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(54) **Liquid delivery device, particularly beverage delivery device**

(57) It is disclosed a beverage delivery device in which an outer container of rigid material is designed to receive a further container (8) of flexible material inside it, which inner container (8) is adapted to be filled with the liquid to be delivered. Delivery means (10) for the inner container (8) allow selective drawing off or discharge of the beverage; the inner container (8) is made of flexible material and has a maximum filling volume bigger than the volume of the outer container (2) and is also made up of at least three distinct portions (80, 81, 82) suitably secured to each other to enable holding of the beverage, at least one of said portions being designed to abut against the bottom (3) of the outer container (2) during the step of filling the device.

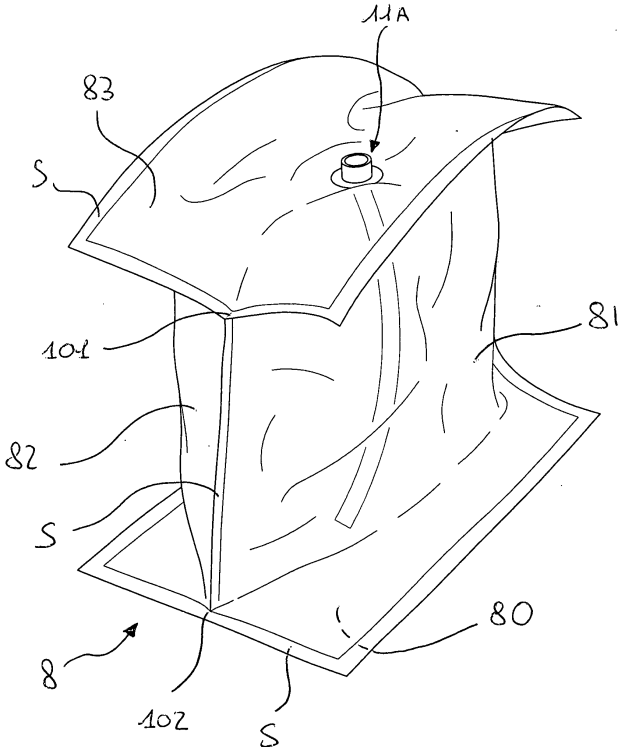

FIG 2a

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Description

[0001] The present invention relates to a liquid delivery device and in particular to a delivery device for beverages either alcoholic or not, fizzy or flat drinks such as wine, beer or the like (obviously the device will be also suitable for delivery of other different liquids not for food use, i.e. of the non-drinkable type).

[0002] It is known that current devices presently on the market for delivering or dispensing beverages such as beer for example, consist of kegs of metal material of suitable volumes and weights containing the beverage under pressure.

[0003] By means of delivery mechanisms generally consisting of a valve suitable for coupling with the metal container and of a hydraulic system for bringing the product close to a dispenser, the beverage can be drawn off and given to the consumers.

[0004] However, these devices presently widely used in this particular field suffer for different operating drawbacks.

[0005] The most apparent of these drawbacks is the cost of the metal container bringing about the necessity of an initial investment for purchase of same; the high cost, on the other hand, involves a compulsory reuse of the same containers once the product has been exhausted and after washing and sterilisation.

[0006] It is clear that also the last-mentioned operations for management of the containers give rise to further expenses connected with storage and logistics problems and weighing upon the overall cost of the product itself.

[0007] In addition, it is also to be taken into account the high weight of these metal containers that, by law or in any case for reasons of handiness and transport by the operators, cannot exceed given weights and volumes which will bring about limitations on the amounts of product that can be stored.

[0008] Due to the above problems and requirements, different solutions have been conceived over time and filed as patents, which solutions involve use of containers of rigid plastic material into which a second container of flexible material can be inserted.

[0009] The second container is filled with the food product while gas under pressure is blown into the hollow space created between the outer container and the flexible container.

[0010] By use of suitable valves a selective delivery of the beverage can be allowed.

[0011] It is however to be noted that in this second type of delivery devices too, there are some limits particularly from the point of view of manufacture and industrialisation of the product.

[0012] Although the solution briefly described above and contemplating a double container has many important advantages as compared with metal containers, the same however has hitherto appeared of difficult use.

[0013] For instance there are problems in carrying out a uniform and complete filling of the flexible inner bag without producing breaks or tearings.

[0014] In an already patented first solution an inner container of elastic flexible material is provided to be adopted. A progressive filling of said container involves deformation of same so that it gradually adapts itself to the outer shape of the container made of rigid plastic material.

