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Speichersystem

Système de stockage

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Description**Field of Invention**

[0001] The present invention relates to a storage system used in washing devices.

Prior Art

[0002] In washing devices such as laundry washers or dishwashers, washed items are rinsed following a washing process. The contamination of rinse liquid (e.g. water) is generally low. Therefore, the rinse water (particularly the final rinse water) is collected in a reservoir to save water and is used in the next washing process as the first wash water (e.g. to loosen the dirt of the items to be washed). However, bacterial growth can take place in water over time as the water collected in the reservoir is kept until the next washing process. Bacterial growth, in turn, may cause unpleasant odor to form and get into the interior of the washing device. In the prior art, various embodiments have been made to prevent this undesired odor. In the embodiments of the prior art, water collected in the washing device is disinfected using chemical products or electrical processes. In these embodiments, however, the disinfection process of stored water is costly.

[0003] In the prior art document EP2524642A1 a dishwasher with a device for recycling the rinse water used therein is disclosed. Said dishwasher comprises a wash tank with a collecting sump below, a pump that draws the water from said collecting sump and sends it to a storage reservoir which comprises two separate valved passages for the inflow and outflow of the recycled water, an internal partition dividing the reservoir into two portions each of which is provided with one of said valved passages and a connection to the wash tank that acts as vent and overflow port. Initially, the rinse water is loaded to one of said portions after the intermediate washing phase and then at the end of the final rinse the rinse water is loaded to the other portion of the storage reservoir. The water collected at the storage container is used at the beginning of the prewash cycle. Hence the time and amount of water used in the prewash phase is increased without using extra water. But as time passes the water collected in the storage container may cause odor to form inside the container which would eventually penetrate into the washing tank since there is not any obstacle provided on said connection portion of the dishwasher.

[0004] In the patent document EP2283762A2 according to the prior art is disclosed a household appliance wherein wash water is reused. In said household appliance, wash water is collected in a container and is used in a further washing process. According to that document, wash water is passed through an odor trap before it is supplied to the reservoir such that dirt particles in water are removed. Even when the water cleaned from dirt particles is left standing, relatively less odor formation takes place as compared to untreated water. However, since

water collected in the container is only physically cleaned in the system disclosed in that document, unpleasant odors do occur anyway to some extent and reach the interior of the washing device.

Brief Description of Invention

[0005] The storage system developed according to the present invention is suitable for use in a washing device provided with at least one body; at least one interior compartment, which is disposed in the body, into which items to be washed are placed, and in which wash and rinse cycles are performed; and at least one base wherein wash liquid present in the interior compartment is collected. The storage system comprises at least one container to which wash liquid collected at the base is transferred; at least one transfer line by which the excess of wash liquid transferred to the container is transferred to said interior compartment once the container is filled; at least one opening by which the transfer line is opened to the interior compartment; at least one pool disposed in a part of the transfer line which opens to the container; and at least one channel extending from the transfer line towards the pool wherein water left in the pool forms a water trap between the container and the transfer line, that prevents air flow from the container to the transfer line. By virtue of the storage system developed according to the present invention, water used in a wash cycle (e.g. the final wash cycle) of the washing device wherein the storage system is employed is stored and used in a further washing process. Additionally, unpleasant odor formed in the container is prevented from getting into the interior compartment by means of the pool and the channel structure disposed in the storage system.

Object of Invention

[0006] The object of the present invention is to develop a storage system for storing and reusing wash liquids in washing devices.

[0007] Another object of the present invention is to develop a storage system by which the transfer of unpleasant odor is prevented to the interior compartment of the washing device making use of the storage system.

[0008] A further object of the present invention is to develop a reliable and durable storage system.

Description of Figures

[0009] Illustrative embodiments of a storage system developed according to the present invention are illustrated in the accompanying figures described below.

Figure 1 is a perspective view of a washing device wherein a storage device according to the present invention is used.

Figure 2 is a perspective view of the storage system.

Figure 3 is a perspective view of detail "A" given in

figure 2.

Figure 4 is a front cross-sectional view of a container disposed in the storage system.

[0010] The parts in the figures are individually designated as following.

