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(54) **Modular bottle**

(57) The bottle is composed by a series of consecutively adjoining watertight modules (sections) which can be singly detached without any alteration of the structure and of the functionality of the container.

Nowadays, containers for liquid goods are constituted by simple bottles of glass or plastic, or tins that don't allow an optimal conservation of drinks or liquids, once these containers are partially emptied. In order to avoid this drawback, this invention is composed by a series of consecutively adjoining watertight modules. Once a module is empty it can be detached and removed allowing to keep full the rest of the container. Optimal conservation of every kind of drinks such as sparkling or not sparkling drinks, wine, water, milk etc. is thus achieved, even if the only content of a single section (or module) is consumed.

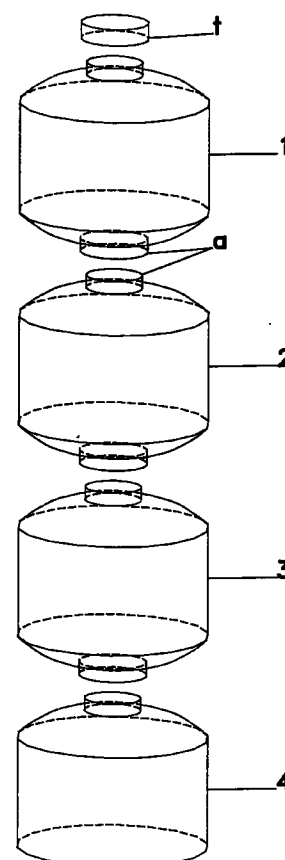


Fig. 1

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Description

This invention consists of a bottle (container) made of plastic or other material, able to contain and conserve liquids charged with gas or other metalloid or non-metalloid compound. Thanks to its "modular" structure, this bottle allows to maintain inaltered effervescence and organoleptic characteristics of contained liquids.

The same bottle, however, may be used to contain various kinds of liquids, e.g. wine, milk, fruit-juices, sauces, etc; these are long-life products and, after their bottle is opened, they should be completely consumed in a short time and stored in a cool place to maintain their natural fragrance, their organoleptic characteristics and not to deteriorate.

It could be also used to contain liquids that are detrimental to human health such as acids or other chemical substances.

The "Modular bottle" is composed by consecutive, contiguous, watertight modules that may be easily unhooked and removed from one another.

Among containers for liquids or drinks, the ones presently on sale, consist of bottles (or other containers) made of glass, plastic or metal that, even if they are characterized by sophisticated shapes and structures, are of limited use in fruition and storage of their content which, for this reason, has to be rapidly consumed.

We can cite the instance of bottles containing sparkling drinks. After uncorking, these drinks lose their characteristics "sparkles" in a short time; such bottles presently on sale force buyers to a rapid consummation of their content. Another instance is that of bottles or containers used at present for long-life products. Once they have been opened, they no more perform their main aim, that is the long-time preservation of their residual contents and, as a consequence, they need to be stored in a cool place. In fact, when residual liquids or drinks are in contact with air, or they are not preserved at certain temperatures, their chemical composition changes and as a consequence the product could go bad.

Other kinds of containers, used for liquids or other products dangerous for human health, have another drawback: once a child is able to remove the cap, he gets in touch with the residual content. This drawback is excluded by the present invention, in fact the aforesaid possibility can't take place in the case of the proposed container thanks to its detachable modules, which can be emptied singly.

Besides, it has to be underlined that, nowadays the customer is only given two chances to deal with presently sold containers: either he can buy a small package suitable for one person only, or a family package but in either way he submits to the aforesaid drawbacks.

The aim of this invention is to eliminate those disadvantages with the use of a "bottle" (container) with a special structure and modularity that allows the preservation of the contained liquids and the nearly elimination of the risk in case of the bottle containing dangerous

chemical substances.

This bottle is composed by some parts (modules) which are consecutively adjoining each other. After emptying the content of some of its modules, they can be removed without alteration of the container's functionality; allowing at the same time to keep full the remaining part of the container (not permitting air entrance) and to preserve the original characteristics of the liquid contained in the bottle.

If the liquid or the substance contained in the bottle are dangerous for human health the special modular structure guarantees a high degree of security even if a child should deal with the container; he would have to do with an integral container with the liquid safely sealed in the full part of the bottle. This is possible thanks to the progressive usage of the content of the different sections and to the possibility of leaving inalterated the security system of the subsequent section.

This invention has the same aim of containers for single usage, but without the drawbacks of the latter.

Another aim is to allow the realization of a "bottle" (container) of high convenience and security, made of plastic or other materials specially suitable for liquids. This bottle must be attainable with usual system of production and moulding in order to have low costs of designing and production.

These purposes are reached by a bottle of plastic or other materials, characterized by a plurality of modules or sections that are consecutively adjoining, watertight, detachable and independent.

Further characteristics and advantages come out from the detailed description of the device, that is illustrated in the enclosure where fig. 1 is a side view of the bottle. Referring to fig. 1 the "modular bottle" that is made of polyvinyl chloride (PVC) or other materials, is composed by four parts 1-2-3-4: 1 upper, 4 lower, 2 and 3 intermediate.

The first part i.e. the upper module is provided with a screw cap with hermetic sealing. The bottom of the module is concave and its central part has a circular opening that is internally threaded and can be screwed tight in the upper opening of module 2, that is externally threaded. Module 2 has an upper opening that is also threaded; its margin is hidden under the concave bottom of the upper module 1(a). The bottom of module 2 is identical to module 4 and is connected in the same way to the under module 4.

The bottom of module 4 has got no openings, but it has strengthening structures that ensure resistance and stability. Obviously the number of intermediate modules can be suitably changed. The purpose of the "modular bottle" is to allow e.g. the parting of module 1 from module 2, once it is depleted, unscrewing it and closing module 2 with the screw cap (t).

