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(54) A WASHING MACHINE COMPRISING A WASHING AGENT DISPENSER

WASCHMASCHINE MIT WASCHMITTELFACH

LAVE-LINGE COMPORTANT UN DISTRIBUTEUR DE PRODUIT LESSIVIEL

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Description

[0001] The present invention relates to a washing machine comprising a washing agent dispenser.

[0002] In washing machines, for example in laundry washing machines and dishwashers, the washing agent required for the cleaning process is placed in a washing agent dispenser. The water received from the water inlet is directed inside the washing agent dispenser. The dissolved - melted washing agent passes into the washing tub together with the water. The washing agent dispensers generally comprise partitions wherein powder and/or liquid washing agents are placed and at least one water inlet for delivering water into the partition.

[0003] Mold is formed in the partition and the interior of the water inlet by time since the said partition and water inlet stays wet after the washing. Since mold is a form of life with spores it can survive in environmental conditions except at high temperatures. This condition is unfavorable in terms of hygiene. Moreover, these parts staying wet causes the washing agent used in the next washing to become damp and lumped thereby making it difficult to be delivered into the tub with the wash water.

[0004] On the other hand, when low temperature (30-40 C) washing programs are selected for the washing process, the detergent cannot be dissolved entirely since the solubility of the washing agent depends on the heat and the washing performance becomes worse as compared with the high temperature programs.

[0005] Another problem encountered as a result of the washing agent dispenser and the water inlet staying wet is that when the weather is very cold, the water in these sections freezes thereby adversely affecting the effectiveness of the washing machine.

[0006] In state of the art washing agent dispensers, resistant heaters are disposed inside the washing agent dispenser for heating the washing agent dispenser thereby eliminating the above cited problems.

[0007] In the state of the art Japanese patent application no JP3247394 a detergent container is explained which is heated by resistant wires disposed on its rear wall.

[0008] In the state of the art Japanese patent application no JP6190187, in a washing machine, a detergent storage part is explained which stores the washing agent and forwards it out by a coil mechanism driven to rotate by a motor. In this implementation, the coil used in the mechanism is allowed to function also as a heater by delivering electric current there through.

[0009] In these implementations known in the technique, the resistant heaters necessitate making an electrical connection to the washing agent dispenser. This condition makes the use of the washing agent dispenser difficult for the user in implementations wherein the dispenser is slid able and/or dismountable for loading and cleaning. On the other hand, the resistant heater disposed on a surface of the washing agent dispenser, for example the rear wall, heats the near vicinity effectively whereas the other parts of the washing agent dispenser are heated less and the desired dryness cannot be maintained.

[0010] The aim of the present invention is the realization of a washing machine comprising a washing agent dispenser whereof the hygienic and utilization features are improved.

[0011] The washing machine realized in order to attain the aim of the present invention is explicated in the attached claims.

[0012] The washing machine of the present invention comprises at least one conductive member situated on the walls of at least one of the compartments of the washing agent dispenser wherein the washing agent is put and at least one induction means, disposed in the housing wherein the washing agent dispenser is disposed, for heating the washing agent dispenser by inducting the conductive member. When current is delivered to the induction means, the conductive members are heated by being inducted and thus the inside of the compartment is dried and the microorganisms, if any, are exterminated. A physical connection is not present between the conductive members and the induction means. Accordingly, the washing agent dispenser is not prevented from being moved or dislodged for loading washing agents.

[0013] The washing machine comprises conductive members arranged around the water inlet for delivering water to the compartment. Thus, the problems of molding, freezing etc. are prevented in the section containing the water inlet.

[0014] In an embodiment of the present invention, the induction means is configured of wires and wound to surround the walls of the housing. Consequently, the entire washing agent dispenser can be heated with equal effectiveness.

[0015] In an embodiment of the present invention, the conductive member is placed into the mould during the production of the washing agent dispenser by plastic injection method etc. Thus, the washing agent dispenser is produced with the conductive members directly integrated on the compartment walls. Accordingly, an additional operation for mounting the conductive members on the compartment walls is not required.

[0016] The washing machine furthermore comprises a control unit for controlling the energizing of the induction means.

[0017] In an embodiment of the present invention, the energizing of the induction means is controlled by the user. In this embodiment, the washing machine comprises a selector that sends a command to the control unit that the user wants the induction means to be energized when actuated by the user. Consequently, the induction means is enabled to be operated at the time desired by the user and within the knowledge of the user.