Washing device	(M)
Body	(1)
Interior compartment	(2)
Base	(3)
Container	(4)
Transfer line	(5)
Opening	(6)
Pump	(7)
Pool	(8)
Channel	(9)

Description of Invention

[0011] Washing devices such as dishwashers or laundry washers may comprise a storage container to save wash water. The storage container collects particularly the final rinse liquid (e.g. rinse water) so that the collected water can be used in the next washing process. The water collected in the storage container in such washing devices forms unpleasant odors over time. The unpleasant odor reaches the interior of the washing device and annoys the user. Accordingly, a storage system is developed according to the present invention by which the odor of water collected in the storage container is prevented from getting into the interior of the washing device.

[0012] The storage system developed according to the present invention and illustrated in figures 2-4 is suitable for use in a washing device (M) illustrated in figure 1 and provided with at least one body (1); at least one interior compartment (2), which is disposed in the body (1), into which items to be washed are placed, and in which wash and rinse cycles are performed; and at least one base (3) wherein the wash liquid present in the interior compartment (2) is collected. The storage system comprises at least one container (4) to which the wash liquid collected at the base (3) is transferred; at least one transfer line (5) by which the excess of the wash liquid transferred to the container (4) is transferred to said interior compartment (2) once the container is filled; at least one opening (6) by which the transfer line (5) is opened to the interior compartment (2); at least one pool (8), preferably with an "U" shape, disposed in a part of the transfer line (5) which opens to the container (4); and at least one channel (9) extending from the transfer line (5) towards the pool (8). In representative embodiments of the present invention wherein the washing device (M) is e.g. a dishwasher, the base (3) corresponds to the basin of the dishwasher. In another representative embodiment wherein the washing device (M) is a laundry washer, the base (3)

corresponds to the tub of the laundry washer.

[0013] In a representative embodiment according to the present invention, preferably the rinse water of the washing device (M) is taken from the base (3) of the interior compartment (2) and supplied to the container (4). No water inlet takes place into the pool (8) until the water supplied to the container (4) comes to a defined level. When the water in the container (4) reaches the defined level (e.g. exceeds an upper level of the pool (8)), the pool (8) starts filling with water. Preferably when the container (4) is completely filled with water, the excess of water supplied to the container (4) is delivered via the pool (8) and the channel (9) to the transfer line (5). Excess water reaches the opening (6) through the transfer line (5) and supplied to the interior compartment (2). When delivery of water to the container (4) is stopped, some amount of water is left in the pool (8) as illustrated in figure 4. Water left in the pool (8) forms a water trap between the container (4) and the transfer line (5). The water trap, in turn, prevents air flow from the container (4) to the transfer line (5). Thus, even if the water collected in the container (4) produces unpleasant odor over time, this odor is not transferred to the transfer line (5). Thus, the transfer of undesired odors into the interior compartment (2) of the washing device (M) is prevented. Additionally, since no moving parts are comprised in the storage system developed according to the present invention which may be damaged in time, the storage system is made reliable and durable.

[0014] In an alternative embodiment according to the present invention, the storage system comprises at least one pump (7) for transferring the wash liquid collected at the base (3) to the container (4). The pump (7) may be special to the storage system, or may be a drainage pump which is already disposed in the washing device (M) and the outlet of which may be controlled.

[0015] In a further alternative embodiment according to the present invention, the storage system comprises at least one check valve (not illustrated in the figures) which is preferably situated at a part of the transfer line (5) which connects to the channel (9), which has one side opening to the transfer line (5) and another side opening to the exterior, which allows air flow from the exterior to the transfer line (5) and prevents air and/or liquid flow from the transfer line (5) to the exterior. By virtue of the check valve, it is prevented that the entire wash liquid in the pool (8) is supplied to the transfer line (5) by siphon effect particularly in embodiments wherein the height of the opening (6) is lower as compared to the pool (8).

[0016] By virtue of the storage system developed according to the present invention, the water used in a wash cycle (e.g. the final wash cycle) of the washing device (M) wherein the storage system is employed is stored and used in a further washing process. Additionally, unpleasant odor formed in the container (4) is prevented from getting into the interior compartment (2) by means of the pool (8) and the channel (9) structure disposed in the storage system.

