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(71) Applicant:
THE PROCTER & GAMBLE COMPANY
Cincinnati, Ohio 45202 (US)

(72) Inventors:
- **Deflander, Joseph Fernand**
  3150 Espelaar (BE)
- **Duquet, Jacky Pierre**
  78580 Herbeville (FR)
- **Lake, Kirk Wallace**
  1933 Sterrebeek (BE)
- **Notele, Greet Renéé Els Francine**
  2660 Hoboken (BE)

(74) Representative:
Engisch, Gautier et al
BVBA Procter & Gamble Europe SPRL,
Temselaan 100
1853 Strombeek-Bever (BE)

(54) General purpose hand-held container

(57) The present invention relates to a process for applying a mixture (10) to a surface (11) in three steps, a first step of providing a hand-held container (1) defining a mixing volume (12) and comprising friction means (13), the second step of inserting within the mixing volume (12) two products (2, 3) for forming the mixture (10), the third step for applying the mixture (10) on the surface (11) and using the friction means (13), characterised in that the hand-held container (1) is a dispensing device (1) of the re-usable type for machine washing. In another aspect, the invention also relates to a dispensing device (1) of the re-usable type for machine washing having friction means (13) and a base (14), characterised in that the friction means (13) is on the outer surface of the base (14), the friction means (13) having a length along one direction of at least 4 cm

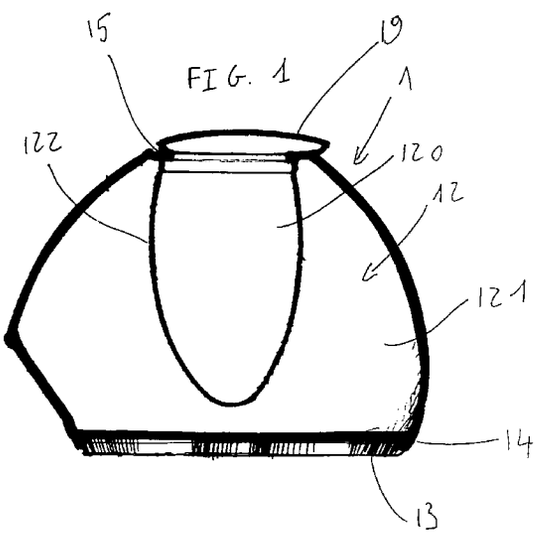

FIG. 1

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Description

Technical field

[0001] The invention relates generally to containers of the hand-held type used for improving cleaning efficiency and to processes for using such containers as cleaning implements.

Background of the invention

[0002] Hand-held containers are widely used, in particular in the field of consumer products. Such containers are used as cleaning implements to enhance cleaning in combination with cleaning products. There are hand-held containers for hand use and there are hand-held containers for machine use.

[0003] Hand-held containers for hand use normally are hand held containers comprising friction means. Such containers can be composed of a scrub brush provided with a cavity used for inserting a product such as a soap bar, whereby this product is progressively dissolved in water during use of the scrub brush to form a cleaning mixture, dissolution starting within a body of non-woven synthetic fibres composing the scrub brush and surrounding the cavity. Such a container is typically used for applying the mixture to a surface such as skin while rubbing the skin with the body of non-woven material as friction means.

[0004] The present invention concerns a process for applying a mixture to a surface comprising a first step, a second step and a third step, the first step consisting in providing a hand-held container defining a mixing volume and comprising friction means, the second step consisting in inserting within the mixing volume a first product and a second product, the first product and the second product forming the mixture, the third step consisting in applying at least part of the mixture on the surface and using the friction means. Such a process is known from WO-A-91/07903.

[0005] Among the advantages of such a process is that the hand-held container provides both the friction means and the product supply, whereby the product may be supplied in a progressive and continuous manner during use of the friction means without need for extra operations. Furthermore, such a container can be a one-piece container which is simple to produce.

[0006] While having these and other advantages, such processes have disadvantages. For example, the existing hand held containers for hand use are usually specifically designed for use with a particular product, such as a soap bar in the case of WO-A-91/07903 or hand dish washing liquid as in J-A-08 024 190, whereby a glove having a sponge cleaner is disclosed. Indeed, the glove disclosed in J-A-08 024 190 would not be suitable for use with a soap bar as it could not contain such a soap bar and dispense it.

[0007] There are also hand-held containers specifically designed for machine washing use. Such hand-held containers may have a dispensing function, as disclosed in EP-A-0 343 071, whereby it comprises means for the distribution of the content to be dispensed, and also a pre-treating function as disclosed in WO95/29121 or in EP-A-0 559 829, whereby the hand-held containers has friction means. These are re-usable dispensing devices for the machine washing of clothes which are provided with an inner volume or with at least one opening suitable for dosing a detergent composition while the hand-held container is on its base.

[0008] In another aspect, the invention concerns a dispensing device of the re-usable type for machine washing, defining a volume for a content, and having a base at one end, the volume being provided with at least one filling opening, the dispensing device having means for the distribution of the content and further comprising friction means. Such a dispensing device is known from EP-A-0 559 829.

[0009] Among the advantage of such machine washing hand-held containers is that they are designed in order to sustain extensive use in a machine washing environment. Further, they are often provided with friction means allowing pre-treatment of small stained areas prior to insertion of the device in the machine for dispensing.

[0010] While having these and other advantages, machine washing hand-held containers, in particular when suitable for pre-treating, have disadvantages. For example, they are specifically designed for one kind of product. Indeed, in the case of EP-A-0 559 829 or WO95/29121, the hand-held container is specifically for use with liquid detergents. Similarly, dispensing devices as disclosed in EP-A-0 343 071 are specifically designed for granular or powder detergents, so that such hand-held containers are not interchangeable.

[0011] In a further aspect, the invention concerns a dispensing device defining a volume for a content, and having a base at one end, the volume being provided with at least one filling opening, the dispensing device having means for the distribution of the content and further comprising friction means, the friction means being on the outer surface of the base. Such a device is known from FR-A-2 669 943. Such a device is not necessarily suitable for washing machine use, although it is preferred.

[0012] The invention seeks to provide a process for applying a mixture to a surface and a hand-held container which can be used with a plurality of product forms and for fulfilling a plurality of different tasks including as a cleaning implement.

Summary of the invention

[0013] In accordance with the invention, this object is accomplished in a process of the above mentioned kind in that the hand-held container is a dispensing device of the re-usable type for machine washing.

[0014] A process in accordance with the invention has a number of advantages. Since the hand-held container has a mixing volume and since the mixing volume serves for mixing two products, the container can be used for applying not only liquid detergent, but also for example powder or granular detergents dissolved in water, the detergent composition being the first product and the water the second product in this example, while being able to fulfil the function of a dispensing device in a washing machine. Therefore, the process according to the invention can be used with a wide range of products and uses.

[0015] In another aspect of the invention, this is accomplished in a dispensing device of the re-usable type for machine washing of the above mentioned kind in that the friction means is on the outer surface of the base, the friction means having a length along one direction of at least 4 cm.

[0016] A dispensing device in accordance with the invention has a number of advantages. Firstly, it can be used for the process of the invention as the volume can serve as a mixing volume, while it is provided with friction means, and is of the re-usable type for machine washing, particularly of clothes or dishes. Furthermore, as the friction means with which is provided is on its base and has a length along one direction of at least 4 cm, it can serve for use as a hand-wash hand-held container whereby the active treating surface described by the friction means along the trajectory of the dispensing device on the surface to be treated has to be sufficiently large to treat large surfaces, and whereby a friction force can be applied easily and energetically by the user to the surface through the use of the dispensing device as the friction means are on the outer surface of the base.

[0017] In the further aspect according to the invention, this is accomplished in a dispensing device defining a volume for a content, and having a base at one end, the volume being provided with at least one filling opening, the dispensing device having means for the distribution of the content and further comprising friction means, the friction means being on the outer surface of the base, characterised in that the device further comprises a force application area, the force application area making an angle of less than 90° and of more than 20° with the base, the angle between the force application area and the base changing of less than 50% when a pressure of 50kPa (Kilo Pascal) is applied onto the force application area, the means for distribution of the content being actuated by a pressure of at least 30kPa.

Detailed description of the invention

[0018] The invention will now be described by way of example and with reference to the accompanying drawings in which:

Figure 1 is a cross section of a dispensing device according to the invention illustrating the first step of the process of the invention.

Figure 2 is a perspective view of the dispensing device of Figure 1 during the second step of the process of the invention while inserting the first product.

