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(54) **Fluid containing system**

(57) Fluid containing system, comprising a first container (10), having a mouth end (12) and a bottom end, provided at its bottom wall (13) with an axial recess (14) in which is formed a through hole (16) and in which are provided means (15) for the coupling with a second container, said second container (20) being provided with a neck portion (22) having an opening (24) at its top, projecting from a wall (21) of its hollow body, the said neck portion (22) being provided with means (23) for the coupling with the axial recess (14) formed in the bottom wall (13) of the said first container (10).

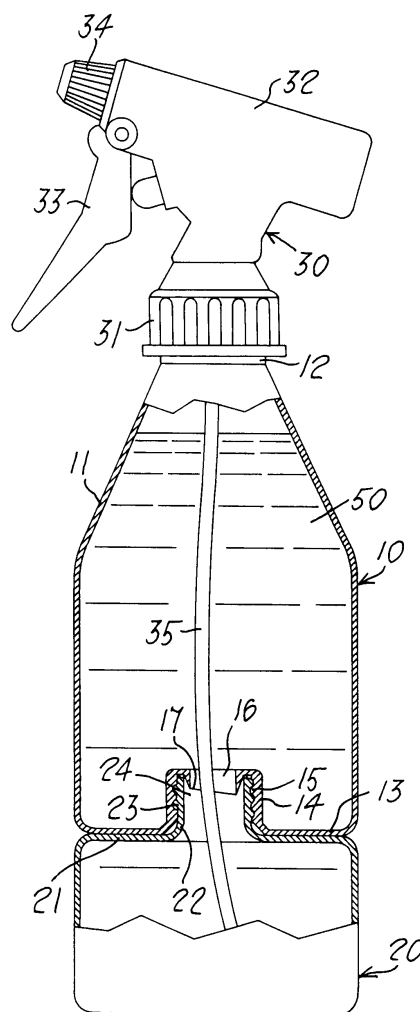


Fig. 2

Description

[0001] The present invention relates to a fluid containing system, particularly for containing fluids such as cleaning liquids or the like.

[0002] In the packaging of such kind of liquids, a principal problem is related to the volume of the packaging, that is strictly linked to the dilution to which the liquid has been subjected, and this in turn is connected to the intended purpose of the said liquid. This can result in a very difficult management of spaces, and in very high transporting and storing costs.

[0003] Another problem is related to the high consumption of materials for the production of the containers, such as thermoplastic resins or the like. Even if a certain amount of containers can be routed to the recycle, these costs heavily affect the overall economy of the production of this kind of goods.

[0004] A solution to the aforementioned problems is to provide cleaning liquids or the like in a straight concentrated form, so as to considerably reduce the dimensions of the container. However, it is difficult for the user to find out each time the appropriate dilution for each use of the cleaning liquid.

[0005] A primary task of the present invention is to provide a containing system which is at least partially reusable; according to the invention, the said containing system allows the use of the liquid contained therein in a wide range of dilution.

[0006] The object of the present invention is therefore a fluid containing system, comprising a first container, having a mouth end and a bottom end, provided on its bottom wall with an axial recess in which is formed a through hole and in which are provided means for coupling with a second container, said second container being provided with a neck portion having an opening at its top, projecting from a wall of its hollow body, the said neck portion being provided with means for coupling with the axial recess formed in the bottom wall of the said first container.

[0007] In a first embodiment of the invention, the coupling means between the said axial recess of the first container and the neck portion of the second container comprise screw-threaded surfaces.

[0008] Moreover, the opening at the top of the neck portion of the second container can be provided with sealing means, such as a plastic or metal flat layer of material welded or otherwise connected to the edge of the said opening.

[0009] Further advantages and features will become more apparent from the following description of one embodiment of the present invention, carried out with reference on the annexed drawings, in which:

the Figures 1A and 1B are two side elevational views, with parts in section, of the two containers of the containing system of the present invention; and the Figure 2 is a side elevational view, with parts in

section, of the containing system according to the invention.

[0010] In figure 1A, the numeral 10 designates the first container of the containing system of the invention. The said container 10 comprises a hollow body 11, having a mouth end 12 and a bottom wall 13. A recess 14 is axially formed in the bottom wall 13, having a through hole 16. The inner wall of the said recess 14 is provided with the screw-threaded portion 15. The peripheral edge of the hole 16 shows a frusto-conical lip 17, projecting into the recess 14. All along a substantially vertical portion of the lateral surface of the body 11 of the container 10 is located a transparent graduated scale 18.

[0011] In figure 1B with 20 is designated the second container of the system of the invention. The container 20 has top wall 21, from which projects axially the neck portion 22, having screw-threaded portion 23 on its lateral surface. The neck portion 22 has at its top an opening 24, provided with sealing means 27. Above the neck portion 22 there is a cap 25, having on the inner surface of its lateral wall the screw-threaded portion 26, coupled with that of the neck portion 22. Inside the container 20 there is the concentrated cleaning liquid 40.

