(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
24 May 2018 (24.05.2018)

WIPO | PCT

(10) International Publication Number
WO 2018/091264 A1

(51) International Patent Classification:
A47L 25/08 (2006.01) *B05C 17/005* (2006.01)
A47L 13/17 (2006.01) *A47K 5/12* (2006.01)
D06F 39/02 (2006.01) *A47L 7/00* (2006.01)
C11D 17/04 (2006.01)

(21) International Application Number:
PCT/EP2017/077893

(22) International Filing Date:
31 October 2017 (31.10.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
16198938.9 15 November 2016 (15.11.2016) EP

(71) Applicant *(for all designated States except AE, AG, AU, BB, BH, BN, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, IN, JO, KE, KN, KW, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, QA, RW, SA, SC, SD, SG, SL, SZ, TT, TZ, UG, US, VC, ZA, ZM, ZW)*: **UNILEVER N.V.** [NL/NL]; Weena 455, 3013 AL Rotterdam (NL).

(71) Applicant *(for AE, AG, AU, BB, BH, BN, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, IN, JO, KE, KN, KW, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, QA, RW, SA, SC, SD, SG, SL, SZ, TT, TZ, UG, VC, ZA, ZM, ZW only)*: **UNILEVER PLC** [GB/GB]; a company registered in England and Wales under company no. 41424 of Unilever House, 100 Victoria Embankment, London, Greater London EC4Y 0DY (GB).

(71) Applicant *(for US only)*: **CONOPCO, INC., D/B/A UNILEVER** [US/US]; 800 Sylvan Avenue AG West, S. Wing, Englewood Cliffs, New Jersey 07632 (US).

(72) Inventors: **NETHAJI, Alagirisamy**; Hindustan Unilever Ltd Research Centre, 64 Main Road, Whitefield 560 066 Bangalore (IN). **RASTOGI, Abhishek**; S/O Mr. Yogendra Kumar Rastogi House No. 108, Moh. Jhanda, Kiratpur UP 246 731 Bijnor (IN). **FERNANDES, Abhishek, B.M.**; Fernandes Innovative Solutions #5, 3rd Floor Srinivasa Residence, 2nd Cross 1st Main Road Hoskerahalli, BSK 3rd Stage, Karnataka, Bengaluru (IN).

(74) Agent: **REIJNS, Tiemen, Geert, Pieter**; Unilever Patent Group, Olivier van Noortlaan 120, 3133 AT Vlaardingen (NL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,

(54) Title: APPLICATOR DEVICE FOR FLUIDS

(57) Abstract: A device (10) for applying a fluid to a surface comprises a container (12) comprising first and second sides defining opposing substantially planar surfaces with a compartment between for holding fluid, and with a dispensing opening. The device further comprises a fluid dispensing system (14) for dispensing the fluid comprising a plunger (24) comprising a base (26) operably mated with the dispensing opening (20), a resilience member (32), a top (28) which projects into an air chamber (19) for allowing air into the compartment (13) when fluid is being released; one or more activators (40) extending outside of the second side and connected to the plunger; and a dispensing head with a plurality of flow paths and outlets connected to the container to receive flow through the dispensing opening, wherein each outlet is directed at an angle of zero degrees to sixty degrees with respect to the second side.

Fig. 1A

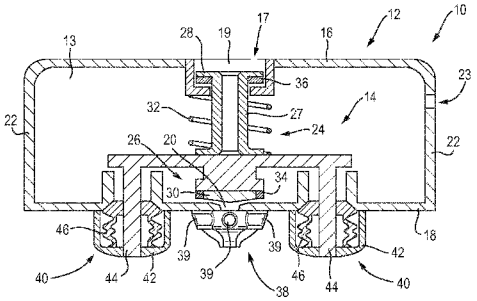
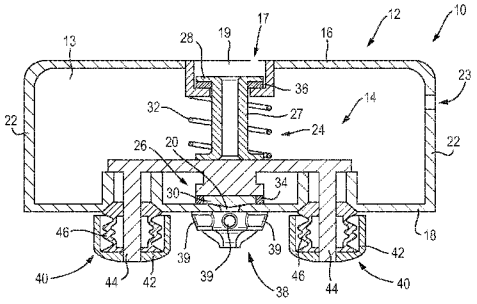


Fig. 1B



WO 2018/091264 A1

[Continued on next page]

HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *with international search report (Art. 21(3))*

APPLICATOR DEVICE FOR FLUIDS

Field of the invention

The present invention relates to an applicator device for fluids to release an active agent onto a surface. In particular, the invention relates to an applicator device to release a composition comprising actives suitable for cleaning the surface.

Background of the invention

Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of the common general knowledge in the field.

Detergent compositions are used for various types of cleaning for e.g. laundry, hard surfaces and also personal cleaning of skin and hair. Detergent compositions in the form of a bar are quite common in many parts of the world and the bar form of the product is considered convenient and economical for use.

