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(54) **A DISHWASHER**

GESCHIRRSPÜLMASCHINE

LAVE-VAISSELLE

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Description

[0001] The present invention relates to a dishwasher wherein energy is saved by adapting the washing programs.

[0002] Since the anticipation of performing the washing process without the need for user adjustments has increased in dishwashers, generally only one button is used to start the washing process and sensors that detect the dirtiness and turbidity etc. are utilized. In dishwashers, all the washing cycles are implemented at temperatures and durations adjusted according to predetermined data or information received from the sensors as a start button is pressed on by the user. The detergent made of chemical cleaning agents is put in the detergent dispenser and during washing the lid of the detergent dispenser is opened allowing the detergent to be mixed into the washing water.

[0003] When the amount of dishes added daily into the dishwasher is smell, the user will not operate the machine and prefer to wait until the amount of dishes to be washed entirely fills up the dishwasher. If the dishes are kept waiting in the dishwasher for a long time, an odor is generated and when the closed door of the dishwasher is opened to put in the daily dishes, this odor is dispersed, annoyingly into the environment. Sometimes the users prewash the dishes manually depending on the dirt level and emplace in the machine after removing the hard-to-clean dirt.

[0004] Furthermore, while salt is added into the salt container or rinse agent is added before the washing process is started, these substances may spill into the machine and must be cleaned before the washing is started so that washing performance is not adversely affected. From time to time a short and economic pre-wash program has to be employed for cleaning the hard-to-remove dirt or the spilled washing agents.

[0005] In the United States of America patent application no. US2005133064, in a dishwashing machine, when using a combination rinse aid like 3 in 1 wherein the rinsing chemical is dissolved before rinsing or can not dissolve until the rinsing is over, or when the chemical rinsing aid is not added, the rinsing program is adapted by revising the run time and temperature. The pH sensor detects whether or not the rinsing chemical is present in the rinsing solution.

[0006] In the dishwasher explained by the European patent document no. EP1362547 and in prior art document DE 102 38 303, in order to detect the presence and amount of any one of the chemicals forming the 3-in-1 multi-purpose preparation, the pH, turbidity, foam, concentration values of the wash water wherein the tablet is dissolved are measured by chemical, acoustical, pneumatic etc. sensors and the parameters of one or more washing programs are altered according to the measurement-comparison results and the regeneration process is revised.

[0007] The aim of the present invention is the realization of a dishwasher wherein a short washing program is implemented when desired, without using a different button.

[0008] The dishwasher realized in order to attain the aim of the present invention is explicated in the claims.

[0009] In the embodiment of the present invention, when the start button is pressed, a sensor detects whether or not detergent is present in the detergent dispenser and in case detergent is not present, a signal is sent to the control unit, providing to employ only a short washing program, for example the pre-wash program stored in the memory instead of implementing all the washing programs. After the implementation of the short washing program, the washing process is ended without going on to the other washing programs like the main wash and rinsing.

[0010] In another embodiment of the present invention, a switch is used that detects whether the detergent lid is closed or not. When the detergent lid is not closed by the user, the switch sends a signal to the control unit and the control unit evaluates this signal as "detergent is not present", providing only the short washing program to be employed when the start button is pressed on. A simple switch is used as the sensor that sends an on-off signal when the lid of the detergent dispenser is closed and opened and an inexpensive solution is provided.

[0011] In the dishwasher of the present invention, in order to implement the short washing program, the user has to merely leave the lid of the detergent dispenser open, close the door and press on the start button.

[0012] In another embodiment of the present invention, the user is warned that the lid of the detergent dispenser is left open by the control unit with a sound or light.

[0013] The dishwasher realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0014] Figure 1 - is the schematic view of a dishwasher.

[0015] The elements illustrated in the figures are numbered as follows:

1. Dishwasher
2. Start button
3. Tub
4. Door
5. Detergent dispenser
6. Detergent dispenser lid
7. Control unit
8. Sensor

[0016] The dishwasher (1) comprises a start button (2) providing to implement the washing programs with cycles of pre-wash, main wash, rinsing and having different parameters of temperature and duration, selected by the user or determined automatically, a tub (3) wherein the items to be washed are loaded, a door (4) providing access into the tub (3), a detergent dispenser (5) wherein the cleaning agent in liquid, gel, tablet or powder form is put for dispensing into the tub (3) and a control unit (7)

that regulates the washing programs.

