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(54)

Refillable pump sprayer system, ring, set of rings, refillable pump sprayer, and method

(57)

The invention relates to a refillable pump sprayer system. The system comprises multiple refillable pump sprayers. Each pump sprayer comprises a bottle having a neck portion provided with a top opening, and a cap for releasably closing off the top opening of the bottle. Said neck portion is provided with first coupling means, for instance external thread, and the cap is provided with second coupling means, for instance internal thread for cooperation with said first coupling means, such as the external thread, of the bottle. Further, each sprayer comprises a pump and a nozzle for dispensing fluid contents from the bottle. The system further comprises different looking rings. Each of the rings is arranged to be placed around the neck portion of one of the bottles such that, when the cap is screwed onto said bottle, the ring is at least partly extending from under the cap. The system also comprises an explanatory table containing representations of the appearances of the different looking rings and linking them to representations of different intended contents of the bottles. Advantageously, each of the rings has a different code colour.

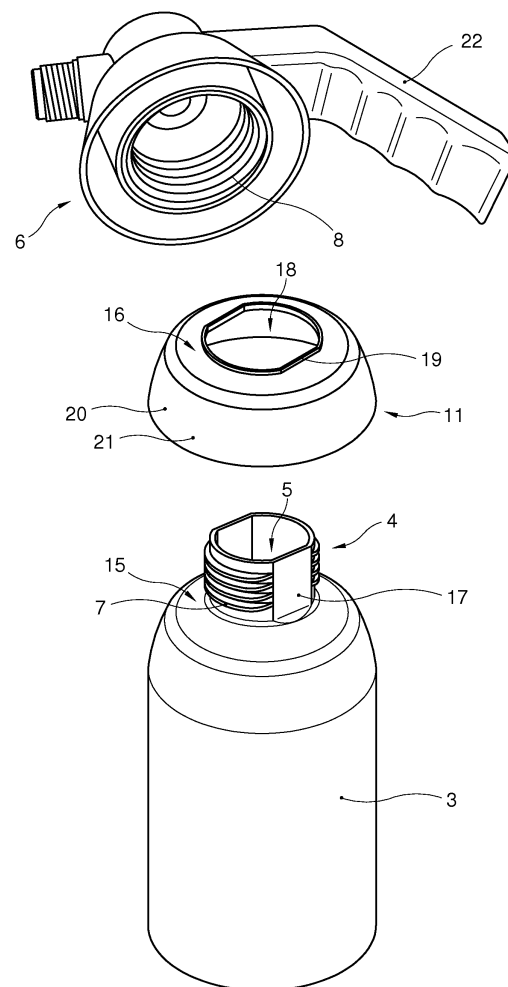


FIG. 2

## Description

**[0001]** The invention relates to refillable pump sprayers. Such a pump sprayer comprises a bottle having a neck portion provided with a top opening, and a cap for releasably closing off the top opening of the bottle, the neck portion being provided with first coupling means, for instance external thread, and the cap being provided with second coupling means, for instance internal thread, for cooperation with said first coupling means, e.g. external thread, of the bottle. The sprayer further comprises a pump and a nozzle for dispensing fluid contents from its bottle.

**[0002]** It is noted that such refillable pump sprayers are often used for spraying liquids, such as solvents, water-based liquids, acids, cleaners, and/or chemical specialties, e.g. brake fluid. For example, the sprayers are used in body shops and repair shops or so-called garages, for applying liquids to cars, bikes, and the like or parts thereof. However, the refillable pump sprayers can also be used in other places, such as other workshops, and/or may be used for other purposes, such as spraying fluids into and/or onto pieces of work and/or other objects.

**[0003]** Normally, multiple sprayers are present in a garage or workshop. For example, a first one of said multiple sprayers contains thinner, another one contains water and yet another one contains grease. Normally, all of these sprayers containing different fluid contents look the same. In the heat of the moment, a user can easily grab the wrong sprayer. As a result, said user can erroneously spray a wrong liquid into or onto a piece of work, thereby staining or damaging said piece of work.

**[0004]** An object of the present disclosure is to provide an alternative refillable pump sprayer and/or an alternative refillable pump sprayer system. It is an object of the present invention to alleviate or solve at least one of the disadvantages of the prior art sprayers and/or systems. In particular, the invention aims at providing a refillable pump sprayer system, wherein at least one of the disadvantages mentioned above is counteracted or advantages there above are obtained. More in particular, the invention aims at providing a refillable pump sprayer system which can counteract that a workman accidentally sprays a wrong fluid contents onto and/or into a piece of work.