[0018] In another embodiment of the present invention, the control unit automatically performs the energizing of the induction means at certain time intervals. For example, when a number of washing processes predetermined

by the producer are performed, the control unit energizes the induction means at the end of the washing process. Consequently, the washing agent dispenser is heated regularly and preserved in a hygienic condition.

[0019] In an embodiment of the present invention, the washing machine comprises an alerter. When energy is delivered to the induction means, the user is notified by the control unit activating the alerter.

[0020] In an embodiment of the present invention, the washing machine comprises at least one lock that prevents the washing agent dispenser from being opened or dislodged by the user. While energy is delivered to the induction means, the user is prevented from dislodging the heated washing agent dispenser by the control unit activating the lock.

[0021] The washing machine 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 a washing machine.
Figure 2 - is the schematic view of a washing agent dispenser in an embodiment of the present invention.
Figure 3 - is the schematic view of a washing machine in an embodiment of the present invention.
Figure 4 - is the schematic view of a washing machine in another embodiment of the present invention.
Figure 5 - is the perspective view of a washing agent dispenser in another embodiment of the present invention.

[0022] The elements illustrated in the figures are numbered as follows:

1. Washing machine
2. Tub
3. Washing agent dispenser
4. Compartment
5. Water inlet
6. Housing
7. Conductive member
8. Induction means
9. Control unit
10. Selector
11. Alerter
12. Lock

[0023] The washing machine (1) is used in cleaning items such as dishes, laundry etc. by washing with water.

[0024] The washing machine (1) of the present invention comprises:

- a tub (2) wherein the washing process is performed,
- a dismountable washing agent dispenser (3) having at least one compartment (4) wherein the washing agent to be delivered into the tub (2) is placed and
- a housing (6) wherein the washing agent dispenser (3) is disposed (Figure 1).

[0025] The washing machine (1) furthermore comprises:

- at least one conductive member (7) situated on the walls of the washing agent dispenser (3) and
- at least one induction means (8), arranged on the walls of the housing (6), for heating the washing agent dispenser (3) by inducting the conductive member (7) (Figure 3 and Figure 4).

[0026] The conductive member (7) is heated as a result of the electromagnetic induction by the energizing of the induction means (8). Thus, the washing agent dispenser (3) is also heated and the disadvantages occurring as a result of the washing agent dispenser (3) staying wet are prevented. On the other hand, since a physical connection is not required between the induction means (8) and the conductive member (7) for heating, a modification of the washing agent dispenser (3) is not necessary for the washing agent dispenser (3) to be made dismountable.

[0027] In an embodiment of the present invention, the conductive member (7) is arranged on the base of the washing agent dispenser (3) (Figure 2). Thus, all the compartments (4) can be heated effectively.

[0028] In an embodiment of the present invention, the washing agent dispenser (3) comprises more than one compartment (4).

[0029] In a version of this embodiment, a conductive member (7) is disposed on each of the walls separating the compartments (4) of the washing agent dispenser (3) (Figure 5). Accordingly, all of the compartments (4) can be heated effectively.

[0030] In another version of this embodiment, a conductive member (7) is disposed on the walls separating the compartments (4) of the washing agent dispenser (3) desired to be heated. Thus, only the required compartments (4) are heated.

[0031] The washing agent dispenser (3) comprises at least one water inlet (5) for delivering water into the compartment (4). In a different embodiment of the present invention, the washing machine (1) furthermore comprises conductive members (7) arranged around the water inlet (5). Thus, the problems of molding, freezing etc. are prevented in the section containing the water inlet (5).

[0032] In an embodiment of the present invention, the induction means (8) is laid on the walls of the housing (6) such that the washing agent dispenser (3) is helically surrounded (Figure 4). Consequently, every region of the washing agent dispenser (3) can be kept dry effectively by inducting the conductive members (7) disposed in the walls of the washing agent dispenser (3).

[0033] In an embodiment of the present invention, the conductive members (7) are placed inside the mould during the production of the washing agent dispenser (3) and thus at the end of production, a washing agent dispenser (3) with the conductive members (7) embedded

within the walls is acquired (Figure 2). Accordingly, the user does not have contact with the conductive members (7) while the washing agent dispenser (3) is being cleaned by taking out of the washing machine (1).