[0012] In figure 2 is shown the containing system of the present invention. The first container 10 is connected to the second container 20 by means of the screw-threaded connection of the recess 14 with the neck portion 22. As can be seen, the lip 17 has broken the sealing means 27 of the opening 24, penetrating therein during the said screw connection. The liquid 50 contained now in both containers 10, 20 is the result of the dilution of the concentrated liquid 40 contained in the container 20 of figure 1B, that is to say, when the same container 20 is sealed and capped.

[0013] Moreover, on the mouth end 12 of the container 10 are connected the dispensing means 30. Said means comprise a sprayer 32 having a pump-handle 33 and a nozzle 34, the sprayer 32 being connected to a tubelet 35 dipped into the liquid 50. The sprayer 32 is connected to the mouth end 12 by means of the ring nut 31.

[0014] The operation of the system according to the present invention is the following. The liquid contained in the container 20 is highly concentrated, so as to require a minimum volume in respect of elevated working performances, in the case of a cleaning liquid as referred to the embodiment described. The cap 25 is removed and the neck portion 22 is inserted in the recess 14 of the first container 10. During the screwing connection of the two cited parts, the lip 17 projecting inside the recess 14 will break the seal 27, putting in communication the two containers.

[0015] Subsequently, the user can add from the mouth end 11 the appropriated amount of diluent liquid, e.g. water, taking into account of the marks of the scale 18 provided on the wall of the container 10. That is to say, there are a number of possible dilutions to be car-

ried out, according to the use of the product chosen in each case by the user.

[0016] By means of dispensing means such as that shown in figure 2, the cleaning liquid, now in its diluted form 50, can be easily applied to any object or surface to be cleaned.

[0017] When the containing system becomes empty, the container 20 can be rapidly disconnected and replaced with a new one.

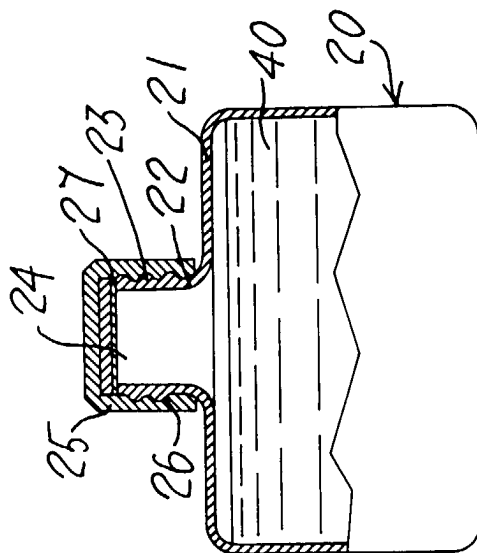
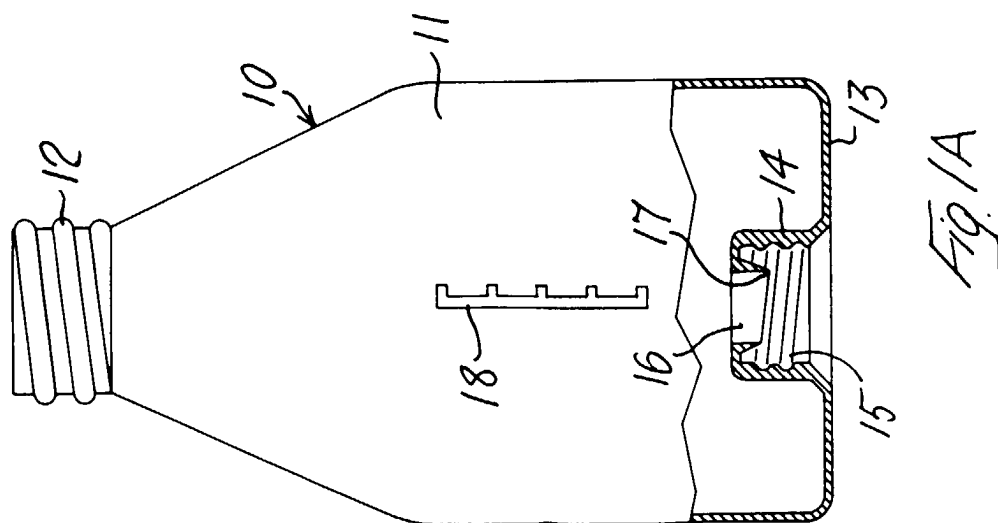
[0018] The containing system of the present invention has been described referring to the cleaning liquids or the like; it is obvious that the said system is able to operate in every situation in which there is a concentrated component that has to be diluted in a range of proportions.