**[0005]** In a first aspect of the disclosure, the present disclosure provides for a refillable pump sprayer system, comprising multiple refillable pump sprayers, wherein each pump sprayer comprises a bottle having a neck portion provided with a top opening, and a cap for releasably closing off the top opening of the bottle, the neck portion being provided with first coupling means, for instance external thread, and the cap being provided with second coupling means, for instance internal thread, for forming a coupling by cooperation with said first coupling means, e.g. external thread, of the bottle, each sprayer further comprising a pump and a nozzle for dispensing fluid contents from the bottle, the system further comprising

ing different looking rings, each ring being arranged to be placed around the neck portion of the bottle such that, when the cap is screwed onto the bottle, the ring is at least partly extending from under the cap, the system further comprising an explanatory table containing representations of the appearances of the different looking rings and linking them to representations of different intended contents of the bottles.

**[0006]** By providing the different looking rings, the sprayers intended for containing different fluids can be made distinguishable in a relatively easy and a relatively durable fashion.

**[0007]** By providing a relatively large part of at least an outer side of the part of the ring which during use extends from under the cap of the sprayer, with a distinguishable look and/or code colour, or by providing it substantially completely with a code colour, preferably with a single code colour, the code colour can be made relatively easily visible. Alternatively or additionally, it may be counteracted that the code colour will be not visible anymore due to local dirt or damage to the ring. It is noted that said relatively large part of the outer side of the extending part may for instance include at least 25%, more preferably at least 50%, especially at least 65% of the surface area thereof.

**[0008]** By providing a relatively large part of the ring by a code colour, especially a single code colour, a pump sprayer provided with such a ring can be recognised relatively quickly. Hence, a workman may be enabled to observe at a glance whether or not a certain sprayer is containing the fluid he wants to use.

**[0009]** In embodiments, the ring can be made of a coloured material. Hence, it can be counteracted that the different appearance, e.g. including its code colour, will not be visible due to damage or wear of said ring. Advantageously, each of the differently looking rings is made of a differently looking plastic material.

**[0010]** Advantageously, an outer side of a bottom part of the neck portion of the bottle has a non-circular cross-section, and the ring has a non-circular opening for engaging the non-circular bottom part of the neck portion such that rotation of the ring with respect to the neck portion of the bottle can be substantially counteracted.

**[0011]** In embodiments, the top opening of the bottle may have a substantially round cross-section.

**[0012]** Alternatively or additionally, the ring may be provided with an upward extending wall portion, preferably an upward extending collar, provided adjacent an edge of the opening in the ring for at least partly abutting the external thread of the neck portion of the bottle such that lateral movement of the ring with respect to the neck portion of the bottle can be substantially counteracted.

**[0013]** Further, the current disclosure relates to a ring for use in a system according to the current disclosure, and to a set of such rings.

**[0014]** Further, the invention relates to a refillable pump sprayer, and to a method for identifying intended fluid contents of a refillable pump sprayer.

**[0015]** Advantageously, the refillable pump sprayer can be a portable sprayer, especially a hand-held sprayer. In embodiments, the bottle of the sprayer may have a fill volume of about 0.5 -3.0 liters, preferably between 0.8 and 2.0 liters, such as for instance about 1.0, 1.5 or 1.6 liters.

**[0016]** Alternatively or additionally, the refillable pump sprayer is a non-aerosol sprayer, a liquid sprayer, and/or a trigger sprayer.

**[0017]** The current disclosure also relates to a refillable pump sprayer, and method for identifying intended fluid contents of a pump sprayer.

**[0018]** Advantageous embodiments of the invention are described below and in the appended claims.

**[0019]** By way of non-limiting examples only, embodiments of the present invention will be described with reference to the accompanying figures in which:

Figure 1 shows a schematic view of a system according to the invention; and

Figure 2 shows a schematic view of a bottle, a cap and a ring of the system of Figure 1.

**[0020]** The embodiments disclosed herein are shown as examples only and should by no means be understood as limiting the scope of the claimed invention in any way. In this description, the same or similar elements have the same or similar reference signs.

**[0021]** Figure 1 shows a schematic view of an embodiment of a refillable pump sprayers system 1 according to an aspect of the present invention. The system 1 comprises multiple refillable pump sprayers 2. Here, the system comprises five sprayers 2, but in alternative embodiments the system may comprise another number of sprayers, such as for example two, three, four, six, ten or twenty sprayers. Each of the sprayers 2 may be arranged for spraying, squirting and/or misting fluids.

