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(54) **Detergent dispenser of washing machine integrated in its hopper**

Waschmitteleinspülvorrichtung einer Waschmaschine, integriert in dem Wäsche-Einfüll-Trichter

Distributeur de détergent d'une machine à laver intégré dans sa trémie de chargement du linge

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## Description

**[0001]** The invention refers to a detergent products dispenser integrated with the loading hopper of a top-loading washing machine.

**[0002]** It is known that, on the most recent washing machines, a detergent products dispenser able to dispense, during some stages of the washing cycle, a solid and/or liquid detergent products previously introduced into the appropriate boxes grouped in the same space, laid out on one of the sides or at the back of the loading hopper of the machine or, on some machines, in a box or in a pocket fixed to the bottom of the hopper door and taking place in the space left free between the hopper door and the periphery of the drum.

**[0003]** The automatic delivery at the right time of each of the detergent products induces a relatively dispenser products detergent complexity to obtain their draining by the wash liquid as well as the unavoidable dead angles in the boxes that disturb the dispersion and complete distribution of the detergent products dose. This results in permanent deposits of matter that ends up by reducing the doses of the products brought, which induces a dispenser dysfunction, causing a user's dissatisfaction regarding the quality of the wash. In addition, the user is forced to clean the dispenser products boxes and channels, which are often difficult to access as constructed, especially when the dispenser is integrated in the loading hopper of the machine.

**[0004]** Aware of this problem, all manufacturers have sought to provide solutions. The main such solution consisted in making the dispenser boxes removable to facilitate cleaning or making the dispenser completely removable in order to allow it to be cleaned as completely as possible outside the machine. But nevertheless this involved a constraint that was rather poorly accepted by users, which resulted in neglected maintenance of these dispensers due to the difficulties of access to all of the parts concerned, often partially hidden by projecting edges or located in rather inaccessible nooks, since these dispensers were made from several parts welded together and which cannot be dismantled.

**[0005]** We know by EP 0 125 627 a detergent supply unit for a laundry washing machine comprising a container formed with compartments for detergents and additives, and a distributor removably secured to the container and provided with internal passages communicating with the individual compartments. A displaceable piston actuated by the program unit of the machine is effective to divert the water to selected compartments. This detergent supply unit mounted in the upper portion of the housing of the machine is provided with a closure lid, hingedly mounted on the upper plane of the housing.

**[0006]** This apparatus offers as advantage to permit the direct access to the supply unit and to unset in view to clean it without open the lid of the tub. However, this solution has the disadvantage to permit the liquid overflowing out of the machine and in the space managed

between the tub and the frame of the machine, because the little lid of the apparatus has not been previous to ensure a sufficient impermeability. Moreover, this solution reduces towards the back of the hopper the clearance section provided by it, which is disadvantageous for loading certain cumbersome part of linen because the lid length is too short.

**[0007]** The purpose of the present invention is to provide a solution for these disadvantages.

**[0008]** This invention, as characterized in the claims, resolves the problem consisting to define a process and create a system that enables, on the one hand, the detergent products dispenser to be easily installed and maintained and, on the other hand, to easily retract the dispenser to facilitate access to the machine drum and seating where the said dispenser is inserted, to perform maintenance on the said dispenser.

**[0009]** The advantages obtained through this invention consist primarily in that the loading hopper door directly seals the dispenser compartments without disturbing the door functioning, while avoiding overflows of detergent products that cause deposits, which are difficult to eliminate after their drying, and in that the easy removal of the dispenser allows, in particular, towards the back of the hopper, the clearance section provided by the hopper to be increased, which is advantageous for loading certain cumbersome parts.

**[0010]** Other characteristics and advantages will appear in the following description of a method of dismountable making of one detergent products dispenser for a top-loading washing machine associated with the loading hopper door of the machine, given as a non-limiting example with regard to the appended drawings where:

- figure 1 shows a top perspective view of the door open loading hopper equipped with the dispenser,
- figure 2 shows a top perspective view of the door open loading hopper without the detergent products dispenser, and
- figure 3 shows an overall perspective view of the detergent products dispenser.