[0015] While this solution appears to be very functional for immediate use, there are problems when use is extended in time because the material forming the elastic container has a tendency to become permeable to the drinkable liquid. This obviously involves the impossibility of the device being commercially usable.

[0016] On the contrary, other solutions in which bags of non-elastic flexible material are adopted, have highlighted problems of breakage during the filling steps, due to overpressures generated in the flexible container itself in particular at the weakening points thereof, such as the welded regions or discontinuity regions, as well as problems connected with the impossibility of carrying out full filling of said containers.

[0017] Accordingly, the present invention aims at substantially solving all the above mentioned drawbacks.

[0018] It is a first aim of the invention to make available a beverage delivery device that can be easily industrialised and marketed.

[0019] In particular, it is an object of the invention to provide a delivery device made of plastic material that is light-in-weight and does not give rise to problems during the step of filling the inner bag, while at the same time allowing an optimal conservation of the food product from storage to delivery.

[0020] Auxiliary objects of the invention are to keep costs as low as possible and to allow both reuse of the device and easy recycling of same.

[0021] It is a final object of the invention to make available a valve typology capable of optimising operation of the valve itself.

[0022] The foregoing and further aims that will become more apparent in the course of the following description are substantially achieved by a liquid delivery device according to that which is described in the appended claims.

[0023] Further features and advantages will be best understood from the detailed description of a preferred but not exclusive embodiment in accordance with the invention.

[0024] The invention will be described hereinafter with reference to the accompanying drawings given by way of non-limiting example, in which:

- Fig. 1 shows a delivery device in accordance with the invention;
- Figs. 2 to 10 show possible alternative embodiments of a container of flexible material used in the device seen in Fig. 1;
- Fig. 11 shows a dispensing valve to be used in the device in Fig. 1.

[0025] With reference to the drawings, a liquid delivery device (possibly also for non-drinkable liquids) and in particular for beverages, either alcoholic or not, fizzy or flat drinks such as wine, beer or the like, has been generally identified with reference numeral 1.

[0026] This device can be preferably but not exclusively used in public places, such as bars, public houses, wine associations, restaurants, to draw off measured amounts of liquid through a suitable dispensing system by means of beer pumps or similar regulation means for drinks on draught. The dispensing system, known by itself, can also comprises a tank under pressure for a service fluid, as well as dispensing lines and lines for feeding the product to the device 1.

[0027] Obviously, the liquids of the greatest interest will be drinks of the type commonly referred to as "soft drinks" such as water or beverages also of the fizzy type, as well as alcoholic drinks such as beer or wine.

[0028] The device 1 can be advantageously used also for holding, storing, transporting and dispensing any other liquid, in particular for food use.

[0029] As can be viewed from Fig 1, the delivery device first of all comprises a first outer container 2 made of rigid material such as plastic material possessing qualities of lightness, cheapness and strength associated together.

[0030] For instance, the materials that can be used are PE (polyethylene)-based materials, PP (polypropylene)-based materials, PET (polyethylene terephthalate), or co-formulations or copolymers thereof also of a type unsuitable for contact with liquids for food use.

[0031] The outer container 2 has a bottom wall 3 of substantially flat extension or in any case of a slightly concave extension provided with suitable feet 4 or ribs made of one piece construction within the overall dimensions of the container 2 to enable the latter to steadily rest on a supporting surface or floor.

[0032] The outer container 2 then has a cylindrical side wall 5 connected to the bottom 3 by a curved lower region 3a and a substantially hemispherical upper portion 6 terminating with a collar 7 defining a delivery mouth A of the outer container 2.

[0033] Internally of the above described container 2 there is a second inner container 8 made of a flexible material so that it can be suitably folded upon itself and inserted into the first container 2 through the delivery mouth A.

[0034] The inner container 8 too, that can be advantageously made of plastic material for food use such as polyethylene, shall have a delivery opening 9 that, under use condition of the device, shall be put in register with the above mentioned delivery mouth A of the outer container 2.

[0035] The inner container 8 made of flexible material can take one or more of the configurations shown in Figs. 2 to 10.

[0036] It will be recognised that said container generally consists of a given number of separate portions 80, 81, 82, 83 that are distinct from each other and are joined together so as to form the liquid-tight container. Generally, the portions are defined by a film of flat plastic material, monolaminar or multilaminar polyethylene or polycoupled or coextruded polyethylene layers, depending on requirements in terms of needed strength.

[0037] The different portions are for example heat-sealed or welded to each other by ultrasonic waves so as to define a suitable inner volume of the bag.

