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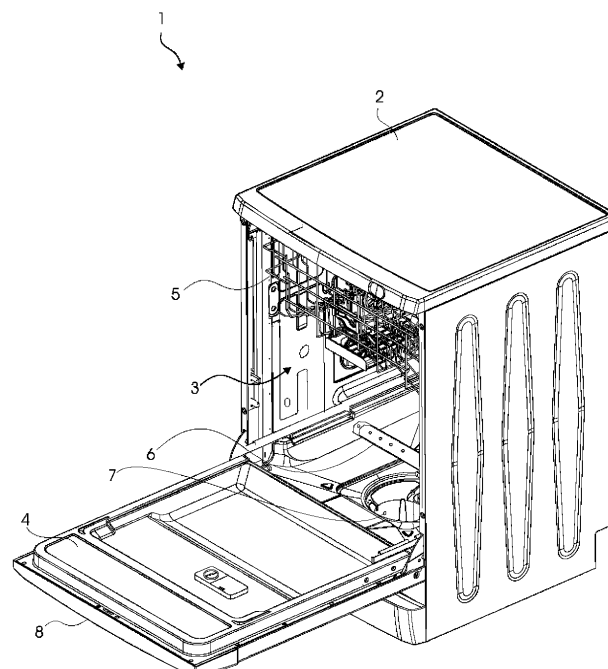
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(54) A DISHWASHER PROVIDING OPTIMIZATION

(57) The present invention relates to a dishwasher (1) comprising a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; a door (4) which isolates the washing tub (3) from the outer environment; at least one rack (5) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying mem-

ber (6) which sprays water onto the rack (5); a dirt measurement member (7) which is disposed in the washing tub (3); and a control unit (8) which controls the washing programs, wherein the control unit (8) which enables the washing parameters to be adjusted as per user preference depending on the data received from the dirt measurement member (7).

Figure 1



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Description

[0001] The present invention relates to a dishwasher which provides optimization.

[0002] In dishwashers, the cleaning process is carried out by delivering hot water and detergent onto the kitchen items. The water heated by the heater is delivered onto the dishes placed onto the rack. The detergent and the hot water provide the removal of the dirt particles from the dishes. Depending on the dirt level of the dishes, the user may choose different washing programs. As the degree of dirt increases, the amount of hot water used, and the temperature of the water and the washing time increase. Thus, it is aimed to take the kitchen items completely clean out of the dishwasher. The cleaning process varies according to the degree of dirt on the dishes. Water at lower temperatures is used for dishes with low dirt level, and shorter programs are preferred. Thus, savings in both water and energy are provided. However, the user may not always correctly determine the dirt level. When the washing process carried out is not suitable for the dirt level, the cleaning cannot be properly performed or water and energy consumption increases. In the state of the art, there are dishwashers which determine the washing program according to the dirt level. However, a program suitable for every dirt level cannot be selected and the cleaning process cannot be realized due to failure to correctly detect the dirt level. In case the user is not satisfied with the cleaning process, he/she may need to perform an additional washing process.

[0003] In the state of the art United States of America Patent No. US10194781, a dishwasher is disclosed, which improves the step determined by the user.

[0004] The aim of the present invention is the realization of a dishwasher with improved washing efficiency.

[0005] The dishwasher realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a body; a washing tub which is disposed in the body; a door which is provided on the body; at least one rack which is disposed in the washing tub; at least one spraying member which sprays water onto the rack; a dirt measurement member which is disposed in the washing tub; and a control unit which controls the washing programs. By means of the water delivered onto the kitchen items through the spraying members, the cleaning process is performed. The dirt level of the dishes is measured by means of the dirt measurement member while the washing programs are controlled by the control unit.

[0006] The dishwasher of the present invention comprises a control unit which enables the washing program to be optimized with the user feedback depending on the data received from the dirt measurement member. The parameters of the washing program corresponding to the dirt level are predefined on the control unit. Standard programs are used as per user preference or the user can change the program parameters.

[0007] In an embodiment of the present invention, the

dishwasher comprises the control unit which optimizes the program values depending on the feedback received from the user at the end of the washing program. After the dirt level is determined, the washing program is optimized depending on the user feedback. Thus, the next washing process for the same dirt level is performed with the optimized values.

[0008] In an embodiment of the present invention, the dishwasher comprises a control button which enables the user to control the optimization of the program values. When the control button is actuated by the user, the washing parameters are optimized.

[0009] In an embodiment of the present invention, the dishwasher comprises the control unit which provides the selection of the washing program suitable for the dirt amount determined by means of the dirt measurement member at the start of the washing program. Thus, the program which best corresponds to the dirt level and which is defined on the dishwasher is used.

[0010] In an embodiment of the present invention, the dishwasher comprises the control unit which controls the prerecorded energy and water consumption levels while determining the washing program suitable for the dirt amount. While the washing programs are optimized by means of the control unit, the energy and water consumption is also evaluated.

[0011] In an embodiment of the present invention, the dishwasher comprises a dirt measurement member which is a dirt sensor. The dirt sensor measures the dirt level.

