



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

**EP 1 455 025 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:

**08.09.2004 Bulletin 2004/37**

(51) Int Cl.7: **E03D 9/03**

(21) Application number: **04251234.3**

(22) Date of filing: **03.03.2004**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IT LI LU MC NL PL PT RO SE SI SK TR**

Designated Extension States:

**AL HR LT LV MK**

(30) Priority: **04.03.2003 US 379174**

(71) Applicant: **INTERNATIONAL FLAVORS &  
FRAGRANCES INC.**

**New York New York 10019 (US)**

(72) Inventor: **Troost, Erik Herman  
1017 VD Amsterdam (NL)**

(74) Representative: **Mercer, Christopher Paul et al  
Carpmaels & Ransford,  
43-45 Bloomsbury Square  
London WC1A 2RA (GB)**

(54) **Toilet rim block holder**

(57) Methods and apparatus for dispensing a material such as a fragrance, a disinfectant, a coloring agent, or a cleaner into a toilet bowl are disclosed. In accordance with certain preferred embodiments of the present invention, a rim holder and material container are provided. The rim holder includes a vessel section that collects flush water after initiation of a flush cycle. After the volume within the vessel section reaches a predeter-

mined level, the material is mixed with the water and permitted to flow into the toilet bowl from a lower aperture. The present invention permits the material to be added in the flush cycle so that the material is not carried away with the initial flow, but instead remains in the bowl after the flush cycle is complete.

**EP 1 455 025 A1**

## Description

[0001] The present invention relates to methods and apparatus for packaging, and more particularly to packaging for products used to clean, remove limescale, disinfect, deodorize, add color and/or add fragrance and add/or impart foam to toilet bowls.

## BACKGROUND OF THE INVENTION

[0002] Both commercial and residential toilets often use treated water for several purposes. The water is treated to provide disinfectant, anti-bacterial, anti-odor and other useful properties that make the toilet "self-cleaning" to the extent that situations such as the proliferation of mold, slime, calcium or lime deposits and iron oxide stains are diminished, and so that the bowl is as clean as possible after each use from the turbulent action of the flush cycle alone. Additionally, the water is often treated to add color and fragrance, both of which improve the aesthetics of the toilet and the room. A fragrance is any molecule that diffuses via vaporization into the atmosphere (under local conditions of temperature and pressure) and subsequently activates a specific receptor in the nasal cavity. The fragrance may either mask any unpleasant odor or may simply be an environmental improvement or a combination of these.

[0003] Toilet water treatment systems fall into two broad categories, i.e., those that treat the water in the tank, and those that treat the water in the bowl. Systems operating within the tank range from solid "drop in" tablets to more elaborate systems such as that shown in U.S. Patent No. 6,192,524, Black, which discloses a system that is affixed to the overflow drain tube found in toilet tanks. However, commercial toilets and many newer residential toilets are either tankless or have a significantly reduced tank volume or non/difficult accessible tanks. Therefore, a system that is attached to the toilet bowl itself is ultimately of wider applicability.

[0004] Systems attaching a simple fragrance-containing solid to the bowl rim are well known in the art, as are more elaborate systems that dispense liquids into the water. For example, both U.S. Design Patent No. D466,583, Heijdenrijk and U.S. Patent No. 6,434,758, Camp, et al. disclose rim mounted systems. Both these patents are assigned to Sara Lee Household and Body Care, a company that manufactures and sells the Ambi-Pur™ line of devices to treat the water in toilet bowls. The systems disclosed in the Sara Lee patents have a holder with a flexible section for suspending the unit from the toilet bowl rim and a reservoir that holds an active substance such as cleansing and air freshening liquids. These liquids are introduced to a porous section that lies in the path of the flushing water, i.e., underneath the rim and along the interior bowl surface. The porous mass is in constant communication with the active substance such that when the unit is in place, a discharge opening discharges active substance on to the porous

mass. The active substance is later washed into the water when the toilet flushes. The problem with such systems, however, is that the initial volume of flush water carries the highest concentration of active substances and fragrance out of the bowl entirely, leading to waste and ineffective results.