In a typical washing operation using a detergent composition, the fabric is washed with the detergent either by soaking in a detergent solution and/or rubbing a detergent bar across the fabric. Among the various methods used for washing laundry, the hand wash method remains by far the most widely used washing technique in developing countries. In general the ‘hand wash' technique involves application of the detergent by rubbing a detergent bar on the fabric to be cleaned. Additionally, the hand wash process is enhanced by the use of wash tools such as brushes or solid blocks for beating the fabrics. Before and after the washing, several other treatments with other actives are also provided to the surface to be cleaned or which has been cleaned.

The detergent bars are a handy tool for removing spot stains like those in collars & cuffs. The bars ensure high active concentration on the spot of dirt and therefore satisfactory cleaning. However, there are several problems associated with their use, e.g., they are harsh on skin because of direct contact with the concentrated detergent and the high pH associated with detergent bars, they become mushy or soggy due to contact with water, they leave white patches on dark coloured fabric, and handling

becomes a problem when the bar is worn out due to use. These bars contain high levels of inorganic material that have specific functions like structuring, building etc., of the bars and this leads to release of insoluble waste into the environment. It has been found that customers would prefer an alternative that brings minimal change in habit and the same perception and experience of a conventional bar.

US 3,880,532 (American Indian Development Corporation, 1975), discloses a portable cleansing dispenser having a closed container having a plurality of interconnected walls surrounding and defining an interior cleaning agent storage space. At least one of the walls is flexible with a strong elastic memory, and at least one wall defines scrub means such as raised spaced ridges. Integral closed fill means and puncturable dispensing means are also included. Preferably, the container is of flexible plastic such as polyethylene or the like and of a size and shape to be conveniently hand held for dispensing liquid soaps, detergents, and other cleansers.

US 5,230,446 (Vaida, 1993), discloses a squeezable container for dispensing liquid soap, which preferably is in the shape of a bar of soap, and includes a device for refilling the container with liquid soap to allow it to be reused. It is required that the porous wall is kept facing upward to prevent the liquid soap from seeping out when the bar is not in use. The container is provided with a permeable wall which allows liquid to pass through only when a squeezing pressure is applied.

WO9937849 (P&G, 1999) describes a hand-held cleaning device which includes a hollow body member having an interior portion and an exterior portion, the interior portion comprising a plurality of separate reservoirs, an abrasive surface attached to the exterior portion of the hollow body member, and at least one passage leading from each reservoir to the abrasive surface.

WO03/074775 A1 (Jesper Soberg) discloses a hand-held apparatus for cleaning fabrics. It has manually driven pump for pumping a cleaning substance through a local area of the material. The pump further comprises an elastic member with a force acting oppositely to the direction of the manual pumping action. One example disclosed in this publication has a first reservoir containing air and an outer housing in which the first reservoir is able to telescopically collapse. There is a piston-spring assembly in the in

the outer housing. The assembly requires a pushing pumping action in order to change the volume of the first reservoir from the deactivated state. Once a stain or spot is observed, a cleaning fluid is put on the spot, and the apparatus is kept over it. By performing manual pushing pump action, air is pressed out of the first reservoir and into the fabric. This causes the cleaning fluid to be pumped through the fabric. When the pressure for the pushing action is relieved, an elastic member in the outer housing causes a pull-back of air into the first reservoir by which the cleaning fluid is pulled through the fabric. By pressing the cleaning fluid back and forth through the fabric, the spot is removed. The publication does not directly and unambiguously disclose a device in which the plunger base has any feature which is a seal knob that operably mates with a fluid release port in one face of the container, i.e., the device or one which is shaped substantially like a conventional bar. This publication also discloses another example of a device in which there is an additional or second reservoir which is used in the following way. Water, with a cleaning agent, is filled into the first reservoir having the opening directed upwards. The housing with the filled first reservoir is placed on a platform and fabric is placed on the rim of the opening of the first reservoir with the corresponding stain on the material within the periphery of the rim. Then, the second reservoir chamber is placed on the upper side of the porous material with its rim fittingly arranged in the rim of the first reservoir-chamber. Pushing the second reservoir chamber downwards causes the liquid from the first reservoir to flow through the porous material and into the second reservoir. When the pushing force is released, the elastic member presses the chambers back into the deactivated state, such that the fluid is sucked back into the first reservoir. Due to the elastic member (spring), a tight connection between the two chambers is retained.

US6746166 BA (Art CT College of Design, 2004) discloses a device for efficiently cleaning stains and extracting cleaning fluid from surfaces such as carpets and upholstery without requiring electrical power. It includes a sprayer for applying cleaning fluid to stains. A piston in a chamber provides the suction force for pulling fluid up through tubules, past check valves and into a waste reservoir. A downward force on the piston provides the suction thereby assuring that the tubules are in contact with the surface during suction. The entire mechanism of piston-spring in this device is configured to suck up liquids, rather than dispense it. The liquid/cleaning composition is

dispensed by pressing a switch, much like conventional steam irons, which have buttons for spraying a jet of water on the clothes.