[0017] In the embodiment of the present invention, the dishwasher (1) comprises a sensor (8) that detects whether or not detergent is put in the detergent dispenser (5) and when the start button (2) is pressed if detergent is detected not to be present in the detergent dispenser (5) by the sensor (8), the control unit (7) provides the implementation of a short washing program, for example the pre-wash program stored in the memory and ends the washing program without starting the other washing cycles (main wash, rinsing, etc.).

[0018] In another embodiment of the present invention, the dishwasher (1) comprises a detergent dispenser lid (6) that opens allowing the water to reach the detergent during washing and delivers the detergent mixed with water to the tub (3) and a sensor (8) that functions as a switch, detecting whether or not the detergent dispenser lid (6) is closed by the user, sending different signals to the control unit (7) in cases of open and closed positions of the detergent dispenser lid (6), and if the detergent dispenser lid (6) is detected to be left open when the start button (2) is pressed, provides a short washing program to be implemented by means of the control unit (7).

[0019] In this embodiment, if the start button (2) is pressed on by the user without closing the detergent dispenser lid (6), the sensor (8) sends a signal to the control unit (7), and the signal informing that the detergent dispenser lid (6) is not closed is evaluated as detergent is not present by the control unit (7) and provides the implementation of only a short washing program. A simple and inexpensive solution is provided by utilizing a switch as the sensor (8) that sends an on-off signal when the detergent dispenser lid (6) is opened or closed.

[0020] In another embodiment of the present invention, the control unit (7) warns the user by a sound and/or light about the detergent dispenser lid (6) being left open.

[0021] In the dishwasher (1) of the present invention, a short program is implemented, not the washing program including all the wash cycles, by pressing on the start button (2) as in normal washing, without the need for pressing any other buttons or making adjustments or changes of program, when a small quantity of dishes are added daily or for cleaning the spilled salt and rinsing aid from the tub (3) or the door (4) while filling into the dishwasher (1). In order to implement this program, the user only has to leave the detergent dispenser lid (6) open, close the door (4) and press on the start button (2). The sensor (8) sends a signal to the control unit (7) detecting that there isn't any detergent in the detergent dispenser (5) or that the detergent dispenser lid (6) is not closed and the short washing program is run. Since all the washing programs are not implemented for a short duration cleaning, energy is saved.

Claims

1. A method for controlling a dishwasher (1), the dishwasher (1) comprising:

a start button (2) providing to implement the washing programs selected by the user or determined automatically, having cycles of prewash, main wash, rinsing and different parameters like temperature and duration,
a tub (3) wherein the items to be washed are loaded,
a detergent dispenser (5) wherein the detergent in liquid, gel, tablet or powder form is put for being dispensing into the tub (3),
a sensor (8) that detects whether or not detergent is put in the detergent dispenser (5) and
a control unit (7), **characterized by** the steps

- pressing the start button (2),
- detecting whether or not detergent is present in the detergent dispenser (5) by means of the sensor (8), and
- providing to implement a short washing program, and ending the washing program without starting the other washing cycles by means of the control unit (7) in case detergent is not present in the detergent dispenser (5).

2. A method for controlling a dishwasher (1) as in Claim 1 with the dishwasher further comprising a detergent dispenser lid (6) that opens during washing allowing the water to reach the detergent and delivers the detergent mixed in water to the tub (3) and a sensor (8) that functions as a switch, wherein the method comprises detecting whether or not the detergent dispenser lid (6) is closed by the user and sending different signals to the control unit (7) in cases of open and closed positions of the detergent dispenser lid (6) by means of the sensor (8), and providing a short washing program to be implemented by means of the control unit (7) if the detergent dispenser lid (6) is detected to be left open when the start button (2) is pressed.

3. A method for controlling a dishwasher (1) as in Claim 1 or 2, **characterized by** warning the user with a sound and/or light about the detergent dispenser lid (6) being left open by the control unit (7).

