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(71) Applicant: **Electrolux Home Products Corporation N.V.**
1950 Zaventem (BE)

(72) Inventors:
- **Monticco, Ivan**
  33082 Azzano Decimo (IT)
- **Mazzon, Andrea**
  33077 Salice (IT)
- **Del Puppo, Matteo**
  33070 Polcenigo (IT)

(74) Representative: **Baumgartl, Gerhard Willi et al**
AEG Hausgeräte GmbH
Group Intellectual Property
90327 Nürnberg (DE)

(54) Electric household washing appliance

(57) An electric household appliance has a first pipe (8) for feeding wash fluid from a wash tub (3), for washing articles, to a drain (7); a filtering device (11) fitted along the first pipe (8); a second pipe (16) parallel to the first pipe (8) and having a retaining device (18) for retaining foreign bodies (12) contained in the wash fluid; and a reversible pump (9) fitted along the first pipe (8), between the filtering device (11) and the drain (7), to feed the wash fluid selectively from the wash tub (3) to the drain (7), or successively through the filtering device (11) and the retaining device (18).

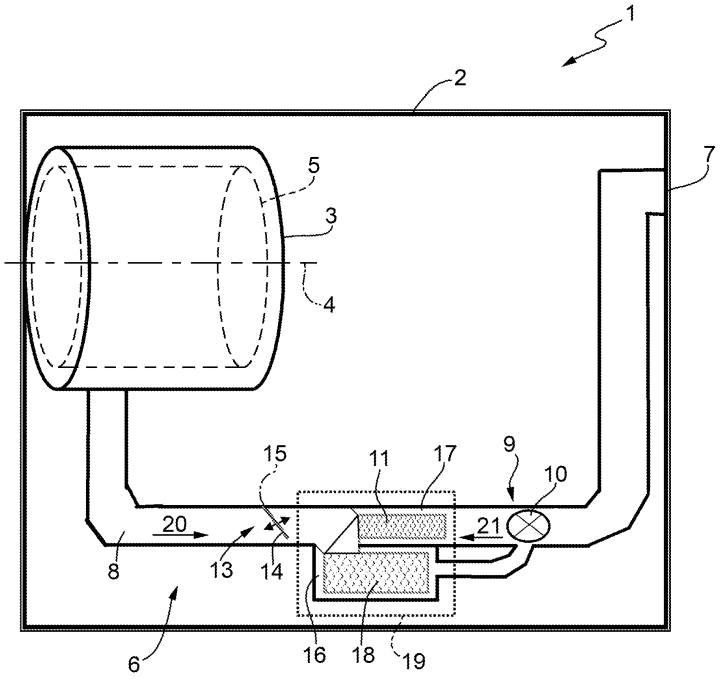

FIG.2

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Description

[0001] The present invention relates to an electric household washing appliance, in particular a dishwasher or washing machine.

[0002] In the electric household appliance industry, an appliance is known comprising a wash tub for washing articles; a hydraulic pipe for feeding a wash fluid from the wash tub to a drain; a filtering device fitted along the hydraulic pipe to remove any foreign bodies from the wash fluid; and a feed pump fitted along the hydraulic pipe, between the filtering device and the drain.

[0003] Known electric household washing appliances of the type described above have various drawbacks, mainly due to the filtering devices normally used clogging rapidly and so requiring frequent cleaning and/or replacement.

[0004] It is an object of the present invention to provide an electric household washing appliance designed to eliminate the aforementioned drawbacks, and which is cheap and easy to produce.

[0005] According to the present invention, there is provided an electric household washing appliance as claimed in the accompanying Claims.

[0006] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figures 1 and 2 show schematics of a preferred embodiment of the electric household appliance according to the present invention;
Figures 3 and 4 show, schematically, operation of the Figure 1 and 2 appliance.