[0005] Thus, none of these prior art systems addresses the problem outlined above. There remains therefore a long-felt yet unmet need for providing a simple device mounted to the toilet bowl rim that will effectively and reliably introduce an active substance at a later point in the flush cycle so that the highest concentration of active substances and fragrance is not carried away with the initial volume of flush water. It would further be desirable to provide such improvements in a manner applicable across a wide variety of packaging designs, and combinations of active substances and the forms of the active substances, such as solid, liquid, gel, etc. in a cost-effective manner.

## SUMMARY OF THE INVENTION

[0006] These shortcomings of the prior art are remedied, however by an apparatus for introducing material into a toilet bowl that has a rim holder positioned within the toilet bowl and a material container filled with a material along with a material dispenser connecting the rim holder and a vessel section of the material container, such that the vessel section comprises walls and a lower aperture open to the toilet bowl. In operation, upon initiation of a flush cycle, this apparatus fills the vessel section to a predetermined level causing the material to be dispensed into the vessel section. There is a wick, valve or other structure that permits material to be admitted to the vessel section when a predetermined volume of flush water is collected. This structure is formed in such a way that fragrance can evaporate continuously in order to provide good deodorizing and/or pleasing action in between flushes as with current systems such as the one by Sara Lee. In certain preferred embodiments, the rim holder and vessel section are integral, and in certain embodiments, the rim holder further comprises a hanger. The apparatus is preferably molded from a plastic material and the material preferably comprises at least one active component. The material is at least one material selected from the group comprising a fragrance, a disinfectant, a coloring agent, and a cleaner.

[0007] The present invention also discloses methods of adding a material to a toilet bowl by positioning a rim holder within the toilet bowl, positioning a material container in fluid communication with the rim holder, and then diverting a portion of flush water entering the toilet bowl into a vessel section. Material is mixed with the water in the vessel section and a mixture including the material flows into the toilet bowl via a lower aperture in the vessel section after an initial volume of flush water has exited the toilet bowl. Preferably, the mixing takes place when a predetermined level within the vessel section is

reached, and the flow through the lower aperture is metered so that substantially all the liquid within the vessel section is dispensed into the bowl after a flush cycle is substantially completed. In preferred embodiments, the material added is at least one material selected from the group comprising a fragrance, a disinfectant, a coloring agent, and a cleaner.

**[0008]** The present invention therefore discloses, in preferred embodiments, apparatus for dispensing a material into a toilet bowl that has a rim holder with a hanger portion that engages the toilet bowl, a vessel section that holds a volume of flush water, a lower aperture that drains the vessel section; and a material container received by the vessel section, whereby material is admitted to the vessel section after a predetermined level of flush water fills the vessel section. Most preferably, the rim holder and the material container are molded from plastic and the material is at least one material selected from the group comprising a fragrance, a disinfectant, a coloring agent, and a cleaner.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

#### **[0009]**

FIG. 1 is a perspective view of a preferred embodiment 100 of the present invention.

FIG. 2 is an exploded perspective view of the assembly illustrated in FIG. 1.

FIG. 3 is a cross-sectional view of an apparatus made in accordance with the present invention taken along line 3-3 of FIG. 1 and shown affixed to a toilet bowl.

FIG. 4, is a view similar to that of FIG. 3, showing the invention in use at a later stage in the flush cycle.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

**[0010]** The present invention is implemented in several preferred embodiments, which are discussed below as illustrative examples. This description is provided for purposes of understanding the invention and is not meant to be limiting.