[0012] In an embodiment of the present invention, the dishwasher comprises a dirt measurement member which is a turbidity sensor. The dirt level is determined by measuring the turbidity of the washing water.

[0013] In an embodiment of the present invention, the dishwasher comprises a dirt measurement member which is a conductivity sensor. The dirt level is measured depending on the conductivity level of the washing water.

[0014] By means of the present invention, a dishwasher is realized, comprising a control unit which enables the washing program to be determined depending on the dirt level and optimizes the washing program under the control of the user.

[0015] A dishwasher realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the perspective view of the dishwasher.

Figure 2 - is the front schematic view of the dishwasher.

[0016] The elements illustrated in the figures are numbered as follows:

1. Dishwasher
2. Body
3. Washing tub
4. Door

- 5. Rack
- 6. Spraying member
- 7. Dirt measurement member
- 8. Control unit
- 9. Control button

[0017] The dishwasher (1) comprises a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; a door (4) which isolates the washing tub (3) from the outer environment; at least one rack (5) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying member (6) which sprays water onto the rack (5); a dirt measurement member (7) which is disposed in the washing tub (3); and a control unit (8) which controls the washing programs. By means of the spraying member (6), water is delivered onto the dishes placed into the washing tub (3). Thus, the dishes are enabled to be cleaned. The dirt particles on the dishes mix into the water. By means of the dirt measurement member (7), the dirt level of the dishes can be measured.

[0018] The dishwasher (1) of the present invention comprises the control unit (8) which enables the washing parameters to be adjusted as per user preference depending on the data received from the dirt measurement member (7). The control unit (8) selects the program suitable for the dirt level determined by the dirt measurement member (7), wherein said program is predefined on the control unit (8) by the manufacturer. The program used is submitted for the approval of the user and adjusted depending on the approval of the user.

[0019] In an embodiment of the present invention, the dishwasher (1) comprises the control unit (8) which enables the washing parameters used depending on the user feedback at the end of the washing process to be recorded as preferred parameters. The settings for the washing program corresponding to the dirt level are changed depending on the user approval at the end of the washing process. As per user preference, the water temperature and the washing time are increased or decreased.

[0020] In an embodiment of the present invention, the dishwasher (1) comprises a control button (9) which enables the user to control the modification of the program values. By means of the control button (9), the user is enabled to approve the readjustment of the washing program or change the parameters.

[0021] In an embodiment of the present invention, the dishwasher (1) comprises the control unit (8) which performs the automatic program selection suitable for the dirt value measured at the start of the washing process. The control unit (8) makes automatic selection from among the dirt levels and programs predefined on the control unit (8). In case the user does not approve optimization, the control unit (8) selects the same program depending on the dirt level at each washing process and starts the washing program with the same program parameters.

[0022] In an embodiment of the present invention, the dishwasher (1) comprises the control unit (8) which adjusts the program parameters depending on the energy consumption and water temperature while determining the washing program suitable for the dirt value. On the control unit (8), the manufacturer predefines the energy and water consumption values corresponding to the parameters used. It is aimed to use the lowest energy and water consumption levels while optimizing the washing program.

[0023] In an embodiment of the present invention, the dishwasher comprises the dirt measurement member (7) which is a dirt sensor. A dirt sensor is used as the dirt measurement member (7), which determines the dirt level.

[0024] In an embodiment of the present invention, the dishwasher (1) comprises the dirt measurement member (7) which is a turbidity sensor. The turbidity sensor is used as the dirt measurement member (7). The dirt level is determined depending on the turbidity level of the water.

[0025] In an embodiment of the present invention, the dishwasher (1) comprises the dirt measurement member (7) which is a conductivity sensor. The dirt level is determined according to the conductivity level of the water measured by the conductivity sensor.

[0026] By means of the present invention, a dishwasher (1) is realized, comprising a control unit (8) which enables the washing program to be selected depending on the dirt level and optimizes the washing program under the control of the user. Thus, the washing performance is improved while consuming less water and energy.

Claims

1. A dishwasher (1) comprising a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; a door (4) which isolates the washing tub (3) from the outer environment; at least one rack (5) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying member (6) which sprays water onto the rack (5); a dirt measurement member (7) which is disposed in the washing tub (3); and a control unit (8) which controls the washing programs, **characterized by** the control unit (8) which enables the washing parameters to be adjusted as per user preference depending on the data received from the dirt measurement member (7).
2. A dishwasher (1), comprising the control unit (8) which enables the washing parameters used depending on the user feedback at the end of the washing process to be recorded as preferred parameters.
3. A dishwasher (1) as in Claim 1 or 2, **characterized by** a control button (9) which enables the user to

control the modification of the program values.

