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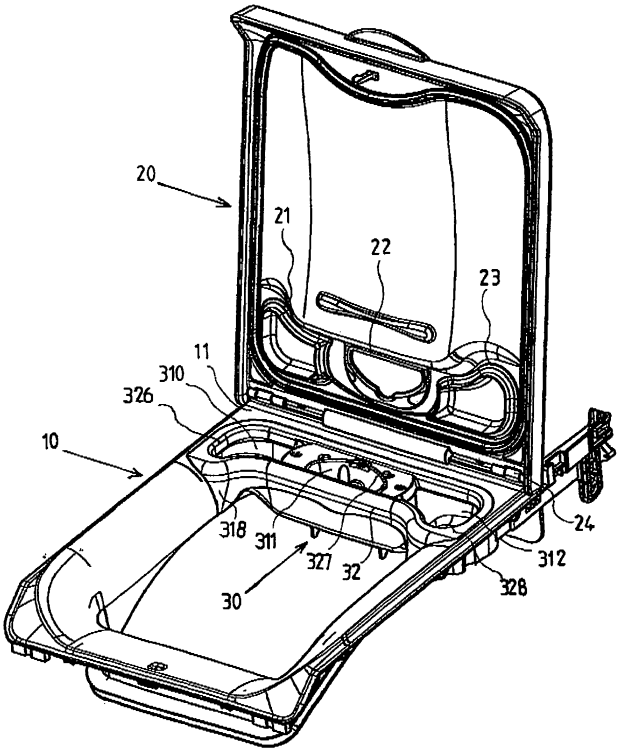
(54) Detergent dispenser of washing machine integrated in its hopper

(57) The invention consists in installing the detergent products dispenser (**30**) in the loading hopper (**10**) of the machine and ensuring its closure by the intermediary of the hopper lid (**20**). For that, the loading hopper lid (**20**) is equipped, on its inside face, with raised parts made in a flexible material that follow the shape of the inlet edges (**326** to **328**) of the respective compartments (**310** to **312**) of the detergent products dispenser (**30**), in order to ensure the correct closure of them under the pressure applied of them by the hopper lid (**20**) when it is closed. This dispenser staying fully dismountable and cleanable out of the machine.

FIG.1



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

[0006] 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.

[0007] 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.

[0008] 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.**

[0009] 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.

[0010] 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 compart-

ments **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. Process for installing and implementing a detergent products dispenser fully integrated with the loading hopper of a top-loading washing machine, **characterized** primarily in that it consists in installing the said dispenser (**30**) in the loading hopper (**10**) of the machine and ensuring its closure by the intermediary of the hopper lid (**20**).

2. Process according to claim 1, **characterized in that** the dispenser (**30**) is installed by insertion in the back part and in the sides of the opening of the loading hopper (**10**).

3. Process according to claim 2, **characterized in that** the dispenser (**30**) is retained permanently against the bottom of the seating (**12**) that it is inserted in.

4. Installation and implementation system for a detergent products dispenser associated with the loading hopper of a top-loading washing machine, achieved by applying the process of claims 1 to 3 taken as a whole, **characterized in that** the loading hopper lid (**20**) is equipped, on its inside face, with raised parts that follow the shape of the inlet edges (**326** to **328**) of the respective compartments (**310** to **312**) of the detergent products dispenser (**30**).

5. System according to claim 4, **characterized in that** the raised parts following the shape of the inlet edges (**326** to **328**) of the dispenser (**30**) compartments (**310** to **312**) are each composed of a seal (**21** to **23**) in a flexible material with a sufficient relief to ensure the correct closure of the said dispenser (**30**) compartments (**310** to **312**) under the pressure applied on them by the hopper lid (**20**) when it is closed.