**[0011]** Referring now to FIG. 1, there is shown a perspective view of a preferred embodiment 100 of the present invention in which a material container 110 is inserted into a rim holder 120. Further details of this embodiment can be seen with reference to FIG. 2, which is an exploded perspective view of the assembly illustrated in FIG. 1. As will be appreciated by those of skill in the art, in certain embodiments the entire assembly 100 will be sold as a disposable assembly, while in other embodiments, the material container 110 will be sold independently for replacement in an existing rim holder 120. As will be further understood by those of skill in the art, the rim holder 120 may be made of any of a number of materials, primarily molded polymers, however, alter-

native materials include metals, fiber composite materials and ceramics. Similarly, the material container 110 may be formed from a molded polymer, glass or ceramic or other material. The choice will take into consideration the nature of the liquid being held inside and chosen so as to minimize degradation of the nature of the liquid, e. g., the preservation of fragrance strength, cleansing and disinfectant power, and color stability. The material container can be divided into a plurality of chambers if desired so that multiple materials can be provided. This is desirable if the materials to be dispensed are not compatible, which not uncommon when a bleach material is used.

**[0012]** The material container 110 provides a housing for at least one material "M" that is to be admitted to the water that is to remain in a toilet bowl. The material may include a cleaner, a disinfectant, a fragrance or a colorant, or any combination of such materials, all of which are well known, either alone or in various combinations. Additionally, the material may be provided in solid, gel, particle, liquid or any combination of forms so long as the material in the material housing 110 is water-soluble. It should be noted that although the discussions herein relate to toilets that use water, it should be understood that the concepts of the present invention have equal applicability to "chemical" toilets that use a medium other than water. When flushed, such embodiments will provide the same mechanism of action as described below, except that the toilet bowl is not filled with water, and the material "M" will be soluble in whatever chemical flushing agent the toilet uses.

**[0013]** An elevation cross-sectional view of an apparatus made in accordance with the present invention affixed to a toilet bowl is shown in FIG. 3. As illustrated, a hanger portion 122 of the rim holder 120 extends over and engages the rim of the toilet bowl 50 in a manner known in the art. As mentioned above, the material chosen for the hanger portion will provide sufficient strength, flexibility and resilience to accommodate this function. The geometry of the hanger 122 is chosen so that the assembly 100 is disposed below the top of the rim 52, and partially underneath the lower edge of the rim 54, as illustrated. Also shown in FIG. 3 is an approximation of the water flow in a flushed toilet, shown by the arrows. Upon flushing, water flows from the lower edge of the rim 54, and due to the construction of the rim holder 120, a portion of this flow is captured in the vessel section 124 of the rim holder 120.

**[0014]** Referring to FIG. 4, there is illustrated a view similar to that of FIG. 3, the primary difference being that the water flow from the flushing action of the toilet has substantially filled the vessel section 124. In other words, the view of FIG. 4 is at a later time in the flushing cycle than the view shown in FIG. 3. At this point, the water level "L" has risen so that material "M" held in the material container 110 is now mixed with the water in the vessel section 124, and this mixture is released into the toilet bowl from a lower aperture 126, as shown by

the arrow in FIG. 4. In a preferred embodiment, the size and structure of the vessel section will be designed to create a mixture of material and fresh water that is sufficient for the intended purpose, whether cleansing, fragrance, deodorizing, disinfecting, color, or any combination of these functions.

**[0015]** Also shown in FIG. 4 is the material dispenser 128, which causes the material "M" to be mixed with the water in the vessel section 124. The material dispenser 128 can be a simple wick or tube, a section of permeable material, such as a sponge or foam, in such embodiments, when the water captured in the vessel section 124 rises to a predetermined level, the material "M" is in contact with the water and fills the vessel section with a solution of water and the material. Alternatively, in certain preferred embodiments the material dispenser 128 is a somewhat more complex mechanism, e.g., a valve with a float actuation such that the valve opens when the level within the vessel section 124 rises to a sufficient level. The material dispenser 128 may be part of the material container 110, part of the rim holder 120, or a separate component that cooperates with of the main components. In any embodiment, the function required is that the material "M" is admitted into and mixed with the water only upon a sufficient level "L" in the vessel section 124, that in turn correlates to a predetermined time into the flush cycle. As a result, as explained above, since the aperture 126 is designed to permit liquid to escape at a slower rate than it is admitted, the filled vessel section 124 will continue to be drained after the flush cycle is complete, and as a result, the solution of water and material "M" will be introduced into the bowl at a higher concentration with substantially less waste and greater effectiveness than found in prior art designs.