WO2013/114122 (Reckitt Benckiser N.V.) discloses a dosing and dispensing device for a liquid detergent which comprises a hollow body with at least a portion formed of flexible material in the form of a sphere. On this flexible portion, there are protrusions with openings which are progressively opened when pressure is applied to the device on a surface to which the liquid detergent is applied. The openings are in the form of slit valves in the protrusions.

The prior art does not address the problems of providing a rigid leak proof device that looks like and simulates a conventional detergent bar and can dispense a composition without the need for change in the consumer habit of rub triggered dispensing of the composition.

The present inventors have been able to solve some of the problems associated with conventional direct application detergent bars and have been able to develop a solid bar shaped device that is filled with a composition with benefit agents that gets dispensed while in use and that can simulate the use of conventional detergent bars. The present inventors have been able to solve at least some problems of the art by designing an actuator that controls the dispensing of the composition from the device while also enabling efficient air entry, avoiding use of one way valves, ensuring dispensing and preventing washing liquid from entering the outlet even during vigorous use.

An object of the present invention is to provide an applicator device that overcomes the above mentioned disadvantages of a detergent bar while still providing similar or better performance benefits.

It is another object of the present invention to provide an applicator device that brings minimal changes in the consumer habit during use and simulates the use of a conventional detergent bar.

It is yet another object of the invention to ensure that the composition comprising the actives is dispensed only during use and does not leak during storage.

It is yet another object of the invention that an efficient air entry system enables that the displaced volume of the composition is replaced by air while avoiding the use of expensive one-way valves.

It is yet another object of the invention that the composition is still dispensed as desired despite vigorous washing or scrubbing.

These and other objects are accomplished by the invention described in the following text and figures.

Summary of the invention

In one aspect of the present invention, there is provided an applicator device for applying a fluid to a surface. The device comprises a container comprising a first side defining a first substantially planar surface; a second side defining a second substantially planar surface opposed to the first side and comprising a dispensing opening; and a compartment between the first and second sides for housing a fluid. The device further comprises a fluid dispensing system for dispensing the fluid from the second side, the fluid dispensing system comprising a plunger comprising a base operably mated with the dispensing opening, a resilience member, and a top which projects into an air chamber for allowing air into the compartment when fluid is being released; and one or more activators extending outside of the second side for contacting the surface and connected to the plunger. The device further comprises a dispensing head connected to the container to receive flow from the dispensing opening, the dispensing head comprising a plurality of flow paths leading to a plurality of outlets, wherein each outlet is directed at an angle of zero degrees to sixty degrees with respect to the second planar surface.

In another aspect, the present invention provides a process for delivering a fluid composition on a substrate, the process comprising the steps of

(a) placing a device of the present invention, with the fluid composition filled in the container on the substrate; and,

(b) pressing the device against the substrate to dispense at least a part of the fluid composition through the dispensing head.

In yet another aspect of the present invention, is disclosed a process for cleaning a substrate. The process comprises the steps of placing the device of the present invention, comprising a cleaning fluid filled in the container; pressing the device against the substrate to dispense at least a part of the fluid composition through the dispensing head; and rubbing the substrate with the device.

In yet another aspect, the present invention provides a kit comprising a device of the present invention and an instruction manual to use the device for delivering fluid composition through the device.

Detailed description of the invention

The present invention relates to an applicator device for fluids and more particularly to a device that simulates the manner in which a conventional detergent bar is used especially during hand washing of laundry.

In one aspect of the present invention is provided an applicator device for a fluid. The device comprises a container with a compartment for housing a fluid composition; a fluid release system housed in the container comprising a plunger having a top and a base, and a resilience member; wherein the plunger base comprises at least one seal knob that operably mates with a corresponding dispensing opening on one face of the container and the top of the plunger projects into an air chamber located in the wall of the container. The dispensing opening leads to a dispensing head which guides the fluid to at least one of a plurality of outlets which are at an angle of between zero and sixty degrees with respect to the face of the container.

The present invention provides a device, which simulates the use of a hand-held bar of detergent, meant especially for cleaning fabrics by direct application. The device can be filled with a fluid composition comprising actives and is designed to dispense the

composition while in use. In order achieve minimal change in consumer habit, it is useful to provide a device, to give the consumer the same experience as that achieved by a conventional hand held cleansing bar. The similarity in perception is achieved by devising the device to resemble as much as possible, a conventional hand-held direct application detergent bar in terms of appearance and cognitive and tactile feel.

The device preferably could therefore be designed to look substantially like a conventional detergent bar in appearance. Apart from appearance, it becomes imperative to preferably provide a cue for delivery of fluid composition comprising actives to consumers, without which they may end-up over-dosing or under-dosing the composition, housed inside the device.

The Device

The device comprises a container for housing a fluid composition, the shape of the container is preferably substantially cuboidal, preferably comprising a plurality of walls. The container is preferably provided with a fluid inlet port to aid filling of the fluid composition into the fluid container. The inlet port is preferably sealed or is preferably provided with an air tight closure mechanism. The air tight closure mechanism preferably allows refilling of the container with a desired fluid composition.