[0007] Number 1 in Figures 1 and 2 indicates as a whole an electric household appliance for washing articles (not shown), and which, in the example shown, is defined by a washing machine comprising a substantially parallelepiped-shaped casing 2; and a substantially cylindrical wash tub 3, which has a longitudinal axis 4, is mounted inside casing 2, and houses a substantially cylindrical drum 5 connected to tub 3 and rotated, with respect to tub 3, about axis 4 by a known actuating device not shown.

[0008] Washing machine 1 also comprises a drain circuit 6 for feeding a wash fluid, normally water and detergent, from tub 3 to a drain 7 connected to the water mains.

[0009] Circuit 6 comprises a first hydraulic pipe 8 extending between tub 3 and drain 7; a reversible feed pump 9 located along pipe 8 and having an impeller 10 mounted to rotate in two opposite directions; and a first filtering device 11 fitted along pipe 8, between tub 3 and pump 9, to remove any foreign bodies 12 from the wash fluid drained along circuit 6.

[0010] Pipe 8 is also fitted with a valve device 13 comprising an on/off member 14, which is fitted inside pipe 8, between tub 3 and filtering device 11, and is mounted to rotate about a hinge axis 15, with respect to pipe 8 and as explained in detail below, between an open position (Figure 3) and a closed position (Figure 4) opening and closing pipe 8 respectively.

[0011] Circuit 6 also comprises a second hydraulic pipe 16, which is mounted parallel to a portion 17 of pipe 8 housing device 11, is located below portion 17, and houses a second filtering device 18. In the example shown, filtering device 11 is designed to remove smaller foreign bodies 12 than filtering device 18.

[0012] In a variation not shown, filtering devices 11, 18 are replaced with a single filtering device of the same filtration capacity along both pipe 16 and portion 17.

[0013] Pipe 16 and portion 17 are housed inside a drawer 19 fitted to casing 2 to slide to and from an extracted position, in which drawer 19 projects outwards of casing 2 to permit cleaning of filtering devices 11, 18, particularly filtering device 18.

[0014] In actual use, when draining wash fluid normally from tub 3 (Figure 3), pump 9 is operated (clockwise in Figure 3) to feed the wash fluid along pipes 8 and 16 to drain 7 and out of washing machine 1 in a given direction 20; on/off member 14 is rotated (anticlockwise in Figure 3) by the wash fluid from the closed to the open position; large foreign bodies 12, such as coins and/or buttons, fall by gravity into pipe 16 and are retained by filtering device 18; and small foreign bodies 12, such as threads and/or fluff, are retained by filtering devices 11, 18.

[0015] When normal drain-off is completed (Figure 4), impeller 10 is rotated in the opposite direction to before (anticlockwise in Figure 4) to feed the wash fluid through filtering device 11 in the opposite direction 21 to direction 20; on/off member 14 is rotated (clockwise in Figure 4) by the wash fluid from the open to the closed position; and the wash fluid is fed successively along portion 17 and pipe 16, i.e. successively through filtering devices 11 and 18.

[0016] By recycling the wash fluid along portion 17 in direction 21 :

foreign bodies 12 are flushed from filtering device 11 into pipe 16 and retained by filtering device 18;
pump 9 supplies wash fluid containing substantially no foreign bodies 12;
pump 9 and filtering device 11 are prevented from clogging; and
numerous wash cycles and tub 3 drain cycles can be performed before having to extract drawer 19 from casing 2 to clean, in particular, filtering device 18.

Claims

1. An electric household washing appliance, in particular a dishwasher or washing machine, the appliance comprising a wash tub (3) for washing articles; a first pipe (8) for feeding a wash fluid from the wash tub (3) to a drain (7) by which to drain the wash fluid from

the appliance; a first filtering device (11) fitted along the first pipe (8); and a pump (9) fitted along the first pipe (8), between the first filtering device (11) and the drain (7); and being **characterized by** also comprising a second pipe (16) parallel to the first pipe (8) and fitted with a retaining device (18) for retaining foreign bodies (12) contained in the wash fluid; the pump (9) operating reversibly to feed wash fluid selectively from the wash tub (3) to the drain (7) or successively through the first filtering device (11) and the retaining device (18).

