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(71) Applicant (for all designated States except MN, US):
RECKITT BENCKISER N.V. [NL/NL]; Siriusdreef 14,
NL-2132 WT Hoofddorp (NL).

(71) Applicant (for MN only): **RECKITT & COLMAN
(OVERSEAS) LIMITED** [GB/GB]; 103-105 Bath Road,
Slough Berkshire SL1 3UH (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DI BONO, Giuseppe**
[IT/IT]; Reckitt Benckiser Italia, Piazza S. Nicolo 12/3, I-

VE 30034 Mira (IT). **WIEDEMANN, Ralf** [DE/IT];
Reckitt Benckiser Italia, Piazza S. Nicolo 12/3, I-VE
30034 Mira (IT).

(74) Agents: **BOWERS, Craig** et al.; Dansom Lane, Hull East
Yorkshire HU8 7DS (GB).

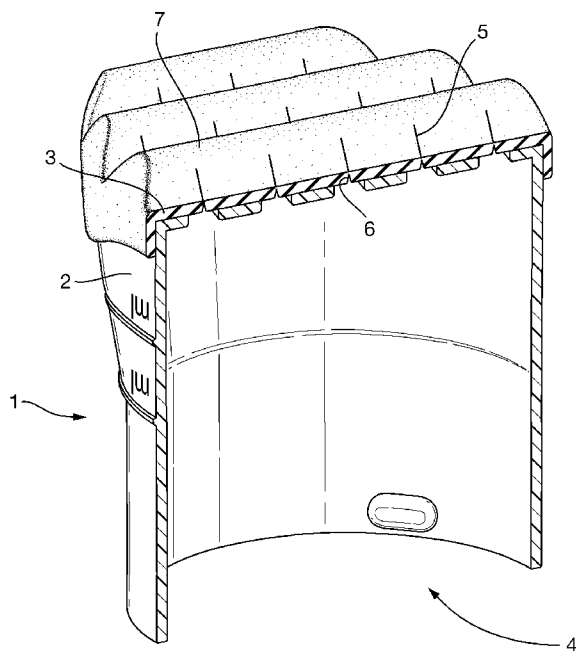
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(54) Title: A DOSING AND DISPENSING DEVICE FOR LIQUID DETERGENT

Fig. 1



(57) Abstract: A dosing and dispensing device (1) for liquid
detergent comprises a hollow body (2) having a portion (3)
comprising a flexible material, where- in at least one slit (5)
is provided in the flexible portion for dispensing the product,
and means to spread at least a portion of the contained liquid
detergent onto a surface of fabric. The slit is (progressively)
opened when pressure is applied to said device on a surface
to which the liquid detergent is applied. The opening is sub-
stantially closed when said pressure stops.



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A DOSING AND DISPENSING DEVICE FOR LIQUID DETERGENT

The present invention relates to a dosing and dispensing device for liquid laundry detergents. The device according to the present invention is particularly adapted to pretreat fabrics with a portion of
5 liquid detergent.

Dispensing devices for liquid detergent, which are to be introduced with the fabrics in the washing machine, are well known in the prior art. It is also known that it is possible to achieve a greater effectiveness in respect of stain removal by pretreating the fabrics
10 without consuming a greater amount of liquid detergent. Pretreatment means that a certain amount of detergent is applied directly onto the dirty parts of said fabrics before they are washed in the machine. In the following these devices are called "pretreatment devices". In the following detergent means a detergent
15 composition for the treatment of fabrics. This detergent composition may comprise washing additives, like beaches, enzymes and/or others known in the art.

Various pretreatment devices for liquid detergent are described in the prior art, for example in WO 92/09736 and WO 92/09737.
20 These devices allow an application of said liquid detergent onto the fabrics before the washing cycle either with predetermined outlets or a removable pretreatment applicator respectively. Another approach is represented by EP-A-575 714. This document describes another pretreatment device for liquid detergent with a fixed applicator
25 in form of a roller ball. This roller ball is able to spread the contained liquid detergent only in a predetermined direction.