**[0022]** Figure 2 shows a schematic view of a bottle 3, a cap 6 and a ring 11 of the system 1 of Figure 1.

**[0023]** Each pump sprayer 2 of the system of Figure 1 comprises a bottle 3, which, as can be seen in Figure 2, has a neck portion 4 provided with a top opening 5. For example, the bottle 3 may be a mixing cup and/or a spray cup. Preferably, the top opening 5 of said bottle 3 can be substantially round and/or a top edge of the top opening can be substantially round. Each pump sprayer 2 also comprises a cap 6 for releasably closing off the top opening 5 of the bottle 3. The neck portion 4 of the bottle 3 is provided with first coupling means, for instance external thread 7 and the cap 6 is provided with second coupling means, for instance internal thread 8, for cooperation with said first coupling means, e.g. external thread 7 of the bottle 3, as can be seen in Figure 2. It is noted that the first and second coupling means are arranged for forming a coupling by cooperation with each other. In an embodiment, the first coupling means may comprise external thread and the second coupling means may comprise external thread. However, the coupling means may be

formed differently. For example, the bottle 3 may be provided with internal thread and the cap 6 may comprise corresponding external thread. In other embodiments, the first and second coupling means may be formed by corresponding snapping parts, or by corresponding parts for forming a bayonet lock.

**[0024]** As can be seen in Figure 1, each sprayer 2 further comprises a pump 9 and a nozzle 10 for dispensing fluid contents from the bottle 3. In embodiments, the nozzle 10 may be releasably connected to a main cap part, for instance by means of thread as is shown in Figure 2.

**[0025]** Advantageously, as in the embodiment shown in Figures 1 and 2, the cap 6 can be arranged to accommodate the pump and/or may be provided with the pump 9. In embodiments, the pump 9 may be a hand pump. In the embodiment shown in Figure 1, the pump comprises a pump rod provided with a grip portion protruding from the cap. The sprayer 2 may be arranged for internal pressure build-up by moving the pump rod up and down, preferably repeatedly, thereby pumping air into the bottle 3 from its surroundings.

**[0026]** The pump 9 may be arranged for pumping air into the bottle 3 in order to increase the pressure inside the bottle. It is noted that the sprayer 2, for instance its bottle 3 and/or cap 6, may be arranged for substantially airtight sealing the contents of the bottle 3 from its surroundings. For example, the cap may house a sealing O-ring for sealingly abutting a round top edge of the neck portion 4 of the bottle 3. In embodiments, the sprayer 2 may be provided with a safety valve in order to counteract too high pressures in the sprayer 2. As can be seen in Figure 1, the sprayer 2, for instance its cap 6 or a handle 22 attached to said cap 6, may be provided with a push button or a trigger 15 and may be arranged for dispensing its pressurised contents by opening the nozzle 10 by controlling said trigger 15. After pressure build-up is realised in the bottle, a push on the trigger 15 or push button may then enable dispense of a spray.

**[0027]** In an alternative embodiment, a trigger or a lever may be provided which may be coupled to a pump, such that by repeatedly squeezing said trigger or lever, fluid contents of the bottle 3 can be pumped from the bottle 3 and through the nozzle 10 out of the sprayer 2.

**[0028]** Advantageously, the cap 6 can be provided with the nozzle 10. However, in alternative embodiments, the nozzle 10 may be provided at a different location. Additionally or alternatively, the nozzle 10 is an adjustable nozzle, preferably having a rotatable nozzle nut for regulating the direction, flow rate, spray angle and/or distribution of dispensed fluid.

**[0029]** Further, the system 1 comprises different looking rings 11. The rings may for example be arranged to look differently by providing them with different colours, different patterns, and/or different colour schemes. Each ring 11 is arranged to be placed around the neck portion 4 of the bottle 3 such that, when the cap 6 is screwed onto the bottle 3, the ring 11 is at least partly extending from under the cap 6. Advantageously, at least 30%, pref-

erably at least 40%, more preferably at least 50%, such as at least 60% of the ring can be extending from under the cap 6 during use. Preferably at least two, more preferably each, of the sprayers 2 can be provided with a ring. Each sprayer 2 provided with a ring may be provided with a different looking ring. However, in embodiments, multiple sprayers 2 of the system can be provided with similar looking rings, for instance when some of the sprayers containing the same fluid.

**[0030]** In embodiments according to the invention, such as the embodiment of Figure 2, the bottle 3 may comprise a shoulder portion 16 adjoining the neck portion 4 of the bottle. The ring 11 can comprise a shoulder portion 16 for at least partly overlaying the shoulder portion 15 of the bottle 3. Advantageously, the shoulder portion 16 of the ring 11 can have a substantially concave inner side which during use is facing a substantially convex outer side portion of the bottle 3, e.g. of its shoulder portion 15, wherein the shape of said concave inner side and said convex outer side portion substantially corresponds to each other, preferably such that the ring 11 can adjointly overlay the corresponding bottle portion. In embodiments, the shoulder portion 16 may extend from an opening 18 therein in a substantially outward direction. Additionally, ring may comprise a skirt portion adjoining an outer edge of the shoulder portion 16, wherein said skirt portion may extend in a substantially downward direction, especially such that it can surround at least a part of an upper portion of the bottle 3.