2. An electric household appliance as claimed in Claim 1, and also comprising a valve device (13) fitted along the first pipe (8), between the wash tub (3) and the first filtering device (11), and movable between an open position and a closed position opening and closing the first pipe (8) respectively.

3. An electric household appliance as claimed in Claim 2, wherein the valve device (13) comprises a non-return valve movable from the closed position to the open position by the wash fluid flowing from the wash tub (3) to the drain (7), and from the open position to the closed position by the wash fluid flowing successively through the first filtering device (11) and the retaining device (18).

4. An electric household appliance as claimed in Claim 2 or 3, wherein the valve device (13) comprises an on/off member (14) fitted inside the first pipe (8) and movable between said open position and said closed position by the wash fluid.

5. An electric household appliance as claimed in any one of the foregoing Claims, wherein the retaining device (18) comprises a second filtering device (18) housed in the second pipe (16).

6. An electric household appliance as claimed in Claim 5, wherein the first filtering device (11) is designed to retain smaller foreign bodies (12) than the second filtering device (18).

7. An electric household appliance as claimed in any one of the foregoing Claims, and also comprising a casing (2) housing the wash tub (3), the first pipe (8), and the second pipe (16); and a drawer (19) which pulls out of the casing (2) and houses at least the retaining device (18).

8. An electric household appliance as claimed in Claim 7, wherein the drawer (19) houses the first filtering device (11) and the retaining device (18).

9. An electric household appliance as claimed in any one of the foregoing Claims, wherein the pump (9) comprises an impeller (10) rotating in a first rotation direction to feed wash fluid through the first filtering device (11) in a given first direction (20), and in a second rotation direction, opposite the first rotation direction, to feed wash fluid through the first filtering device (11) in a second direction (21) opposite the first direction (20).

10. An electric household appliance as claimed in any one of the foregoing Claims, wherein the pump (9) comprises an impeller (10) rotating in a first rotation direction to feed wash fluid in parallel along said first and said second pipe (8, 16), and in a second rotation direction, opposite the first rotation direction, to feed wash fluid successively through the first filtering device (11) and the retaining device (18).

11. An electric household appliance as claimed in any one of the foregoing Claims, wherein the second pipe (16) is mounted parallel to a portion (17) of the first pipe (8) housing the first filtering device (11).