The inner bottom wall of the container is preferably provided with a projected slope that extends downwards between the inner surface of the side wall of the container and the center of the inner surface of the bottom wall of the container. The provision of the slope preferably helps in efficient flow of the fluid composition towards dispensing opening.

The outer walls of the container form the shape of the applicator device and is preferably rigid and is preferably made of non-flexible material. The outer walls of the applicator device is preferably in the range of 0.1 mm to 5 mm. The materials used for moulding the applicator device is preferably selected from polymeric materials like nylon, polyacrylates, polycarbonates, teflon, polyethylene, polypropylene, elastomeric and rubber material etc., and more preferably high density or low density polyethylene

or their blends thereof. Alternatively, the device is made of metal or reinforced plastics, laminates or glass.

A fluid dispensing system is housed in the container preferably extending between the face of the container having the dispensing opening and the air chamber located in the wall of the container. It is preferable that the dispensing opening and the air chamber are located on the opposite faces of the container. It is more preferable that the fluid dispensing system extends between top and bottom faces of the container. The plunger preferably has a base, a shaft and a top and preferably the base of the plunger is broader than the shaft.

The base of the plunger is preferably of any suitable geometric shape. The plunger is made of materials selected from preferably polymeric materials like nylon, polyacrylates, polycarbonates, Teflon®, polyethylene, polypropylene, elastomeric and rubber material and the likes, more preferably high density or low-density polyethylene or their blends thereof.

It is preferable that the fluid release system is actuated by application of a predetermined threshold pressure on to the device by the user of the device. This threshold pressure is the pressure below which the fluid release system is not actuated and the liquid is not released.

The top of the plunger is housed inside an air chamber that is positioned in the wall of the container. The side of the container having the air chamber is also provided with an air vent which opens into the air chamber. A second gasket is preferably placed on the inner bottom surface of top of the plunger, such that the gasket can seal between the air chamber and the container fluid compartment when the plunger is in an initial position. The second gasket is preferably made of a material selected from rubber or foams possessing elastomeric properties like neoprene, silicone rubbers, styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPDM) and polyurethane and the like.

One or more activators are present, extending through the bottom face of the container for contacting a surface in use and activating the movement of the plunger. The activators preferably have non-resilient caps and are linked to the plunger such that pressure on the activators cause movement of the plunger. Preferably resilient and/or sealing members, such as bellows, seal the openings through which the activators extend through the bottom face of the container.

A dispensing head covers the dispensing opening, receiving fluid from the dispensing opening and providing a plurality of paths leading to a plurality of outlets for exiting the applicator device. The dispensing head preferably includes at least two flow paths, each with an outlet. Preferably, these are located in directions facing the same direction as opposite sides of the container, and at an angle of zero degrees to sixty degrees with respect to the bottom face of the container. More preferably, the dispensing head provides four flow paths with four outlets facing the same directs as four side walls of a cuboidal container, and at an angle of zero degrees to sixty degrees with respect to the bottom face of the container. The dispensing head is preferably non-resilient so that the outlets stay positioned in their intended direction.

Plunger

The plunger preferably extends between the top and bottom faces of the container and the base of the plunger is provided with at least one seal knob that operably mates with a corresponding dispensing opening. The seal knob is preferably either fixed to the base of the plunger or is freely rotatable with respect to the base of the plunger. It is preferable that the plunger base is provided with a first gasket. It is preferable in some embodiments that the seal knob extends out of the dispensing opening.

The seal knob is preferably formed of a material selected from polymeric materials like nylon, polyacrylates, polycarbonates, Teflon®, polyethylene, polypropylene, elastomeric and rubber material and the likes, more preferably high density or low density polyethylene or their blends thereof.

The base of the plunger is preferably covered with a first gasket exposing only the seal knob. The first gasket preferably prevents leakage of the fluid composition when the

device is not in use. The first gasket is preferably of a thickness in the range from 0.1 mm to 5 mm and more preferably 0.1 mm to 2 mm. The first gasket is preferably made of a material selected from rubber or foams possessing elastomeric properties like neoprene, silicone rubbers, styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPDM) and polyurethane and the likes.

The seal knob is covered with a dispensing head which provides a plurality of flow paths and outlets. The outlets extend at an angle of about zero degrees to about sixty degrees with respect to the bottom face of the container. Preferably, an outlet is facing in the same general direction as each side wall of the container.

Resilience member

The resilience member preferably forms the shaft of the plunger or is preferably positioned coaxial to the plunger and more preferably positioned around the shaft coaxially. The resilience member is preferably not in its rest position and is preferably under a slight stress that will provide a force on the plunger base to effectively seal the fluid dispensing port when the device is not in use.

The resilience member is preferably a spring, or in the form of bellows and is preferably made of material that does not react with the fluid composition contained in the container. The material of the resilience member is preferably selected from metal, polymeric material such as nylon, polyester, polycarbonate, polyvinyl chloride, high density polyethylene, acrylonitrile butadiene styrene, rubber and foams possessing elastomeric properties like neoprene, silicone rubbers, styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPDM) and polyurethane and the likes. It is preferable that the resilience member is a spring and more preferably with a spring constant in the range 10 to 1000 N/m and more preferably 100 to 400 N/m. The resilience member is preferably made of metal and more preferably stainless steel.