**[0031]** Advantageously, an outer side of a bottom part 17 of the neck portion 4 of the bottle 3 can have a non-circular cross-section, and the ring 11 can have a non-circular opening 18 for engaging the non-circular bottom part 17 of the neck portion 4 such that rotation of the ring 11 with respect to the neck portion 17 of the bottle 3 can be substantially counteracted. Preferably, the non-circular opening 18 and said non-circular bottom part 17 may have a corresponding and/or substantially similar shape. For example, the non-circular opening 18 and/or said non-circular bottom part 17 can have an oblong shape, preferably substantially formed by two semicircles joined by a rectangle, as shown in the embodiment of Figure 2.

**[0032]** Advantageously, the non-circular bottom part 17 of the neck portion 14 may be formed at least partly by a lower winding or lower windings of the external thread 7 of the neck portion 4. For example, locally, for instance at one or two sides of the neck portion 4, the windings may be interrupted and/or the ridges formed by said windings can be flattened to at least some extent. In embodiments, the neck portion may be substantially of round-cylindrical design, wherein at least a part of the windings of the external thread 7 of the neck portion 4 is arranged for providing for a non-circular cross-section of the neck portion 14 or at least a bottom part 17 of said neck portion 4.

**[0033]** Additionally or alternatively, the ring 11 may be provided with one or more upward extending wall portions 19, provided adjacent an edge of the opening 18 in

the ring 11. Preferably, said wall portion 19 can be shaped as an upward extending collar, which may substantially surround the opening 18. However, the wall portion or portions 19 may be of different design. For instance, at least two wall portions may be provided which are located at substantially opposite edge parts of the opening 18. It is noted that the wall portion or portions 19 can be arranged for at least partly abutting the external thread 7 of the neck portion 4 of the bottle 3 such that lateral movement of the ring 11 with respect to the neck portion 4 of the bottle 3 can be substantially counteracted.

**[0034]** Further, the ring 11 may be arranged such that when during use the ring 11 is pressed down onto the shoulder portion 15 of the bottle 3, its upward extending wall portion or portions 19 extends at least up to, and preferably beyond, at least an outer ridge formed by a lower winding of the external thread 7 of the neck portion 4 of said bottle 3, preferably at least two outer ridges formed by the lower two windings.

**[0035]** Alternatively, the ring 11 may be arranged such that its upward extending wall portion or portions 19 will not extend up to or beyond an outer ridge formed by a lower winding of the thread 7 of the neck portion 4. The ring may be arranged such that said upward extending wall portion or portions 19 can be moved downwardly relatively easily when putting the ring 11 around the neck portion of the bottle, but will engage a respective winding, preferably the lower winding, of the thread 7 when the ring is pulled in an upward direction, thereby counteracting removal of the ring 11. As a result, it can be counteracted that the ring 11 will be easily or accidentally removed from the bottle. Hence, even when the cap 6 is removed, the intended contents of the bottle can still be easily identifiable by means of the look of the ring 11 present around its neck portion 4.

**[0036]** It is noted that each ring 11, preferably an outer side 20 thereof, can be provided with a code colour. The code colours can be used for distinguishing one ring from another in an elegant manner. Since a colour can be observed relatively easily, and for instance no text has to be read, the fluid contents of different refillable pump sprayers 2 can be identified and/or distinguished in a relatively swift and elegant manner. Preferably, each of the rings 11, or at least an outer side of the part 21 of the ring 11 which during use extends from under the cap 6 of the sprayer 2, can be substantially completely provided with a code colour, especially substantially completely provided with a single code colour. Alternatively, at least a relatively big portion, for instance at least 50%, at least 70% or at least 80% of the outer surface of the extending part 21 is provided with said code colour. Hence, it can be facilitated that the code colour can be visually relatively easily, e.g. without having to turn the sprayer 2. Further, it may be facilitated that the code colour can still be visible, even if the extending part 21 of the ring 11 is partly covered with grease or dirt.

**[0037]** Preferably, the appearances of each ring 11, e.g. at least formed by the code colour, can correspond

with the respective intended bottle contents. Advantageously, the code colour may be chosen from a group of colours, preferably comprising a limited number of colours relatively easily distinguishable from each other. For example, said group may comprise the colours: red, blue, yellow, green, and orange. Advantageously, said group of colour may consist of said five colours, i.e. no other colours are chosen than colours of said group. However, in alternative embodiments, one or more rings 11 may be provided which are provided with other code colours, such as for instance a black, white, grey, brown, purple or pink code colour.