[0034] The washing machine (1) furthermore comprises a control unit (9) that controls the energizing of the induction means (8).

[0035] In an embodiment of the present invention, the washing machine (1) comprises a selector (10) which sends a command to the control unit (9) for energizing the induction means (8) when actuated by the user. When the selector (10) is actuated by the user, the conductive members (7) are heated and hence the washing agent dispenser (3) is dried by energizing the induction means (8).

[0036] In another embodiment of the present invention, the control unit (9) energizes the induction means (8) at the end of the washing process when a number of washing processes predetermined by the producer is performed. Accordingly, the washing agent dispenser (3) is heated at certain time intervals and the existing organisms like molds are exterminated as a result of the high temperature.

[0037] In an embodiment of the present invention, the washing machine (1) comprises at least one alerter (11) which is activated by the control unit (9) while energy is delivered to the induction means (8) and notifies the user that energy is being delivered to the induction means (8).

[0038] In an embodiment of the present invention, the washing machine (1) comprises at least one lock (12) which is activated by the control unit (9) while energy is delivered to the induction means (8) and that prevents the washing agent dispenser (3) from being opened or dislodged by the user. It is to be understood that the present invention is not limited by the embodiments disclosed above and a person skilled in the art can easily introduce different embodiments. These should be considered within the scope of the protection postulated by the claims of the present invention.

Claims

1. A washing machine (1) that is used in cleaning items such as dishes, laundry etc. by washing with water, comprising - a tub (2) wherein the washing process is performed, - a dismountable washing agent dispenser (3) having at least one compartment (4) wherein the washing agent to be delivered into the tub (2) is placed and - a housing (6) wherein the washing agent dispenser (3) is disposed and **characterized by** - at least one conductive member (7) situated on the walls of the washing agent dispenser (3) and - at least one induction means (8), arranged on the walls of the housing (6), for heating the washing agent dispenser (3) by inducting the conductive member (7).

2. A washing machine (1) as in Claim 1, **characterized by** a conductive member (7) arranged on the base of the washing agent dispenser (3).

3. A washing machine (1) as in Claims 1 or 2, **characterized by** a washing agent dispenser (3) comprising more than one compartment (4) and a conductive member (7) disposed on each of the walls separating the compartments (4) of the washing agent dispenser (3).

4. A washing machine (1) as in Claims 1 or 2, **characterized by** a washing agent dispenser (3) comprising more than one compartment (4) and a conductive member (7) disposed on the walls separating the compartments (4) of the washing agent dispenser (3) that are desired to be heated.

5. A washing machine (1) as in any one of the above Claims, **characterized by** a washing agent dispenser (3) comprising at least one water inlet (5) for delivering water into the compartment (4) and conductive members (7) arranged around the water inlet (5).

6. A washing machine (1) as in any one of the above Claims, **characterized by** induction means (8) laid on the walls of the housing (6) such that the washing agent dispenser (3) is helically surrounded.

7. A washing machine (1) as in any one of the above Claims, **characterized by** conductive members (7) embedded within the walls of the washing agent dispenser (3) by being placed inside the mould during the production of the washing agent dispenser (3).

8. A washing machine (1) as in any one of the above Claims, **characterized by** a control unit (9) that controls the energizing of the induction means (8).

9. A washing machine (1) as in Claim 8, **characterized by** a selector (10) which sends a command to the control unit (9) for energizing the induction means (8) when actuated by the user.

10. A washing machine (1) as in Claim 8 or 9, **characterized by** a control unit (9) that energizes the induction means (8) at the end of the washing process when a number of washing processes predetermined by the producer is performed.

11. A washing machine (1) as in any one of the Claims 8 to 10, **characterized by** at least one alerter (11) which is activated by the control unit (9) while energy is delivered to the induction means (8) and notifies the user that energy is being delivered to the induction means (8).

12. A washing machine (1) as in any one of the Claims

8 to 11, **characterized by** at least one lock (12) which is activated by the control unit (9) while energy is delivered to the induction means (8) and which prevents the washing agent dispenser (3) from being opened or dislodged by the user.