Fluid Composition:

The device can be, and preferably is, pre-filled with the fluid composition at the time of manufacturing of the device or the user may preferably be instructed to fill the fluid

composition into the container of the device. It is also possible as a preferred feature where a solid precursor can be fluidised in the container of the device. It is particularly preferred that the fluid composition is a laundry detergent composition in liquid form. The term fluid does not mean air or any other gas.

The fluid composition is preferably selected from a detergent composition useful in cleaning laundry, hard surfaces or for personal hygiene or for providing benefits in subsequent washes.

The fluid composition to be delivered by the device is preferably in the form of a fluid, paste or a gel. It is also preferred that a solid composition is dissolved in a suitable solvent and is filled into container of the device or preferably the solid composition is converted into a fluid composition by mixing a suitable solvent into the solid composition inside the container of the device.

A cleaning composition that is used in the device is preferably any suitable detergent composition available commercially or is formulated specifically. The composition preferably comprises 5 to 50% of a detergent active by weight of the composition that is preferably selected from anionic, non-ionic, cationic or zwitterionic surfactant or a mixture thereof. Preferably other benefit agents such as builders, abrasives, perfumes, colouring agents, polymers, hydrotopes, fluorescers, enzymes, bleaches can also be used in the composition and preferably an amount up to 10 % by wt.

<u>Filling of Fluid composition in the device:</u>

The composition is filled into the container of the device preferably through the inlet port of the device that is preferably provided with an airtight closure mechanism.

According to another aspect of the invention there is provided a process for delivering a fluid composition on a substrate, the process comprising the steps of:

(a) placing the device of the present invention, with the fluid composition filled in the container on the substrate; and,

(b) pressing the device against the substrate to dispense at least a part of the fluid composition through one or more of the outlets of the dispensing head.

According to another aspect of the invention there is provided a process for cleaning a substrate, the process comprising steps of:

(a) placing the device of the present invention, comprising a fluid composition filled in the container;

(b) pressing the device against the substrate to dispense at least a part of the fluid composition through one or more of the outlets of the dispensing head; and

(c) rubbing the substrate with the device.

The process of cleaning a substrate preferably further comprises a rinsing step. More preferably rinsing is done with a suitable solvent such as water.

The device is placed on a substrate with the bottom of the device, in particular the one or more activators on the bottom of the device, in contact with the substrate and preferably pressing the device on the substrate. The plunger preferably plunges inside the device by preferably compressing the resilience member from its initial position due to the connection to the one or more activators. The plunger preferably moves up and the first gasket is preferably disengaged from the dispensing opening thereby allowing the fluid composition to be released outside the compartment into the dispensing head, through one or more of the flow paths in the dispensing head and through the one or more outlets onto the substrate. The top of the plunger is preferably simultaneously disengaged from the second gasket thereby preferably opening the air inlet channel allowing the volume of fluid released from the container to be replaced by air inside the compartment. When the user stops pressing the device, preferably the resilience member returns back to preferably its initial position whereby the first gasket preferably closes the dispensing opening and the top of the plunger preferably reengages with the second gasket, thereby closing the air inlet channel preferably leading to the effective stoppage of fluid composition dispensing from the container.

According to yet another aspect of the invention there is provided a kit comprising:

(a) a device of the present invention; and,

(b) an instruction manual to use the device for delivering fluid composition through the device.

The device and the instruction manual to use the device for delivering the fluid composition through the device is preferably packaged as one unit. The device preferably is either prefilled with the fluid composition or preferably at least one pack of the fluid active is provided in form of a one-time use cartridge as a part of the kit with instructions to fill the same into the container of the device through the inlet port.

The dispensing of liquid can be achieved through alternative means of activation by making suitable modifications to the design of the devices.

The invention will now be further exemplified with the following non-limiting figures and examples.

Brief Description of the figures:

Figure 1A shows a cross-sectional view of an embodiment of an applicator device in an open position for dispensing fluid.

Figure 1B shows a cross-sectional view of the applicator device of Fig. 1A in a closed position.

Detailed description of the figures:

Figure 1A shows a first embodiment of applicator device 10 in an open position to dispense a fluid, and Figure 1B shows applicator device 10 in a closed position.

Applicator device 10 includes container 12 with compartment 13, first side 16 (with air vent 17), second side 18, sides 22, air chamber 19, dispensing opening 20 and dispensing head 38 with outlets 39. Fluid dispensing system 14 includes plunger 24 with base 26, shaft 27, top 28, seal knob 30, resilience member 32, first gasket 34, second gasket 36, and activators 40 (each with activator cap 42, activator leg 44 and bellows 46).

Container 12 includes substantially planar upper, lower and side surfaces 16, 18, 22 to form a rectangular or cuboidal shape which resembles a bar. Air chamber 19 and air vent 17 are located in first side 16 of container 12. Fluid inlet 23 is shown in side wall 22, though could be in other positions, and dispensing opening 20 is in second side 18. Second side 18 also includes further openings for activator legs 44.

