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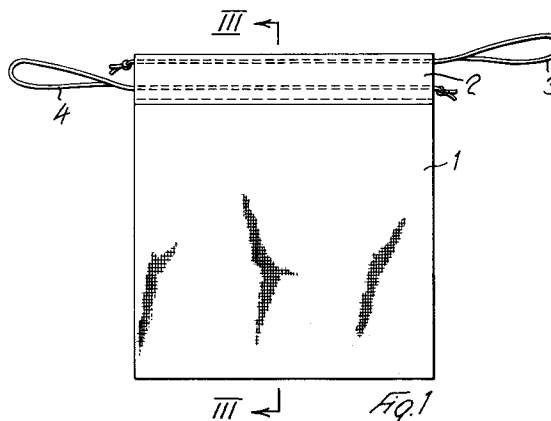
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I-16124 Genova (IT)(54) **Dispenser for washing powders, or the like, in automatic washing machines.**

(57) A dosing and dispensing device for washing powder or the like, in automatic washing machines, comprising a container (1) for washing powders or other kinds of powder compounds for washing, which is intended to be placed directly together with the linen in the drum of the automatic washing machine and is reusable for an indefinite number of subsequent washings. The container (1) is realized of a material permeable to water and to said powder compounds in their dissolved form, as well as insoluble in water and being provided of openable closure means (2, 3, 4) that keep the container (1) in closed condition during the whole washing step, so that the washing powder or other kinds of compounds are progressively discharged, in their completely dissolved condition in water, only through the walls of the container (1).

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The invention relates to a dispenser for washing powders, or the like, in automatic washing machines.

Presently, in automatic washing machines the washing powders and others additives are supplied to compartments, from which they are entrained and supplied to the drum of the machine by the washing water that flows through the compartments before being supplied to the drum. However, this way of proceeding presents the drawback that the washing water is not able to entrain the whole amount of powder compound, thus leaving in the said compartments, residual amounts of solids consisting in powder compound agglomerations adhering to them. Besides the dirtying of the compartments, that must be cleaned before every subsequent washing, the required compound concentration in the drum to obtain the optimum actives principles exploitation is not achieved. The dissolution of the compound results even incomplete and often a certain amount of not dissolved powder settle on the drum bottom. In order to obtain the sufficient concentration of compound in the washing solution, users are compelled to considerably increase the detergent doses or powder additives, with a greater use of them. To avoid such drawbacks, some users put the washing powder or additives directly in the drum together with the linen. Even in this case the exploitation of compounds is not the best and it is possible to damage fabrics, particularly colored ones, because powder is directly in contact with fabrics before dissolving in water. The solution concentration is not uniform during washing, but it is particularly high in contact zones of single compound grains adhering to fabrics.

An object of the invention is to realize a dispenser for washing powders or the like that enables the elimination of the above disadvantages and an optimum exploitation of the washing powder and additives, by creating best distribution and dissolution conditions.

The present invention achieves said object by providing a dispenser for washing powders or the like, in automatic washing machines, consisting of a container for the washing powders or other kinds of powder compounds for washing, that is intended to be placed directly in the drum of the washing machine together with the linen and that is reusable for an indefinite number of subsequent washings, the container being realized in a material permeable to water and to the powder compounds in their dissolved form, as well as insoluble in water and being provided with openable closure means which remain in closed position during the whole washing step, so that washing powder or additives are progressively delivered in their completely dissolved condition in water, only through the con-

tainer walls.

The container is realized as a floppy bag and can be made by any kind of material that is rather porous to allow the penetration of the washing water inside the walls and the progressive outside passage towards the exterior of the solution containing water, washing powders and other washing compounds. It can be for exemple made of fabric, nonwoven fabric, either of natural or of synthetic fibers, or combination thereof, whose wefts show by themselves a sufficient porosity or that are provided with microholes or normal holes with a predetermined size lesser than the granulometry of the powder compounds and with a predetermined ratio between the total area of the holes and the walls area. Even particular kinds of papers or sheets of fibrous or synthetic material, like plastic material or the like with desired porosity, can be used.

The openable closure means can be of any kind, and preferably consisting closure strings of the kind usually employed in other fields for closing small bags.

The constructive simplicity and the cheapness of the device according to the invention are apparent, even in front of the possibility of its repeated use. From the functional point of view, the dispenser according to the invention allows to regulate freely the doses of washing powder or additive that one wants to use. During washing, the container comes in contact with the whole volume of washing water, distributing progressively and uniformly the washing powder and other washing compounds. This assures the maximum effectiveness of products and also assures an optimum washing. The container softness and deformability eliminate the danger of damaging the container itself and the drum, and the noisiness in bumps. The compressibility of the container assures the whole exploitation of the dose of washing powder or additive, avoiding wastes or unsatisfactory washing results. The compounds pass to the outside of the bag in dissolved condition and with an optimum concentration, so that problems about direct contact of compounds in non-dissolved form on the fabrics are avoided. The features of the invention and deriving advantages will become apparent from the following description of an embodiment illustrated in the drawings, in which:

Figure 1 shows a front view of an empty bag according to the invention,

Figure 2 shows similarly to Figure 1 the bag in full and closed condition,

Figure 3 is a section along the line III-III of Figure 1.