**[0016]** In accordance with the present invention, the device 100 described above enables a material, for one example a fragrance liquid, to be dispensed into a toilet bowl 50 both during and after the flushing cycle. In this aspect the present invention provides a significant improvement over the prior art in that previously treated liquid was flushed away since it was created either before or during the flush cycle, in some instances resulting in the majority of the liquid being flushed out of the bowl. On the other hand, a device made in accordance with the present invention will provide a system wherein the material, whether a cleaner, disinfectant, colorant, fragrance, etc. remains substantially in the water remaining in the toilet bowl after the flush cycle has ended.

**[0017]** As noted above various surfactant materials can be used in the present invention. Representative surfactants include alkylaryl sulfonates, amine oxides, betaines, block copolymers, ethoxylated alcohols such as Neoldol 23 available from Shell Chemical Company, alkylphenol ethoxylates, ethoxylated fatty acids, fluorosurfactants, imididazolines and derivatives, quaternary amines, linear alkyl sulfonates, sulfosuccinates and alkyl polyglycosides as set forth in U.S. Patents, 3,970,596, 4,861,511 and 5,256,328.

**[0018]** Disinfectant materials used in the invention include alkyl dimethyl ammonium chloride, and orthophenylphenol. A bacteriostatic such as 5-chloro-2-(2,4-dichlorophenoxy)phenol as described in U.S. Patent 3,897,357 is appropriate for use in toilet bowl cleanser applications.

**[0019]** Suitable thickening agents used in this field include fumed silica, methyl cellulose derivatives, clays, polyacrylic acid, xantham gums, polysaccharides and magnesium silicate.

**[0020]** Chelating agents suitable for use in the invention include tetrasodium EDTA.

**[0021]** Fragrance materials used in the invention include any material which is compatible with the other components in the composition and which imparts a pleasing aesthetically appealing fragrance to the composition. When fragrance materials are used they are used in amounts up to about 15 weight percent, preferably from about 0.5 to 10 and most preferably from about 1 to about 5 weight percent based on the total weight of the composition. Suitable fragrances include but are not limited to fruits such as almond, apple, cherry, grape, pear, pineapple, orange, strawberry, raspberry; musk, flower scents such as lavender-like, rose-like, iris-like, and carnation-like. Other pleasant scents include herbal and woodland scents derived from pine, spruce and other forest smells. Fragrances may also be derived from various oils, such as essential oils, or from plant materials such as peppermint, spearmint and the like.

**[0022]** A list of suitable fragrances is provided in U.S. Patent No. 4,534,891. Another source of suitable fragrances is found in *Perfumes, Cosmetics and Soaps*, Second Edition, edited by W. A. Poucher, 1959. Among the fragrances provided in this treatise are acacia, cassie, chypre, cyclamen, fern, gardenia, hawthorn, heliotrope, honeysuckle, hyacinth, jasmine, lilac, lily, magnolia, mimosa, narcissus, freshly-cut hay, orange blossom, orchid, reseda, sweet pea, trefle, tuberose, vanilla, violet, wallflower, and the like.

**[0023]** Upon review of the foregoing, numerous adaptations, modifications, and alterations will occur to the reviewer. These will all be, however, within the spirit of the present invention. Accordingly, reference should be made to the appended claims in order to ascertain the true scope of the present invention.