Figure 3 is a perspective view of the dispensing device of Figure 1 during the second step of the process of the invention while inserting the second product.

Figure 4 is a perspective view of the dispensing device of Figure 1 during the third step of the process of the invention while applying part of the mixture.

Figure 5 is a perspective view of the dispensing device of Figure 1 during the third step of the process of the invention while using the friction means.

Figure 6 is a cross section of another dispensing device according to the invention illustrating the first step of the process of the invention.

Figure 7 is a perspective view of the dispensing device of Figure 6 during the second step of the process of the invention while inserting the first product.

Figure 8 is a perspective view of the dispensing device of Figure 6 during the second step of the process of the invention while inserting the second product.

Figure 9 is a perspective view of the dispensing device of Figure 6 prior to the third step of the process of the invention and following the second step of the process of the invention.

Figure 10 is a perspective view of the dispensing device of Figure 6 during the third step of the process of the invention.

Figure 11 is a cross section of yet another dispensing device according to the invention prior to the third step of the process of the invention and following the second step of the process of the invention.

Figure 12 is a plan view of a further dispensing device according to the invention illustrating the third step of the process of the invention while applying part of the mixture.

Figure 13 is a plan view of the dispensing device of Figure 12 illustrating the third step of the process of the invention while using the friction means.

[0019] The invention relates to a process for applying a mixture to a surface. By a mixture, it should be understood that at least two different products are contained in the mixture, the first and the second product. The mixture or any of the products composing it may have various forms, including liquid, gel, powder, paste, tablet or granular forms. Furthermore, the mixture may be comprising several of these form. For example, the mixture could have the form of a liquid, or of a liquid containing granules. The same applies for each product. Preferably, the mixture and each product are flowing materials, whereby they are in a form which allows flowing under gravity, as do for example the liquid or the granular forms. The form of the products taken independently may be different from the form of the products once in the mixture. For example, the first product may be granular or may be a tablet when taken independently, the second product may be liquid when taken independently, while the mixture of these could be liquid, due to dissolution of the first product in the mixture, for example. All or some of the products in the mixture could also interact when mixed together. For example, the second product could be a solvent for the first product, so that the first product could be in a solid form, such as a bar or such as granules, and dissolve partially or completely in the second product, which may be a liquid. In case of an interaction between some or all of the products forming the mixture, the interaction may have a chemical, a kinetic, a thermodynamic, a catalytic or a physical origin, or be due to several of these. Indeed, mixture of the products forming the mixture could involve a chemical reaction, for example.

[0020] The mixture is applied to a surface. Application can occur in various ways, such as pouring or discharging and preferably involves mechanical action such as scrubbing, wiping, scratching or rubbing. The application is made onto a surface. By a surface, it should be understood that the application is made on a substantially two dimensional structure which may have relief. This includes hard surfaces such as wood, tile, glass, ceramic, metal, for example for cars, or synthetic surfaces, but also to other surfaces including skin, leather or upholstery, carpets, or clothes. Preferably, the surface is clothes.

[0021] The process of the invention has a first step consisting in providing a hand-held container. By a hand-held container, it should be understood that it can be held by hand. However, it does not have to be used by hand. This container is defining a mixing volume. The mixing volume is the volume in which the mixture can be found. The mixing volume may be partially or completely full of the mixture. If the mixture is filling only part of the mixing volume, the remainder may be air for example. It should be noted that partial filling would allow leaving part of the volume filled with air, thus aiding during shaking. This could be encouraged by means of a dosing line for example. The mixing volume is preferably but not necessarily formed of a hollow body. Indeed, other forms for the mixing volumes may be used, such as a puff having an internal pocket and surrounding extensions, whereby both the pocket and the extensions are forming the mixing volume. It should be noted that the mixing volume does not necessarily have an homogeneous structure. Indeed, it may be formed from a hollow body together with a part defining a plurality of inter-linked channels or cavities such as a sponge medium or a foamed plastic medium or of two of these media. As the mixing volume is for forming a mixture, if it comprise several chambers, such chambers will be inter-linked. As mentioned earlier, the mixing volume may be defined by a pocket having extensions, whereby the pocket and the extensions are made of material forming a net-like structure. Such a structure may be provided with a soft porous pouch for covering it in order to control dispensing and to avoid catching extensions during machine use. The mixing volumes can be adapted and designed to have an influence on the mixture. For example, it may have a structure favouring or preventing dissolution, by separating or by having means for mixing the products forming the mixture. Such mixing means include having a ball or a plurality of balls within the mixing volume for improving mixing by means of mechanical action, whereby the balls may have various shapes including spherical and various surfaces including spiky surfaces. Other mixing means include having a sieve, sifter or propeller axis within the mixing volume, whereby the sieve, sifter or propeller axis may be mobile or articulated. The hand-held container according to the invention further comprises friction means. Such friction means are allowing active mechanical treatment of the surface in combination with the applied mixture. A reason for having such friction means can be to improve cleaning efficiency. Such friction means should co-operate with the surface to be treated. In order to achieve this, the friction means may be rougher for hard surface use, or softer for other surfaces. The aim is to have efficient treatment of the surface while avoiding to damage the surface to treat. Such a friction means includes a net structure. Such a net is typically made of relatively abrasive woven fibres.

[0022] The process of the invention has a second step whereby a first and a second product are inserted within the mixing volume for forming the mixture. It should be noted that insertion is not necessarily simultaneous. Indeed, the first product is preferably inserted firstly and the second product subsequently. Furthermore, insertion may or may not be continuous or repeated. Indeed, insertion may occur at once. Additionally, the products may not be inserted in the same manner. Indeed, the first product may for example be inserted through an opening directly within the mixing volume, whereas the second product may for example be inserted through a porous membrane. Insertion may be facilitated by various means. For example, the container may comprises flexible resilient walls which could allow creation of a pressure gradient between a part or whole of the mixing

volume and the surrounding environment, so that the second product, for example, could be sucked in the mixing volume by means of pressure depression, for example through a porous membrane. Once inserted within the mixing volume, the mixture is formed. It should be noted that the mixture may not be homogeneous, and it is possible that some products forming the mixture are not miscible. The term "mixture" as used in the invention could relate to a mere grouping of products which may not mix. However, there is at least two products forming the mixture, these two products being at least partially present in the mixing volume, even if not mixing.

[0023] The process according to the invention has a third step whereby at least part of the mixture is applied to the surface and the friction means are used. By at least part of the mixture, it is meant that the mixture is not necessarily applied to the surface completely. Indeed, part of the mixture may be kept for other purposes, as for dispensing during machine use. The part of the mixture which is applied to the surface may be applied continuously or discretely, in one go or repeatedly. Indeed, the hand-held container may comprise means for controlling delivery of the mixture to the surface, whereby such controlling means may control the quantity or the form of the mixture delivered to the surface or both. Such controlling means include for example flexible resilient walls, whereby depression of these could create a pressure gradient favouring egress of the mixture, the action on these walls also possibly allowing control of the form of the mixture to dispense by allowing to have a mechanical action on the content of the mixing volume, which can result in an improvement in dissolution of the first product in the second one, for example. Indeed, in a preferred embodiment according to the invention, the first product is formed from granules whereas the second product is a liquid solvent for such granules.

[0024] The third step also mentions use of the friction means. Such use of the friction means may be concomitant or not with the application of the mixture.

[0025] The process of the invention is characterised by the fact that the hand-held container is a dispensing device of the re-usable type for machine washing. This means that such a device can dispense its content when placed within a domestic laundry washing machine during the wash cycle of the machine, and can be reused in the same manner during multiple wash cycles. Such a dispensing device is intended for use as a device for dispensing preferably of a detergent composition when inserted for example together with clothes within a washing machine. In order to fulfil this function, it should have some particular features. For example, such a dispensing device should withstand high temperatures of up to 95 degrees C without irreversible damage or deformation. Indeed such a high temperature could be reached during a washing cycle in a washing machine, and the device of the invention is of the re-usable type. Another feature is that such a device should have a shape preventing being caught in mechanical parts of the machine during the washing cycle. Preferably, a device according to the invention has a relatively compact structure with a minimal number of extensions. Furthermore, the device according to the invention is a dispensing device. This means that means for egress of its content, or means for distribution, during a washing cycle should be part of the device. Such means for egress of the content could simply be an opening, but could also consist of a porous membrane letting through the content of the dispensing device. An other feature is related to the size and shape of the dispensing device. Indeed, such a dispensing device should have a size allowing easy insertion in a machine, without spillage of the content. As a dispensing device of the re-usable type for the machine washing of clothes, the device can inserted with clothes to be washed in the machine washing while containing a dose of cleaning composition. Dispensing of the cleaning composition will occur during the wash due to mechanical agitation for example.