Patentansprüche

1. Wasch-/Spülmaschine (1), die zum Reinigen von Gegenständen wie Geschirr, Wäsche usw. durch Waschen bzw. Spülen mit Wasser benutzt wird, umfassend:

- ein Wasch-/Spülbehälter (2), in dem der Wasch-/Spülvorgang durchgeführt wird,
- ein abnehmbarer Wasch-/Spülmittelspender (3) mit wenigstens einem Fach (4), in das das Wasch-/Spülmittel gegeben wird, das dem Wasch-/Spülbehälter (2) zugeführt werden soll, ein Gehäuse (6), in dem der Wasch-/Spülmittelspender (3) angeordnet ist,
und **gekennzeichnet durch**
- wenigstens ein leitfähiges Element (7), das an den Wänden des Wasch-/Spülmittelspenders (3) angeordnet ist, und
- wenigstens ein Induktionsmittel (8), das an den Wänden des Gehäuses (6) angeordnet ist, um den Wasch-/Spülmittelspender (3) **durch** Induktion des leitfähigen Elements (7) zu erwärmen.

2. Wasch-/Spülmaschine (1) nach Anspruch 1, **gekennzeichnet durch** ein leitfähiges Element (7), das an der Basis des Wasch-/Spülmittelspenders (3) angeordnet ist.

3. Wasch-/Spülmittelmaschine (1) nach Anspruch 1 oder 2, **gekennzeichnet durch** einen Wasch-/Spülmittelspender (3), der mehrere Fächer (4) umfasst, und ein leitfähiges Element (7), das an den Wänden angeordnet ist, die die Fächer (4) des Wasch-/Spülmittelspenders (3) trennen.

4. Wasch-/Spülmittelmaschine (1) nach Anspruch 1 oder 2, **gekennzeichnet durch** einen Wasch-/Spülmittelspender (3), der mehrere Fächer (4) umfasst, und ein leitfähiges Element (7), das an den Wänden angeordnet ist, die die Fächer (4) des Wasch-/Spülmittelspenders (3) trennen, die erwärmt werden sollen.

5. Wasch-/Spülmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** einen Wasch-/Spülmittelspender (3), der wenigstens einen Wassereinlass (5) zum Zuführen von Wasser in das Fach (4) umfasst, und leitfähige Elemente (7), die um den Wassereinlass (5) herum angeordnet sind.

6. Wasch-/Spülmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** ein Induktionsmittel (8), das an den Wänden des Gehäuses (6) liegt, derart, dass der Wasch-/Spülmittelspender (3) spiralförmig umgeben wird.

7. Wasch-/Spülmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** leitfähige Elemente (7), die in die Wände des Wasch-/Spülmittelspenders (3) eingebettet sind, indem sie während der Herstellung des Wasch-/Spülmittelspenders (3) in der Form angeordnet werden.

8. Wasch-/Spülmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** eine Steuereinheit (9), die die Energieversorgung des Induktionsmittels (8) steuert.

9. Wasch-/Spülmaschine (1) nach Anspruch 8, **gekennzeichnet durch** einen Selektor (10), der einen zum Versorgen des Induktionsmittels (8) mit EnergieBefehl an die Steuereinheit (9) sendet, wenn er vom Benutzer betätigt wird.

10. Wasch-/Spülmaschine (1) nach Anspruch 8 oder 9, **gekennzeichnet durch** eine Steuereinheit (9), die das Induktionsmittel (8) am Ende des Wasch-/Spülvorgangs mit Energie versorgt, wenn eine Anzahl von Wasch-/Spülvorgängen, die vom Hersteller im Voraus festgelegt werden, durchgeführt wird.

11. Wasch-/Spülmaschine (1) nach einem der Ansprüche 8 bis 10, **gekennzeichnet durch** wenigstens einen Melder (11), der von der Steuereinheit (9) aktiviert wird, während das Induktionsmittel (8) mit Energie versorgt wird, und den Benutzer davon unterrichtet, dass das Induktionsmittel (8) mit Energie versorgt wird.

12. Wasch-/Spülmaschine (1) nach einem der Ansprüche 8 bis 11, **gekennzeichnet durch** wenigstens eine Verriegelung (12), die von der Steuereinheit (9) aktiviert wird, während das Induktionsmittel (8) mit Energie versorgt wird, und die verhindert, dass der Wasch-/Spülmittelspender (3) vom Benutzer geöffnet oder gelöst wird.