## Claims

1. Apparatus for introducing material into a toilet bowl comprising:

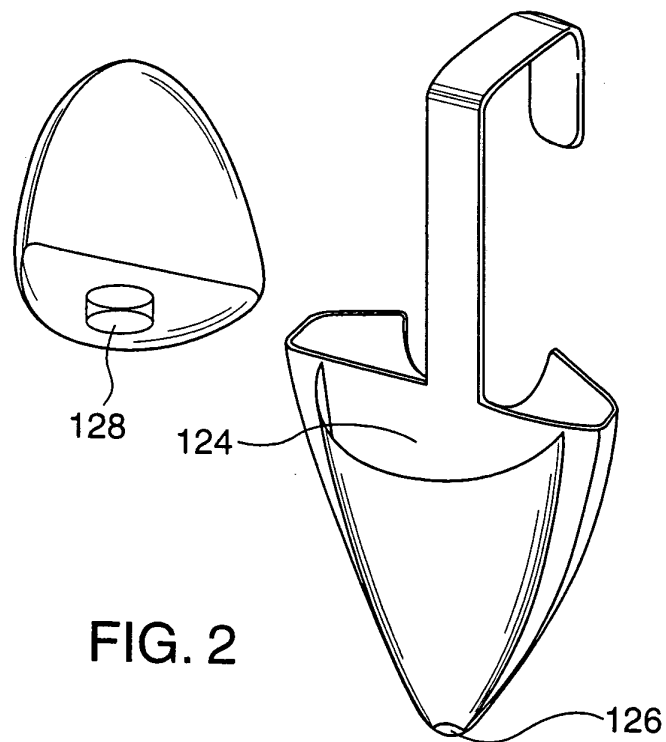
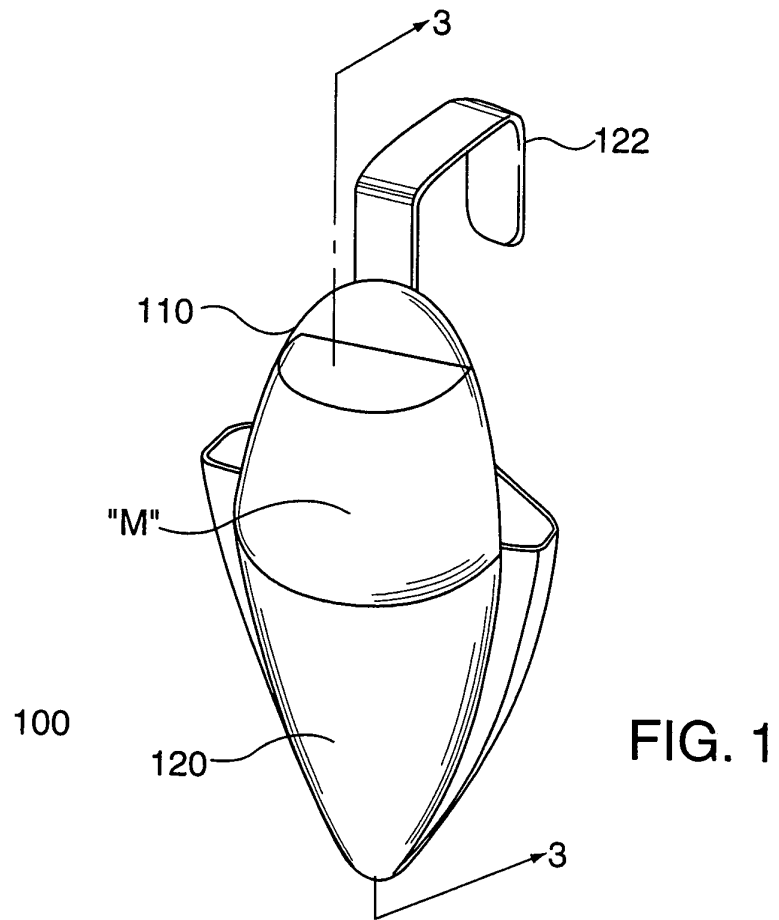
a rim holder positioned within the toilet bowl;  
a material container filled with a material; and  
a material dispenser connecting the rim holder and a vessel section of the material container, wherein the vessel section comprises walls and a lower aperture open to the toilet bowl,

whereby the initiation of a flush cycle fills the vessel section to a predetermined level causing the material to be dispensed into the vessel section.