**[0038]** The system 1 also comprises at least one explanatory table 12 containing representations 13 of the appearances of the different looking rings 11 and arranged for linking them to representations 14 of different intended contents of the bottles 3. Advantageously, the appearances of the different looking rings represented 13 in the explanatory table 12 may each include a colour or the colour, a colour scheme and/or a pattern of the respective ring 11. It is noted that the explanatory table 12 may be arranged for linking the ring appearance representations 13 to respective bottle contents representations 14 by including the latter representations 14. For example, each of said latter representations 14 may be presented and/or printed adjacent to the corresponding respective ring appearance representation 13 and/or visually connected therewith. However, alternatively, the explanatory table 12 may be arranged for linking the ring appearance representations 13 to respective bottle contents representations 14 by providing an area adjacent and/or visually connected to the ring appearance representation 13, in which area a bottle contents representations 14 can be entered, e.g. by a user of the system 1.

**[0039]** In embodiments, the explanatory table 12 can be provided on a wall poster. Alternatively or additionally, the explanatory table 12 may be presented in a different form. For instance, said table 12 may be printed on a sticker, which for instance may be adhered to a sprayer 2, preferably its bottle 3, or to another object, preferably an object present in a workshop, such as for instance a tool box or workbench. In alternative embodiments, the explanatory table 12 may be provided by other means. For example, the explanatory table 12 may be printed on the sprayer, preferably its bottle, and/or it may be displayed on a screen or display.

**[0040]** Further, at least one bottle 3, and preferably all bottles 3, may contain a fluid. For example a bottle may comprise water, thinner, oil, grease, brake fluid, benzine, white spirit, or alcohol. Additionally or alternatively, at least one of the bottles 3 may comprise solvents, acids, water-based liquids, cleaners, and/or chemical specialties, for instance chemicals for wax or grease removal. In embodiments, a bottle may contain one of the fluids of a group comprising: acetylene or ethane, alums, amyl alcohol, petrol, benzene, benzyl alcohol, brake fluid, butane, calcium hydroxide, calcium hypochlorite, cyclohexane, cyclohexanol, diesel fuel or gazole, petroleum, vin-

egar, e.g. 5% aqueous acetic acid, ethanol or ethyl alcohol, ethylbenzene, ethyl chloride, ethylene glycol or glycol, isooctanol or 2-ethyl-1-hexanol, hydrofluoric acid, e.g. <65% cold, glycerol, heating oil, n-heptane, n-hexane, isobutyl alcohol, isooctane, isopropanol, potassium hydroxide solutions, paints, paint solvents, water, mineral oils, naphtha, sodium hydroxide, olive oil or other oils, oxalic acid perchloric acid, e.g. 2-molar, propanol, propane, castor oil, e.g. castor oil A371, nitric acid 3-molar, soda or sodium carbonate, sulphurous acid, transformer oil, detergent, preferably detergent dissolved in water, hydrogen peroxide, preferably diluted, hydrogen peroxide, e.g. 90%, and citric acid. Preferably, at least two of the sprayers can contain a different fluid. It is noted that the bottles and/or sprayers may be arranged for containing one or more of these fluids mentioned above.

**[0041]** Advantageously, the fluid contained by the respective bottle 3 can correspond to the intended contents of said bottle 3, which can be represented by a respective bottle contents representation 14 of the explanatory table 12. Said intended contents can correspond with the respective ring 11 with which said bottle 3 is provided.

**[0042]** It is noted that the bottles 3 can be substantially similar, for instance said bottles can substantially look the same, and/or have the same shape, colour, and/or size. Additionally, or alternatively, the caps 6 can be substantially similar, especially they can substantially look the same, and/or have the same shape, colour, and/or size. Hence, a set of refillable pump sprayers 2 can be provided which can visually form a coherent whole, and which can have sprayers 2 being clearly distinguishable from each other, preferably at first glance.

**[0043]** The invention also relates to a ring 11, especially a ring as such, as disclosed above as part of the system 1 of the current disclosure. The ring 11 is arranged to be placed around a neck portion of a bottle of a refillable pump sprayer such that, when the cap is screwed onto the bottle, the ring is at least partly extending from under the cap. For instance, such a ring or a set of such rings may thus be distributed or sold without the other components of the system. Preferably, the set of rings may comprise at least two, preferably at least three, more preferably at least four, such as for instance at least five different looking rings. For example, each of the rings of the set may be provided with a different look, especially a different code colour. However, a set may also comprise multiple rings having a similar or the same look, for instance for providing multiple sprayers intended for containing the same fluid with the same or similar rings.