Revendications

1. Une machine à laver (1) qui est utilisée pour le nettoyage des objets tels que la vaisselle, le linge, etc. par le lavage à l'eau, comprenant

- une cuve (2) dans laquelle le processus de lavage s'effectue,

- un bac à produit (3) détachable qui présente au moins un compartiment (4) dans lequel le produit de lavage à délivrer à la cuve (2) est placé et
un logement (6) où le bac à produit (3) est disposé et
caractérisée par

- au moins un élément conducteur (7) situé sur les parois du bac à produit (3) et
- au moins un moyen d'induction (8) qui est situé sur les parois du logement (6) pour le chauffage du bac à produit (3) en induisant l'élément conducteur (7).

2. Une machine à laver (1) selon la Revendication 1, **caractérisée par** un élément conducteur (7) qui est disposé sur la base du bac à produit (3).

3. Une machine à laver (1) selon la Revendication 1 ou 2, **caractérisée par** un bac à produit (3) comprenant plus d'un compartiment (4) et un élément conducteur (7) qui est disposé sur chacune des parois séparant les compartiments (4) du bac à produit (3).

4. Une machine à laver (1) selon la Revendication 1 ou 2, **caractérisée par** un bac à produit (3) comprenant plus d'un compartiment (4) et un élément conducteur (7) qui est disposé sur les parois séparant les compartiments (4) du bac à produit (3) que l'on souhaite chauffer.

5. Une machine à laver (1) selon l'une quelconque des revendications précédentes, **caractérisée par** un bac à produit (3) comprenant au moins une entrée d'eau (5) pour livrer l'eau dans le compartiment (4) et des éléments conducteurs (7) disposés autour de l'entrée d'eau (5).

6. Une machine à laver (1) selon l'une quelconque des revendications précédentes, **caractérisée par** un moyen d'induction (8) arrangé sur les parois du logement (6) de telle sorte que le bac à produit (3) est entouré de manière hélicoïdale.

7. Une machine à laver (1) selon l'une quelconque des revendications précédentes, **caractérisée par** des éléments conducteurs (7) qui sont implantés dans les parois du bac à produit (3) en étant placés dans le moule pendant la fabrication du bac à produit (3).

8. Une machine à laver (1) selon l'une quelconque des revendications précédentes, **caractérisée par** une unité de commande (9) qui contrôle l'activation du moyen d'induction (8).

9. Une machine à laver (1) selon la Revendication 8, **caractérisée par** un sélecteur (10) qui envoie une commande à l'unité de commande (9) pour exciter le moyen d'induction (8) lors qu'il est actionné par l'utilisateur.

10. Une machine à laver (1) selon la Revendication 8 ou 9, **caractérisée par** une unité de commande (9) qui excite le moyen d'induction (8) à la fin du processus de lavage lorsqu'un certain nombre de processus de lavage prédéterminé par le fabricant est effectué.

11. Une machine à laver (1) selon l'une quelconque des revendications de 8 à 10, **caractérisée par** au moins un avertisseur (11) qui est actionné par l'unité de commande (9) tandis que l'énergie est délivrée au moyen d'induction (8) et informe l'utilisateur que l'énergie est en train d'être délivrée au moyen d'induction (8).

12. Une machine à laver (1) selon l'une quelconque des revendications de 8 à 11, **caractérisée par** au moins un verrou (12) qui est actionné par l'unité de commande (9) tandis que l'énergie est délivrée au moyen d'induction (8) et qui empêche le bac à produit (3) d'être ouvert ou délogé par l'utilisateur.

