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(54) **Fluid containing system**

Flüssigkeit enthaltendes Behältersystem
Système de récipient contenant un fluide

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(56) References cited:
EP-A- 0 755 866
AU-B- 426 828
FR-A- 2 506 726
US-A- 4 201 316
US-A- 5 740 948

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EP-A- 0 770 561
DE-A- 19 746 339
GB-A- 2 335 179
US-A- 4 355 739

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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] In FR-A-2506726 is fluid containing system comprising two containers, provided with breakable sealing means which separate the first and the second container. This kind of containing system allows to store together fluid that have to be mixed only at the time of their use. However, this device does not allow any dilution of the mixture obtained.

[0006] In DE-A-19746339 is described a fluid containing system comprising a mixing chamber, a mixing valve and a containing chamber; the constructional arrangement and the operation of such a device appear to be too complicated in view of a spread diffusion.

[0007] In document EP-A-0770561 is described a fluid containing system very similar to that described in FR-A-2506726, but having improved means for sealing and for breaking the seals; also in this case it is impossible to obtain any further dilution of the given mixture.

[0008] Document US-A-4355739 relates to a device in which a water/concentrated mixture, can be fed into the mixing chamber with the aid of the spray pump, removed from there via a suction tube, and sprayed with the spray pump; that is to say, the water and the concentrated fluid are taken away from two different and separated containers, by means of two different suction tubes. This kind of solution is very complicated and many problems can arise owing to the different density of the two fluids, to the complexity of the mixing chamber and to the real effectiveness of the system of regulation of the dilution of the mixture.

[0009] In US-A-4201316 is described a dispensing assembly, in which the diluent and the concentrated fluid are brought in contact after the breaking of the capsule containing the concentrated fluid, so that the diluent has to be introduced in the right proportion before the said

breaking.

[0010] 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.

[0011] 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 at its bottom wall with an axial recess in which is formed a through hole and in which are provided means for the 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 the coupling with the axial recess formed in the bottom wall of the said first container, the opening at the top of the neck portion of the second container being provided with sealing means, the recess formed in the bottom wall of the said first container being provided with means for breaking the said sealing means, characterised in that the first container is empty and the said second container contains a concentrated fluid, that can be diluted at the right proportion with an appropriate diluent fluid when the two are connected one to another, the diluent fluid being introduced from the mouth end of the said first container.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] Subsequently, the user can add from the mouth end 11 the appropriated amount of diluent liquid, e.g. water, taking into account 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 carried out, according to the use of the product chosen in each case by the user.

[0019] 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.

[0020] When the containing system becomes empty, the container 20 can be rapidly disconnected and replaced with a new one.

[0021] 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), the opening (24) at the top of the neck portion (22) of the second container (20) being provided with sealing means (27), the recess (14) formed in the bottom wall (13) of the said first container (10) being provided with means (17) for breaking the said sealing means (27), **characterised in that** the first container is empty and the said second container (20) contains 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).

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 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).
4. Fluid containing system according to claim 1, in which the peripheral edge of the hole (16) formed in the said recess (14) is provided with a frusto-conical lip (17), projecting into the recess (14).
5. Fluid containing system according to claim 1, 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.

Patentansprüche

1. Flüssigkeit enthaltendes Behältersystem, umfassend: einen ersten Behälter (10) mit einer Öffnungsseite (12) und einer Unterseite, die an ihrer Bodenwand (13) mit einer axialen Vertiefung (14) versehen ist, in der eine Durchgangsbohrung (16) gebildet ist und in der Mittel (15) zum Anschluss an einen zweiten Behälter vorgesehen sind, wobei dieser zweite Behälter (20) mit einem Halsteil (22) mit ei-

ner Öffnung (24) an seinem oberen Ende versehen ist, welcher aus einer Wand (21) seines hohlen Körpers herausragt, wobei dieser Halsteil (22) mit Mitteln (23) zum Anschluss an die axiale Vertiefung (14) ausgestattet ist, die in der Bodenwand (13) des ersten Behälters (10) gebildet ist, und wobei die Öffnung (24) an der Oberseite des Halsteils (22) des zweiten Behälters (20) mit Verschlussmitteln (27) versehen ist, und wobei die Vertiefung (14) in der Bodenwand (13) des ersten Behälters (10) mit Mitteln (17) zum Aufbrechen dieser Verschlussmittel (27) ausgestattet ist, **dadurch gekennzeichnet, dass** der erste Behälter leer ist und der zweite Behälter (20) eine konzentrierte Flüssigkeit (40) enthält, die mit einer geeigneten Verdünnungsflüssigkeit im richtigen Verhältnis verdünnt werden kann, wenn die zwei Behälter (10, 20) miteinander verbunden werden, wobei die Verdünnungsflüssigkeit aus der Öffnungsseite (12) des ersten Behälters (10) zugeführt wird.