Patentansprüche

1. Verfahren zum Steuern eines Geschirrspülers (1), wobei der Geschirrspüler (1) Folgendes umfasst:

eine Starttaste (2), die das Implementieren der von dem Benutzer ausgewählten oder automatisch bestimmten Spülprogramme ermöglicht, die Zyklen des Vorspülens, Hauptspülens, Klar-

spülens und verschiedene Parameter wie Temperatur und Dauer aufweisen,
einen Spülbehälter (3), in den zu waschende Gegenstände geladen werden, einen Spülmitteldosierer (5), in dem das Spülmittel in flüssiger, gelförmiger, tablettenförmiger oder Pulverform gegeben wird, um in den Spülbehälter (3) abgegeben zu werden,
einen Sensor (8), der erkennt, ob Spülmittel in den Spülmitteldosierer (5) gegeben wurde, und eine Steuereinheit (7), **gekennzeichnet durch** folgende Schritte:

- Drücken der Starttaste (2),
- Erkennen mithilfe des Sensors (8), ob Spülmittel im Spülmitteldosierer (5) vorhanden ist, und
- Ermöglichen des Implementierens eines Kurzspülprogramms und Beenden des Spülprogramms, ohne die anderen Spülzyklen zu starten, mithilfe der Steuereinheit (7) für den Fall, dass kein Spülmittel im Spülmitteldosierer (5) vorhanden ist.

2. Verfahren zum Steuern eines Geschirrspülers (1) nach Anspruch 1, wobei der Geschirrspüler (1) einen Spülmitteldosiererdeckel (6), der sich während des Spülens öffnen, so dass Wasser das Spülmittel erreichen kann und das Spülmittel gemischt mit Wasser zum Spülbehälter (3) leitet, und einen Sensor (8) umfasst, der als ein Schalter funktioniert, wobei das Verfahren Folgendes umfasst:

Erkennen, ob der Spülmitteldosiererdeckel (6) vom Benutzer geschlossen wurde, und Senden unterschiedlicher Signale an die Steuereinheit (7) je nach geöffneter und geschlossener Position des Spülmitteldosiererdeckels (6) mithilfe des Sensors (8), und Ermöglichen des Implementierens eines Kurzspülprogramms mithilfe der Steuereinheit (7), wenn erkannt wird, dass der Spülmitteldosiererdeckels (6) offen gelassen wurde, wenn die Starttaste (2) gedrückt wird.

3. Verfahren zum Steuern eines Geschirrspülers (1) nach Anspruch 1 oder 2, **gekennzeichnet durch** Warnen des Benutzers mit einem Ton und/oder Licht darüber, dass der Spülmitteldosiererdeckels (6) offen gelassen wurde, mittels der Steuereinheit (7).

Revendications

1. Une méthode pour commander un lave-vaisselle (1), le lave-vaisselle (1) comprenant:

un bouton de démarrage (2) permettant l'application des programmes de lavage sélectionnés par l'utilisateur ou automatiquement déterminés, comportant des cycles de pré-lavage, lavage principal, rinçage et des paramètres différents tels que la température et la durée,
une cuve (3) dans laquelle les objets à laver sont chargés,
un distributeur de détergent (5) dans lequel le détergent sous forme de gel, tablette ou poudre est mis pour être distribué dans la cuve (3),
un capteur (8) qui détecte si ou non le détergent est mis dans le distributeur de détergent (5) et une unité de commande (7), **caractérisé par** les étapes de