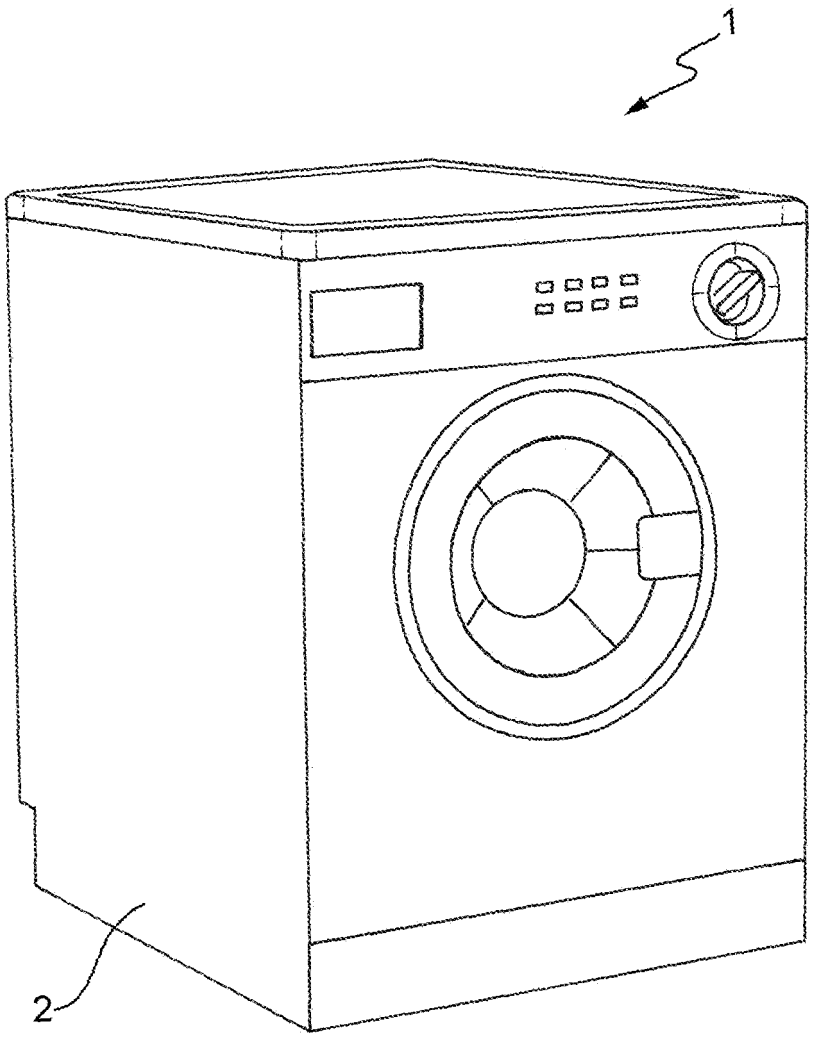

FIG.1

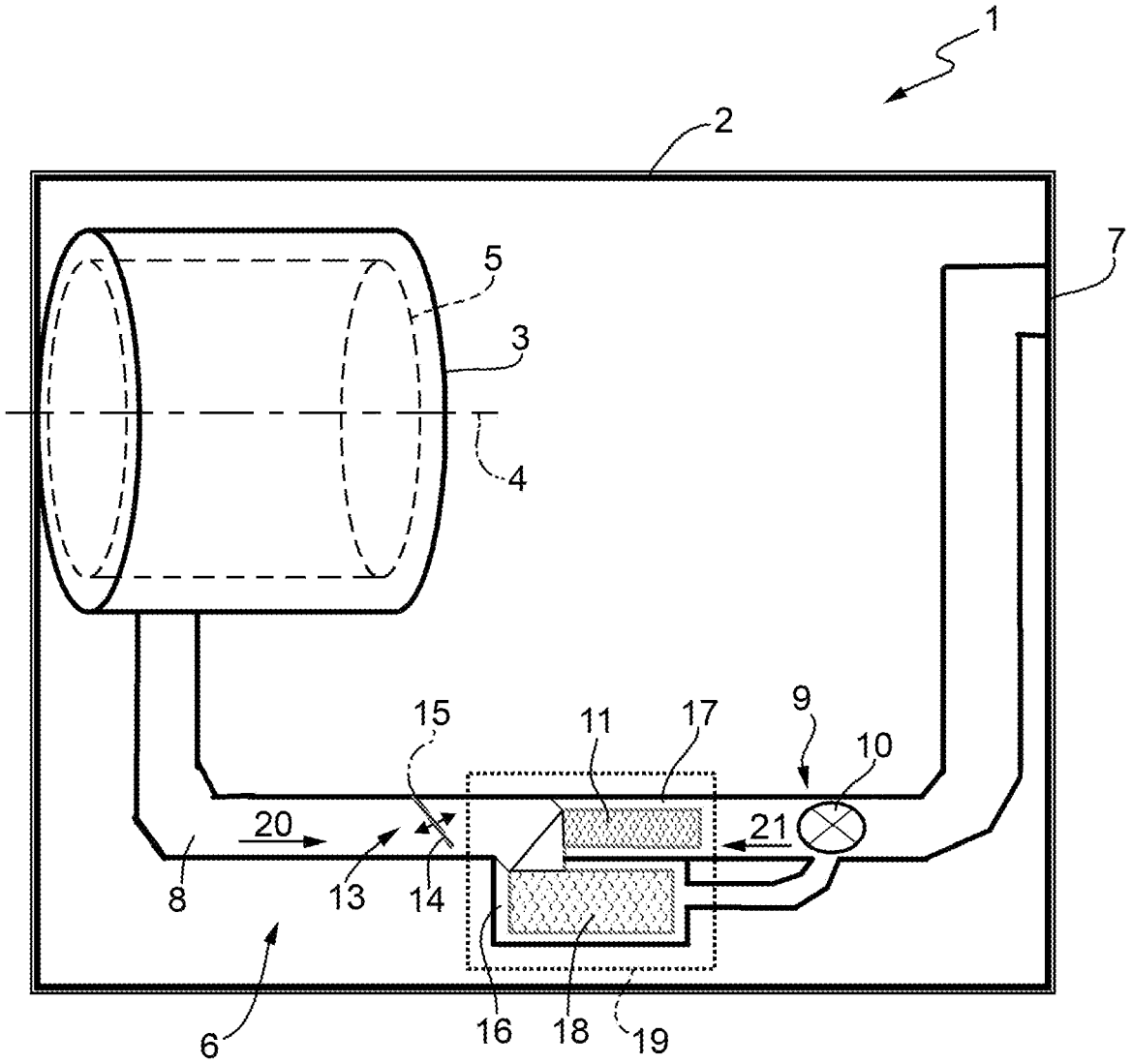

FIG.2