**[0011]** The figures show the loading hopper **10** of a top-loading washing machine, equipped on the back with a detergent products dispenser **30**. The detergent compartments **310** to **312** are closed by the loading hopper lid **20** that includes closing seals **21** to **23**. The dispenser **30** constitute a removable assembly recessed in a seating **12** arranged in the back part **11** of the loading hopper **10**. In this case, the said dispenser **30** is constantly held against the back wall of the recessed seating **12** by flexible slats **318** and **319**.

**[0012]** In examining figure 1 in more detail, one notices that when the hopper lid **20** is open, it includes on its back part, near its articulation **24**, raised parts in a flexible material forming seals **21** to **23**, each of which takes on the shape of the inlet edges **326** to **328** of the detergent compartments **310** to **312** that are made with a certain strip,

which facilitates the seals **21** to **23** alignment and the contact with the said inlet edges **326** to **328** when the lid **20** closes. This alignment is facilitated by the constant holding of the dispenser **30** and more particularly its upper part **32** against the back wall of the recessed seating **12**, made in the back part **11** of the hopper **10**, under the action of the flexible slats **318** and **319**, each located at the front and ends of the dispenser **30** and bearing against the front parts **121**, **122** of the dispenser recessed seating **12**. One notes that, in this way, the good conformability of the seals **21** to **23** is obtained and therefore they are in regular contact, which results in obtaining good water-tightness that is favourable to the complete distribution of the detergent products. One also notes that, given the free recessed fitting of the dispenser **30** in its seating **12**, the dispenser **30** can be easily removed from the machine to be cleaned and even refilled without bother.

**[0013]** By referring now to figure **3**, showing an overall view of the dispenser **30**, one notices that the dispenser **30** includes on the top the inlet edges **326** to **328** made with a certain clearance that facilitates the contact of the closing seals **21** to **23** with the opening of the compartments **310** to **312** of the dispenser **30** and, on the sides and towards the front, the contact of the flexible return slats **318** and **319** of the dispenser **30** against the back of the seating **12** made in the hopper **10**. As one can see, the dispenser **30** is very easy to remove from its seating to clean it or to enlarge towards the back the clearance section offered by the hopper **10**.

## Claims

1. The combination of a detergent products dispenser (30), for a top-loading washing machine, and a loading hopper (10) and a loading hopper lid (20) of the machine in order to obtain directly the obturation of dispenser compartments (310 - 312) at each loading hopper lid closing, the said dispenser (30) being situated in the back part (11) of the opening of the loading hopper (10) **characterized in that** the loading hopper lid (20) is equipped on its inside face with raised parts (21-23) that follow the shape of the inlet edges (326 - 328) of the respective compartments (310 - 312) of the detergent products dispenser (30) and that the dispenser is installed by insertion in a recessed seating (12) wherein the dispenser (30) is constantly held against the back wall of the recessed seating (12) under the action of flexible slats (318, 319).
2. The combination according to claim 1, **characterized in that** the raised parts (21-23) following the shape of the inlet edges (**326 - 328**) of the dispenser compartments (**310 - 312**) are each composed of a seal (**21 - 23**) in a flexible material with a sufficient relief to ensure the correct closure of the said dis-

penser compartments (**310 - 312**) under the pressure applied on them by the hopper lid (**20**) when it is closed.

3. The combination according to claim 1, **characterized in that** its dispenser compartments (310 to 312) are made with a certain strip which makes easier the seals (21 to 23) alignment and their contact with the inlet edges (326 to 328) when the lid (20) closes.