Claims

1. A storage system which is suitable for use in a washing device (M) provided with at least one body (1); at least one interior compartment (2) which is disposed in the body (1), into which items to be washed are placed and in which wash and rinse cycles are performed; at least one base (3) wherein wash liquid present in the interior compartment (2) is collected wherein the storage system comprises; at least one container (4) to which the wash liquid collected at the base (3) is transferred; at least one transfer line (5) by which the excess of the wash liquid transferred to the container (4) is transferred to said interior compartment (2) once the container is filled and at least one opening (6) by which the transfer line (5) is opened to the interior compartment (2), and the storage system is **characterized by** further comprising;
 - at least one pool (8) disposed in a part of the transfer line (5) which opens to the container (4) and
 - at least one channel (9) extending from the transfer line (5) towards the pool (8)

wherein water left in the pool (8) forms a water trap between the container (4) and the transfer line (5), that prevents air flow from the container (4) to the transfer line (5).
2. The storage system according to claim 1, **characterized in that** the pool (8) has a "U" shape.
3. The storage system according to claim 1, **characterized in that** the washing device (M) is a dishwasher.
4. The washing device according to claim 3, **characterized in that** the base (3) is in the form of a basin.
5. The storage system according to claim 1, **characterized in that** the washing device (M) is a laundry washer.
6. The washing device according to claim 5, **characterized in that** the base (3) is in the form of a tub.
7. The storage system according to claim 1, **characterized by** comprising at least one pump (7) for transferring the wash liquid collected at the base (3) to the container (4).
8. The storage system according to claim 7, **characterized in that** the pump (7) is specially configured for the storage system.
9. The storage system according to claim 7, **characterized in that** the pump (7) is a drainage pump

which is already disposed in the washing device (M) and the outlet of which may be controlled.

10. The storage system according to claim 1, **characterized by** comprising at least one check valve which is situated in the transfer line (5), which has one side opening to the transfer line (5) and another side opening to the exterior, which allows air flow from the exterior to the transfer line (5) and prevents air and/or liquid flow from the transfer line (5) to the exterior.
11. The storage system according to claim 10, **characterized in that** the check valve is situated at a part of the transfer line (5) which connects to the channel (9).

Patentansprüche

1. **Speichersystem**, angepasst und geeignet in einer Waschvorrichtung (M) verwendet zu werden, mit zumindest einem Körper (1); zumindest einem inneren Raum (2), der in dem Körper (1) angeordnet ist, in den zu waschende Gegenstände platziert werden und in welchem Wasch- und Spülzyklen durchgeführt werden; zumindest einer Basis (3) in welcher Waschflüssigkeit im inneren Raum (2) gesammelt wird, wobei das Speichersystem umfasst; zumindest einen Behälter (4), zu dem die in der Basis (3) gesammelte Waschflüssigkeit übertragen wird; zumindest eine Transferleitung (5), durch die der Überschuss an Waschflüssigkeit, welche zu dem Behälter (4) übertragen wird, zu dem inneren Raum (2) übertragen wird, sobald der Behälter gefüllt ist; und zumindest eine Öffnung (6), durch die die Transferleitung (5) zu dem inneren Raum (2) geöffnet wird, und das Speichersystem **dadurch gekennzeichnet, dass** es ferner umfasst;
 - zumindest einen Pool (8), welcher in einem Teil der Transferleitung (5) angeordnet ist, welche sich zum Behälter (4) öffnet und
 - zumindest einem Kanal (9), der sich von der Transferleitung (5) zum Pool (8) erstreckt;

wobei Wasser, welches in dem Pool (8) zurückbleibt, einen Wasserabscheider zwischen dem Behälter (4) und der Transferleitung (5) bildet, der einen Luftstrom von dem Behälter (4) zu der Transferleitung (5) verhindert.
2. Speichersystem nach Anspruch 1, **dadurch gekennzeichnet, dass** der Pool (8) eine U-Form aufweist.
3. Speichersystem nach Anspruch 1, **dadurch gekennzeichnet, dass** die Waschvorrichtung (M) ein

Geschirrspüler ist.

4. Waschvorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** die Basis (3) die Form eines Beckens aufweist. 5
5. Speichersystem nach Anspruch 1, **dadurch gekennzeichnet, dass** die Waschvorrichtung (M) eine Waschmaschine ist. 10
6. Waschvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** die Basis (3) die Form einer Wanne aufweist.
7. Speichersystem nach Anspruch 1, mit zumindest einer Pumpe (7) zum Übertragen der an der Basis (3) gesammelten Waschflüssigkeit zu dem Behälter (4). 15
8. Speichersystem nach Anspruch 7, **dadurch gekennzeichnet, dass** die Pumpe (7) speziell für das Speichersystem angepasst ist. 20
9. Speichersystem nach Anspruch 7, **dadurch gekennzeichnet, dass** die Pumpe (7) eine Entwässerungspumpe ist, welche bereits in der Waschvorrichtung (M) angeordnet ist und deren Auslass gesteuert werden kann. 25
10. Speichersystem nach Anspruch 1, **dadurch gekennzeichnet, dass** es zumindest ein Rückschlagventil umfasst, welches in der Transferleitung (5) angeordnet ist, welches eine Seitenöffnung zur Transferleitung (5) aufweist und eine andere Seitenöffnung nach außen aufweist, welche Luftströmung von außen zu der Transferleitung (5) erlaubt und Luft- und/oder Flüssigkeitsströmung von der Transferleitung (5) nach außen verhindert. 30
11. Speichersystem nach Anspruch 10, **dadurch gekennzeichnet, dass** das Rückschlagventil an einem Teil der Transferleitung (5) angeordnet ist, die mit dem Kanal (9) verbunden ist. 40

Revendications 45

1. Système de stockage qui est adapté pour être utilisé dans un dispositif de lavage (M) doté d'au moins un corps (1) ; d'au moins un compartiment intérieur (2) qui est disposé dans le corps (1), dans lequel des articles à laver sont placés et dans lequel des cycles de lavage et de rinçage sont réalisés ; d'au moins une base (3) dans lequel du liquide de lavage présent dans le compartiment intérieur (2) est collecté dans lequel le système de stockage comprend ; au moins un récipient (4) auquel le liquide de lavage collecté au niveau de la base (3) est transféré ; au moins une ligne de transfert (5) par laquelle l'excédent du liqui- 50

de de lavage transféré au récipient (4) est transféré audit compartiment intérieur (2) une fois que le récipient est rempli et au moins une ouverture (6) par laquelle la ligne de transfert (5) est ouverte sur le compartiment intérieur (2), et le système de stockage est **caractérisé en ce qu'il** comprend en outre :

- au moins une piscine (8) disposée dans une partie de la ligne de transfert (5) qui s'ouvre sur le récipient (4) et
- au moins un canal (9) s'étendant de la ligne de transfert (5) vers la piscine (8)

dans lequel l'eau laissée dans la piscine (8) forme un piège à eau entre le récipient (4) et la ligne de transfert (5), qui empêche un flux d'air du récipient (4) à la ligne de transfert (5).

2. Système de stockage selon la revendication 1, **caractérisé en ce que** la piscine (8) a une forme en « U ». 20
3. Système de stockage selon la revendication 1, **caractérisé en ce que** le dispositif de lavage (M) est un lave-vaisselle. 25
4. Dispositif de lavage selon la revendication 3, **caractérisé en ce que** la base (3) est en forme de bassin.
5. Système de stockage selon la revendication 1, **caractérisé en ce que** le dispositif de lavage (M) est un lave-linge. 30
6. Dispositif de lavage selon la revendication 5, **caractérisé en ce que** la base (3) est en forme de cuve. 35
7. Système de stockage selon la revendication 1, **caractérisé en ce qu'il** comprend au moins une pompe (7) pour transférer le liquide de lavage collecté au niveau de la base (3) au récipient (4).
8. Système de stockage selon la revendication 7, **caractérisé en ce que** la pompe (7) est spécialement configurée pour le système de stockage. 45
9. Système de stockage selon la revendication 7, **caractérisé en ce que** la pompe (7) et une pompe de drainage qui est déjà disposée dans le dispositif de lavage (M) et dont la sortie peut être commandée.
10. Système de stockage selon la revendication 1, **caractérisé en ce qu'il** comprend au moins un clapet anti-retour qui est situé dans la ligne de transfert (5), qui a une ouverture latérale sur la ligne de transfert (5) et une autre ouverture latérale sur l'extérieur, qui permet un flux d'air de l'extérieur à la ligne de transfert (5) et empêche un flux d'air et/ou de liquide de la ligne de transfert (5) à l'extérieur. 55