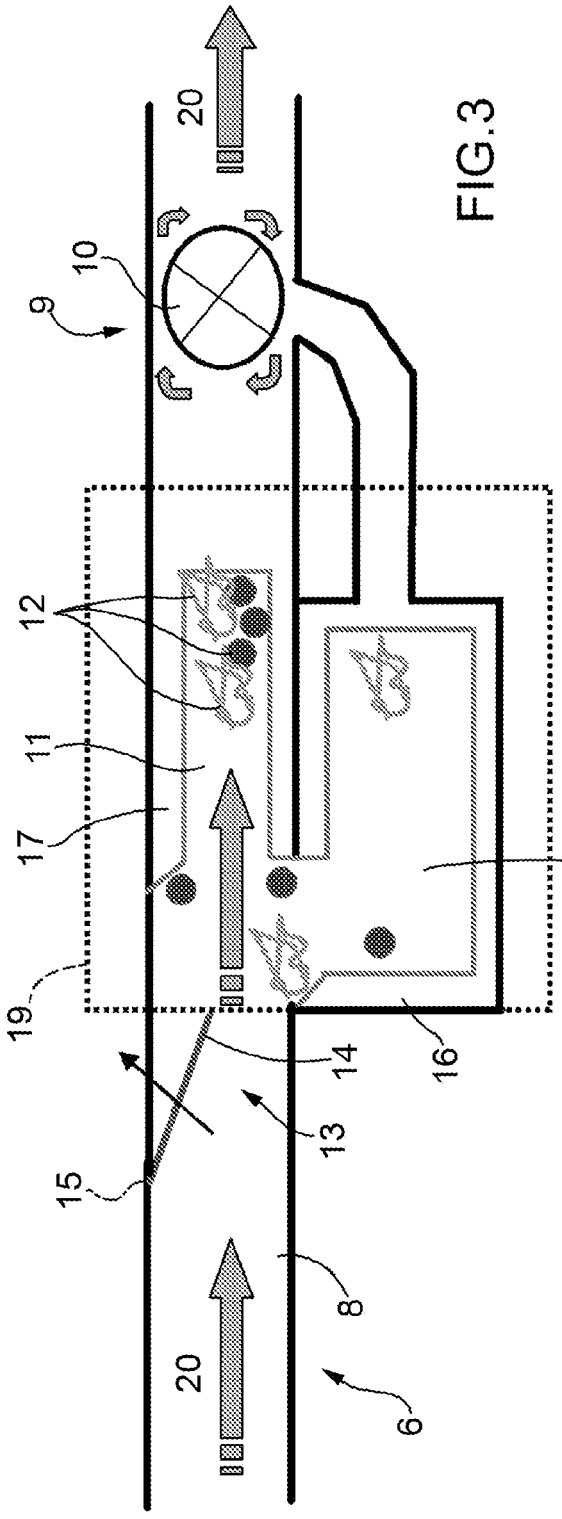
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FIG.3