## Patentansprüche

1. Kombination eines Waschmittelproduktspenders (30) für eine Toplader-Waschmaschine und eines Ladetrichters (10) und eines Ladetrichterdeckels (20) der Maschine, um die Abdichtung von Spenderfächern (310 - 312) bei jedem Schließen des Ladetrichterdeckels direkt zu erhalten, wobei der Spender (30) im hinteren Teil (11) der Öffnung des Ladetrichters (10) angeordnet ist, **dadurch gekennzeichnet, dass** der Ladetrichterdeckel (20) auf seiner Innenfläche mit erhöhten Teilen (21 - 23) ausgestattet ist, die der Form der Einlasskanten (326 - 328) der jeweiligen Fächer (310 - 312) des Waschmittelproduktspenders (30) folgen, und dass der Spender durch Einfügung in eine ausgesparte Aufnahme (12) eingebaut ist, wobei der Spender (30) unter der Wirkung von flexiblen Leisten (318, 319) konstant gegen die Rückwand der ausgesparten Aufnahme (12) gehalten wird.
2. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass** die erhöhten Teile (21 - 23), die der Form der Einlasskanten (326 - 328) der Spenderfächer (310 - 312) folgen, jeweils aus einer Dichtung (21 - 23) in einem flexiblen Material mit einem Relief bestehen, das ausreicht, um den korrekten Verschluss der Spenderfächer (310 - 312) unter dem Druck zu gewährleisten, der durch den Trichterdeckel (20) auf sie ausgeübt wird, wenn er geschlossen ist.
3. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass** ihre Spenderfächer (310 bis 312) mit einem bestimmten Streifen hergestellt sind, welcher die Ausrichtung der Dichtungen (21 bis 23) und ihren Kontakt mit den Einlasskanten (326 bis 328) leichter macht, wenn der Deckel (20) schließt.

## Revendications

1. Combinaison d'un distributeur de produits détergents (30) pour une machine à laver à chargement vertical, et une trémie de chargement (10) et un couvercle de trémie de chargement (20) de la machine afin d'obtenir directement l'obturation des comparti-

ments de distribution (310-312) à chaque fermeture du couvercle de trémie de chargement, ledit distributeur (30) étant positionné dans la partie arrière (11) de l'ouverture de la trémie de chargement (10), **caractérisée en ce que** le couvercle (20) de la trémie de chargement est équipé sur sa face intérieure de parties relevées (21-23) qui suivent la forme des bords d'entrée (326-328) des compartiments (310-312) respectifs du distributeur de produits détergents (30) et **en ce que** le distributeur est installé par insertion dans un siège évidé (12), dans lequel le distributeur (30) est maintenu de manière constante contre la paroi arrière du siège évidé (12) sous l'action des lattes flexibles (318, 319).

2. Combinaison selon la revendication 1, dans laquelle les parties relevées (21-23) suivant la forme des bords d'entrée (326-328) des compartiments de distribution (310-312) sont chacune composées d'un joint d'étanchéité (21-23) réalisé avec un matériau flexible avec un relief suffisant pour garantir une fermeture correcte desdits compartiments de distribution (310-312) sous la pression appliquée sur ceux-ci par le couvercle (20) de la trémie lorsqu'il est fermé.
3. Combinaison selon la revendication 1, **caractérisée en ce que** ses compartiments de distribution (310 à 312) sont réalisés avec une certaine bande qui facilite l'alignement des joints d'étanchéité (21 à 23) et leur contact avec les bords d'entrée (326 à 328) lorsque le couvercle (20) se ferme.