This operation can be repeated with the other modules thus reducing air presence in the container and avoiding outgassing, evaporation, oxygenation or alteration of the original content. It is now evident that industrial production and marketing of the "modular bottle" would

have a great amount of advantages .

Claims

1. Bottle made of plastic (or other material) characterized by its modular structure : the modules are consecutively adjoining and watertight . They can be detached from one another leaving inalterated the container's functionality and the characteristics of liquids or substances contained in the full sections, not permitting air entrance in those parts . 5
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2. Bottle made of plastic (or other material) as in claim 1, characterized by the presence of a removable watertight (made of plastic or other material) membrane in the upper part of the neck of each section . This membrane prevents the decanting of liquid from one section to another in order to completely separate contiguous modules that could also contain different goods. 15
20
3. Bottle made of plastic (or other material) as in claim 1, allowing liquid flowing from one section to another, because of the lack of the aforesaid membrane previously situated on the upper part of the section's neck . This allows to consume the content section after section, avoiding air infiltration, deterioration and loss of liquid's typical characteristics . 25
4. Bottle made of plastic (or other material) as in claims 1 characterized by the fact that the underside surface is completely sealed (even if in connection with another section) so as to stop the decantation of liquids . 30
35
5. Bottle made of plastic (or other material) as in claims (1,2,4) characterized by the closed bottom of the section and by the aforesaid membrane in the upper part of the neck . 40
6. Bottle made of plastic (or other material) as in claims (1,2,3,4,5) characterized by a connection of its sections or modules : this can be achieved through a: screw-hooking, pressure-hooking, tug-hooking, slot-hooking ,click-hooking system . 45
7. Bottle made of plastic (or other material) as in claims (1,2,3,4,5,6) whose sections and membranes can be re-used , thus restoring the modularity and the watertight properties of the container. 50
8. Bottle (see aforesaid claims) made of plastic, glass , metal or any other material in any kind of shape .
9. Bottle made of plastic (or other material) that is characterized according to the aforesaid descriptions and illustrations . 55

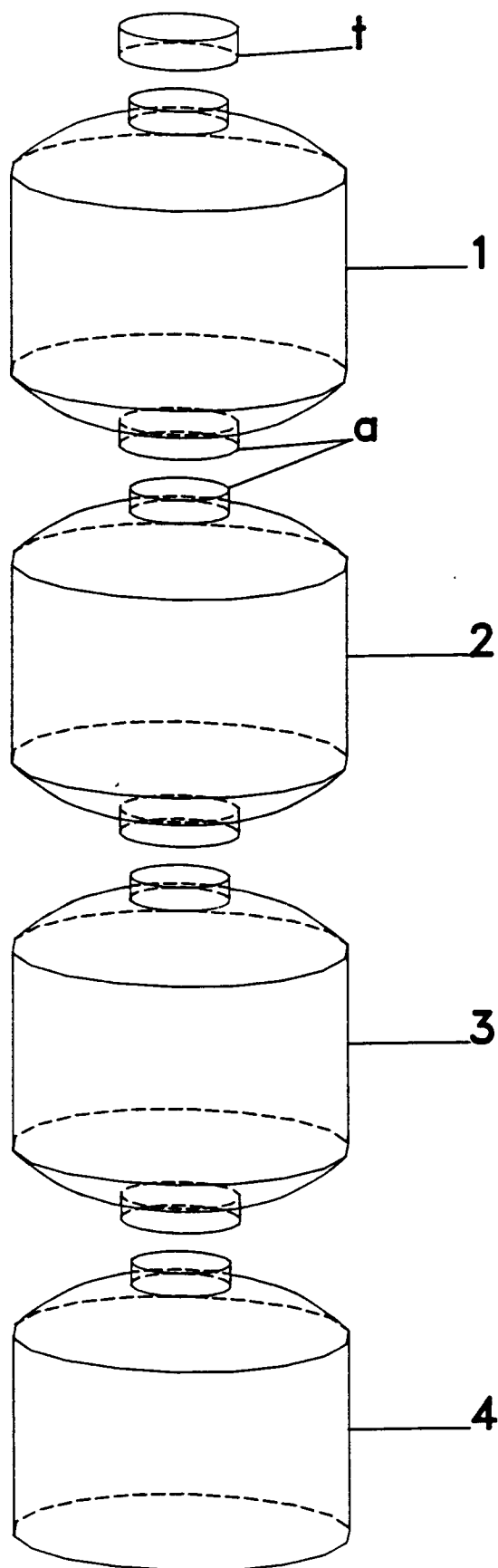


Fig. 1



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PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 96 83 0402 shall be considered, for the purposes of subsequent proceedings, as the European search report

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	FR 2 684 072 A (COUDERC GREGOIRE) 28 May 1993 * page 3, line 18 - page 5, line 20 * * page 6, line 2 - page 6, line 6 * * page 3, line 24 - page 3, line 30 * * figures 1,2 *	1,2,4-8	B65D21/036 B65D8/00
Y	---	3	
Y	FR 2 207 065 A (GASTINES PHILIPPE DE) 14 June 1974 * page 1, line 16 - page 1, line 23 * * figures 1,2 * -----	3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
INCOMPLETE SEARCH			
The Search Division considers that the present European patent application does not comply with the provisions of the European Patent Convention to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of some of the claims Claims searched completely: 1-8 Claims searched incompletely: Claims not searched: 9 Reason for the limitation of the search: EPC R29-6			
Place of search		Date of completion of the search	Examiner
THE HAGUE		14 October 1996	Farizon, P
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 I : document cited for other reasons & : member of the same patent family, corresponding document			

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