Claims

1. Fluid containing system, comprising a first container (10), having a mouth end (12) and a bottom end, provided at its bottom wall (13) with an axial recess (14) in which is formed a through hole (16) and in which are provided means (15) for the coupling with a second container, said second container (20) being provided with a neck portion (22) having an opening (24) at its top, projecting from a wall (21) of its hollow body, the said neck portion (22) being provided with means (23) for the coupling with the axial recess (14) formed in the bottom wall (13) of the said first container (10).
2. Fluid containing system according to claim 1, in which the coupling means between the said axial recess (14) of the first container (10) and the said neck portion (22) of the second container (20) comprise screw-threaded surfaces (15, 23).
3. Fluid containing system according to claim 1 or 2, in which the opening (24) at the top of the neck portion (22) of the second container (20) is provided with sealing means (27).
4. Fluid containing system according to claim 3, in which the said sealing means comprise a plastic or metal membrane (27) welded or otherwise connected to the peripheral edge of the opening (24) of the neck portion of the said second container (20).
5. Fluid containing system according to claim 3 or 4, in which in the recess (14) formed in the bottom wall (13) of the said first container (10) are provided means (17) for breaking the said sealing means (27).
6. Fluid containing system according to claim 5, in which the peripheral edge of the hole (16) formed in the said recess (14) is provided with a frusto-con-

ical lip (17), projecting into the recess (14).

7. Fluid containing system according to anyone of the preceeding claims, in which the said second container (20) is filled with a concentrated fluid (40), that can be diluted at the right proportion with an appropriate diluent fluid when the two containers (10, 20) are connected one to another, the diluent fluid being introduced from the mouth end (12) of the said first container (10).
8. Fluid containing system according to claim 7, in which at least a substantially longitudinal portion of the body (11) of the said first container (10) is transparent or semitransparent, in the said portion being located a graduated scale (18) for evaluating the dilution of the fluid contained into the said fluid containing system.



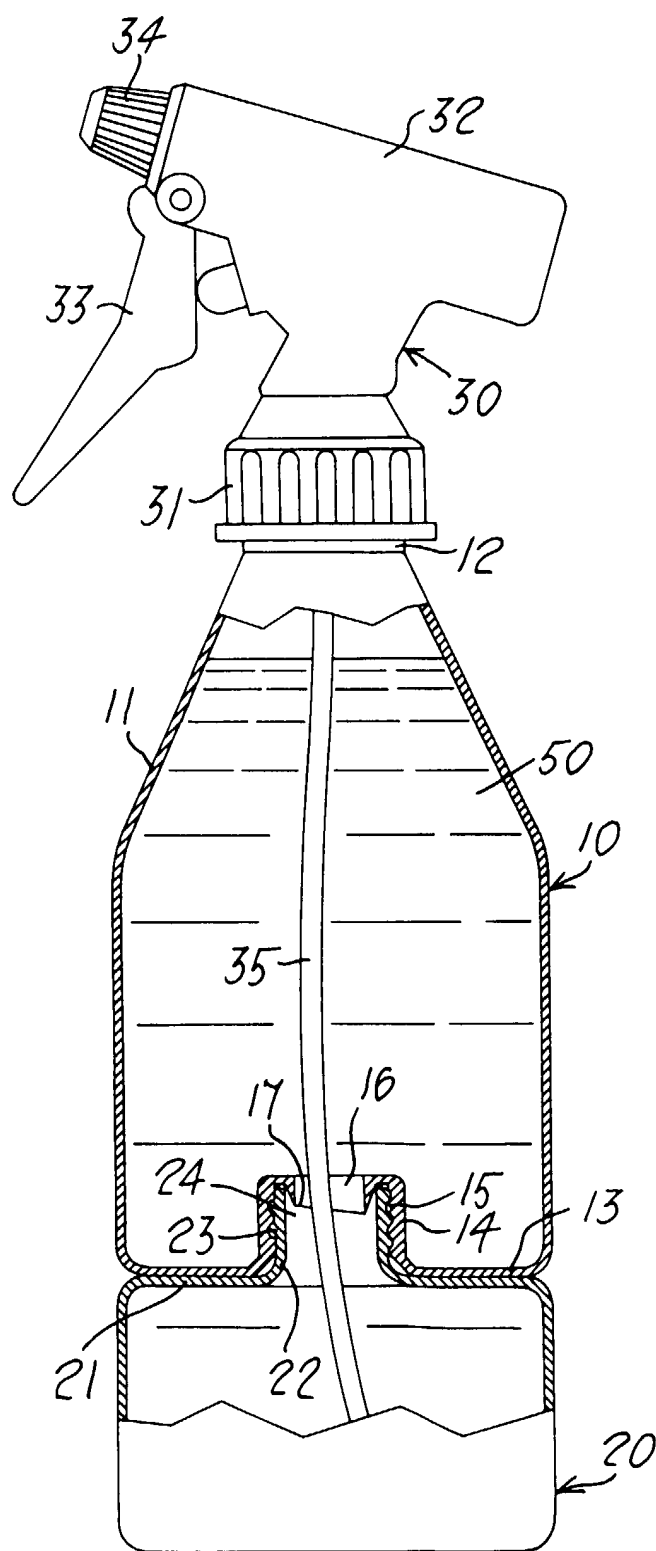


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 8666

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23 February 2000	Examiner Berrington, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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Application Number
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Place of search THE HAGUE		Date of completion of the search 23 February 2000	Examiner Berrington, N
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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