Figure 1

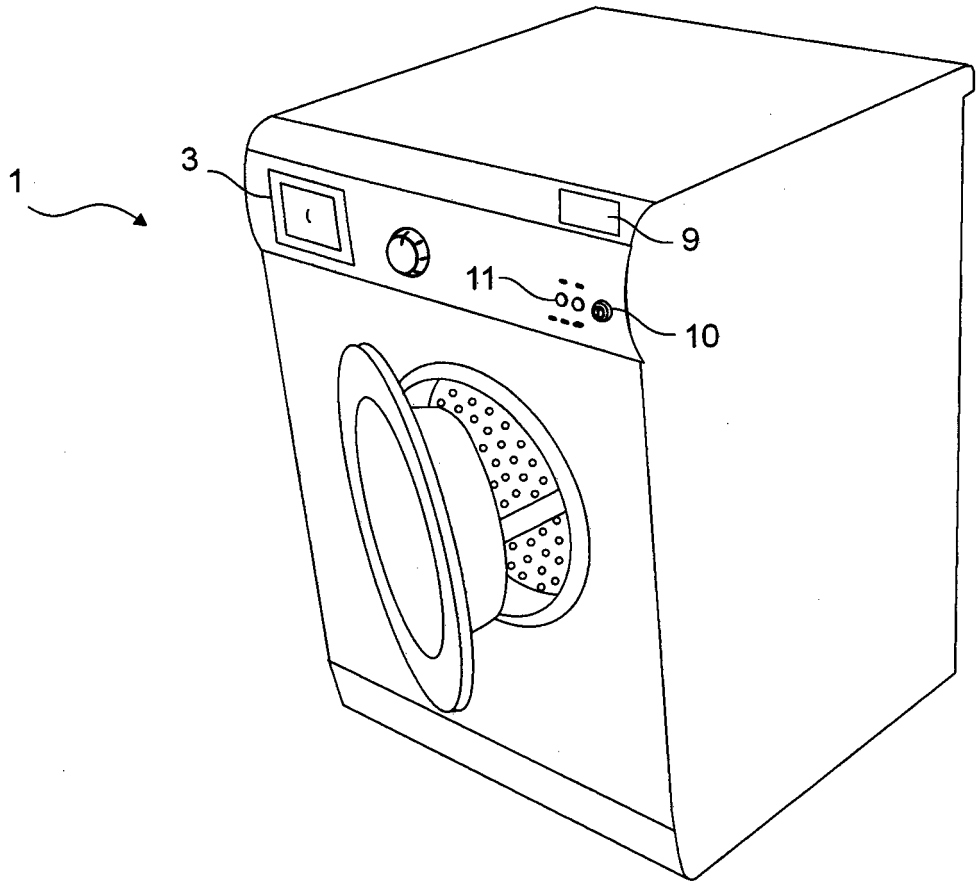


Figure 2

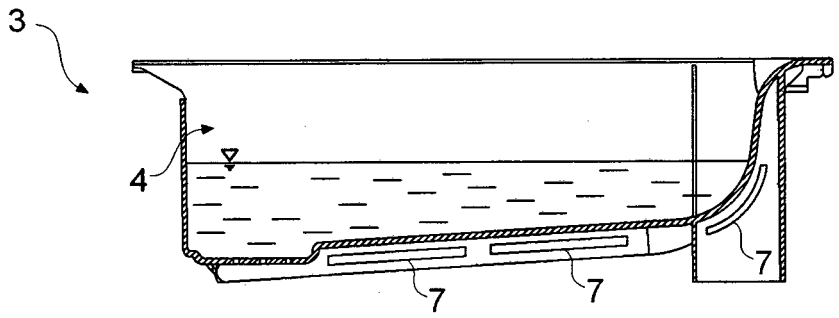


Figure 3