FIG.1

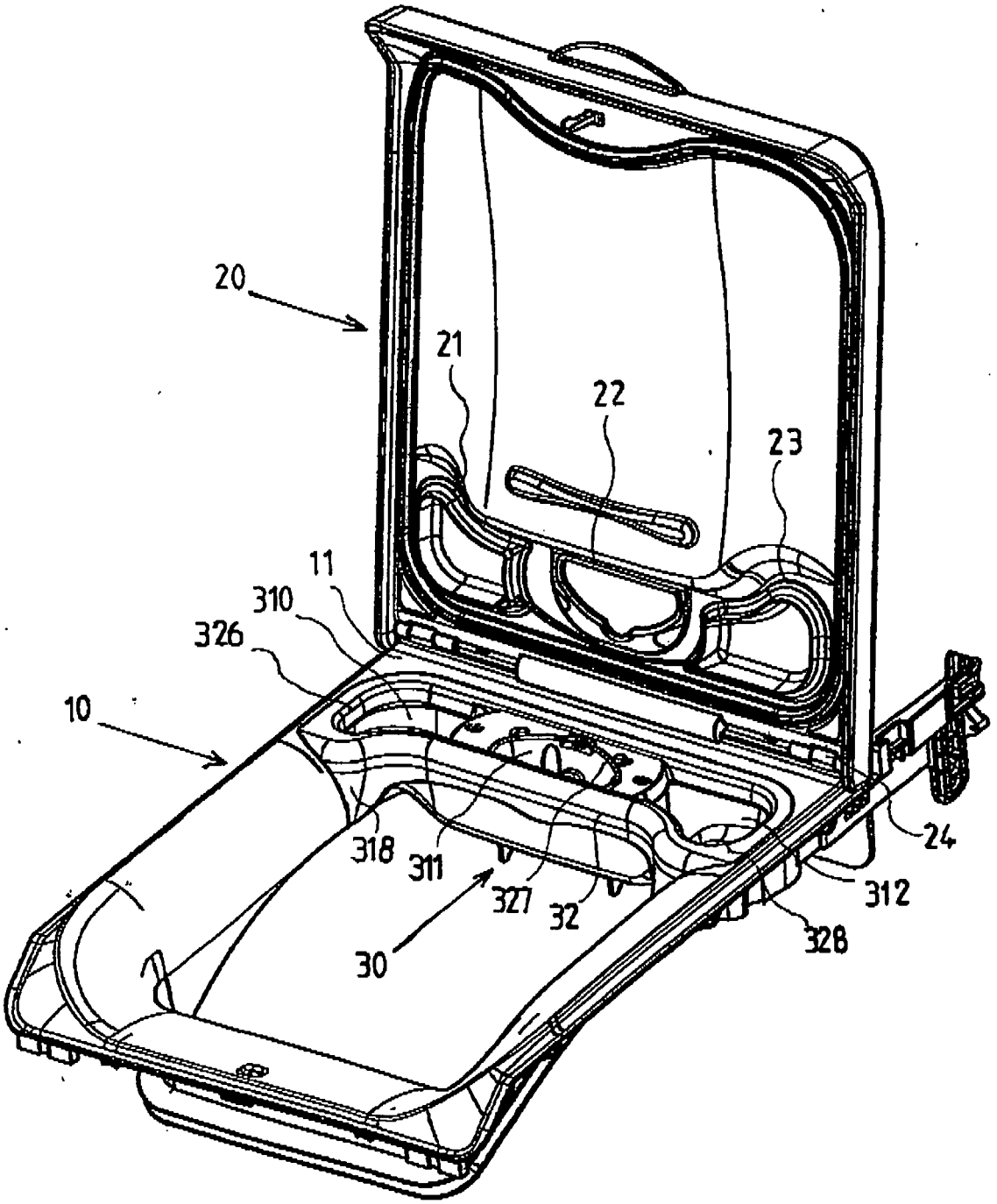


FIG.2

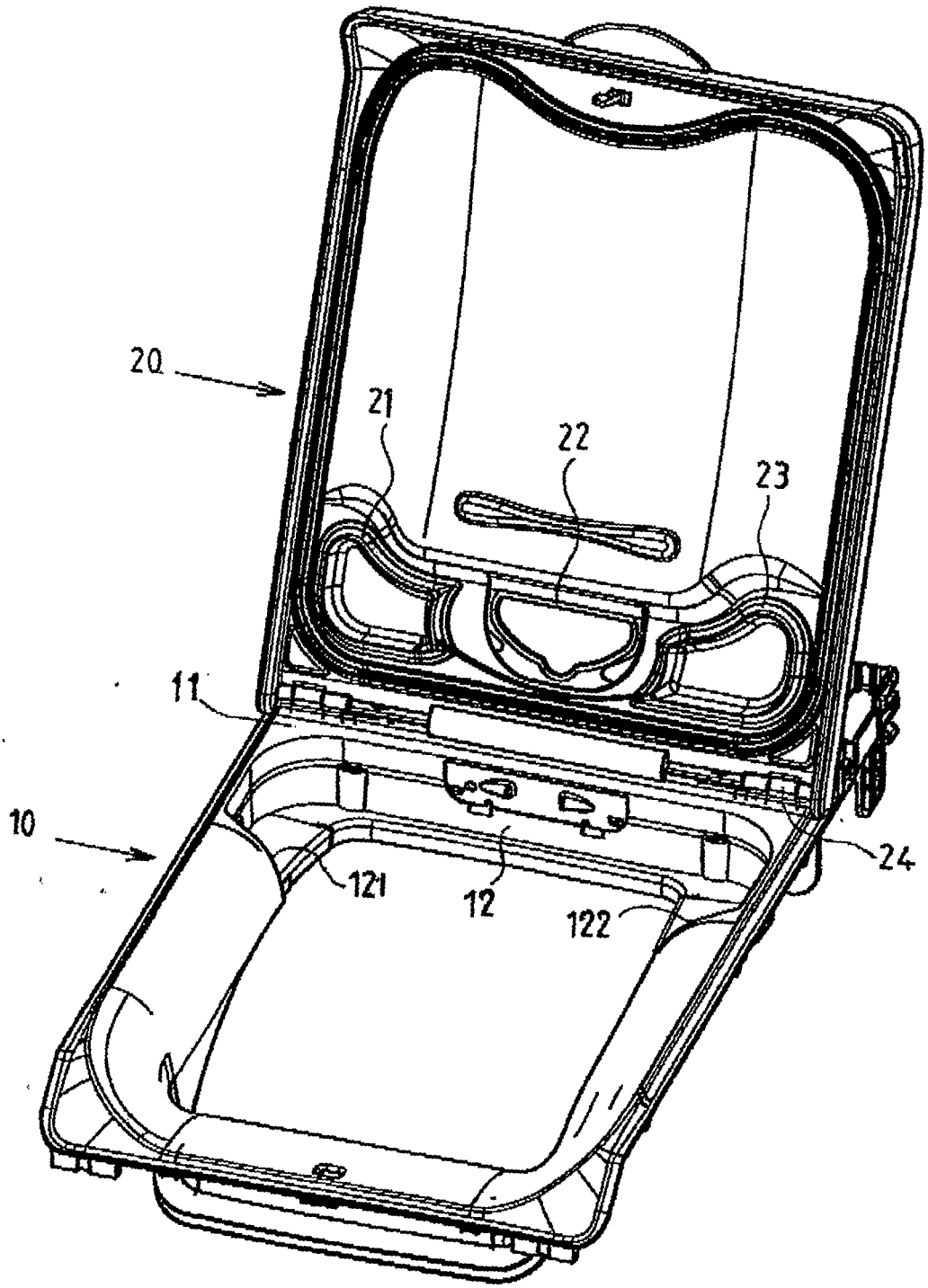
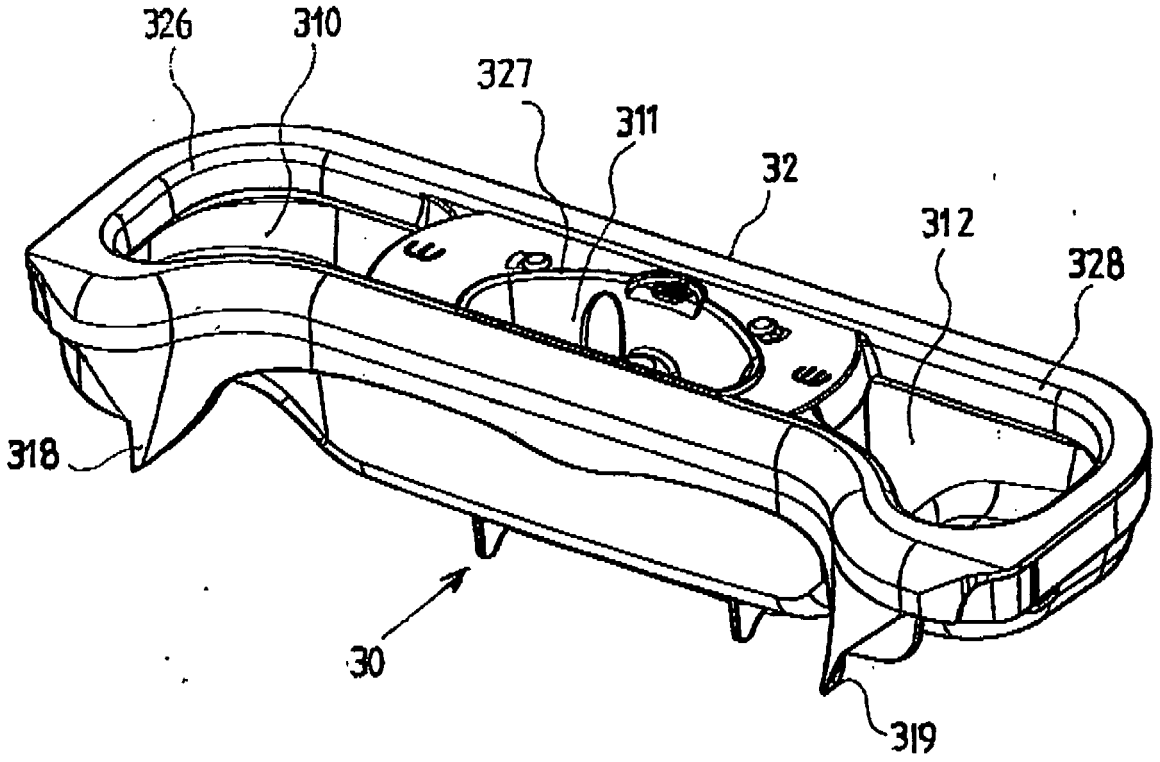


FIG3



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EUROPEAN SEARCH REPORT

Application Number
EP 06 00 8884

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 October 2006	FALKENTOFT, C

CATEGORY OF CITED DOCUMENTS

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