[0026] The process according to the invention could comprise an extra step. This extra step would consist in applying the second product directly to the surface and prior to the third step. This is made particularly clear in case of use of the process of the invention for the hand washing of clothes. In this case indeed, clothes should be firstly wet with water, this consisting in the extra step whereby the water is the second product. Independently, a cleaning composition, i.e. the first product, can be inserted within the mixing volume. Insertion of the second product, water in the example, can occur in various manners. In a first manner, the hand-held container may be dipped or immersed in the second product, partially or completely, in such a manner that some of the second product will enter the mixing volume. In such a case, the first product can be inserted in the mixing volume prior to the second product. In another manner, the hand-held container is laid onto the surface on which the second product has already been applied directly, so that some of the second product enters the mixing volume. Use of the hand-held implement for such a hand washing process is allowing to use a minimal quantity of either the first or the second product. Indeed, as the mixture is within the mixing volume, it can be dispensed in a controlled manner. This differs to existing hand washing processes, whereby a bar of soap is directly rubbed onto the surface to wash, or whereby the surface to wash is completely immersed in a mixture. Indeed, the bar soap method requires repeated wetting of the surface in order to dissolve the soap, whereas according to the invention, pre-dissolution can occur within the mixing volume. Furthermore, a bar soap will reduce in shape during use, so that direct use will be rendered awkward and uncomfortable after a certain number of uses, to the difference with the hand-held container according to the invention. Complete immer-

sion hand-wash is particularly product consuming as a large quantity of mixture is prepared for complete immersion of the surface within the mixture. Furthermore, complete immersion still often requires mechanical action, i.e. friction, to obtain a satisfactory result, whereby the user of such process often has to insert the hands into the mixture, which may be of concern if the mixture has an effect on the skin. Indeed it is believed that the process of the invention allows product economy, and therefore benefits to the environment, while allowing satisfactory use.

[0027] Devices according to the invention are defining a volume for a content, which would correspond to the mixing volume when such a device is used according to the process of the invention. This volume is provided with at least one filling opening in order to place or pour the content within the volume. When used in the process according to the invention, the filling opening could be used for inserting either or both of the first or second products. It should be noted that more than one opening could also be provided. For example, a first opening could allow insertion of a first product and a second opening of a second product. Indeed, the products intended to be inserted in the device of the invention could for example have different forms, as a first product could be a tablet and a second a liquid, whereby use of different openings having different characteristics more particularly adapted to the insertion of a given product would be preferable. Indeed, the filling opening could have a shape or contour varying greatly. However, in a preferred embodiment according to the invention, the filling opening has a circular contour. It should also be noted that the filling opening could co-operate with a cap allowing repeated closure of the opening. As another essential feature, such devices are provided with means for the distribution of the content. Such means for the distribution of the content are indeed necessary for use as a dispensing device. The means for distribution may be of various kinds. Indeed, such means of distribution may simply be provided by the filling opening, but they may also be provided by extra means. Indeed, the device according to the invention may be provided with a porous membrane for example, whereby the porous membrane allows dispensing the content of the device. The device could also be provided with one or with a plurality of extra openings for this purpose. Such openings could also be valves, thus having a closed and an opened position.

[0028] The dispensing device according to the invention is also having a base at one end. By a base, it should be understood that the device has supporting means. Indeed, a base would allow to support the device in a stable manner when the device is laid onto a surface. There is different reasons for which the device according to the invention should have a base. Firstly, as the device is intended for use in a washing machine, it should preferably be suitable for dosing a cleaning composition. In order to achieve dosing, the device should be stable on its base while pouring or placing the cleaning composition in. The filling opening could for example be used for pouring or placing the content of the device in order to dose it. Secondly, as the device according to the invention is intended for more general use including hand washing of surfaces, it should be provided with an substantial contact with the surface to be treated. This is indeed the characterising feature of the device according to the invention that it has friction means situated on the outer surface of the base, the friction means having a length along one direction of at least 4 cm. The important criteria is that while moving the device on the surface to be treated in the same manner as one would when using for example a soap bar, the active part of the device, in other words the friction means, is defining a band along the trajectory of the device on the surface to be treated whereby the band has a sufficient surface allowing complete coverage in a sufficient time. Indeed, the existing dispensing devices having friction means are adapted for pre-treatment and are therefore having friction means defining a surface or band of application along the trajectory of the device on the surface which has a width of the order of 1 cm, so that an extensive use of such friction means would require a long time, thus prohibiting use of such existing devices for use as normal hand washing of clothes for example. Indeed the device according to the invention is suitable for use both as a hand wash device and as a machine wash device. It has a friction means allowing an improvement in efficiency of hand wash by having a length along one direction of at least 4 cm, so that a band described by the friction means on the surface to be treated along the trajectory of the device would have a width of 4 cm. This is the case when the device is used in such a manner that the trajectory is in a direction substantially perpendicular to the length of at least 4 cm. Such a length indeed corresponds to the width of a soap bar, such bars being typically used for such extensive hand washing operations. In this manner, the friction means could for example consist in a linear brush having the required length, thus rendering hand wash particularly efficient when the trajectory of the device is perpendicular to the direction of the brush. The friction means could also be a succession of such linear brushes or could cover a whole surface having at least one dimension of at least 4 cm. It should be noted that such a 4 cm length could be achieved using a plurality of portions of a shorter length which would still describe a band having a width of at least 4 cm. Furthermore, such a 4 cm length could be achieved by a plurality of portions at an angle from each other such that the band described during use would have a width of at least 4 cm.

[0029] A first embodiment of a device according to the invention is presented on Figure 1. In this embodiment, the volume 12 defined for the content is consisting in a hollow body. In this particular example the volume 12 is divided in two parts by a porous membrane 122, but

such a membrane 122 is not necessary. The membrane 122 is defining two media which it separates. The object of such media is to control the mixture of two products which may be inserted according to the process of the invention. For example, when using this device for the process of the invention, the first product 2 can be inserted through a filling opening 15 within the first medium 120, the second product 3 being inserted in the second medium 121 through a second opening 16. As the membrane is porous 122, the products will start mixing. However, mixing will not occur as fast as it would if the membrane 122 was not present. In a preferred example, the first product 2 is a cleaning composition, preferably a detergent composition, being in the form of granules, gel, liquid or in the tablet form, while the second product 3 is a solvent for the first product 2, and is preferably water. In this example, if the first product 2 is a detergent composition in the granular form, it will be poured through the first filling 15 opening to fill into the first medium 120 as shown on figure 2, and water, the second product 3, is inserted in the second medium 121, by dipping the device 1 in a bucket of water for example, as shown in Figure 3. It should be noted that this embodiment of the device 1 is further comprising a lid 19 co-operating with the first filling 15 opening to allow closure. Once both products are being inserted, the first 2 and second 3 products come into contact through the porous membrane 122. In this example, the membrane 122 is sufficiently porous to freely let water through, whereas the granules are being kept within the first medium 120. This can be obtained by using a membrane 122 made from a net having a hole size smaller than the size of the granules for example. As the water is acting as a solvent for the detergent composition, the first product 2 will start dissolving, so that the first product 2 in the dissolved form will enter the second medium 121 which was already containing the second product 3. The advantage of such a two media system is that it allows progressive dissolution, this having several advantages. Firstly, progressive dissolution allows use of the device for a longer time, which is a significant advantage in case of extensive hand washing. Another advantage of progressive dissolution appears if the first product is containing sensitive components. This particularly applies to a mixture of enzymes and of bleaching components, whereby bleaching components are active for a limited period once dissolved in an environment comprising enzymes. In such a case, progressive dissolution allows to keep part of the sensitive component such as the bleaching components in a "dry" or protected state so that the dispensing device can be effectively used during a time longer than the limited period of activity of the sensitive component. Indeed, if dissolution occurred at once, all of the active components would be active from the start, and would stop being active once the device has been used for the period of activity of these components. In the case of bleaching components, the period of activity is of the order of 10 minutes, after which the activity drops significantly in the presence of enzymes. If using a device with progressive dissolution, bleaching components will be activated progressively, thus progressively replacing the bleaching components which are not anymore effective, therefore allowing to use efficiently the device for a longer time.