[0038] Generally the maximum filling volume will never be less than the volume of the outer container 2 and generally the maximum filling volume of the bag 8 will be bigger than that of the outer container 2.

[0039] In this way, during the bag filling steps said bag will bear against the rigid walls of the outer container 2 that will help it in withstanding the general pressure of the liquid, particularly at the weakening points (weldings S).

[0040] Referring particularly to the examples shown in Figs. 2, 2a, 3, 7 and 8, it is possible to see that the preferred embodiment of the inner bag 2 is made up of at least one portion (that is preferably flat) 80 which, during the filling step, is designed to abut against the bottom 3 of the outer container 2.

[0041] Generally these containers 8 will then comprise at least two portions 81, 82 to be mutually coupled that will define the side wall of the bag and a fourth upper portion 83 to complete the container's structure.

[0042] As can be seen, the two portions 81, 82 are joined together (by welding) at respective opposite sides and are then in turn welded, at the bottom, to portion 80 and, on the opposite side, to the fourth upper portion 83. In other words, four portions will define the whole structure of the container.

[0043] As can be further noticed, the bottom portion 80 is welded to the two portions 81, 82 along the whole outer perimeter and therefore one half of said perimeter is directly secured to portion 81, while the other half is connected to portion 82.

[0044] In the same manner, the fourth upper portion 83 is welded to the two portions 81, 82 defining the side wall along the whole outer perimeter thereof, therefore having one half of the perimeter directly secured to the side portion 81 and a second half directly secured to the side portion 82. No direct connection exists between the upper portion 83 and bottom portion 80.

[0045] By operating in this way two upper junction points 100 and 101 are generated between the portions defining the side wall and the upper portion and two corresponding lower junction and contact points 102, 103 between the bottom portion 80 and the portions defining the side walls 81, and 82. At these points the weldings S shall meet.

[0046] Generally these portions shall take the shape of quadrilaterals as shown in Figs. 2 and 2a (rectangles) or in Fig. 3 (rhombus).

[0047] Obviously, different alternative configurations can be adopted such as the one shown in Fig. 7.

[0048] Fig. 8 shows an inner container 8 quite similar

to the one shown in Fig. 2 in which however a tubular structure has been adopted which is suitably folded and welded at the end portions thereof so as to define the whole holding structure.

[0049] It is to be pointed out that Figs. 2 and 2a correspond to the same container, the first one being a diagrammatic view highlighting several different aspects of the container, the second one being a perspective view better reflecting the real three-dimension configuration of the container.

[0050] Further embodiments are shown in Figs. 4, 5, 6, 9 and 10.

[0051] The example in Fig. 4 shows the adopted inner container 8 consisting of many portions, more exactly six portions defining the bottom 80 and six portions defining the upper region 83; then suitable elements or segments adapted to define the side wall are present.

[0052] On the contrary, Fig. 5 shows another alternative embodiment consisting once more of a bag of flexible material such folded as to resemble a package for food products such as a milk package.

[0053] Fig. 6 shows a further alternative embodiment in which the substantially circular bottom 80 is welded to two portions 81, 82 defining the side and upper regions of bag 8.

[0054] The embodiment in Fig. 9 depicts a square (or rectangular) bottom 80 to which respective and separate side portions are welded. Then an upper portion 83 of the same shape as the bottom is present and welded to the side portions so as to define a parallelepiped-shaped holding structure.

[0055] Alternatively, the side wall can be defined by a single tubular plastic element that is suitably folded to define the side corners and also by two plastic portions that are welded to each other at the ends and then folded to obtain the configuration seen in Fig. 9.

[0056] The embodiment in Fig. 10 is substantially the same as the preceding one except for the bottom 80 and the upper portion 83 that have a round or elliptical configuration. In this case too the side wall can consist either of two portions 81, 82 welded to each other, or of a single tubular portion.

[0057] It is also to be pointed out that the region close to valve 11 (or in any case to the lower body 11a thereof) has a structural reinforcing element 14 at least in the vicinity of the delivery opening 9.

[0058] With reference to the embodiment in Figs. 2, 3 and 6, the reinforcing element is placed on the fourth upper portion 83.

[0059] The structural reinforcing element 14 can consist of a reinforced layer so that the upper portion 83 of multilaminar material is made up of at least one plastic layer 30 (and preferably two or more layers) of polyethylene coupled with at least another layer of nylon oriented in the two ways (reinforcing element 14).