4. A dishwasher (1) as in any one of the above claims,
characterized by the control unit (8) which performs
the automatic program selection suitable for the dirt
value measured at the start of the washing process. 5
5. A dishwasher (1) as in Claim 4, **characterized by**
the control unit (8) which adjusts the program pa-
rameters depending on the energy consumption and 10
water temperature while determining the washing
program suitable for the dirt value.
6. A dishwasher (1) as in any one of the above claims,
characterized by the dirt measurement member (7) 15
which is a dirt sensor.
7. A dishwasher (1) as in any one of the Claims 1 to 5,
characterized by the dirt measurement member (7)
which is a turbidity sensor. 20
8. A dishwasher (1) as in any one of the Claims 1 to 5,
characterized by the dirt measurement member (7)
which is a conductivity sensor. 25

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Figure 1

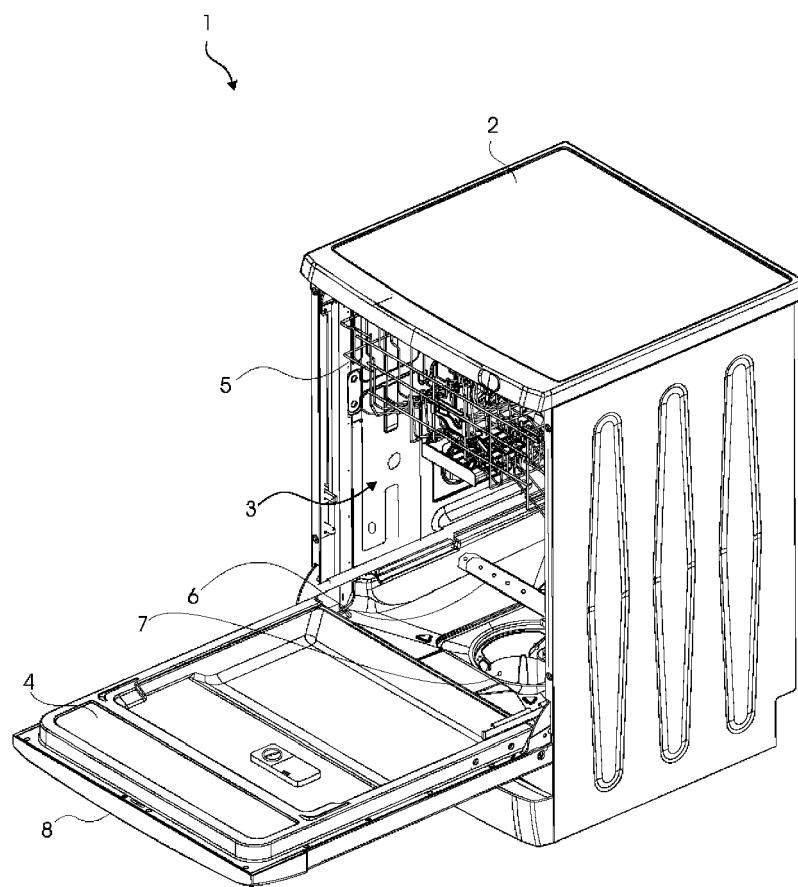
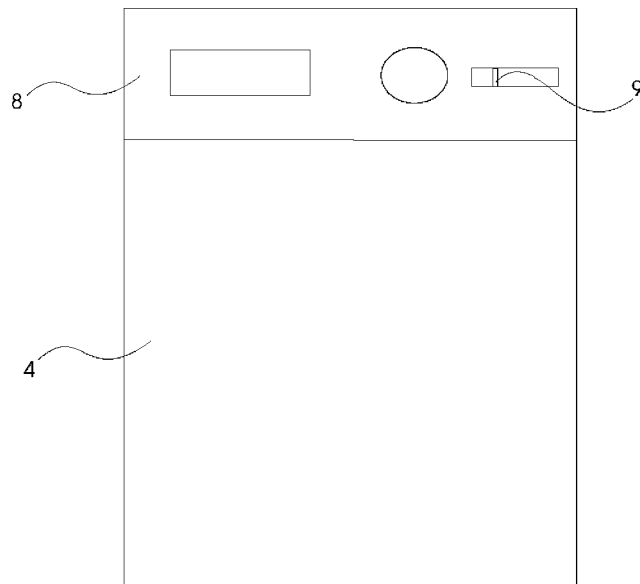


Figure 2





EUROPEAN SEARCH REPORT

Application Number

EP 21 21 0151

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EPO FORM 1503 03.82 (P04C01)

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A	* paragraph [0002] * * paragraph [0030] - paragraph [0048]; claims 1-10; figures *	7, 8	
X	DE 10 2016 208740 A1 (BSH HAUSGERAETE GMBH) 23 November 2017 (2017-11-23)	1, 3-7	
Y	* paragraph [0019] *	8	
A	* paragraph [0023] - paragraph [0024] * * paragraph [0056] - paragraph [0080]; figures *	2	
Y	EP 2 308 363 B1 (ELECTROLUX HOME PROD CORP [BE]) 27 June 2012 (2012-06-27)	8	TECHNICAL FIELDS SEARCHED (IPC)
A	* paragraph [0015]; figures * * abstract * * paragraph [0014] - paragraph [0022] *	1-7	
The present search report has been drawn up for all claims			A47L
Place of search		Date of completion of the search	Examiner
Munich		5 May 2022	Sangiorghi, Massimo
CATEGORY OF CITED DOCUMENTS		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	
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			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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REFERENCES CITED IN THE DESCRIPTION

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