2. Flüssigkeit enthaltendes Behältersystem nach Anspruch 1, bei dem die Mittel zum Anschluss zwischen der axialen Vertiefung (14) des ersten Behälters (10) und dem Halsteil (22) des zweiten Behälters (20) mit Schraubgewinden versehene Oberflächen (15, 23) aufweisen.
3. Flüssigkeit enthaltendes Behältersystem nach Anspruch 1 oder 2, bei dem die Verschlussmittel eine Kunststoff- oder Metall-Membran (27) umfassen, die durch Schweißen oder auf andere Weise mit dem Außenrand der Öffnung (24) des Halsteils des zweiten Behälters (20) verbunden ist.
4. Flüssigkeit enthaltendes Behältersystem nach Anspruch 1, bei dem der Außenrand der in der Vertiefung (14) gebildeten Durchgangsbohrung (16) mit einer kegelstumpfförmigen Lippe (17) versehen ist, die in die Vertiefung (14) hineinragt.
5. Flüssigkeit enthaltendes Behältersystem nach Anspruch 1, bei dem mindestens ein beträchtlicher länglicher Teil des Körpers (11) des ersten Behälters (10) transparent oder halbtransparent ist, wobei in diesem Teil ein graduierter Maßstab (18) zum Beurteilen der Verdünnung der Flüssigkeit untergebracht ist, die in dem Behältersystem enthalten ist.

Revendications

1. Système contenant un fluide, comprenant un premier récipient (10) comportant une extrémité de goulot (12) et une extrémité de fond, pourvu au niveau de sa paroi de fond (13) d'un évidement axial (14) dans lequel est formé un trou débouchant (16) et dans lequel des moyens (15) sont prévus pour

l'accouplement avec un deuxième récipient, ledit deuxième récipient (20) étant pourvu d'une partie de col (22) comportant un orifice (24) à son sommet, s'étendant depuis une paroi (21) de son corps creux, ladite partie de col (22) étant pourvue de moyens (23) pour l'accouplement avec l'évidement axial (14) formés dans la paroi de fond (13) dudit premier récipient (10), l'orifice (24) au sommet de la partie de col (22) du deuxième récipient (20) étant pourvu de moyens d'étanchéité (27), l'évidement (14) formé dans la paroi de fond (13) dudit premier récipient (10) étant pourvu de moyens (17) pour rompre lesdits moyens d'étanchéité (27), **caractérisé en ce que** le premier récipient est vide et ledit deuxième récipient (20) contient un fluide concentré (40), qui peut être dilué dans la bonne proportion avec un fluide diluant approprié lorsque les deux récipients (10, 20) sont reliés l'un à l'autre, le fluide diluant étant introduit à partir de l'extrémité de goulot (12) dudit premier récipient (10).

2. Système contenant un fluide selon la revendication 1, dans lequel les moyens d'accouplement entre ledit évidement axial (14) du premier récipient (10) et ladite partie de col (22) du deuxième récipient (20) comprennent des surfaces filetées (15, 23).
3. Système contenant un fluide selon la revendication 1 ou 2, dans lequel lesdits moyens d'étanchéité comprennent une membrane en plastique ou en métal (27) soudée ou autrement reliée au bord périphérique de l'orifice (24) de la partie de col dudit deuxième récipient (20).
4. Système contenant un fluide selon la revendication 1, dans lequel le bord périphérique du trou (16) formé dans ledit évidement (14) est pourvu d'une lèvre conique tronquée (17) s'étendant dans l'évidement (14).
5. Système contenant un fluide selon la revendication 1, dans lequel au moins une partie sensiblement longitudinale du corps (11) dudit premier récipient (10) est transparente ou semi-transparente, une échelle graduée (18) étant située dans ladite partie pour évaluer la dilution du fluide contenu dans ledit système contenant un fluide.