Plunger 14 extends from first side 16 to second side 18 of container 12 and works to allow fluid to be released from compartment 13 when in an open position (Fig. 1A) and prevent the release when closed (Fig. 1B). Seal knob 30 connects to plunger base 26, and first gasket 34 extends around seal knob on plunger base 26 to seal dispensing opening 20 when container 12 is closed. Resilience member 32 biases plunger 24 toward a closed position. Second gasket 36 extends around the bottom side of plunger top 28 to seal air chamber 19 from compartment 13.

Activator caps 42 are non-resilient, and connect to plunger 24 through activator legs 44, which are movable through openings in second side 18 into chamber 13. Bellows 46 act as sealing and resilient members, sealing around the openings for activator legs 44, while allowing for movement of activator base 42 and activator legs 44.

Dispensing head 38 is connected to second side 18 to receive flow through dispensing opening 20, and could be integrally formed with container in some embodiments. Dispensing head 38 can vary in size, shape and configuration, but includes a plurality of flow paths leading to a plurality of outlets 39. In the embodiment shown, dispensing head 38 includes four outlets 39, each generally facing in the direction of one of the sides 22 of container 12. Outlets 39 are directed at about zero degrees or parallel with respect to second side 18. In other embodiments, outlets 39 could be directing fluid at any angle from about zero degrees to about sixty degrees with respect to substantially planar second side 18.

When a user places device 10 on a substrate to be cleaned and presses/rubs on the substrate, second side 18 faces toward the substrate and activators 40 are the points of contact with the substrate. Pressure on activators 40 shifts activators upward with

respect to container 12 translating to movement of plunger 24 through activator legs 44, and compressing resilient member 32 and bellows 46 from their respective initial positions. This moves first gasket 34 upward, opening a path for fluid in compartment 13 to exit through dispensing opening 20 into dispensing head 38 and out one or more of outlets 39. Simultaneously, this also moves plunger top 28 and second gasket 36 upward allowing air to enter compartment 13 from air chamber 19 (which is provided air by air vent 17), allowing the volume of fluid released through dispensing opening 20 to be replaced by air inside compartment 13. The upper movement of seal knob 30 and plunger 24 is limited by activator caps 42, which are non-resilient and stop further movement once in contact with second side 18.

When a user stops pressing or rubbing device 10 as shown in Figure 1B, the resilience member 32 and bellows 46 return to their initial state, in which the first gasket 34 closes the dispensing opening 20 and the top 28 of plunger 24 re-engages with the base of the air chamber 19, thereby causing fluid dispensing to stop.

Applicator device with dispensing head 38 with a plurality of outlets 39 which are at an angle of zero degrees to sixty degrees with respect to second side 18 provide for dispensing of fluid even during vigorous rubbing, scrubbing and other cleaning movements. When device 10 is being used for a cleaning operation, a user generally moves it back and forth to scrub as they would do with past conventional bars of soap. Sometimes this movement is quite vigorous, for example at speeds of up to 5 m/sec., causing the fluid within device 10 to be shifted around, accelerating and decelerating according to the movement. Applicator device 10 relies on gravity for dispensing, not positive pressure, thus hindering dispensing in a downward direction when liquid is flowing sideways within device 10. By using dispensing head 38 with a plurality of outlets 39 in different directions and which are angled between zero degrees and sixty degrees from second side 18, composition is still dispensed even when device 10 and therefore liquid within device 10 is subject to vigorous movements. Users generally scrub in line with the sides of device 10. Thus, outlets 39 which generally extend in the direction of each of the sides 22 of device 10 allow for dispensing no matter the direction of scrubbing. In other embodiments, there could be additional outlets 39, for

example, in directions facing the corners of sides 22. In some embodiments, there could be fewer outlets 39.

While the invention has been described with reference to exemplary or preferred embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular or preferred embodiments or preferred features disclosed, but that the invention will include all embodiments falling within the scope of the appended claims.

Claims

1. A device (10) for applying a fluid to a surface, the device comprising:
a container (12) comprising:
a first side (16) defining a first substantially planar surface,
a second side (18) defining a second substantially planar surface opposed to the first side and comprising a dispensing opening (20), and
a compartment (13) between the first and second sides for housing a fluid;
a fluid dispensing system (14) for dispensing the fluid from the second side (18), the fluid dispensing system comprising and one or more activators (40) extending outside of the second side for contacting the surface and a plunger (24) comprising a base (26) operably mated with the dispensing opening (20), a resilience member (32), and a top (28) which projects into an air chamber (19) for allowing air into the compartment (13) when fluid is being released, wherein the one or more activators are connected to the plunger; and
a dispensing head (38) connected to the container (12) to receive flow from the dispensing opening (20), the dispensing head (38) comprising a plurality of flow paths leading to a plurality of outlets (39), wherein each outlet (39) is directed at an angle of zero degrees to sixty degrees with respect to the second side planar surface.