The pretreating devices mentioned before allow an even spreading of the contained liquid detergent onto the fabric, i.e. the spread quantity is always the same. This way of even spreading does not

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consider that different stains need a different amount of liquid detergent during pretreatment. For example, stains can be made of certain constituents which need a more thorough pretreatment to increase its effectiveness. This can be achieved by applying a greater amount of the liquid detergent. A greater quantity is also needed depending on the dimensions of the stain itself. Therefore, we found that the effectiveness of stain removal is increased when a greater amount of pretreating detergent is applied upon the soiled surface of the fabric, since said surface can be pretreated more thoroughly.

It is not possible with the pretreatment devices of the prior art to adjust the amount of liquid detergent on the specific needs. Indeed, the outlets having a fixed aperture or the applicators, being for example a sponge, do not give the possibility to vary the quantity of liquid detergent to be spread on the fabric for a thorough pre-treatment / to control the amount of detergent such that eventual damages to fabrics (i.e. fading, etc.) can be avoided. It is therefore the object of the present invention to provide a device with an adjustable flow of the contained liquid detergent for the pretreatment.

It is an object of the present invention to obviate / mitigate the problems outlined above.

According to a first aspect of the present invention there is provided a dosing and dispensing device for liquid detergent comprising a hollow body having a portion comprising a flexible material, wherein at least one slit is provided in the flexible portion for dispensing the product, and means to spread at least a portion of the contained liquid detergent onto a surface of fabric, wherein said slit is (progressively) opened when lateral pressure is applied to said de-

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vice on a surface to which the liquid detergent is applied, and said opening being substantially closed when said pressure stops.

It has been found that the container of the invention is particularly advantageous in that the amount of detergent dosed from the device and the spreading of the detergent onto the surface being treated is surprisingly beneficial. These benefits include quick / advanced control of discharge of the detergent from the device by the application / removal of pressure applied thereto. Additionally the device of the invention is able to provide a rubbing / scrubbing action as well as the application of pressure.

Generally the opening is located in the bottom part of said device. This allows dosing of the detergent (aided by gravity) onto the surface being treated. To achieve this aim preferably the portion of flexible material is located in the bottom part of said device.

Preferably the device comprises several openings. This allows effective dosage and spreading of the detergent onto the surface being treated.

It is preferred that the openings are in the form of a slit valve. Such slit valves are understood to be capable of being opened when pressure is applied thereto. The pressure applied may be in the form of contact pressure against a surface or translational pressure (or a combination thereof) caused by movement relative to a surface.

Each slit valve may have one or more preferably a plurality of separate slit openings (these may be arranged perpendicularly to one other - in this way it is possible to achieve dosing of the detergent even when the direction of rubbing is perpendicular to some of the slit valves (i.e. for any rubbing direction some valves will be in the

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best condition to work)), (ideally about two openings for enhanced discharge of detergent). Where more than one slit opening is present it can be that the openings are not of an equivalent size.

Preferably the slit valve is co-planar with the surface of the flexible portion. The flexible portion may be planar. Optionally the flexible portion is in the form of a portion of a sphere / spheroid. .

To improve the penetration / spreading of the detergent into the (usually fabric surface) being treated it is preferred that the device (preferably on the flexible portion) comprises a spreading means.

10 Preferably the spreading means is in the form of a ridge. The ridge may be liner or may be curved. Generally a plurality of ridges is present on the device.

In order to be capable of being used by a consumer generally the device comprises a gripping means. The gripping means preferably comprises the main body of the device, into which the detergent is poured. The main body of the device is preferably shaped so that it is capable of fitting into a hand of a user yet may contain sufficient detergent for a pre-treatment and laundry step. The main body thus has a volume of from 50-200cm³. The main body

15 20 may comprise any geometrical shape but is generally based on an ovoid, tapering towards its upper opening (into which the detergent is poured) and also at its lower end (which adjoins onto the flexible portion).

Generally the device is made of elastic plastic material. The main body may comprise PP, PE or PET (both injected or blow moulded).

25 The ridges and the valves may comprise any rubber or elastomer suitable for being welded, melted or glued onto the main body.

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According to a second aspect of the present invention there is provided a process for pretreating and washing fabrics in a washing machine with the dosing and dispensing device according to any of the preceding claims, characterized in that it comprises of the following steps: a dose of the total quantity of liquid detergent to be utilized during the pretreatment and washing cycle is introduced into the dosing and dispensing device; pretreatment of the fabrics is executed with a controlled quantity of the liquid detergent dosage contained in said device and dispensed from said device through said cut; the thus pretreated fabrics are placed in the drum of the washing machine together with said dosing and dispensing device and with other non-pretreated fabrics.

