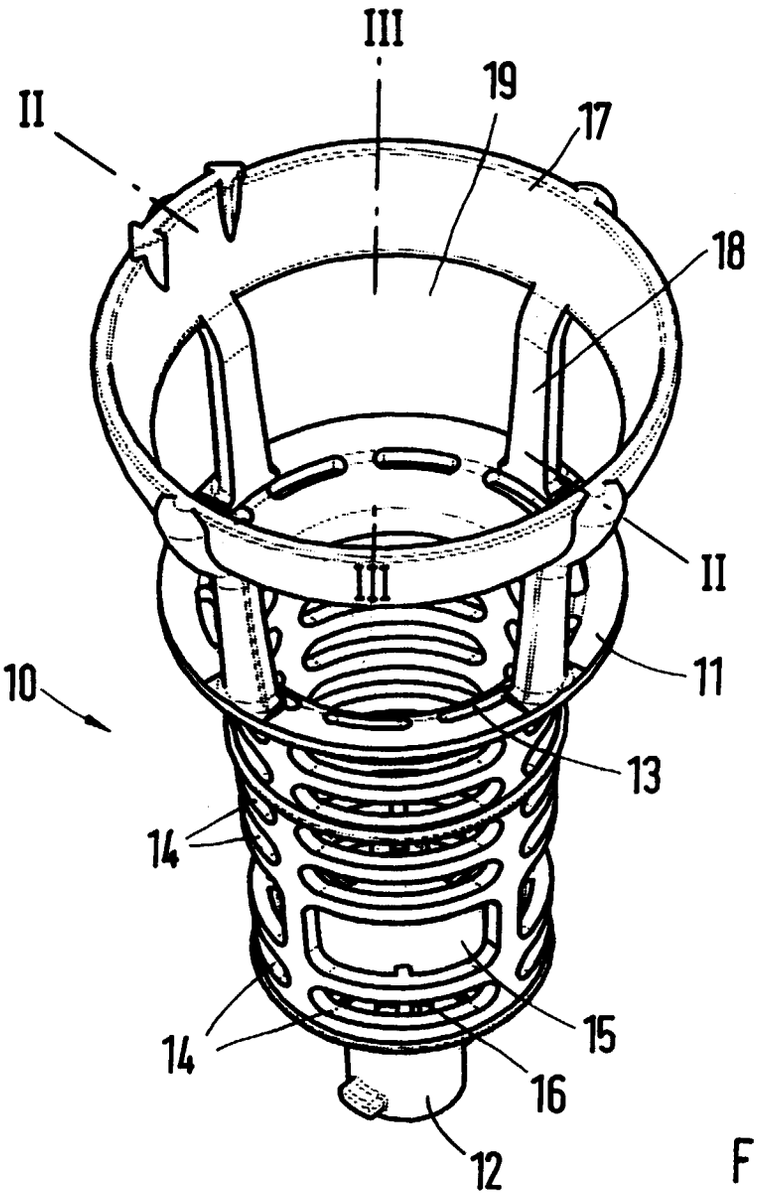

Fig. 1

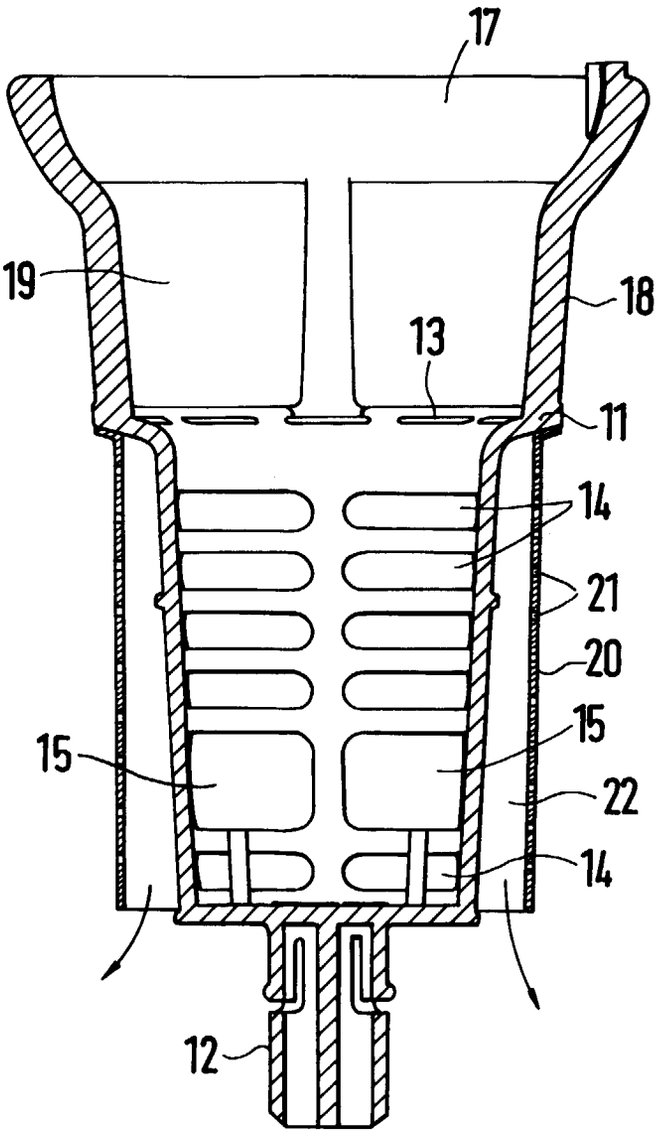

Fig. 2

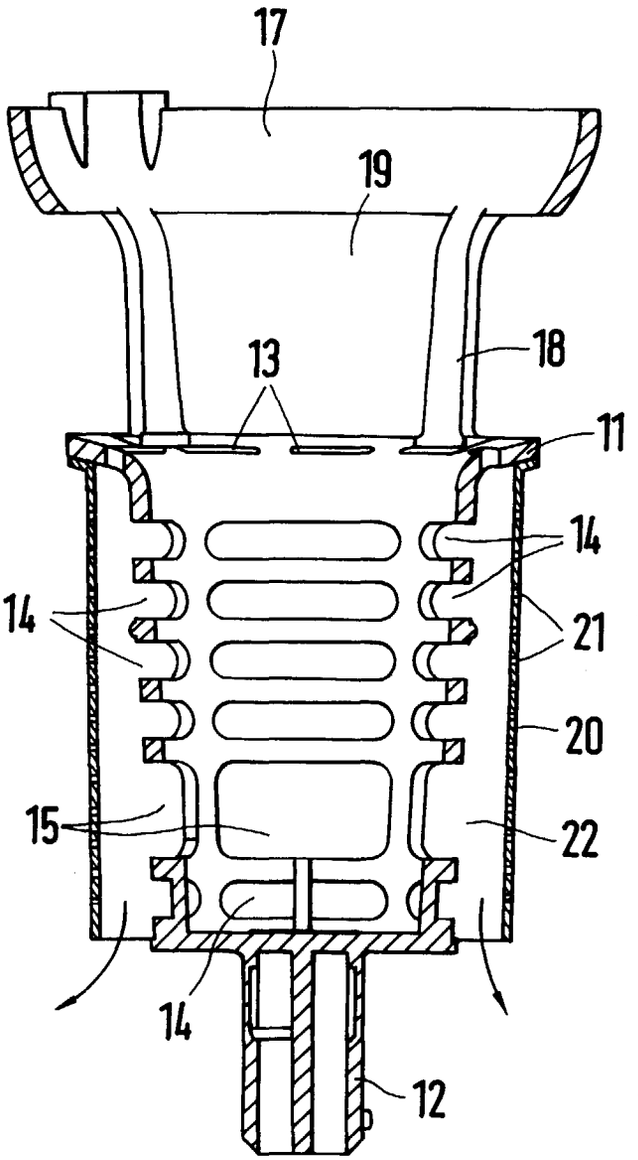

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 4331

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.6)
A	EP 0 505 685 A (MERLONI ELETTRODOMESTICI SPA) 30 September 1992 * column 2, line 22 - column 2, line 52; figures 1-4 *	1	A47L15/42
A,D	GB 2 161 699 A (BOSCH SIEMENS HAUSGERAETE) 22 January 1986 * the whole document *	1	
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TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	6 July 1999	Laue, F

CATEGORY OF CITED DOCUMENTS

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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