FIG.1

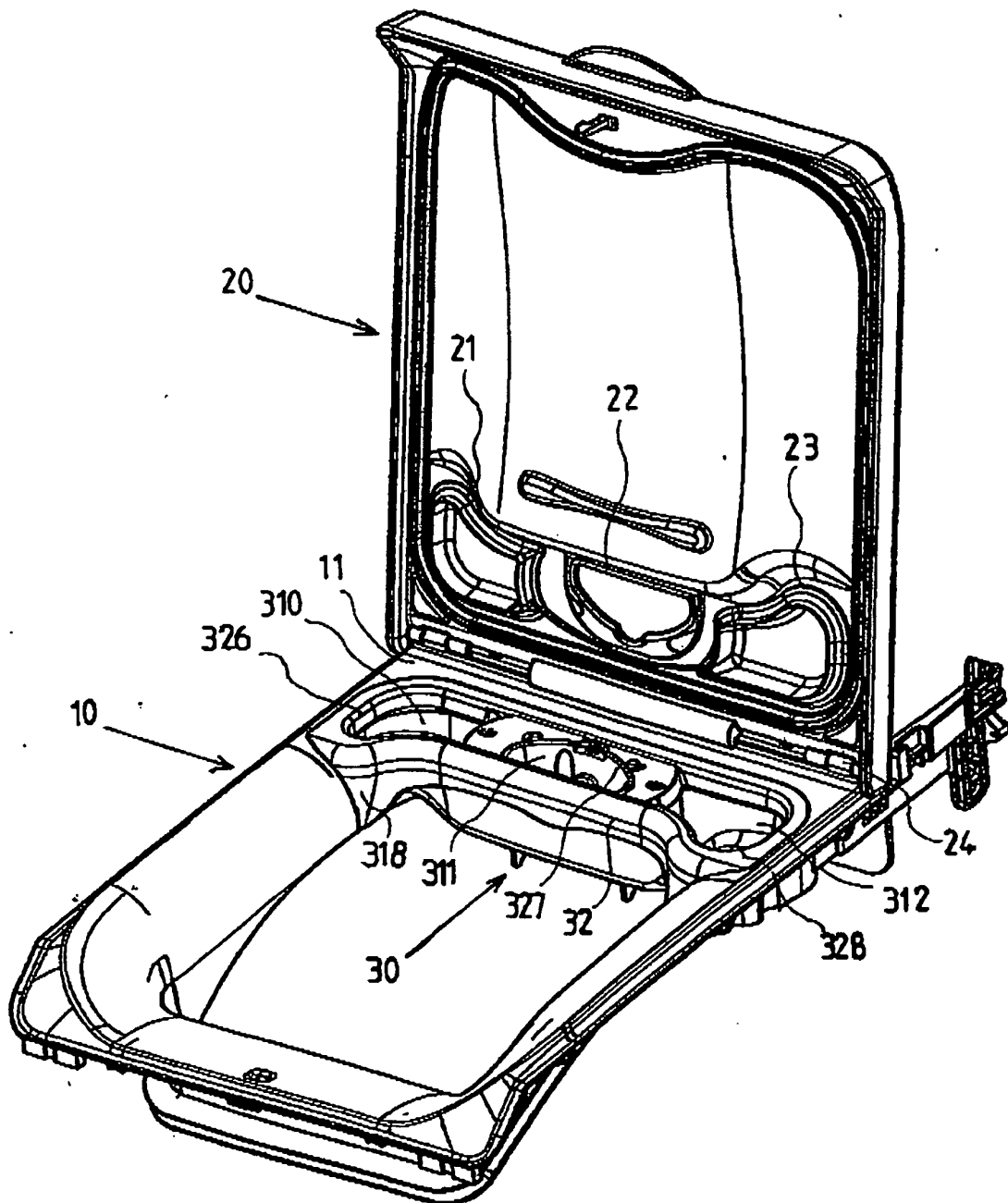
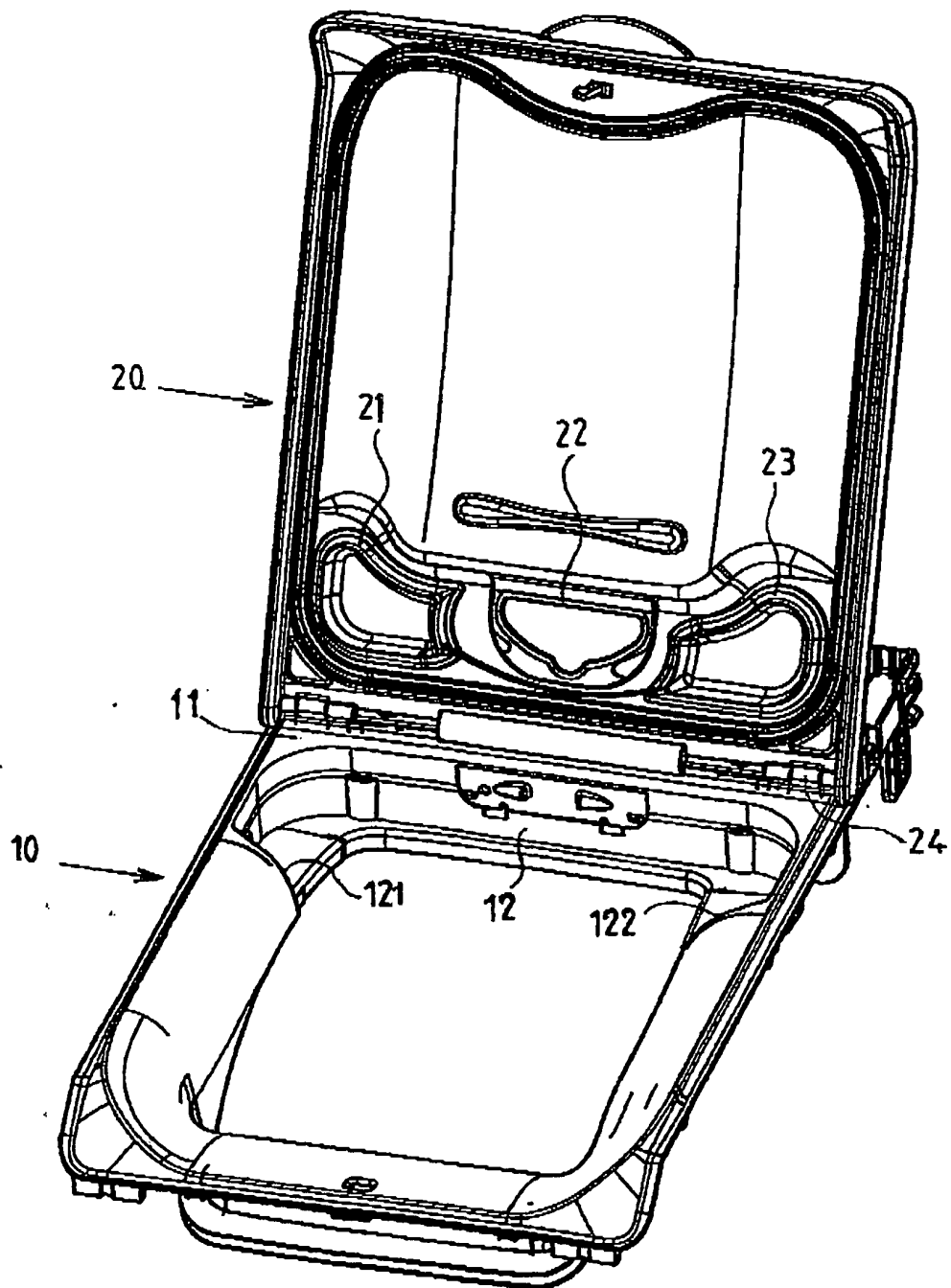
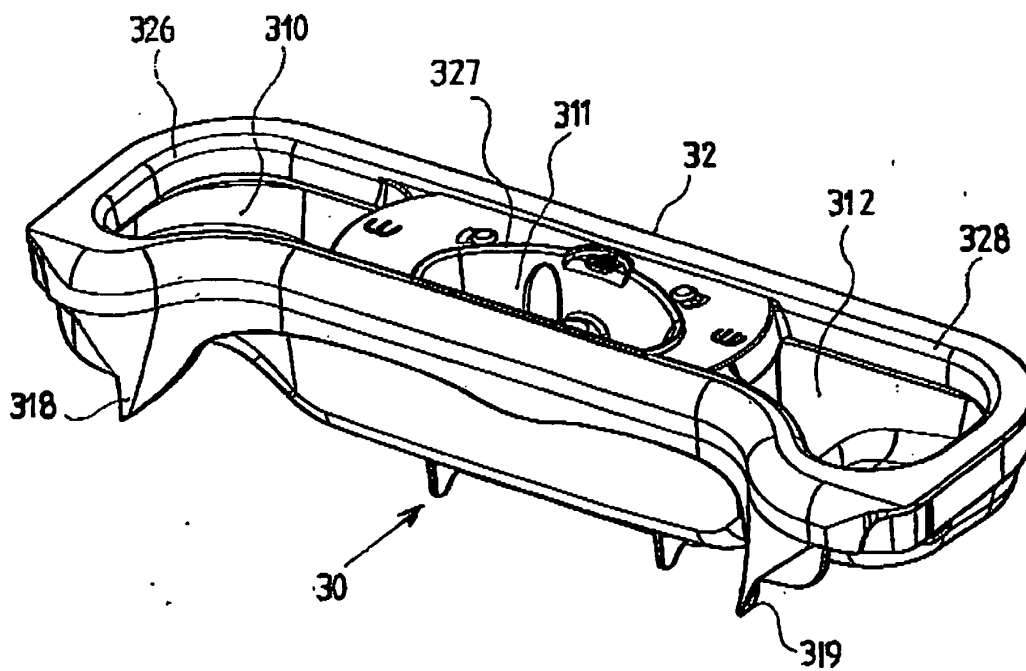


FIG.2



**FIG3**



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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