[0030] Once insertion of the two products has occurred, the embodiment of Figure 1 may be used as described in Figures 4 and 5, whereby the implement 1 is scrubbed over the surface 11 to be treated. In these Figures, for reasons of clarity, the hand of the user is not drawn, although it is it which is acting onto the device 1. The mixture 10 is applied onto the surface 11 through the second filling opening 16 which in this example can also serve as a dispensing opening 16. It should be noted that this opening 16 is formed from a net like structure which allows control of the mixture 10 dispensed by filtering. This is particularly useful when the first product 2 is in a granular form, whereby the filter allows to avoid direct dispensing of non-dissolved granules onto the surface 11. Indeed, as is the case when using detergent granules, such granules are most efficient when applied once dissolved. Another particular feature of the embodiment of the device 1 of the invention as illustrated on Figure 4 in that the dispensing opening 16 is inclined at an angle. This is made in order to avoid clogging of the filter. Indeed, it should be reminded that this device 1 may be used without the membrane 122, in which case, when using granules for example, clogging may occur, thus hindering application of the mixture. This is avoided by giving an inclination to the dispensing opening 16. Once part of the mixture 10 is on the surface 11, the friction means 13 provided on the outer surface of the base 14 of the container 1 is used for further applying the mixture 10 onto the surface 11. It is important that the friction means 13 is on the outer surface of the base 14 of the container 1 in order to allow active friction. Indeed, the user can press firmly onto the device 1 in a direction normal to the base 14 in order to have a more active friction, this being allowed by the fact that the device 1 lie on its base 14 in a stable manner. There is another particular feature in this embodiment which allows active and firm action on the surface 11 which consists in a platform 17 provided for pressing for example the tip of the fingers in order to exert a greater force in the direction normal to the base. Such a platform 17 also serves as a protecting means for the hand of the user by physically avoiding direct contact between the hand or fingers of the user with the mixture 10 and/ or the area of application.

[0031] In another version of a device according to the invention presented in Figure 6, the friction means 13 is a porous friction means which can act both as a friction means 13 and for applying the mixture 10 onto the surface 11. In such a case, the second opening 16 as described in the embodiment of Figure 1 to 5 and serving for application of the mixture 10 by means of an inclined filter can be suppressed. Indeed, porous friction

means 13 will also allow insertion of a product as well as the second opening 16 could allow in the embodiment of Figures 1 to 5. Furthermore, such porous friction means 13 can allow replenishment of the second product 3, for example. Indeed, if for example, the surface 11 to be treated is such that the second product 3 has been directly applied to the surface 11, and if the dispensing device 1 has flexible resilient walls 18 allowing to exert a mechanical action, the flexible walls 18 may be repeatedly compressed in order to create a depression in the device 1. Such a depression will be usually followed by a sucking action at the level of the porous friction means 13 such that some of the second product 3 on the surface 11 will be inserted in the mixing volume 10. This will induce replenishment of the second product 3 during use. In this case, whereby the second product 3 is inserted in the mixing volume 12 during application of the mixture 10, the ratio of the mass of the first product 2 comprised in the mixing volume 12 to the mass of the second product 3 comprised in the mixing volume 12 is varying. As there is some of the first 2 and some of the second 3 products in the mixing volume 12, such a ratio is defined. Indeed, this ratio could not be defined if there was none of the second product 3 in the mixing volume. Replenishment may also take place if the device 1is dipped within the second product 3 during application as in Figure 3. The advantage of replenishment is that it allows to control the relative quantities of the first product 2 and of the second 3 products within the mixture 10.

[0032] In case of use of flexible resilient walls 18, there are various advantages. Indeed, such walls 18 can be suitable for adapting to the shape of a hand or to the relief of the surface 11. Furthermore, such walls 18 may be used as explained above for sucking in a product. Such a function is facilitated if the only opened opening is for example the porous friction means 13. Therefore, in case of use of a device 1 as presented in figures 6 to 10 provided with a porous friction means 13 instead of a second opening 16, it is preferred to close the first opening 15 with a lid 19 if it is desired to use flexible resilient walls 18 for sucking in a product. However, closure could also simply be made by applying the palm of a hand onto the opening 15, if the device 1 has a design similar to the design of the embodiment of Figures 1 to 5. Indeed, the palm of the hand is intended to be placed in this location. Yet another possibility is that the first opening 15 is situated on the base 14 of the device 1 as in Figures 6 to 10, so that it can be repeatedly and removably covered with the friction means 13. Such removability can be provided by using clipping means, threads or a hinge such that the opening can be used for inserting product, and then reclosed using the removable or hinged friction means. Such an embodiment could also look similar to the embodiment presented in Figures 1 to 5, whereby it would not have the first 15 nor the second 16 opening as in Figures 1 to 5, and therefore no lid 19, but whereby the base 14 could be opened up to give access to the volume 12 for the content of the container 1. However, in order to facilitate the manufacturing process of the device 1, it would be preferable that the friction means 13 be an integral part of the device 1, so that the whole device 1 is only one piece. Reclosability could still be achieved for example by moulding the device 1 with friction means 13 as an integral part attached to the main part by a flexible hinge. Indeed, such a device 1 would preferably be manufactured using thermoplastic resins, preferably poly-olefins, being made using for example Ziegler Natta or Metallocene catalysis. Preferred poly-olefins would include poly-ethylene or poly-propylene resins. Thermoplastic elastomers, rubbers or thermoset resins may also be used. The device 1 could be made transparent or see-through to allow the user to check a level or to check dissolution, for example. The device 1 could also be provided with dosing lines. Other features could include specific moulding of the device so as to facilitate grip by the user.

[0033] Another advantage which could be provided by flexible resilient walls 18 would be to allow to exert a mechanical action on the content of the container 1. This would be particularly suited when at least one of the two products is not liquid. For example, if the first product 2 is in the form of a tablet or of granules, mechanical action through flexible resilient walls 18 will significantly improve dissolution of the first product 2. This is particularly useful when using such a product for hand washing, as it allows to suitably control the concentration of the mixture dispensed, but also in case of use in or prior to a washing machine process, whereby pre-dissolution of the product allows the product to dissolve more readily and more rapidly during the wash. This is particularly useful when using particular detergent compositions which dissolve slowly, therefore allowing to use smaller amounts of water during the machine washing than would normally be needed for a satisfactory dissolution. Indeed, the device could be provided with mechanical means for improving or accelerating or allowing pre-dissolution of a non liquid composition such as a tablet or such as granules in a solvent such as water. Furthermore, in case of use with a tablet, and more specifically with a detergent tablet, the device could allow crushing of the tablet prior to use by inserting the tablet within the device by itself or with a second product, such crushing favouring dissolution of the tablet. This would be particularly useful if applied to detergent tablets such as disclosed in the pending European applications of the Applicant n° 96203471.6, 96203462.5, 96203473.2 or 96203464.1. In such a case, mechanical action on the tablet prior to use or during use will allow to improve dissolution and therefore effectiveness in washing both for machine washing or for hand washing, while also providing a cleaning implement to use during hand or machine wash for dispensing the cleaning composition. Tablets are preferably blocks of product having a given cross section, and hav-

ing a shape defined by a translation along a distance corresponding to the thickness of the tablet of this given cross-section. More preferably the cross section is rectangular, square, with or without rounded corners or chamfer. Most preferably, the cross section is elliptical or circular, therefore making it a cylinder. The shape of the volume of the device could be more specifically designed so as to take account of the shape of such tablets while facilitating application of the mechanical action through for example the resilient walls and allowing dissolution and dispensing of a mixture.