**[0044]** The invention also relates to a refillable pump sprayer 2 for use in a system as disclosed above, wherein the sprayer 2 is provided with a ring 11. The refillable pump sprayer 2 can comprise a bottle 2 having a neck portion 4 provided with a top opening 5, wherein the neck portion 4 is provided with first coupling means, for instance external thread 7, and a cap 6 for releasably closing off the top opening 5 of the bottle 3, the cap 6 being provided with second coupling means, for instance internal thread

8, for cooperation with said first coupling means, e.g. the external thread 7, of the bottle 3, the sprayer 2 further comprising a pump 9 and a nozzle 10 for dispensing fluid contents from the bottle 3, wherein the sprayer 2 is provided with a ring 11 arranged to be placed around the neck portion 4 of the bottle 3 such that, when the cap 6 is screwed onto the bottle 3, the ring 11 is at least partly extending from under the cap 6.

**[0045]** Further, the invention relates to a method for identifying intended fluid contents of a refillable pump sprayer 2, preferably a sprayer 2 as disclosed above. Said method comprises a step of observing the visual appearance of a ring 11 present around a neck portion 4 of a bottle 3 of a refillable pump sprayer 2. Further, the method comprises comparing said observed appearance with at least one representation 13 of ring appearances included in an explanatory table 12, and perceiving the respective intended fluid contents represented 14 as corresponding with the observed ring appearance, thereby identifying the intended fluid contents of the sprayer 2.

**[0046]** The invention is not restricted to the embodiments described above. It will be understood that many variants are possible.

**[0047]** Such other embodiments will be apparent to the person skilled in the art and are considered to lie within the scope of the invention as formulated in the following claims.

## Claims

1. Refillable pump sprayer system, comprising multiple refillable pump sprayers, wherein each pump sprayer comprises a bottle having a neck portion provided with a top opening, and a cap for releasably closing off the top opening of the bottle, the neck portion being provided with first coupling means, for instance external thread, and the cap being provided with second coupling means, for instance internal thread, for cooperation with said first coupling means, for instance the external thread, of the bottle, each sprayer further comprising a pump and a nozzle for dispensing fluid contents from the bottle, the system further comprising different looking rings, each ring being arranged to be placed around the neck portion of the bottle such that, when the cap is screwed onto the bottle, the ring is at least partly extending from under the cap, the system further comprising an explanatory table containing representations of the appearances of the different looking rings and linking them to representations of different intended contents of the bottles.
2. System according to claim 1, wherein the bottle comprises a shoulder portion adjoining the neck portion of the bottle, and wherein the ring comprises a shoulder portion for at least partly overlaying the shoulder portion of the bottle.

3. System according to claim 1 or 2, wherein an outer side of a bottom part of the neck portion of the bottle has a non-circular cross-section, and the ring has a non-circular opening for engaging the non-circular bottom part of the neck portion such that rotation of the ring with respect to the neck portion of the bottle can be substantially counteracted.
4. System according to any one of the previous claims, wherein the ring is provided with an upward extending wall portion, preferably an upward extending collar, provided adjacent an edge of the opening in the ring for at least partly abutting the external thread of the neck portion of the bottle such that lateral movement of the ring with respect to the neck portion of the bottle can be substantially counteracted.
5. System according to any one of the previous claims, wherein each ring, preferably an outer side thereof, is provided with a code colour.
6. System according to any one of the previous claims, wherein each of the rings, at least an outer side of the part of the ring which during use is extending from under the cap of the sprayer, is substantially completely provided with a code colour, especially substantially completely provided with a single code colour.
7. System according to claim 5 or 6, wherein the code colour is chosen from a group of colours comprising the colours: red, blue, yellow, green, and orange, said group of colours preferably consisting of said colours.
8. System according to any one of the previous claims, wherein the cap is provided with the pump, and/or wherein the pump is a hand pump.
9. System according to any one of the previous claims, wherein the cap is provided with the nozzle, and/or wherein the nozzle is an adjustable nozzle.
10. System according to any one of the previous claims, wherein the explanatory table is provided on a wall poster, and/or wherein the appearances of the different looking rings represented in the explanatory table each include a colour of the respective ring.
11. System according to any one of the previous claims, wherein at least one bottle, and preferably all bottles, contains a fluid corresponding to the intended contents corresponding with the respective ring with which said bottle is provided.
12. System according to any one of the previous claims, wherein the bottles are substantially similar, and/or wherein the caps are substantially similar.