2. The device (10) of claim 1, wherein the one or more activators (40) each comprise:
an activator cap (42) for contacting the surface;
an activator leg (44) connecting the activator cap (42) to the plunger (24) through an opening in the second side (18); and
resilient sealing means (46) for sealing the opening into the compartment.

3. The device (10) of claim 2, wherein the resilient sealing means comprises bellows (46).

4. The device (10) of any of the preceding claims, and further comprising a seal knob (30) extending from the plunger base (26).

5. The device (10) of any of the preceding claims, and further comprising one or more sealing means (34, 36) for sealing the plunger base (26) to the second side (18) around the dispensing opening (20) and/or for sealing between the air chamber (19) and the compartment (13).

6. The device of claim 5, wherein the sealing means comprise one or more gaskets (34, 36).

7. The device (10) of any of the preceding claims, wherein the container is substantially cuboidal.

8. The device (10) of any of the preceding claims, wherein the dispensing head (38) comprises four outlets (39).

9. The device (10) of claim 8, wherein the four outlets (39) are directed in the same direction as the side walls of the container (12).

10. The device (10) of any of the preceding claims, wherein the dispensing head (38) is integrally formed with the container (12).

11. The device (10) of any of the preceding claims, and further comprising an air vent (17) leading to the air chamber (19), and sealing means (36) to seal between the air chamber (19) and the compartment (13), wherein the sealing means are opened to allow air flow into the compartment (13) from the air chamber (19) when the plunger (24) is moved upward.

12. The device (10) of any of the preceding claims, wherein the container (12) further comprises a fluid inlet port (23) with a seal.

13. The device (10) of any of the preceding claims, wherein the dispensing head (38) is non-resilient.

14. The device (10) of any of the preceding claims, wherein the device comprises one or more of plastic, glass, metal, alloy and composite materials.