[0034] Relating to the embodiment presented in Figures 6 to 10, it should be noted that it is provided with means for scooping product as it has the shape of a scoop as appears in Figure 7 whereby the first product 2, in this example granules, is being inserted as in the second step of the process according to the invention. In Figure 8, the second product 3 is being inserted within the volume 12. In this particular example, insertion of the second product 3 is made directly and through the same opening than insertion of the first product 2. However, the second product 3 could also be inserted through porous friction means 13. It should be noted that the volume 12 in the embodiment presented in figures 6 to 10 is a hollow body having a single medium, to the difference of the embodiment presented in figures 1 to 5. In this embodiment, dissolution of the first product 2, i.e. the granules, in the second product 3, i.e. the solvent inserted as shown in Figure 8, could be improved by shaking the closed device 1 as in figure 9 so as to improve dissolution by mechanical means particularly consisting in shaking in this example. The embodiment presented in Figure 6 to 10 has a reclosable lid 19 for the filling opening 15, whereby the lid 19 serves also as a base 14 and therefore caries the friction means 13 on the outer surface of the base 14. In this example, the friction means 13 is composed of a plurality of hair like parts. Such parts can either be made separately and clipped onto the device, or the device may be a one piece device comprising the friction means as an integral part, thus allowing a manufacture in one piece. The friction means has a length in one direction of at least 4 cm. This allows to use the device 1 for hand use in a particularly efficient manner when using the friction means 13 along a direction perpendicular to the direction where the friction means 13 are of at least 4 cm. In the embodiments presented in figures 1 to 13, the friction means 13 are covering a surface, in particular a substantially circular surface in case of the embodiment presented in Figure 6, the surface being such that it comprises a full length of 4 cm of friction means 13 in at least one direction. For example, friction means 13 corresponding to a surface and more particularly to a circular surface and having a diameter of 4 cm would be convenient, particularly because it is efficient for use in all directions. However, it is also possible to use a linear friction means as long as such a friction means has a length of at least 4 cm along one direction. It should be noted that such friction means 13 could be such that it would allow more or less rough friction when used along one or another direction. Indeed, the friction means could be such that they are particularly flexible along a first direction, thus convenient for treatment of a delicate surface, or less flexible along another direction, thus allowing treatment of less delicate surfaces or of surfaces requiring a more intense treatment. Such friction means 13 could have for example a hair like structure with a given or variable resilience and flexibility, or a net like structure such as used for example on some sponges for scrubbing dishes, or a roughened or spiky surface, as long as it allows friction between the surface and the friction means. Other examples include protruding fibres, or abrasive or non-abrasive fabric, woven or non woven, brush material or dimpled material to provide high pressure points. This includes a membrane such as a polyethylene, polypropylene, polyethylene therephthalate or styrene membrane having penetrating or non penetrating bristles placed on one side in a direction normal to the membrane. Ideally, the friction means should provide effective scrubbing despite non-flat surfaces to treat. Indeed, the surface to treat may not be flat. Furthermore, it may be useful if the friction means provides some degree of penetration within the dimension of the surface, particularly if this surface is fabric. Friction could be rendered more or less gentle depending on the force applied to the device. It is preferred that the device has means 17 for applying a force by hand in the direction normal to the base 14 for this purpose. Such means for applying a force may consist in a relatively rigid structure or platform 17 on which the hand can press, or may consist of a handle like structure, for example. It should be noted that the force exerted on the device 1 for friction purpose also may have components both in a direction normal to the base 14 and in a direction in the plane of the base 14 in the direction defining the trajectory of the device.

[0035] Preferably, the friction means 13 will have a length along at least one direction of at least 4.5 cm, more preferably of at least 5.25 cm, even more preferably of at least 6.25 cm and most preferably of at least 7 cm. As a further characteristic, the friction means should preferably cover a surface of at least 10 cm^2, more preferably of at least 15 cm^2, even more preferably of at least 25 cm^2 and most preferably of at least 40 cm^2.

[0036] In the embodiments presented in figures 1 to 10, the first product 2 is granules. However, same applies for gel, paste, liquid or other flowing materials, whereby dissolution may also be improved by mechanical means, for example by shaking. Similarly, the second product 3 may also and independently have various forms including liquid, gel, paste or granules. Indeed, the two products may both be granules for example, which could for example favour abrasion during use. The device 1 according to the invention may also be used with only one product.

[0037] In the embodiment presented on figure 11 to 13, insertion of the products can occur through a filling opening 15 situated on the side of the device 1 opposite to the base 14, whereby the opening 15 can subsequently be closed either by a lid 19, as on figure 11, or by the palm of a hand during use for example. Other reclosable openings include use of a resilient "purse like" opening whereby application of a force at both ends of a resilient structure will open it, or resilient openings similar to openings as described in WO94/29182 for snap caps. It should be noted that filling can be made using unit dose pouches for example. The friction means 13 is placed on the outer surface of the base 14 according to the invention, and application of the mixture 10 can occur through a pouring spout provided on the side of the device opposite to the base. It should be noted that such a structure will allow to apply the mixture 10 only if the device 1 is tilted. Indeed, in this particular element, neither the friction means 13 nor the base 14 are porous. This allows a good control on the amount of mixture 10 to be applied. Indeed, the user will pour and therefore apply mixture 10 to the surface 11 only when desired, by tilting the device 1. In a preferred embodiment, the dispensing means allowing to apply the mixture onto the surface comprise a valve or more preferably a self seal valve. Other means for dispensing the mixture include use of a dip tube dipping on the one side into the mixture, and reaching out of the device, preferably at an angle, so as to direct a jet of mixture onto the surface on which the mixture should be applied, when the device is squeezed, for example.

[0038] This control by tilting is also possible on the device presented on figures 12 and 13, whereby the angle of the opening 16 allowing application of the mixture is such that more mixture will be dispensed when the device 1 is tilted. Indeed, when mathematically projecting the surface of the opening 16 onto the surface 11 to be treated along a direction normal to the surface 11 to be treated, the projected surface of the opening 16 is larger when the device is tilted, so that more of the mixture 10 is dispensed in this manner. In this particular example, the opening 16 can serve as a filling opening as well as means for distribution of the content.

[0039] The devices according to the invention are of the re-usable type for machine washing, in particular of clothes or dishes. Indeed, the embodiments presented in figures 1 to 13 have a shape which is substantially convex. By convex it should be understood that it bulges toward any external point of observation.

[0040] Indeed, devices for use within a machine should have a minimum of concave parts in order to avoid being caught in mechanical parts of the machine during use within a machine. Furthermore, a convex shape would prevent damaging fabrics during use within a machine. Therefore, the preferred shape for such a device would be a sphere, an ellipsoid or an ovoid. As the device according to the invention has a base for supporting the friction means, it preferably also comprises a flat part. However, such a part should introduce a minimum of concave surfaces, and if possible none. The ideal convex shape may also be slightly modified to accommodate handling by hand, while also introducing a minimum of concave surfaces. Furthermore, such devices of the re-usable type for machine washing should not be too hard, and therefore should preferably be made of a relatively resilient and flexible material to avoid damaging a machine or the device during use due to shocks which are likely to occur, as may for example occur in a washing machine for clothes, whereby the device is inserted in a structure rotating at high speeds which may be in excess of 1700 turns per minute, and whereby the device is also subject to acceleration. Indeed, a steel or glass device would be particularly unsuitable for such a purpose as the machine would be damaged in the first case and the device would in the second during machine use. Therefore, the device according to the invention is preferably made from thermoplastic resins. Furthermore, any part of the device should withstand temperatures in excess of 95°C, preferably 100°C, more preferably 120°C and most preferably 150°C in order not to be damaged by machine use at high temperature, as may for example occur in a washing machine for clothes or for dishes. Furthermore, the device should be such that it could be readily emptied out from its content during machine use. This means that the volume containing the content should not comprise dead ends or shapes in which the content could be caught and would therefore not be used. Similarly, un-maintained and soft materials would tend to facilitate clogging and thus to hinder efficient dispensing. By un-maintained, it is meant that it can substantially freely collapse, thus retaining mixture in collapsed parts. In case of a presence of a membrane as in the embodiment presented in figures 1 to 5, the membrane may be removable to facilitate this purpose as well as the fact that risks of catching parts of the device within parts of the machine should be reduced. In order to be readily emptied, the device also comprises means for distribution of the content. Such means include means known from the art, in particular means already used for existing devices designed specifically for machine washing use. For example, in the case of the embodiment presented in figures 1 to 5, the distribution means can either be the second opening or the first opening once the lid is removed or if the lid comprises specific dispensing means, or both.

[0041] As a further characteristic, the device according to the invention may comprise means for dispensing the mixture whereby such means facilitate sudsing, foaming or bubbling. This may be achieved by having dispensing means consisting in a porous surface, the surface having a plurality of openings for providing the porosity, whereby the percent open surface area of such a surface is comprised between 20 and 60%.

[0042] As a further step for the process according to the invention, the device may be used for rinsing after

washing by inserting a product convenient for rinsing such as water for example. Similar example include laying a protective layer on a surface such as varnish on leather for example.

[0043] In another preferred embodiment, a pair of such devices is used, the base of the first device being placed against the base of the second device for efficiently scrubbing a surface placed in between the bases. Such a pair of devices may also conveniently comprise means for mutually co-operating so as to use it as one device having two friction means by joining the first and second base in the same plane, the two devices being side to side.

[0044] Another convenient embodiment would comprise inserting the device within a flexible pouch having a rigid frame for catching the surface to be treated, so that the surface would be maintained when using the device. Such a pouch could co-operate with the device in such a manner that the device will be fixed to the pouch. This is particularly applicable to the hand washing of clothes.