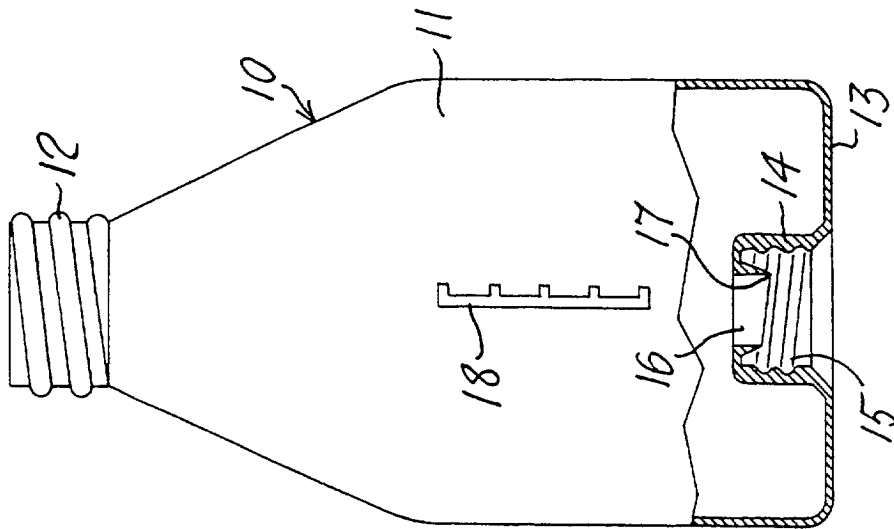


FIG. 1A

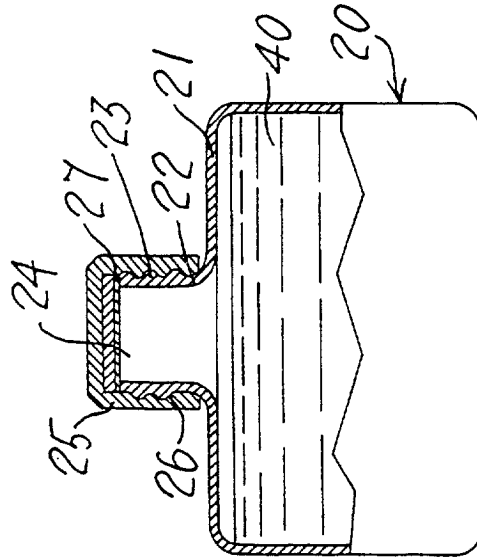


FIG. 1B

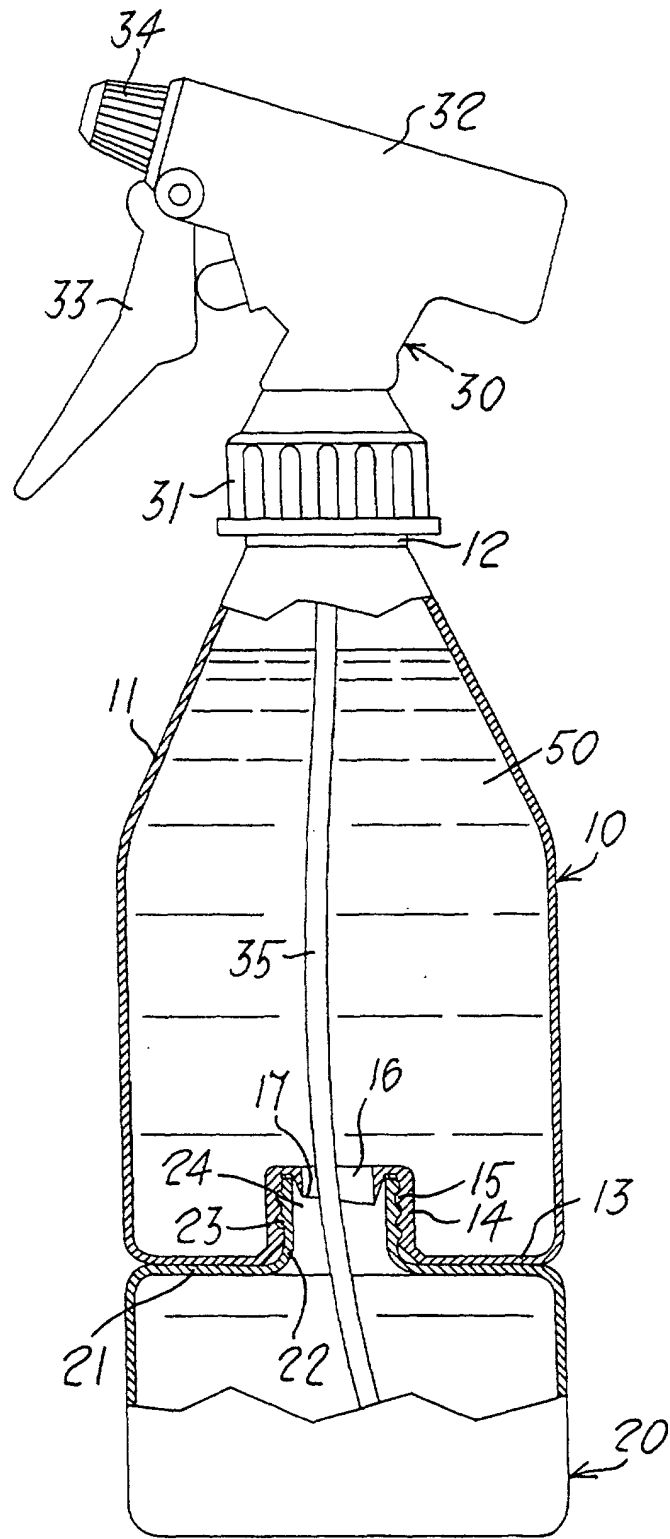


Fig. 2