11. Système de stockage selon la revendication 10, **caractérisé en ce que** le clapet anti-retour est situé au niveau d'une partie de la ligne de transfert (5) qui est reliée au canal (9).

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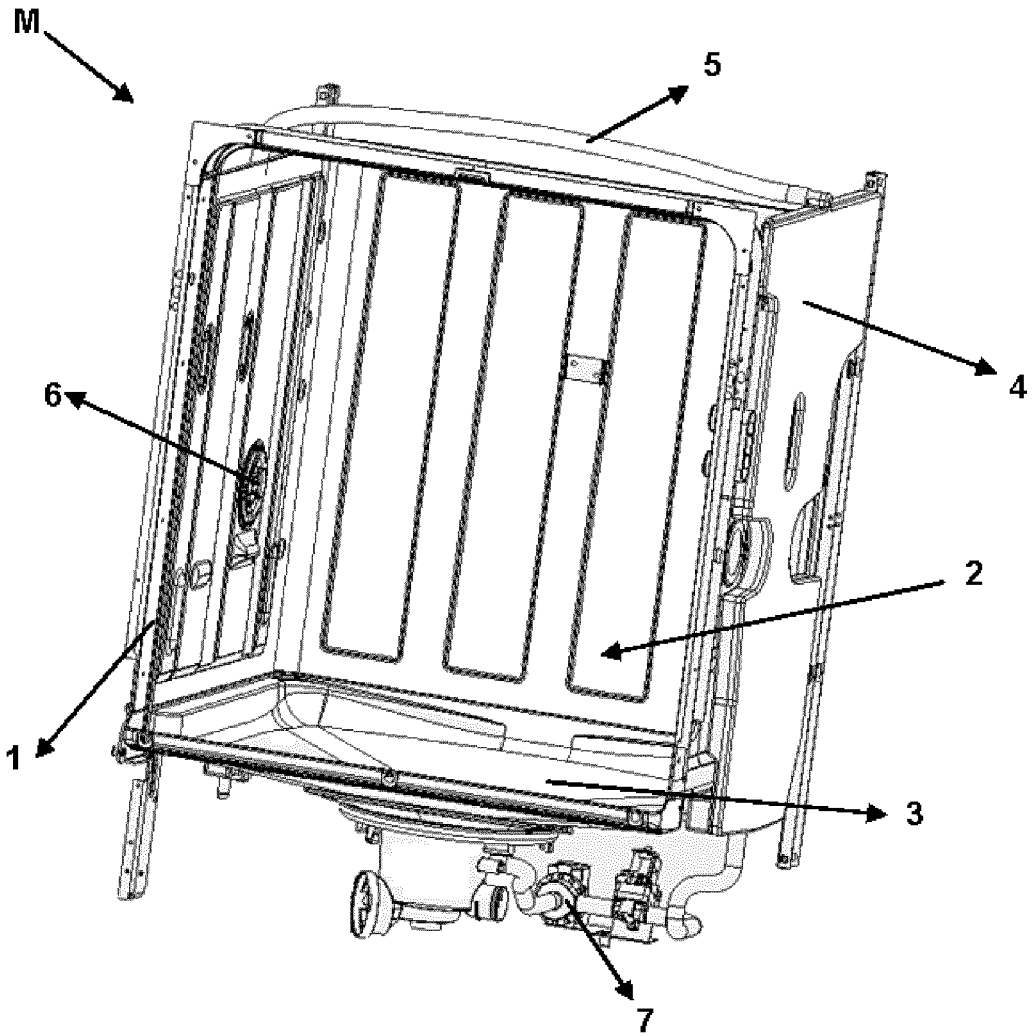