Most preferably the device is for a laundry cleaning formulation and for use in dispensing same onto a clothing surface.

Preferably the laundry cleaning formulation comprises a bleach, e.g. in an amount of from 0.001% to 99.99%, preferably 0.001% to 20%, preferably 4% to 18%, e.g. most preferably about 4.5% or 13%, by weight, of bleach. The bleach is preferably peroxide bleach, most preferably hydrogen peroxide. Peroxide sources other than H_2O_2 can be used.

Preferably the laundry cleaning formulation comprises a surfactant. Where present the composition comprises from 0.001% to 99.99%, preferably 0.05% to 15%, e.g. about 7%, by weight of surfactant.

The surfactant is, for example, an anionic or nonionic surfactant or mixture thereof (most preferably a nonionic surfactant). The nonionic surfactant is preferably a surfactant having a formula $RO(CH_2CH_2O)_nH$ wherein R is a mixture of linear, even carbon-

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number hydrocarbon chains ranging from $C_{12}H_{25}$ to $C_{16}H_{33}$ and n represents the number of repeating units and is a number of from about 1 to about 12. Examples of other non-ionic surfactants include higher aliphatic primary alcohol containing about twelve to
5 about 16 carbon atoms which are condensed with about three to thirteen moles of ethylene oxide.

Other examples of nonionic surfactants include primary alcohol ethoxylates (available under the Neodol trade name from Shell
10 Co.), such as C_{11} alkanol condensed with 9 moles of ethylene oxide (Neodol 1-9), C_{12-13} alkanol condensed with 6.5 moles ethylene oxide (Neodol 23-6.5), C_{12-13} alkanol with 9 moles of ethylene oxide (Neodol 23-9), C_{12-15} alkanol condensed with 7 or 3 moles ethylene oxide (Neodol 25-7 or Neodol 25-3), C_{14-15} alkanol condensed
15 with 13 moles ethylene oxide (Neodol 45-13), C_{9-11} linear ethoxylated alcohol, averaging 2.5 moles of ethylene oxide per mole of alcohol (Neodol 91-2.5), and the like.

Other examples of nonionic surfactants suitable for use in the present invention include ethylene oxide condensate products of secondary aliphatic alcohols containing 11 to 18 carbon atoms in a straight or branched chain configuration condensed with 5 to 30 moles of ethylene oxide. Examples of commercially available non-ionic detergents of the foregoing type are C_{11-15} secondary alkanol
25 condensed with either 9 moles of ethylene oxide (Tergitol 15-S-9) or 12 moles of ethylene oxide (Tergitol 15-S-12) marketed by Union Carbide, a subsidiary of Dow Chemical.

Octylphenoxy polyethoxyethanol type nonionic surfactants, for example, Triton X-100, as well as amine oxides can also be used as a
30 nonionic surfactant in the present invention.

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Other examples of linear primary alcohol ethoxylates are available under the Tomadol trade name such as, for example, Tomadol 1-7, a C₁₁ linear primary alcohol ethoxylate with 7 moles EO; Tomadol 25-7, a C₁₂-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; 5 Tomadol 45-7, a C₁₄-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; and Tomadol 91-6, a C₉-C₁₁ linear alcohol ethoxylate with 6 moles EO.

Other examples of linear primary alcohol ethoxylates are available under the Lutensol trade name such as, for example, Lutensol A3N, 10 a C₁₃₋₁₅ linear primary alcohol ethoxylate with 3 moles EO; Lutensol LA60, a C₁₃₋₁₅ linear primary alcohol ethoxylate with 7 moles EO. Also Genapol such as, for example, Genapol LA3, a C₁₃₋₁₅ linear primary alcohol ethoxylate with 3 moles EO; Genapol LA070, a C₁₃₋₁₅ linear primary alcohol ethoxylate with 7 moles EO 15

Tomadol 45-7, a C₁₄-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; and Tomadol 91-6, a C₉-C₁₁ linear alcohol ethoxylate with 6 moles EO.