[0060] In fact the upper portion appears to be subjected to particularly heavy stresses because it cannot abut against the rigid surface of the outer container 2.

[0061] The device further comprises, close to the collar 7 of the outer container, delivery means 10 adapted to enable the beverage to be selectively drawn off; said means comprises a valve 11 which is able to selectively allow filling of the flexible bag 8/delivery of the beverage from said bag (arrow 21 - Fig. 9) and also to enable gas under pressure to be introduced into or discharged from the hollow space generated between the two containers 2 and 8 (arrows 22 - Fig. 9).

[0062] The valve 11 first of all comprises a lower body 11a of rigid plastic material secured to the flexible bag 8 (see Fig. 9). This body 11a consists of a circle ring 12 welded (heat-sealed or welded by ultrasonic waves, for example) at the edges of a hole in the flexible bag 8.

[0063] Said lower body 11a has an emerging portion 13 of circular shape and internally threaded. Said circular emerging portion 13 internally defines a feeding/discharge passage for the liquid for food use.

[0064] The valve 11 also comprises a second body 11b to be removably engaged with the previously described one by means of a suitable outer thread carried by a lower region 15 of the element itself.

[0065] The upper body 11b of the valve 11 is substantially of cylindrical symmetry and is provided at the top with a circle ring 16 adapted to define an abutment surface for engagement in a resting condition with the collar 7 of the outer container 2.

[0066] In particular the upper body 14 can be inserted on collar 7 from the top until the circle ring 16 is brought to abut thereon, as shown in Fig. 1.

[0067] In order to ensure a steady engagement between the valve 11 and container 2, axial ribs 17 are then present on the outer surface of the upper body 11b, which ribs are adapted to enable an angularly predetermined fit and possibly an interference fit, with collar 7.

[0068] Obviously the upper body 11b too of the valve 11 defines a passage channel to enable feeding or delivery of the beverage into and from the container 8 of flexible material.

[0069] In other words, once the upper body 11a and lower body 11b of valve 11 are in engagement with each other, a main channel is defined which brings the external atmosphere into fluid communication with the inside of the flexible bag 8.

[0070] The communication way towards and from the container of flexible material 8 is controlled by a spring 23 and a respective closure member 24 that can be shifted to enable delivery and to enable filling, respectively.

[0071] It is then to be pointed out that the upper body 11b also comprises at least one and preferably two further check valves 18 capable of bringing the hollow space 20 defined between the outer container 2 and inner container 8 into fluid communication with the external atmosphere.

[0072] These two further mechanisms are designed, on the one hand, to enable emission of the air contained in the hollow space 20 during the steps of filling the inner container with a beverage and, on the other hand, to en-

able introduction of gases or fluids under pressure into the hollow space during the liquid delivery step, as better clarified in the following.

[0073] While a coupling by screwing between the upper body 11a and lower body 11b of valve 11 is the preferred one, it will be also possible to obtain said coupling by a suitable bayonet engagement, interference fit or the like.

[0074] The valve 11 described above in detail is configured in such a manner that it can be coupled with drawing-off mechanisms and devices or in any case with filling and delivery devices of known type and therefore not further described.

[0075] Therefore, advantageously, the delivery devices in accordance with the invention do not require dedicated hydraulic circuits, but can be used on dispensing equipment and apparatus already available on the market.

[0076] In other words, in spite of their innovative character, the devices of the invention can replace the containers of metal material presently on the market without any type of modification being required to the installations.

[0077] The device also comprises an elongated body 19 disposed inside the bag which can have a substantially ribbon-like shape with a section in the form of a double comb comprising a base ribbon of a width included between 5 and 30 mm for example, and a thickness between 1 and 5 mm and a series of elements parallel to each other and extending substantially perpendicular to the base ribbon and over the whole length of the elongated element from each of the opposite faces of the base ribbon itself, so as to form a series of channels parallel to each other enabling full emptying of the inner container 8 during the dispensing steps.

[0078] It is finally to be pointed out that the collar 7 of the rigid container 2 is externally threaded so that it can receive a suitably holed plug in engagement, which plug is capable of locking the valve 11 in place, as well as a gripping element for easier transport.

[0079] After describing the invention from a structural point of view, operation of the delivery device in accordance with the invention is as follows.

[0080] Once the bag of flexible material has been inserted into the rigid container 2 and the valve has been positioned close to the collar 7 of said rigid container, the channel for feeding liquid to the flexible bag 8 is opened.

[0081] Simultaneously, escape of the excess air present in the hollow space 20 of the device is allowed by means of the two check valves.