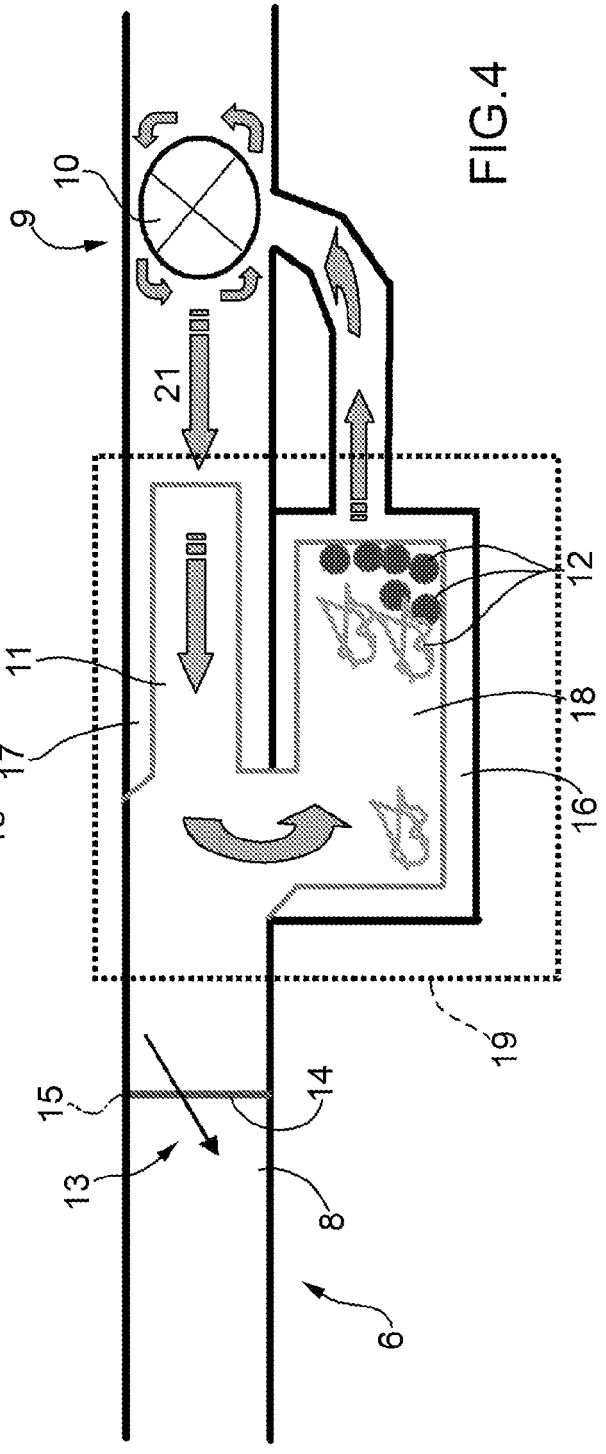
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FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 6765

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 493 745 A (HAUCH DENNIS W [US]) 27 February 1996 (1996-02-27) * column 2, line 38 - column 2, line 57; figures 2,3 *	1,2,6,7, 9	INV. D06F39/08 D06F39/10 A47L15/42
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TECHNICAL FIELDS SEARCHED (IPC)

D06F
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 November 2008	Fachin, Fabiano

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03-11-2008

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