Figure - 1

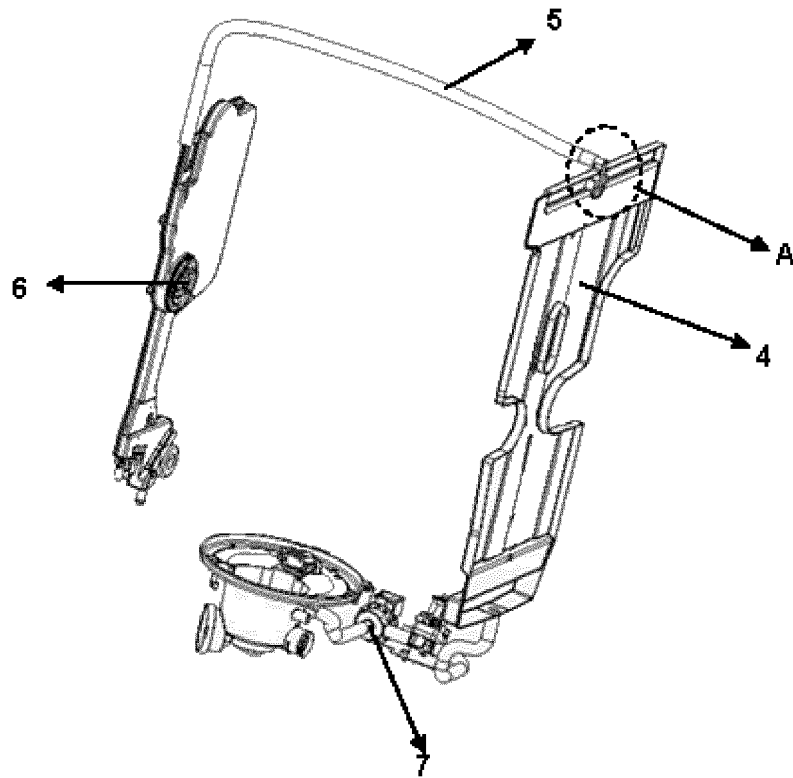


Figure- 2

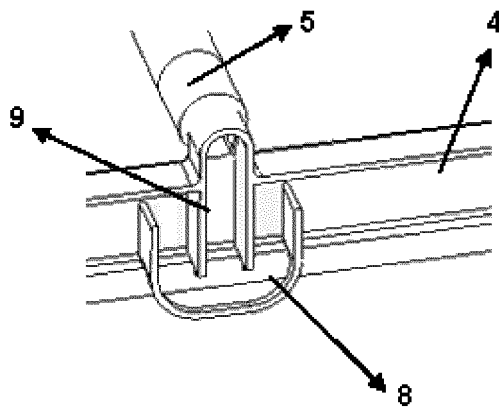


Figure - 3

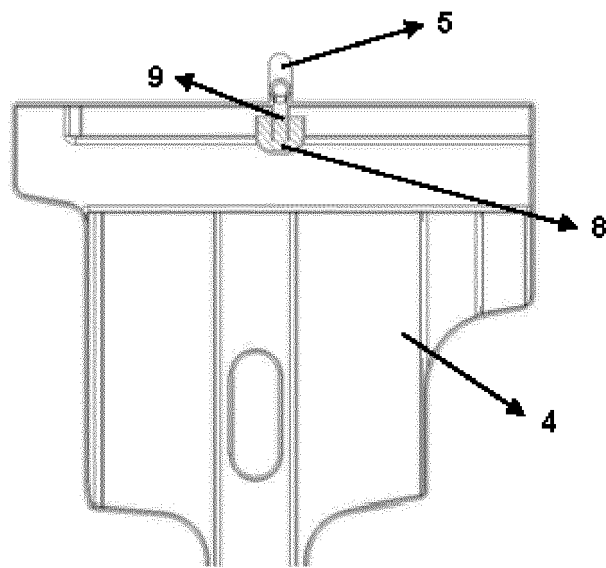


Figure - 4

REFERENCES CITED IN THE DESCRIPTION

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