[0045] The process of the invention could also consist in firstly hand-washing, as washing by hand, and secondly of machine washing, whereby part of the mixture is used as in the process according to the invention and is then inserted together with the container in the machine for using the remaining mixture.

[0046] In the further aspect according to the invention, concerning a dispensing device defining a volume for a content, and having a base at one end, the volume being provided with at least one filling opening, the dispensing device having means for the distribution of the content and further comprising friction means, the friction means being on the outer surface of the base, characterised in that the device further comprises a force application area, the force application area making an angle of less than 90° and of more than 20° with the base, the angle between the force application area and the base changing of less than 50% when a pressure of 50kPa is applied onto the force application area, the means for distribution of the content being actuated by a pressure of at least 30kPa, it was found that such a device would be particularly suitable for heavy hand use, for example for washing laundry or for body wash. Indeed, the angle between the base and the force application area is such that it adapts well to heavy hand washing, allowing the user to apply a strong mechanical action while being in a natural position. Indeed, the palm of the hand would typically lie onto the force application area during use. Furthermore, the fact that the angle between the force application area and the base changing of less than 50% when a pressure of 50kPa is applied onto the force application area gives rigidity to the force application area which allows good transfer of mechanical forces between the palm of the hand and the base. Typically, the force application area has the shape that accommodates the palm of a hand. A further feature is that the means for distribution of the content being actuated by a pressure of at least 30kPa. This allows actuation by application of a force using a finger, typically. It should be noted that in this manner, the content is dispensed only when so desired by the user. Preferably, the actuation means is situated on the side of the device opposite to the force application area, so that the user would have its finger placed in the region of the actuation means when its palm is against the force application area. Actuation means could consist in walls sufficiently resilient to allow exerting a mechanical action allowing to expel product. In another embodiment, actuation means consist of a valve. It may also consist of a button. Preferably, the means for distribution of the content is such that the content is distributed directly towards the surface, further facilitating use for heavy wash. This is most preferably combined with actuation on the side of the device opposite to the base, i.e. on the top of the device. In a preferred embodiment, the angle between the force application area and the base is of at least 25°, more preferably of at least 30° and most preferably of at least 35°. Preferably, this angle is of less than 70°, more preferably of less than 50° and most preferably of less than 40°. This angle is measured when no force is applied onto the force application area, and can be measured for example by measuring the angle formed between the edge of the base and the edge of the force application area in a cross section along a plane normal to the base, the plane preferably comprising the direction of use of the device, i.e. the plane being preferably normal to both the base and the force application area. When a pressure of 50kPa is applied onto the force application area, the angle between the force application area and the base changing of less than 50%, preferably of less than 40%, more preferably of less than 30% and most preferably of less than 20%. It should be noted that the change is normally corresponding to a reduction of the angle, for example, a change of 50% bringing an angle of 70° to 35°. This relative rigidity is such that the user can repeatedly use the device and apply force onto the force application area without collapsing of the device, while maintaining comfort of use, as such a device is mainly intended to be used heavily.

[0047] The means for distribution of the content is actuated by a pressure of at least 30kPa, preferably by a pressure of at least 40 kPa and most preferably by a pressure of at least 45 kPa, and preferably by a pressure of less than 100 kPa, more preferably of less than 80 kPa and most preferably of less than 55 kPa. Such an actuation pressure being aimed at allowing easy actuation during use, typically with one or more fingers or by a squeezing action, preferably while the user is applying a force onto the force application area, typically with the palm of the hand.

Claims

1. A process for applying a mixture (10) to a surface

(11) comprising a first step, a second step and a third step, the first step consisting in providing a hand-held container (1) defining a mixing volume (12) and comprising friction means (13), the second step consisting in inserting within the mixing volume (12) a first product (2) and a second product (3), the first product (2) and the second product (3) forming the mixture (10), the third step consisting in applying at least part of the mixture (10) on the surface (11) and using the friction means (13), the process being characterised in that the hand-held container (1) is a dispensing device of the re-usable type for machine washing.

2. The process according to claim 1, whereby the third step further consists in inserting the second product (3) in the mixing volume (12) during application of the mixture (10), so that that the ratio of the mass of the first product (2) comprised in the mixing volume (12) to the mass of the second product (3) comprised in the mixing volume (12) is defined and is varying.

3. The process according to claim 1, whereby the first product (2) is a cleaning composition, preferably a detergent composition, the second product (3) being a solvent for the first product, preferably water.

4. The process according to claim 1, whereby the first product (2) is a granular product.

5. A dispensing device (1) of the re-usable type for machine washing, defining a volume (12) for a content, and having a base (14) at one end, the volume (12) being provided with at least one filling opening (15), the dispensing device (1) having means for the distribution of the content (16) and further comprising friction means (13), and characterised in that the friction means (13) is on the outer surface of the base (14), the friction means (13) having a length along one direction of at least 4 cm.

6. The dispensing device (1) according to claim 7, whereby the volume (12) is a hollow body.

7. The dispensing device (1) according to claim 7, whereby it further comprises means (17) for applying a force by hand in the direction normal to the base (14).

8. The dispensing device (1) according to claim 7, whereby the dispensing device (1) comprises flexible resilient walls (18) for exerting a mechanical action on the content.

9. The dispensing device (1) according to claim 7, whereby the friction means (13) are forming an integral part of the device.

10. A dispensing device defining a volume for a content, and having a base at one end, the volume being provided with at least one filling opening, the dispensing device having means for the distribution of the content and further comprising friction means, the friction means being on the outer surface of the base, characterised in that the device further comprises a force application area, the force application area making an angle of less than 90° and of more than 20° with the base, the angle between the force application area and the base changing of less than 50% when a pressure of 50kPa is applied onto the force application area, the means for distribution of the content being actuated by a pressure of at least 30kPa.