13. Ring for use in a system according to any one of the previous claims, wherein the ring is arranged to be placed around the neck portion of a bottle of a refillable pump sprayer such that, when the cap is screwed onto the bottle, the ring is at least partly extending from under the cap. 5
14. Set of rings according to claim 13, wherein the set comprises at least two, preferably at least three, more preferably at least four, such as for instance at least five different looking rings. 10
15. Refillable pump sprayer for use in a system according to any one of claims 1-12, comprising a bottle having a neck portion provided with a top opening, wherein the neck portion is provided with first coupling means, for instance external thread, and a cap for releasably closing off the top opening of the bottle, the cap being provided with second coupling means, for instance internal thread, for cooperation with said first coupling means, such as the external thread, of the bottle, the sprayer further comprising a pump and a nozzle for dispensing fluid contents from the bottle, wherein the sprayer is provided with a ring arranged to be placed around the neck portion of the bottle such that, when the cap is screwed onto the bottle, the ring is at least partly extending from under the cap. 15  
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16. Method for identifying intended fluid contents of a refillable pump sprayer, preferably a sprayer according to claim 15, the method comprising the steps of: observing the visual appearance of a ring present around a neck portion of a bottle of a refillable pump sprayer; comparing said observed appearance with at least one representation of ring appearances included in an explanatory table; and perceiving the respective intended fluid contents represented as corresponding with the observed ring appearance, thereby identifying the intended fluid contents of the sprayer. 30  
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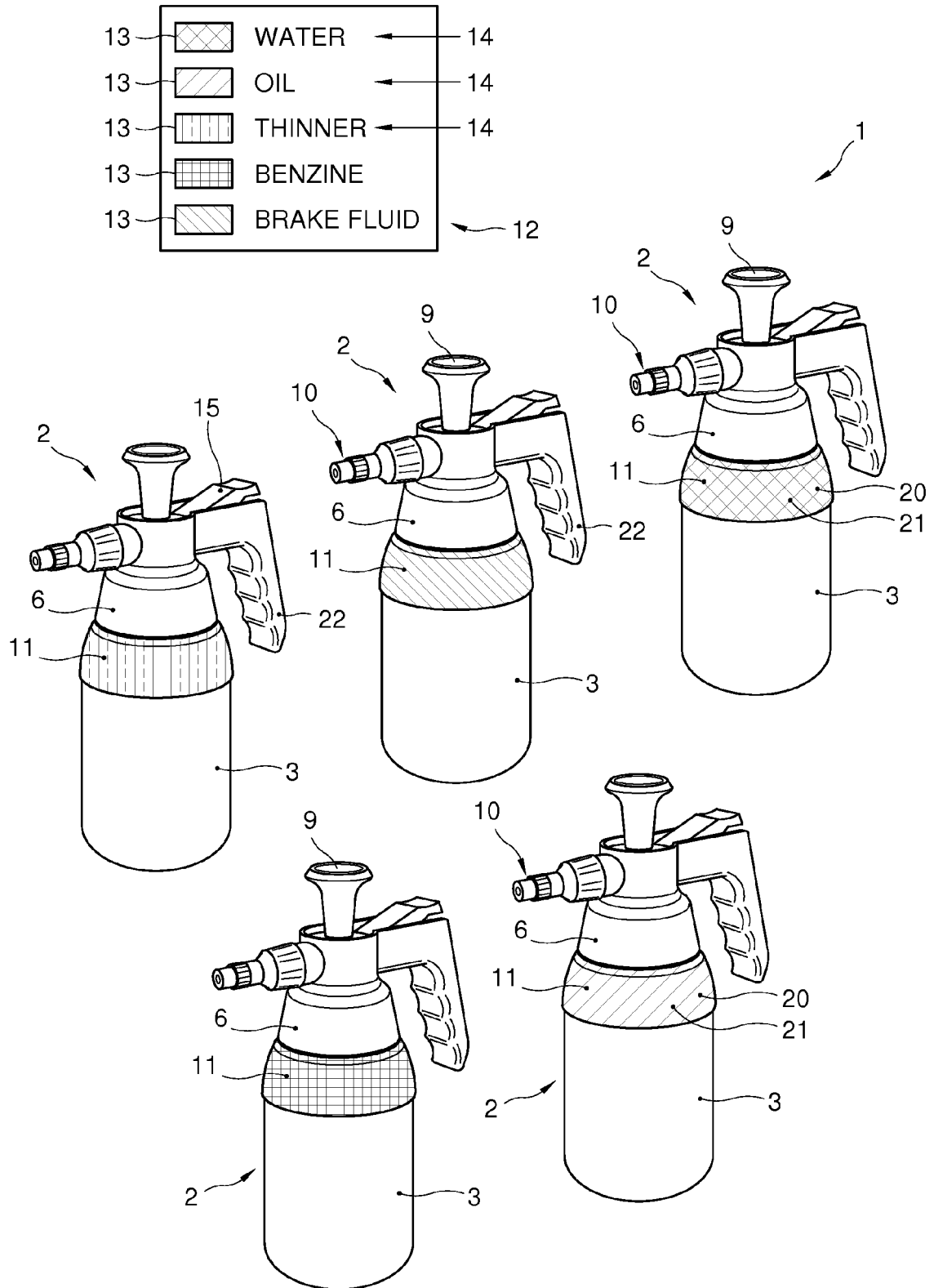