The container according to the invention is formed by a small bag 1 of rectangular shape. The small bag 1 can be made of fabric, nonwoven

fabric or formed by a sheet of water-insoluble material, permeable to water and to the solution of water and washing powder or additive. This can depend on the inherent porosity of the employed materials that can be made of natural or synthetic fibers or a combination thereof, or can be obtained forming a number of holes or microholes, the size of which is lesser than the granulometry of the powder compounds, in order to prevent its discharge in dry conditions.

The small bag 1 presents a flat envelope-like shape and is open along one of the peripheral edges of its two faces. The peripheral edge 2 of each face, near the opening, is realized in tubular form in the shape of a slot, and is open at the opposite head sides. Inside each peripheral tubular edge 2 there are arranged two closure pull elements 3, 4, for example two strings which are closed on themselves and extend in both tubular edges 2 of the faces, surrounding the opening. The closure of the upper edge 2 of the small bag 1 is obtained by pulling the strings 3, 4 in opposite directions.

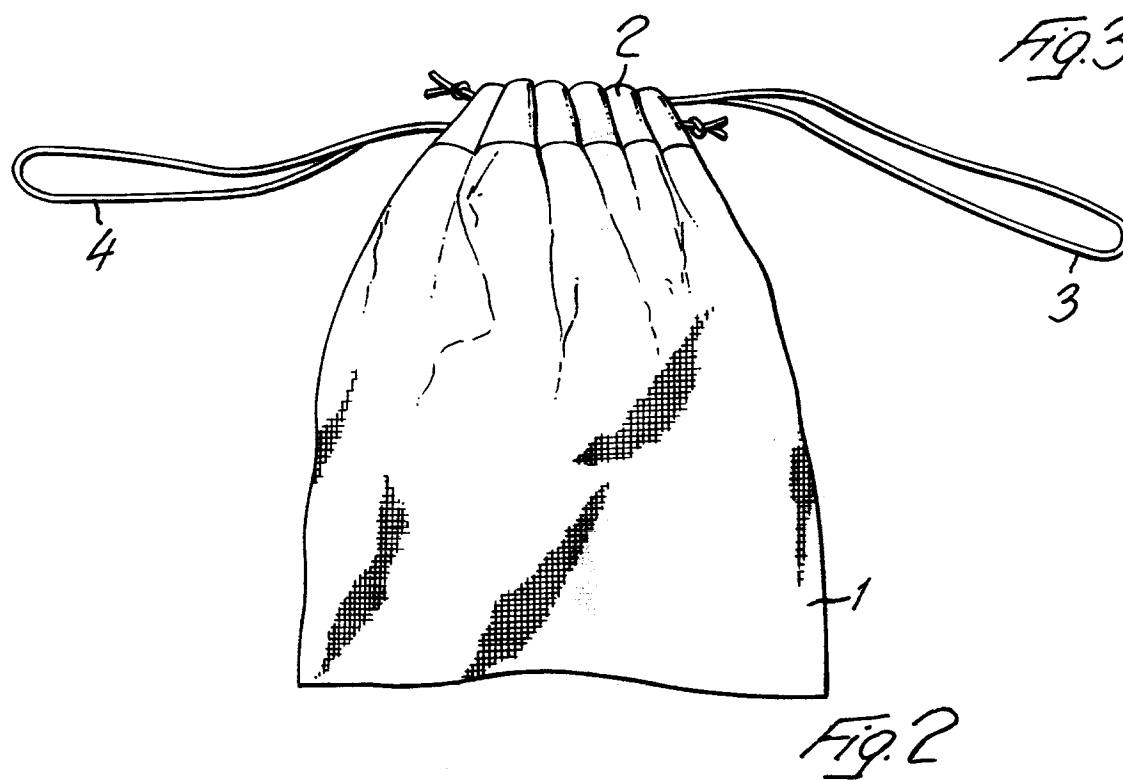
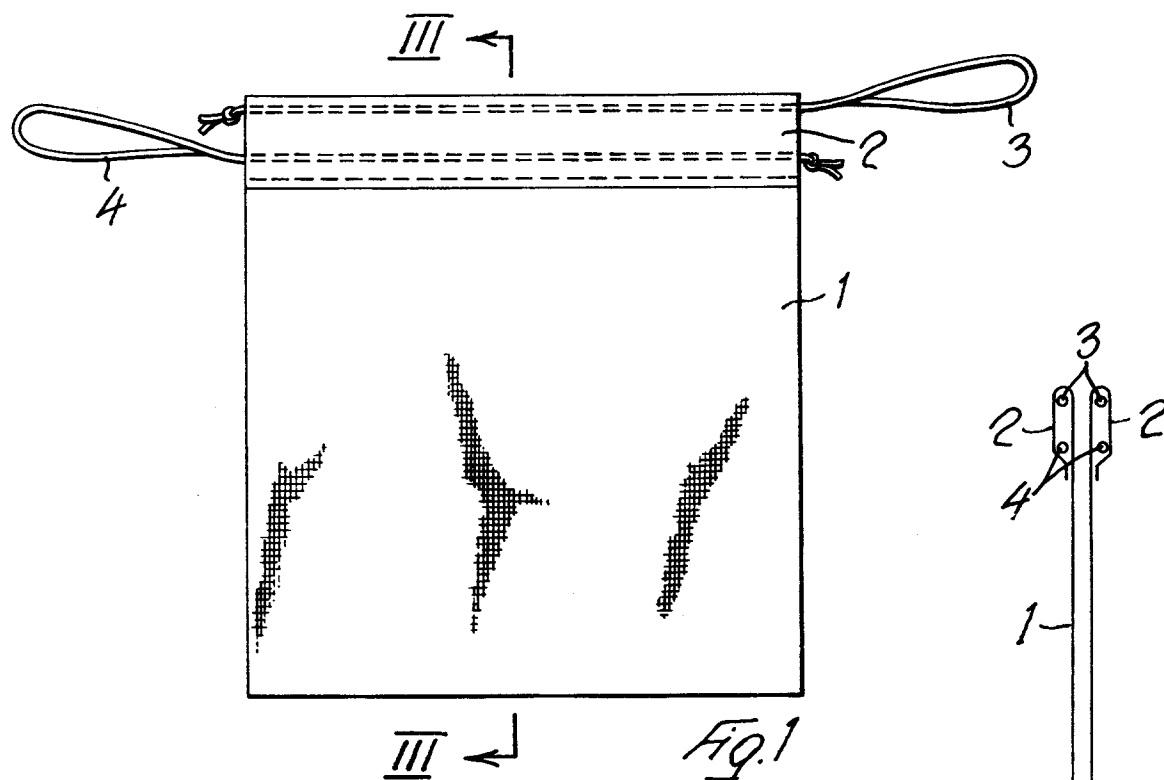
This suffices to keep closed the small bag during washing, avoiding the discharge of the loaded dose of compound all at once. In the case, for more safety, the two strings can be further tied together.