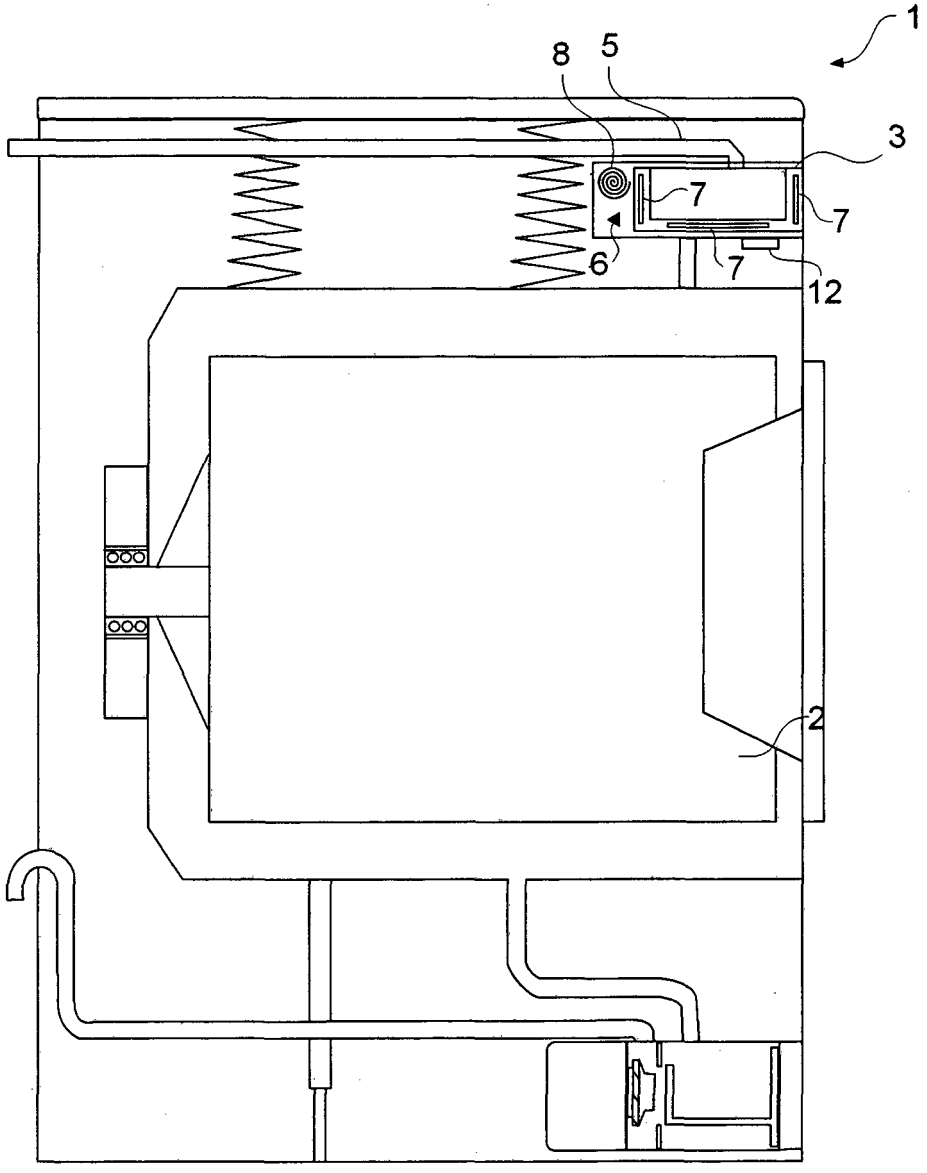


Figure 4

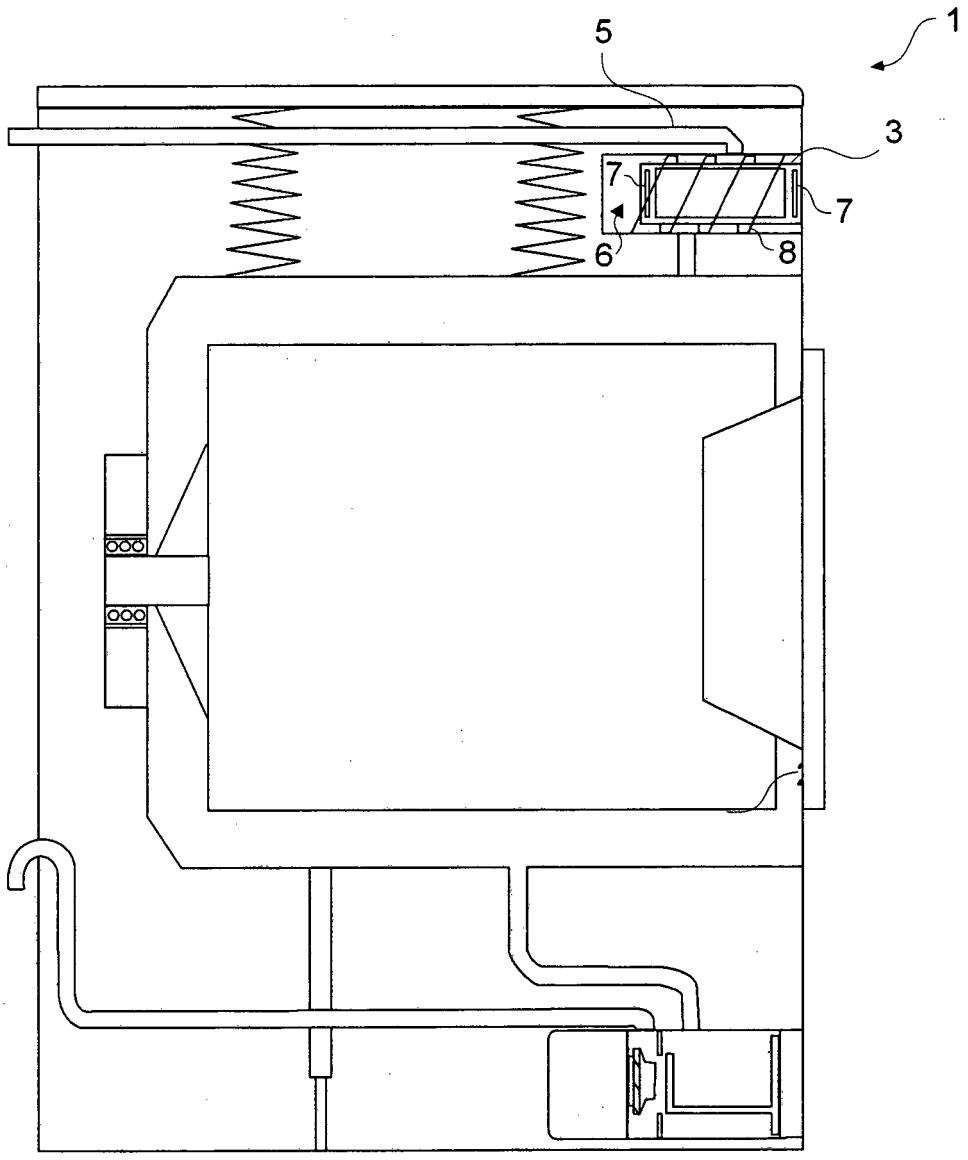
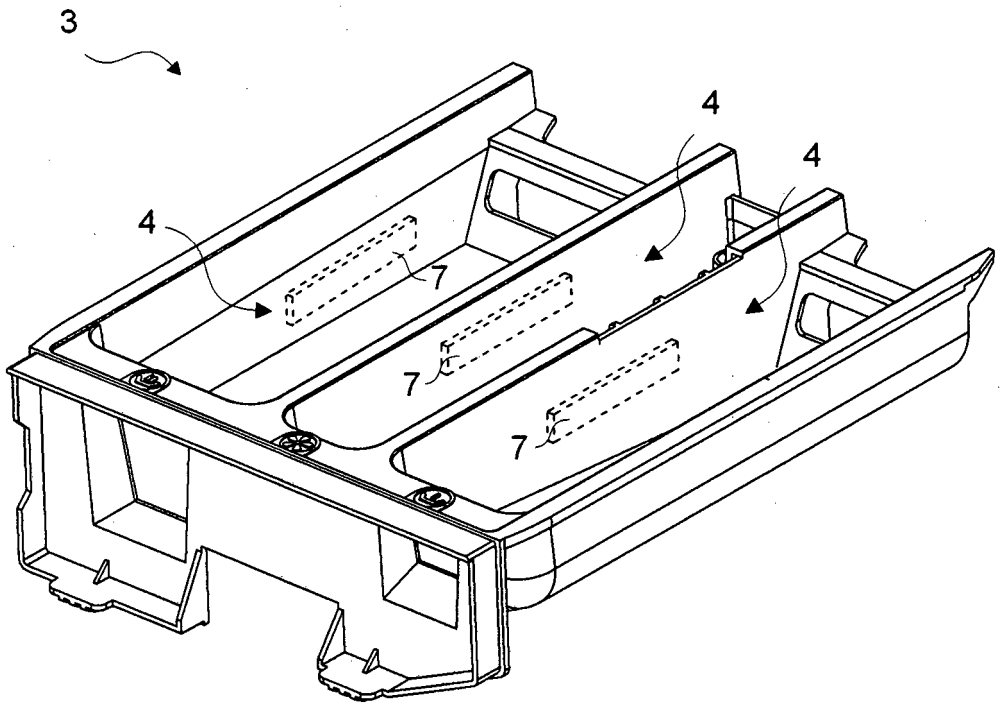


Figure 5



REFERENCES CITED IN THE DESCRIPTION

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