20

Other nonionic surfactants are amine oxides, alkyl amide oxide surfactants.

Preferred anionic surfactants are frequently provided as alkali metal salts, ammonium salts, amine salts, aminoalcohol salts or magnesium salts. Contemplated as useful are one or more sulfate or sulfonate compounds including: alkyl benzene sulfates, alkyl sulfates, alkyl ether sulfates, alkylamidoether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkylsulfonates, alkylamide sulfonates, alkylarylsulfonates, olefinsulfonates, paraffin sulfonates, alkyl sulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfosuccinamate, alkyl sulfoacetates, 25 30

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alkyl phosphates, alkyl ether phosphates, acyl sarconsinates, acyl isethionates, and N-acyl taurates. Generally, the alkyl or acyl radical in these various compounds comprise a carbon chain containing 12 to 20 carbon atoms.

5

Other surfactants which may be used are alkyl naphthalene sulfonates and acyl / oleoyl sarcosinates and mixtures thereof.

The laundry cleaning formulation may comprise various optional
10 ingredients, including enzymes, builders, solvents, dye transfer inhibition agents, dye catchers, preservatives, anti-oxidants, anti-static agents, fragrances, odour absorbing components, optical brighteners, acidifying agents, alkalizing agents, thickeners (e.g. hydroxyethylcellulose and / or xanthan gum).

15 The container of the invention is further described by reference to the following Figures in which:

Figure 1 is a cross-sectional view of a portion of a device in accordance with the invention.

From Figure 1 it can be seen that the device 1 comprises a main
20 body section 2 in the form of a modified cylinder and a flexible body portion 3. These are joined together to form a dosing device for retaining / dosing a liquid (detergent) composition.

The main body 2 is able to act as a handle for use by a consumer. The main body has an opening 4 for introduction of detergent into
25 the device and release of detergent in a (laundry) washing cycle.

The flexible body portion 3 comprises a plurality of slit valves 5 disposed on its lower surface. The slit valves 5 have openings 6 that may be opened by the application of pressure (contact and /

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or translational) on a surface. The flexible body portion 3 also comprises a plurality of curved spreading ridges 7 on its lower surface.

In use a dose of the total quantity of liquid detergent to be utilized during the pretreatment and washing cycle is introduced into the device 1. Pretreatment of fabrics is executed with a controlled quantity of the liquid detergent dosage contained in said device 1 being dispensed from said device 1 through said valves 5. This is achieved by pressing and rubbing the device 1 on the fabric surface to be treated, thus causing release of detergent and spreading of same (aided by the ridges 7) on the surface being treated. The thus pretreated fabrics are placed in the drum of the washing machine together with said dosing and dispensing device 1 and with other non-pretreated fabrics. A washing cycle may then be operated.