Claims

1. A dosing and dispensing device for washing powder or the like, in automatic washing machines, characterized in that it is formed by a container (1) for washing powders or other kinds of powder compounds for washing, which is intended to be placed directly together with the linen in the drum of the automatic washing machine and is reusable for an indefinite number of subsequent washings, the container (1) being realized of a material permeable to water and to said powder compounds in their dissolved form, as well as insoluble in water and being provided of openable closure means (2, 3, 4) that keep the container (1) in closed condition during the whole washing step, so that the washing powder or other kinds of compounds are progressively discharged, in their completely dissolved condition in water, only through the walls of the container (1).
2. A device according to claim 1, characterized in that is realized as a floppy bag (1) which can be made of any usual fabric, nonwoven fabric, either of natural or synthetic fibers or of a combination thereof, or of sheets of fibrous material, either synthetic or natural, the wefts

of which present by themselves a sufficient porosity, or which are provided with microholes or normal holes with a predetermined size lesser than the granulometry of the powder compounds and with a predetermined ratio between the pores total area and the walls area.

3. A device according to claims 1 or 2, characterized in that the openable closure means (2, 3, 4) are formed by closure strings guided around the opening of the small bag (1).
4. A device according to one of the preceding claims, characterized in that the small bag (1) presents a tubular edge (2) which surrounds the opening and is open on diametrically opposed sides and inside which are arranged strings (3, 4) closed on themselves, and which both surround the opening, so that the closing take place pulling the strings in opposite directions.
5. A dispenser according to one or more preceding claims, characterized in that the small bag (1) is realized as a flat envelope which is open at a peripheral edge of its faces.





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EUROPEAN SEARCH REPORT

Application Number

EP 93 10 2104

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 345 409 (HENKEL KG AUF AKTIEN) * column 2, line 16 - column 6, line 58; claims 1,5,6; figures 6,7 * ---	1-5	D06F39/02
X	DE-U-9 012 686 (DALLI-WERKE MÄURER+WIRTZ GMBH & CO KG) * the whole document * ---	1-5	
A	GB-A-302 416 (BEATTIE COPLAND,J.) * the whole document * -----	1,2	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			D06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23 JUNE 1993	Examiner MUNZER E.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			