2. The apparatus of claim 1, wherein the rim holder and vessel section are integral. 5
3. The apparatus of claim 1 or claim 2, wherein the rim holder further comprises a hanger. 10
4. The apparatus of any one of claims 1 to 3, wherein the rim holder is molded from a plastic material. 15
5. The apparatus of any one of claims 1 to 4, wherein the material container is molded from a plastic material. 20
6. The apparatus of any one of claims 1 to 5, wherein the material comprises at least one liquid component. 25
7. The apparatus of any one of claims 1 to 6, wherein the material comprises at least one of a fragrance, a disinfectant, a colouring agent and a cleaner. 30
8. The apparatus of any one of claims 1 to 7, wherein the material dispenser is a wick. 35
9. The apparatus of any one of claims 1 to 7, wherein the material dispenser is a valve. 40
10. The apparatus of any one of claims 1 to 9, wherein the material dispenser is integral with the material container. 45
11. A method of adding a material to a toilet bowl, comprising the steps of:
  - positioning a rim holder with the toilet bowl;
  - positioning a material container in fluid communication with the rim holder;
  - diverting a portion of flush water entering the toilet bowl into a vessel section;
  - mixing the material with the water in the vessel section; and
  - flowing a mixture including the material into the toilet bowl via a lower aperture in the vessel section after an initial volume of flush water has exited the toilet bowl.
12. The method of claim 11, wherein the step of mixing comprises sensing a predetermined level within the vessel section. 50
13. The method of claim 12, wherein the step of mixing comprises opening a valve. 55
14. The method of claim 11, further comprising the step

of metering the flow through the lower aperture so that substantially all the liquid within the vessel section is dispensed into the bowl after a flush cycle is substantially completed.

15. The method of claim 11, wherein the material added is at least one of a fragrance, a disinfectant, a colouring agent and a cleaner.
16. Apparatus for dispensing a material into a toilet bowl comprising a rim holder having a hanger portion that engages the toilet bowl, a vessel section that holds a volume of flush water, and a lower aperture that drains the vessel section; and a material container received by the vessel section, whereby material is admitted to the vessel section after a predetermined level of flush water fills the vessel section.
17. The apparatus of claim 15, wherein the rim holder and the material container are molded from plastic.
18. The apparatus of claim 15, wherein the material is at least one of a fragrance, a disinfectant, a colouring agent and a cleaner.