15. The device (10) of any of the preceding claims, wherein the fluid is a laundry detergent liquid.

Fig. 1A

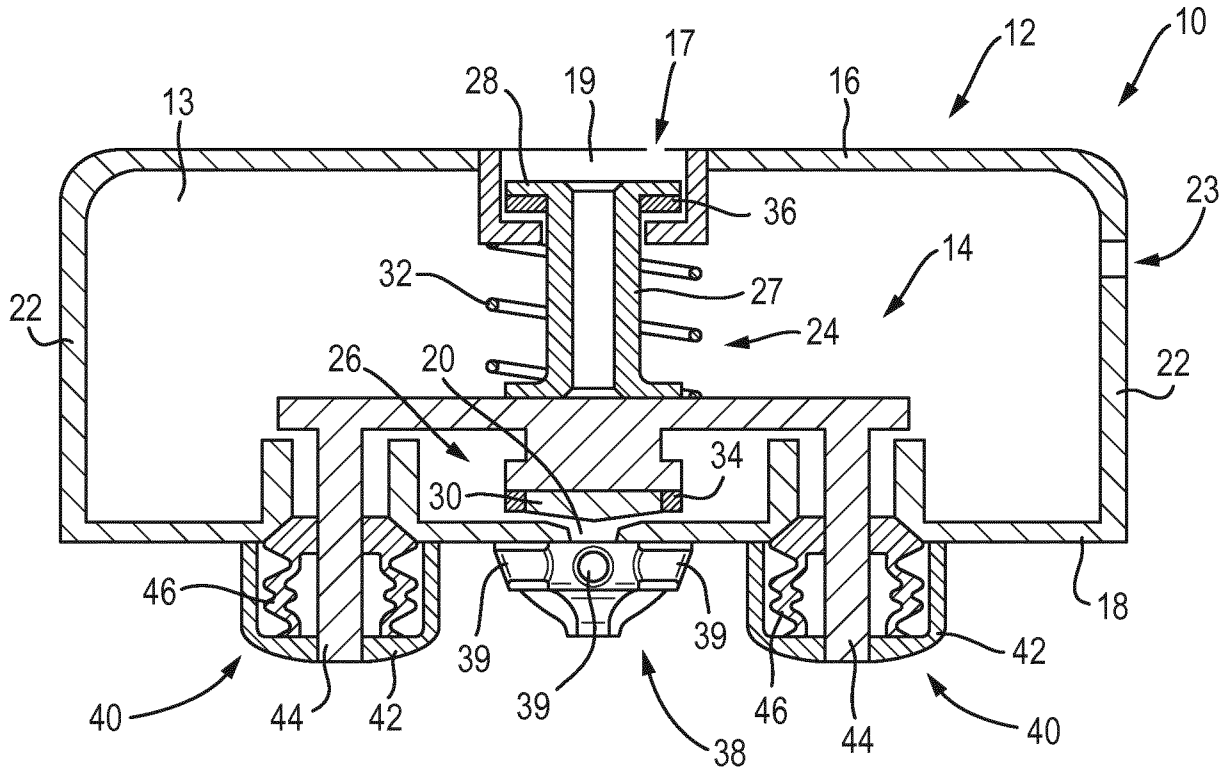
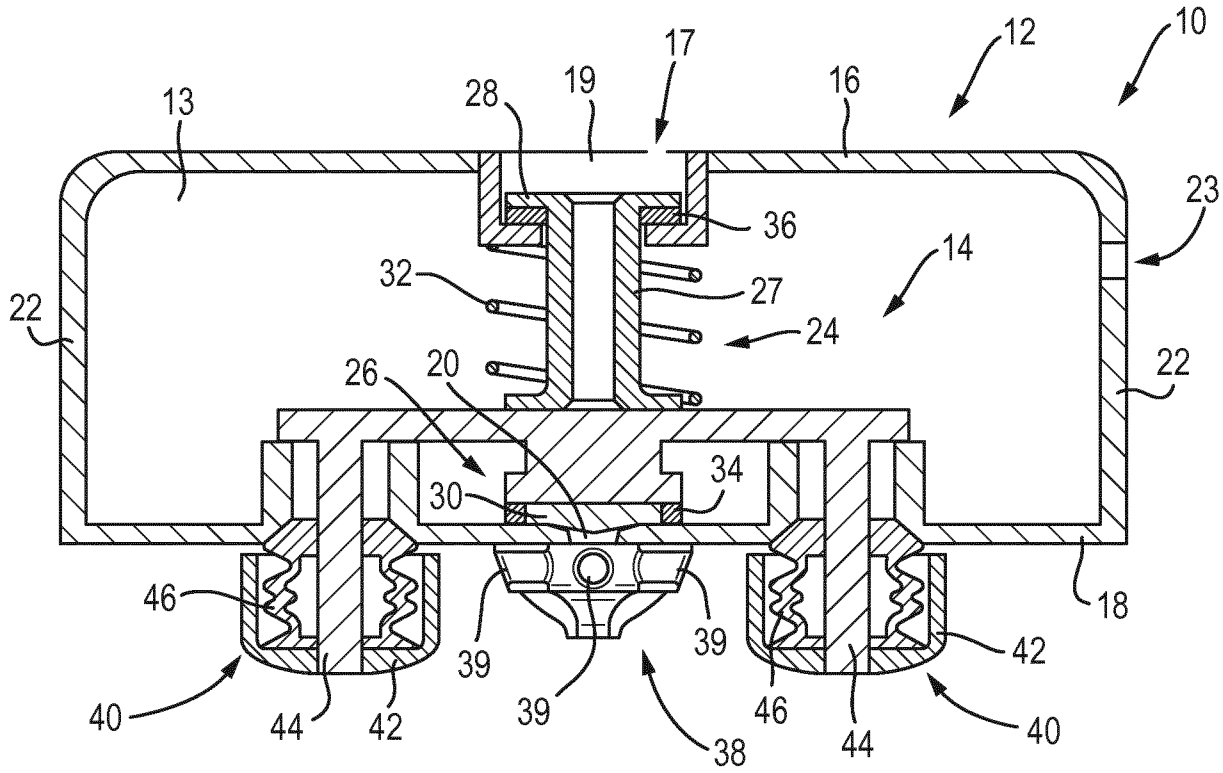

10
12
17
28
19
16
13
23
36
14
32
27
24
22
22
26
20
34
30
46
18
39
39
42
40
44
42
39
46
44
40
38

Fig. 1B


10
12
17
28
19
16
13
23
36
14
32
27
24
22
22
26
20
34
30
46
18
39
39
42
40
44
42
39
46
44
40
38

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/077893

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L25/08 A47L13/17 D06F39/02 C11D17/04 B05C17/005
A47K5/12 A47L7/00
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)
A47L D06F C11D B05C A47K

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 916 132 A1 (MGS CONSULTING SARL [FR]) 21 November 2008 (2008-11-21) page 6, line 3 - page 9, line 34; figures 1-8	1,7-10, 12-15
A	FR 2 516 371 A1 (DOIBAN ELEONORE [FR]) 20 May 1983 (1983-05-20) page 3, line 11 - page 4, line 35; figures 1-5	1,7,9, 10,12-15
A	DE 245 061 C (ERNST JAESCHKE) 25 March 1912 (1912-03-25) the whole document	1,12,14, 15

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 December 2017	03/01/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Masset, Markus

2

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/077893

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2013/114122 A1 (RECKITT BENCKISER NV [NL]; RECKITT & COLMAN OVERSEAS [GB]) 8 August 2013 (2013-08-08) cited in the application page 11, line 6 - page 13, line 26; figures 1-4 -----	1

2

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2017/077893

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2916132 A1	21-11-2008	EP 2150162 A2	10-02-2010
		FR 2916132 A1	21-11-2008
		JP 2010526622 A	05-08-2010
		US 2010268134 A1	21-10-2010
		WO 2008142296 A2	27-11-2008
FR 2516371 A1	20-05-1983	NONE	
DE 245061 C	25-03-1912	NONE	
WO 2013114122 A1	08-08-2013	GB 2499015 A	07-08-2013
		WO 2013114122 A1	08-08-2013