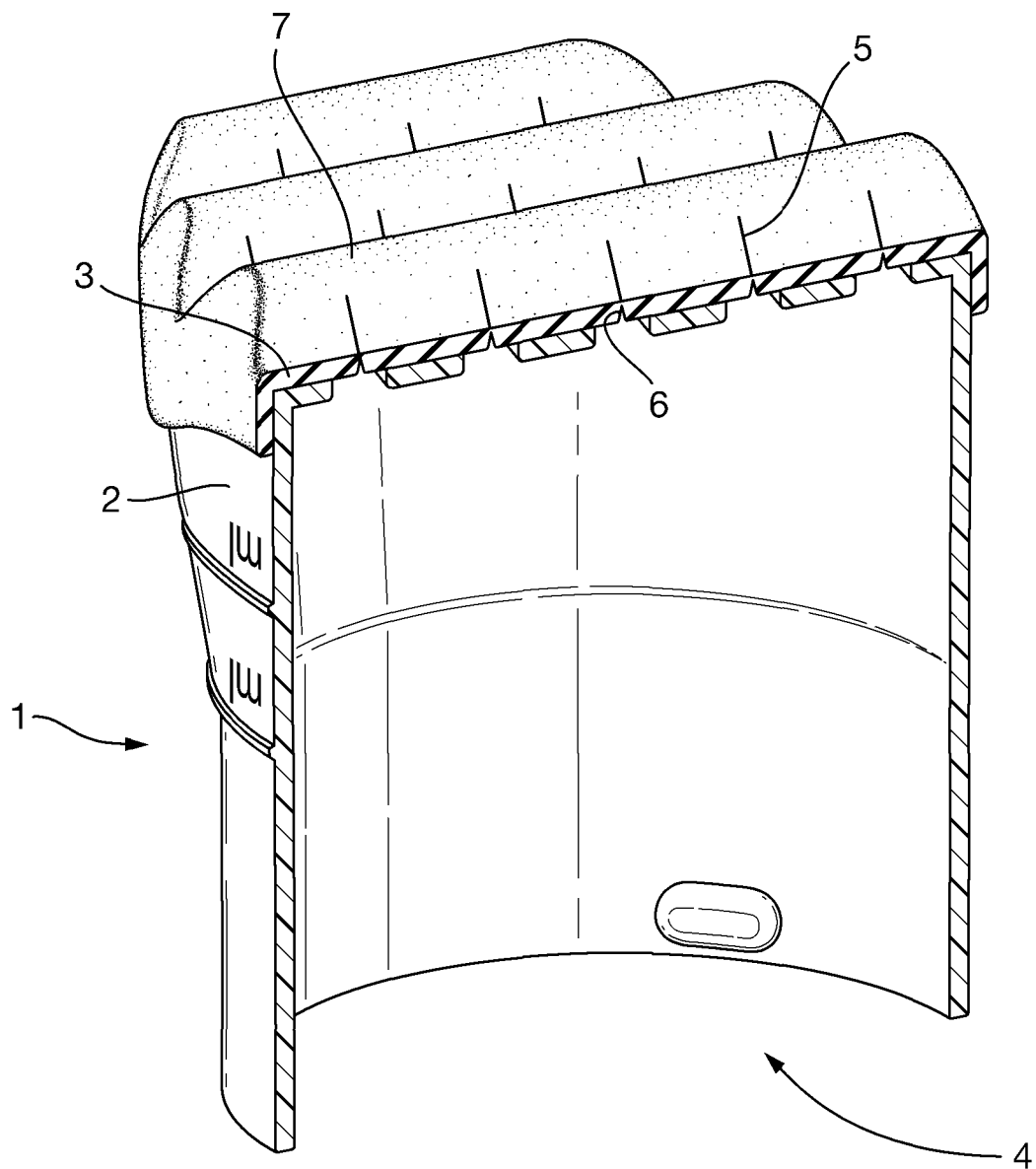
CLAIMS

1. A dosing and dispensing device for liquid detergent comprising a hollow body having a portion comprising a flexible material, wherein at least one slit is provided in the flexible portion for dispensing
5 the product, and means to spread at least a portion of the contained liquid detergent onto a surface of fabric, wherein said slit is (progressively) opened when lateral pressure is applied to said device on a surface to which the liquid detergent is applied, and said opening being substantially closed when said pressure stops.
- 10 2. A device according to claim 1, wherein said slit is located in the bottom part of said device.
3. A device according to claims 1 or 2 wherein a plurality of slits is provided.
4. A device according to claim 3, wherein the slits are arranged in
15 a regular pattern.
5. A device according to any one of the proceeding claims wherein the slits have a size of 0.1 to 10mm.
6. A device according to any one of the proceeding claims wherein the slits, wherein said portion of flexible material is located in the
20 bottom part of said device.
7. A device according to any of the preceding claims, wherein said device comprises rubbing ridges.
8. A device according to any of the preceding claims, wherein said device comprises gripping means.
- 25 9. A device according to any of the preceding claims, wherein said device is made of elastic plastic material.

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10. A process for pretreating and washing fabrics in a washing machine with the dosing and dispensing device according to any of the preceding claims, characterized in that it comprises of the following steps: a dose of the total quantity of liquid detergent to be
5 utilized during the pretreatment and washing cycle is introduced into the dosing and dispensing device; pretreatment of the fabrics is executed with a controlled quantity of the liquid detergent dosage contained in said device and dispensed from said device through said cut; the thus pretreated fabrics are placed in the
10 drum of the washing machine together with said dosing and dispensing device and with other non-pretreated fabrics.

Fig. 1



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. D06F39/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Spitzer, Bettina

INTERNATIONAL SEARCH REPORT

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PCT/GB2012/051464

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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International application No

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