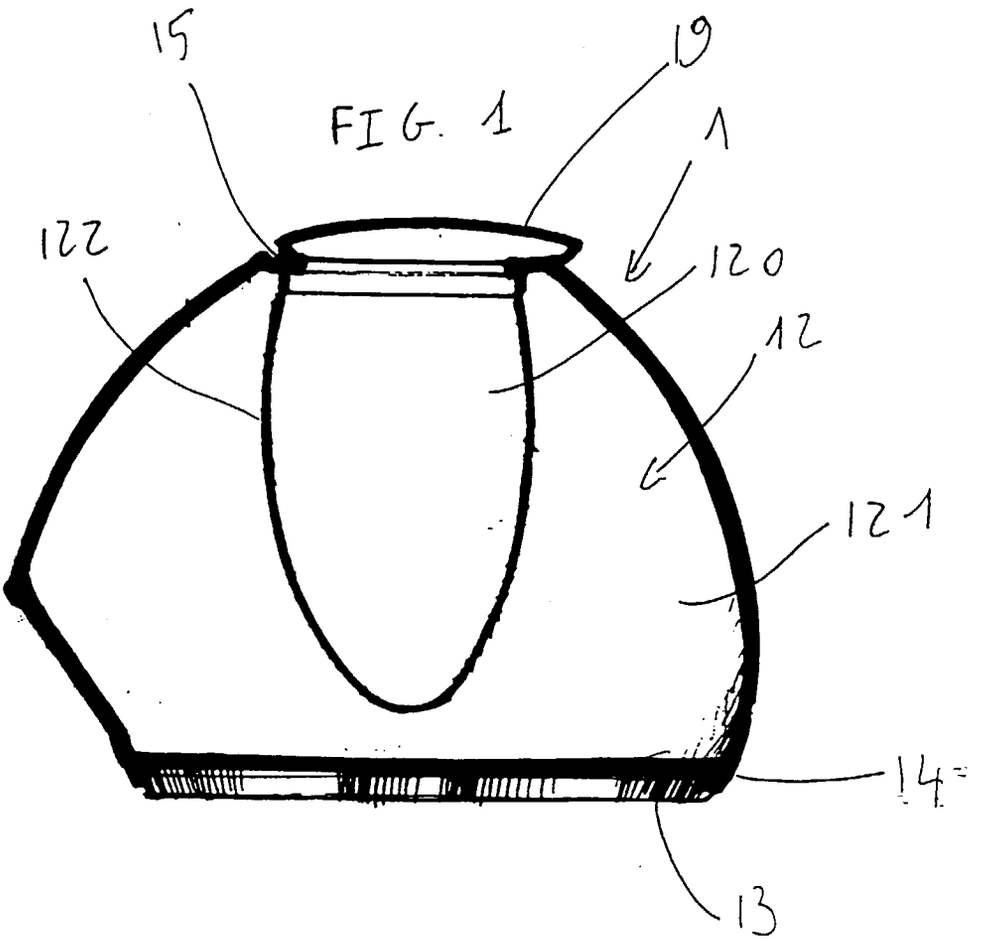


FIG. 1

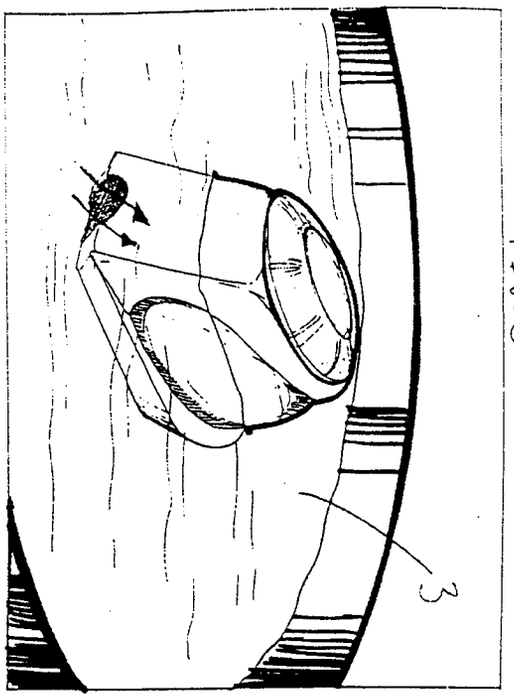


FIG. 3

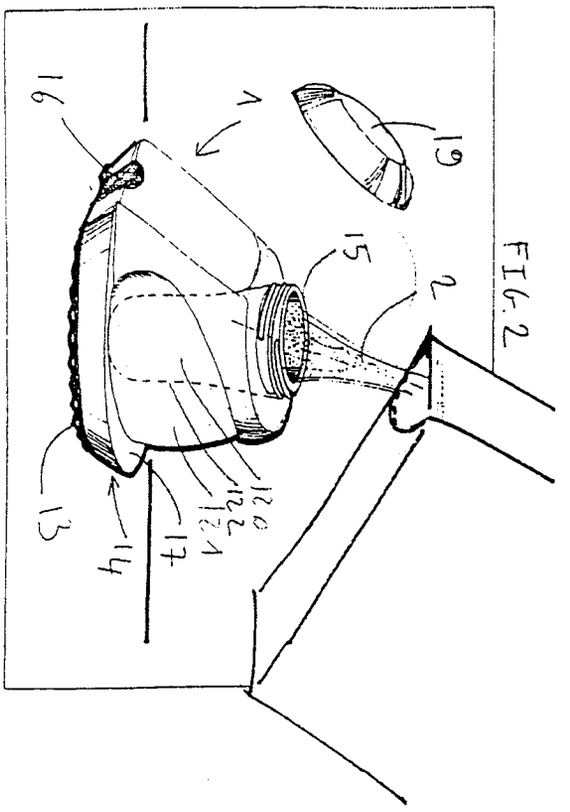


FIG. 2

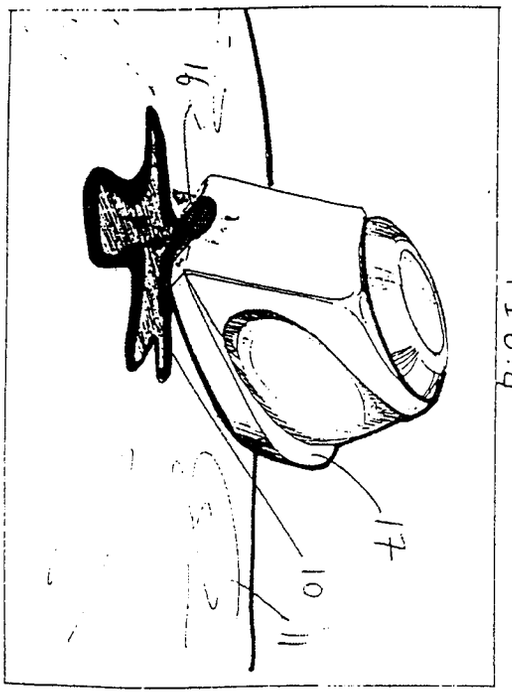


FIG. 4

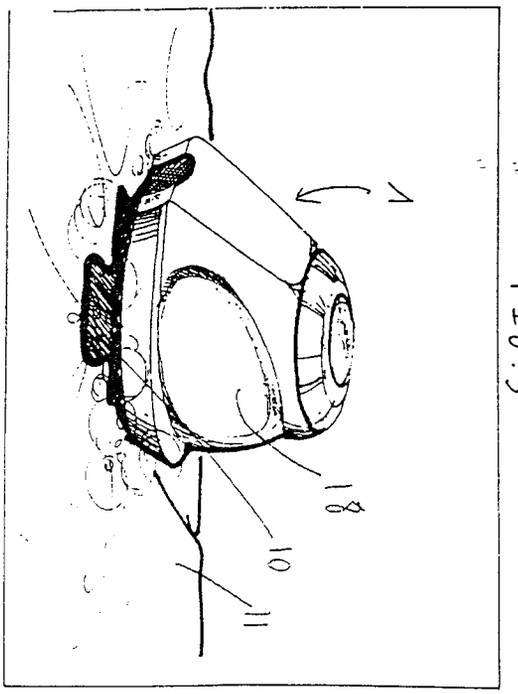


FIG. 5

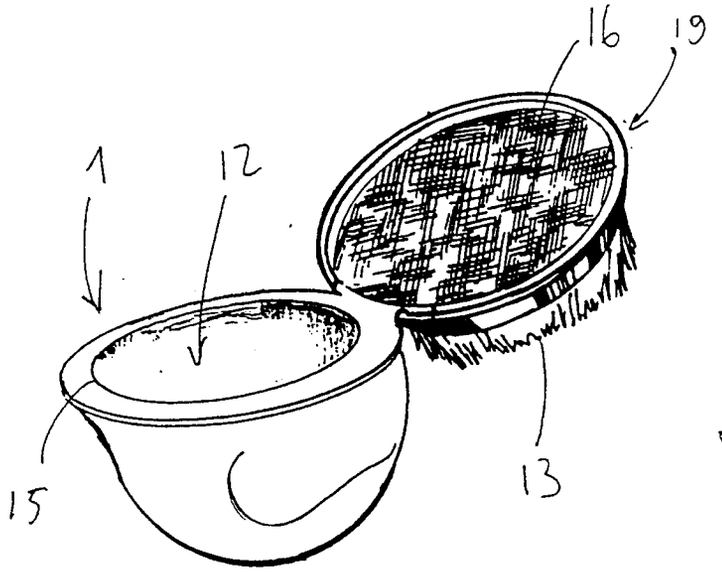


FIG. 6

FIG. 7

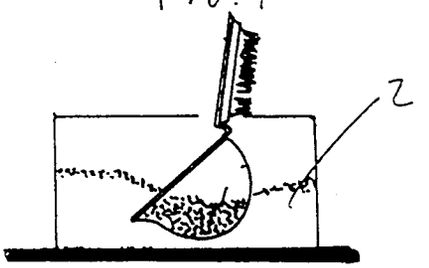


FIG. 8

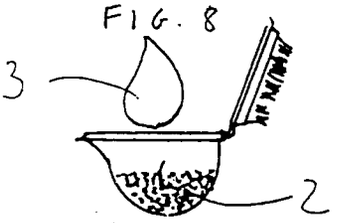
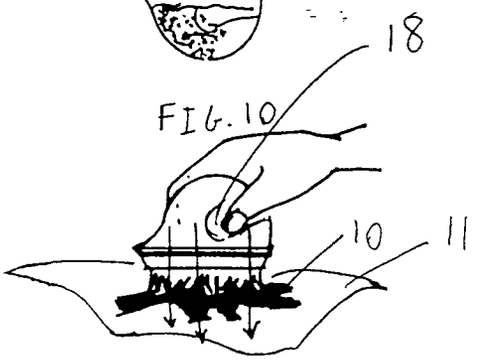