FIG. 1



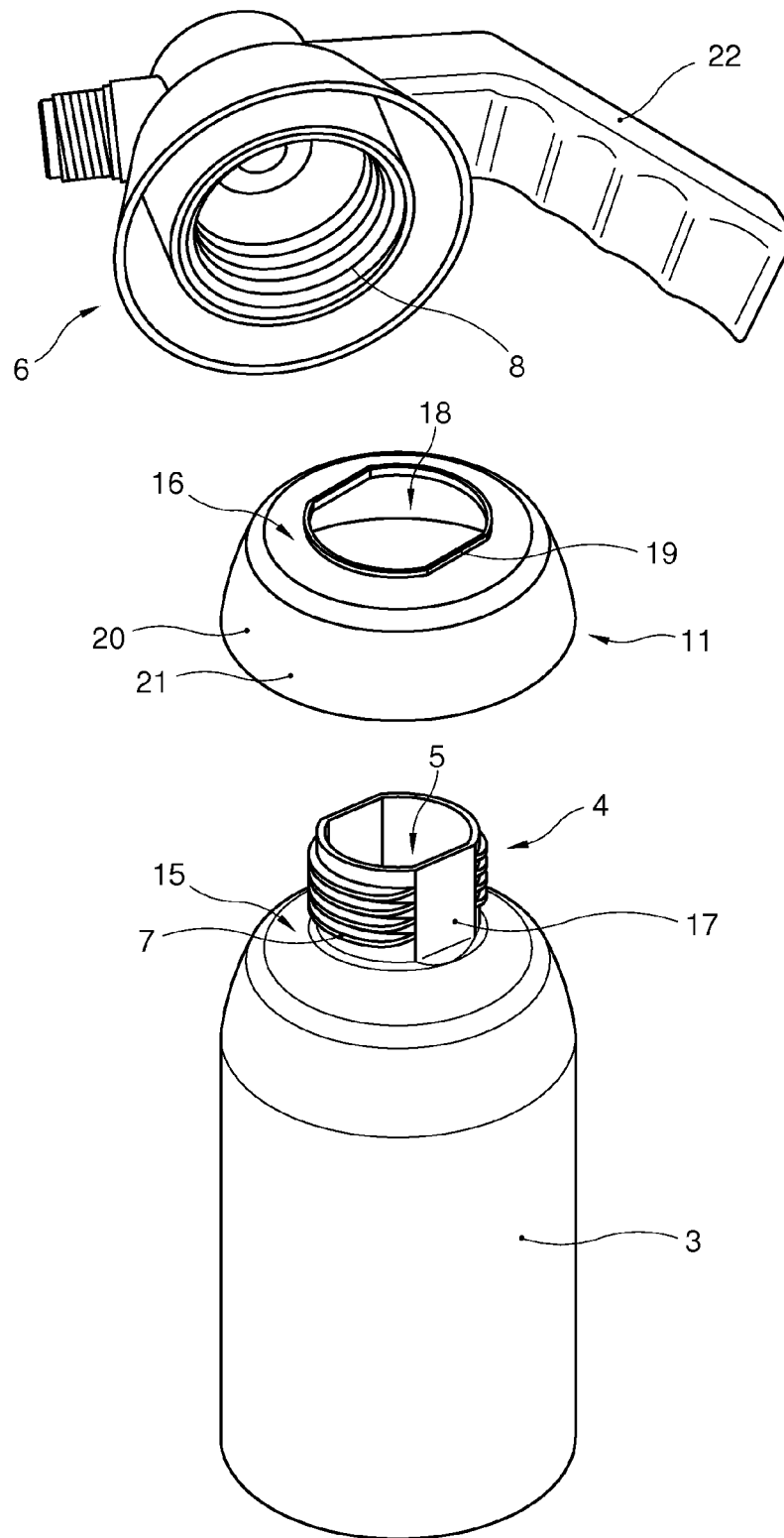


FIG. 2



## EUROPEAN SEARCH REPORT

 Application Number  
EP 15 15 0334

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DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
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Y	* paragraph [0010] - paragraph [0014]; figures *	1-16		
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