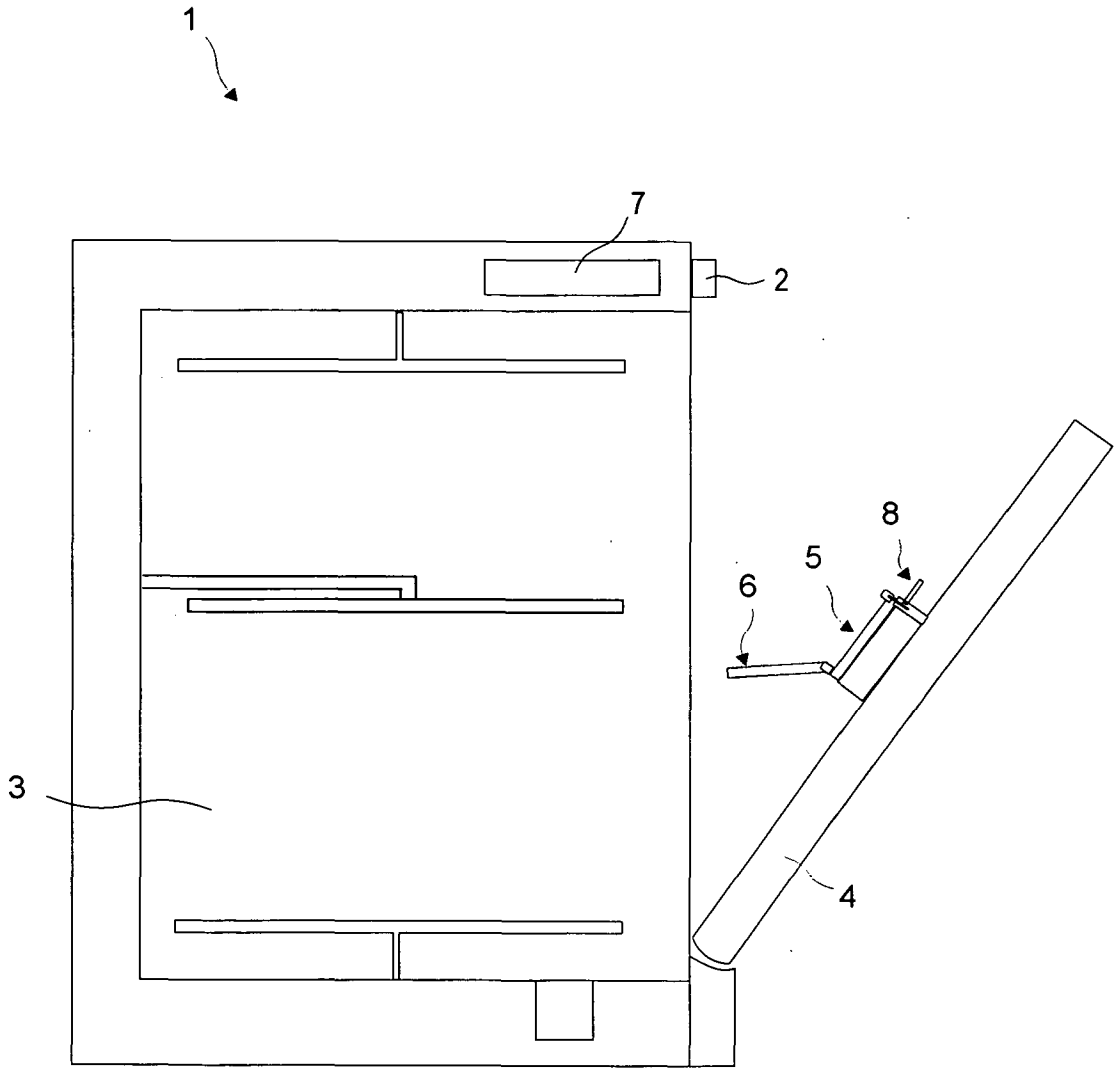
- appuyer sur le bouton de démarrage (2),
- détecter si ou non le détergent est présent dans le distributeur de détergent (5) au moyen du capteur (8), et
- permettre l'application d'un programme court de lavage, et terminer le programme de lavage sans commencer les autres cycles de lavage au moyen de l'unité de commande (7) au cas où le détergent n'est pas présent dans le distributeur de détergent (5).

2. Une méthode pour commander un lave-vaisselle (1) selon la Revendication 1, le lave-vaisselle (1) en outre comprenant un couvercle du distributeur de détergent (6) qui s'ouvre pendant le lavage en permettant à l'eau d'atteindre le détergent et qui délivre le détergent mélangé dans l'eau à la cuve (3) et un capteur (8) qui fonctionne comme un commutateur, où la méthode comprend les étapes de détecter si ou non le couvercle du distributeur de détergent (6) est fermé par l'utilisateur et d'envoyer des signaux différents à l'unité de commande (7) au moyen du capteur (8) en cas de positions ouvertes et fermées du couvercle du distributeur de détergent (6), et de permettre l'application d'un programme court de lavage par l'unité de commande (7) si le couvercle du distributeur de détergent (6) est détecté comme ouvert lorsque le bouton de démarrage (2) est appuyé.

3. Une méthode pour commander un lave-vaisselle (1) selon la Revendication 1 ou 2, **caractérisé par** avertir l'utilisateur par audio et/ou lumière par l'unité de commande (7) que le couvercle du distributeur de détergent (6) est ouvert.

[Fig.]

Figure 1



REFERENCES CITED IN THE DESCRIPTION

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