FIG. 9

FIG. 10



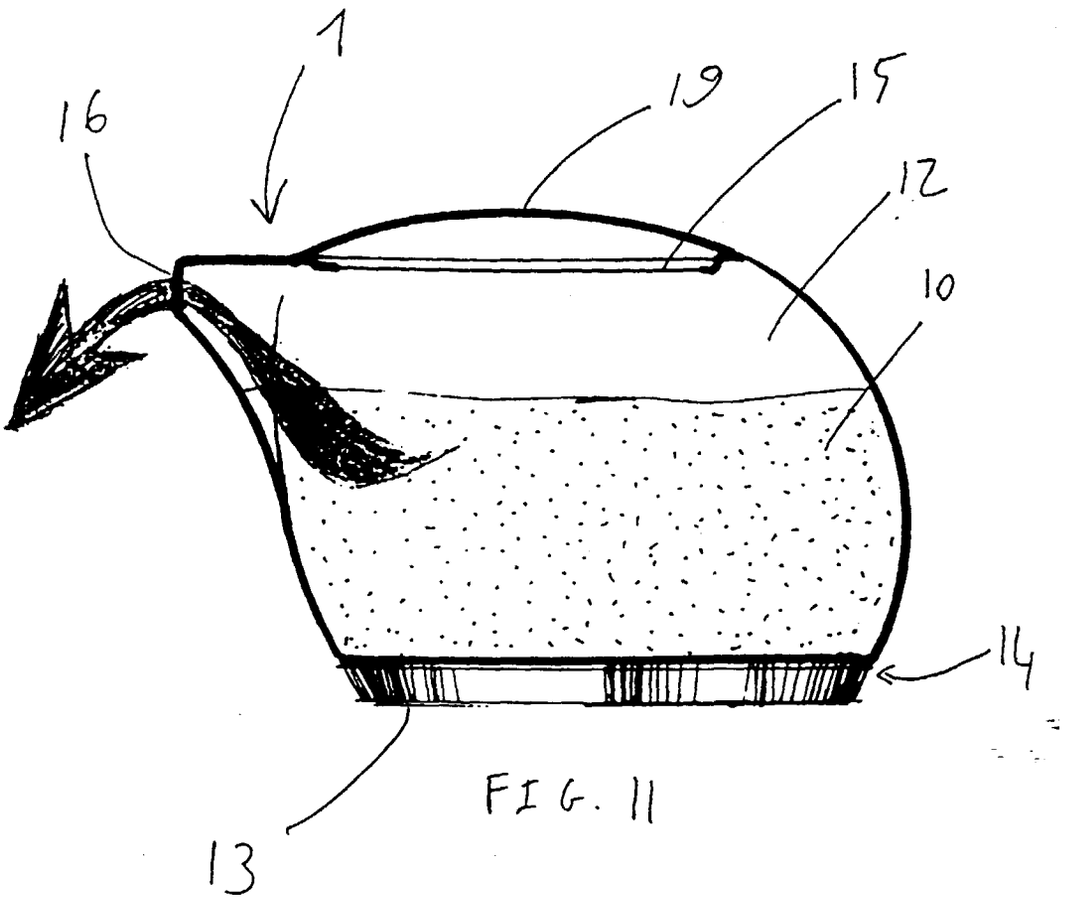


FIG. 11

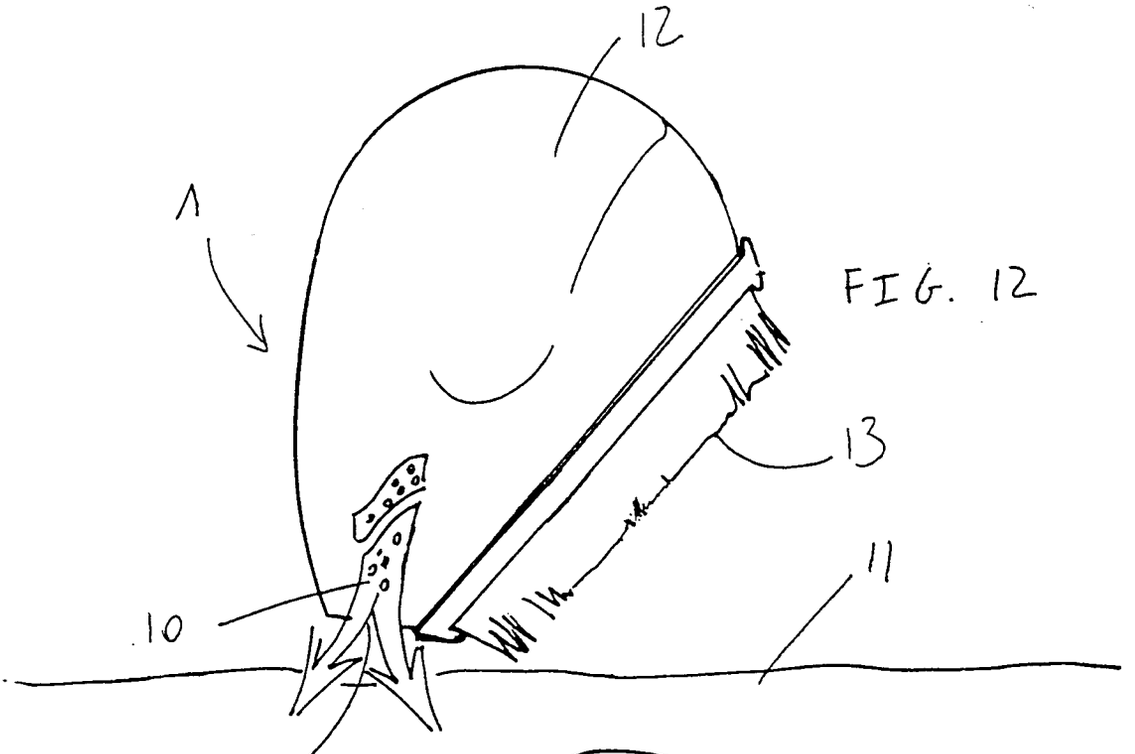


FIG. 12

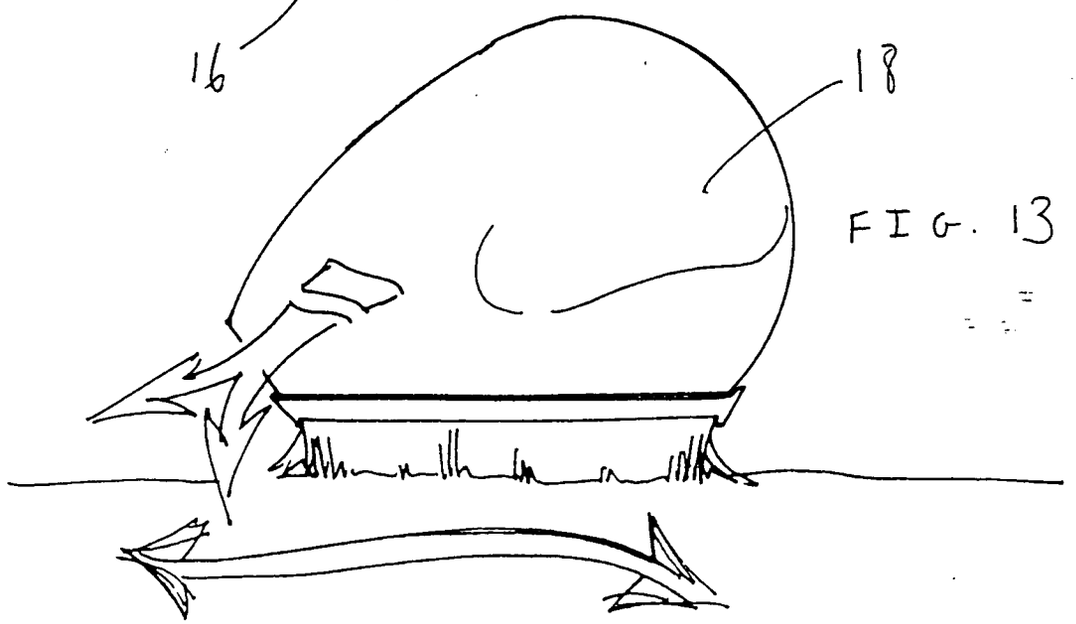


FIG. 13

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 87 0177

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.6)
X,D	FR 2 669 943 A (PROCTER & GAMBLE) 5 June 1992 * page 8, line 17 - page 9, line 2 * * figure 2 *	5-10	D06F39/02 A47L25/08
A		1	
X,D	WO 92 09736 A (PROCTER & GAMBLE) 11 June 1992 * page 12, line 23 - page 14, line 25; figures 8-11,21-23 *	5-10	
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D06F
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 January 1999	Norman, P

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 87 0177

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
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29-01-1999

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