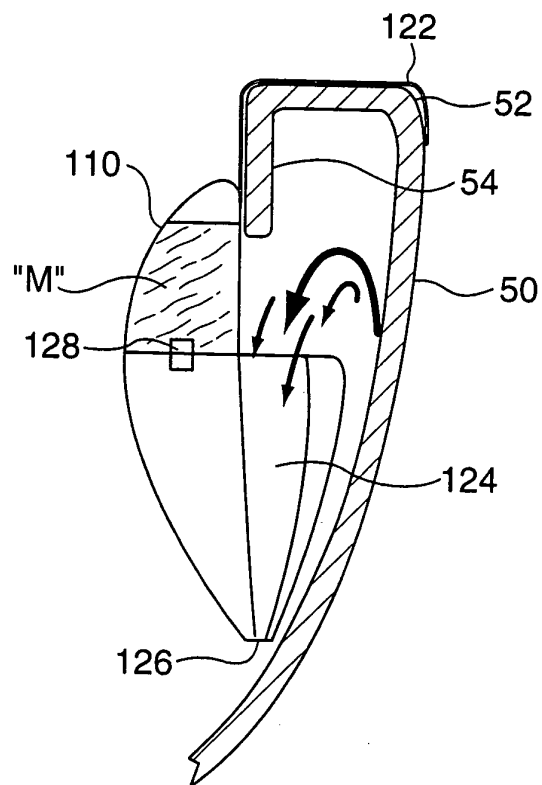


FIG. 3

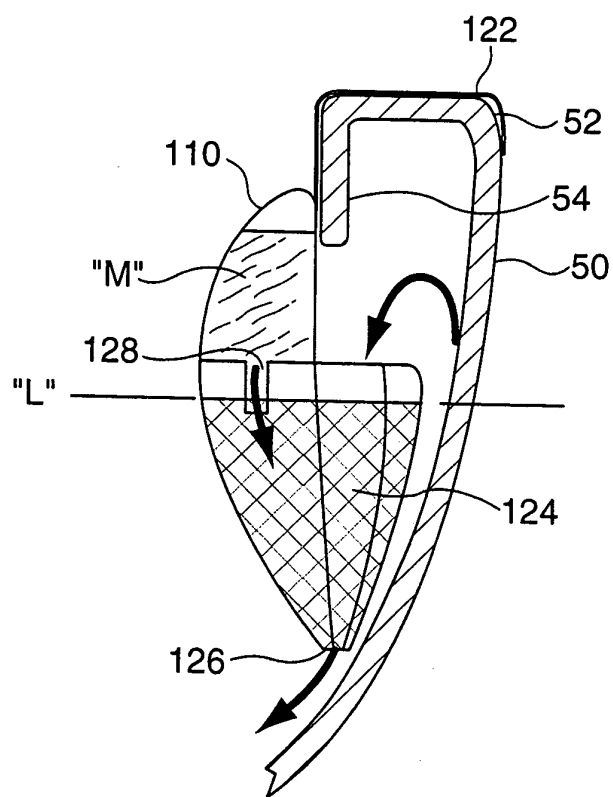


FIG. 4



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 04 25 1234

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.7)
X	DE 100 25 972 A (HENKEL KGAA) 6 December 2001 (2001-12-06)  * column 3, line 44 - line 58 * * column 6, line 34 - line 66 * * column 7, line 30 - line 65 * * figures *	1-7, 9, 11-13, 15-18	E03D9/03
X	DE 296 23 700 U (HENKEL KGAA) 15 April 1999 (1999-04-15)  * page 11, paragraph 1 * * figures 1,4 *	1-8, 10-12, 15-18	
X	GB 2 339 210 A (RECKITT & COLMAN FRANCE) 19 January 2000 (2000-01-19) * page 2, line 12 - line 15 * * page 6, line 15 - line 36 * * figure 4 *	11,14,15	
X,P	WO 2004/010833 A (AFA POLYTEK BV ;HURKMANS PETRUS LAMBERTUS WILH (NL); MAAS WILHELMU) 5 February 2004 (2004-02-05) * page 13, line 5 - page 14, line 23 * * figures 1,4-6 *	11-18	TECHNICAL FIELDS SEARCHED (Int.Cl.7)  E03D
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>10 June 2004</b>	Examiner <b>Urbahn, S</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03 B2 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 25 1234

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-06-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 10025972	A	06-12-2001	DE 10025972 A1	06-12-2001
DE 29623700	U	15-04-1999	DE 19520145 A1	05-12-1996
			DE 29623700 U1	15-04-1999
			AT 3068 U2	27-09-1999
			AT 180855 T	15-06-1999
			CZ 9703794 A3	15-04-1998
			DE 29521762 U1	02-07-1998
			DE 59602108 D1	08-07-1999
			DK 828902 T3	15-11-1999
			WO 9638637 A1	05-12-1996
			EP 0828902 A1	18-03-1998
			ES 2135233 T3	16-10-1999
			GR 3030400 T3	30-09-1999
			HU 9801803 A2	30-11-1998
			PL 322688 A1	16-02-1998
			SI 828902 T1	31-08-1999
			SK 159497 A3	06-05-1998
GB 2339210	A	19-01-2000	NONE	
WO 2004010833	A	05-02-2004	WO 2004010833 A2	05-02-2004

EPO FORM P0489

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82