[0082] The inner container 8 of flexible material is therefore gradually filled with the beverage in such a manner as to bring its bottom portion into contact with the bottom of the outer container and to progressively fill it.

[0083] When filling has been completed the container of flexible material 8 is substantially in contact with the outer container 2 at each portion thereof (except for the region surrounding the delivery opening 9).

[0084] At this point the device is associated with the common dispensing circuits presently already in use.

[0085] When delivery of the beverage is required, air or in any case a suitable fluid is introduced into the hollow space 20 and simultaneously the valve enabling discharge of the beverage is opened.

[0086] In this way any type of direct contact between the fluid present in the hollow space 20 and the beverage itself is avoided while ensuring an optimal delivery of the product.

[0087] The invention achieves important advantages.

[0088] First of all the particular configuration and geometry of the containers of flexible material adopted in the delivery device enables an easier filling of the bag that is able to conforms itself to the outer container, therefore avoiding creation of localised stresses that could involve yielding of the welded regions or in any case tearing of the flexible container itself.

[0089] The particular coupling between the inner surface of the rigid container and the bag of flexible material allows said bag to withstand pressures of several bars under filling conditions. Said bag would not be able to withstand the same pressure externally of the rigid container.

In other words, the fact that the flexible bag bears against the walls of the rigid container allows the above pressures to be reached without arising of particular structural problems.

[0090] In addition, the presence of a reinforcing element for the inner-container wall at the delivery valve prevents the bag from suffering for tearings even at the weakening points without, on the other hand, making the container of flexible material too rigid.

[0091] Obviously, the delivery device in accordance with the invention as compared with the containers of metal material presently used on the market, offers advantageous characteristics in terms of weight, costs, hygiene, etc.

Claims

1. A liquid delivery device, particular for beverages, comprising:

   - an outer container (2) of substantially rigid material having at least one delivery mouth (A);
   - an inner container (8) of flexible material to be inserted into said outer container (2) and having at least one delivery opening (9), said inner container being adapted to be filled with the liquid to be delivered;
   - delivery means (10) interlocked with the inner container (8) to enable selective drawing out or emission of said liquid,

   characterised in that said inner container (8) of flexible material has a maximum filling volume at

least as large as and preferably larger than the volume of said outer container (2), and **in that** the inner container (8) comprises at least three distinct portions (80, 81, 82) suitably secured to each other to allow holding of the liquid, at least one (80) of said portions (80, 81, 82) being designed to abut against a bottom (3) of the outer container (2) in the step of filling the device.

2. A device as claimed in claim 1, **characterised in that** the portions (80, 81, 82) of the inner container (8) are welded together, said portions being preferably defined by flat films of plastic material such as polyethylene, for example.

3. A device as claimed in claim 1, **characterised in that** at least two (81, 82) of said portions (80, 81, 82) are joined to each other at respective opposite sides and define a side wall of said inner container (8), the portion designed to abut against the bottom (3) of the outer container (2) defining the bottom of said inner container and being secured to said two portions (81, 82) defining the side wall, the inner container (8) preferably comprising a fourth upper portion having said delivery opening (9), the fourth upper portion (83) being preferably secured to the side wall.

4. A device as claimed in claim 3, **characterised in that** the portion (0) defining the bottom of the inner container (8) is secured to the two portions (81, 82) defining the side wall along the whole outer perimeter thereof, the fourth upper portion (83) being secured to said two portions (81, 82) defining the side wall along the whole outer perimeter thereof, the portion (80) defining the bottom and the upper portion of the inner container (8) having no direct points of mutual engagement.

5. A device as claimed in claim 4, **characterised in that** the four portions (80, 81, 82, 83) defining the inner container (8) of flexible material are of substantially quadrangular shape and are welded to each other along their outer perimeters, the inner container (8) having two junction points (100, 101) between the fourth upper portion (83) and first and second portions (81, 82) defining the side wall and two further junction points (102, 103) between the portion (80) defining the bottom wall and the first and second portions (81, 82) defining the side wall.

6. A device as claimed in anyone of the preceding claims, **characterised in that** at least one of said portions (80, 81, 82, 83) has a structural reinforcing element (14) located close to the delivery opening (9).

7. A device as claimed in claim 6, **characterised in that** the structural reinforcing element (14) is placed on the fourth upper portion (83), the fourth upper portion (83) being for example made up of a layer of multilaminar material consisting of at least one and preferably two plastic layers coupled with another layer of nylon oriented in the two ways, said layer of nylon defining said structural reinforcing element.

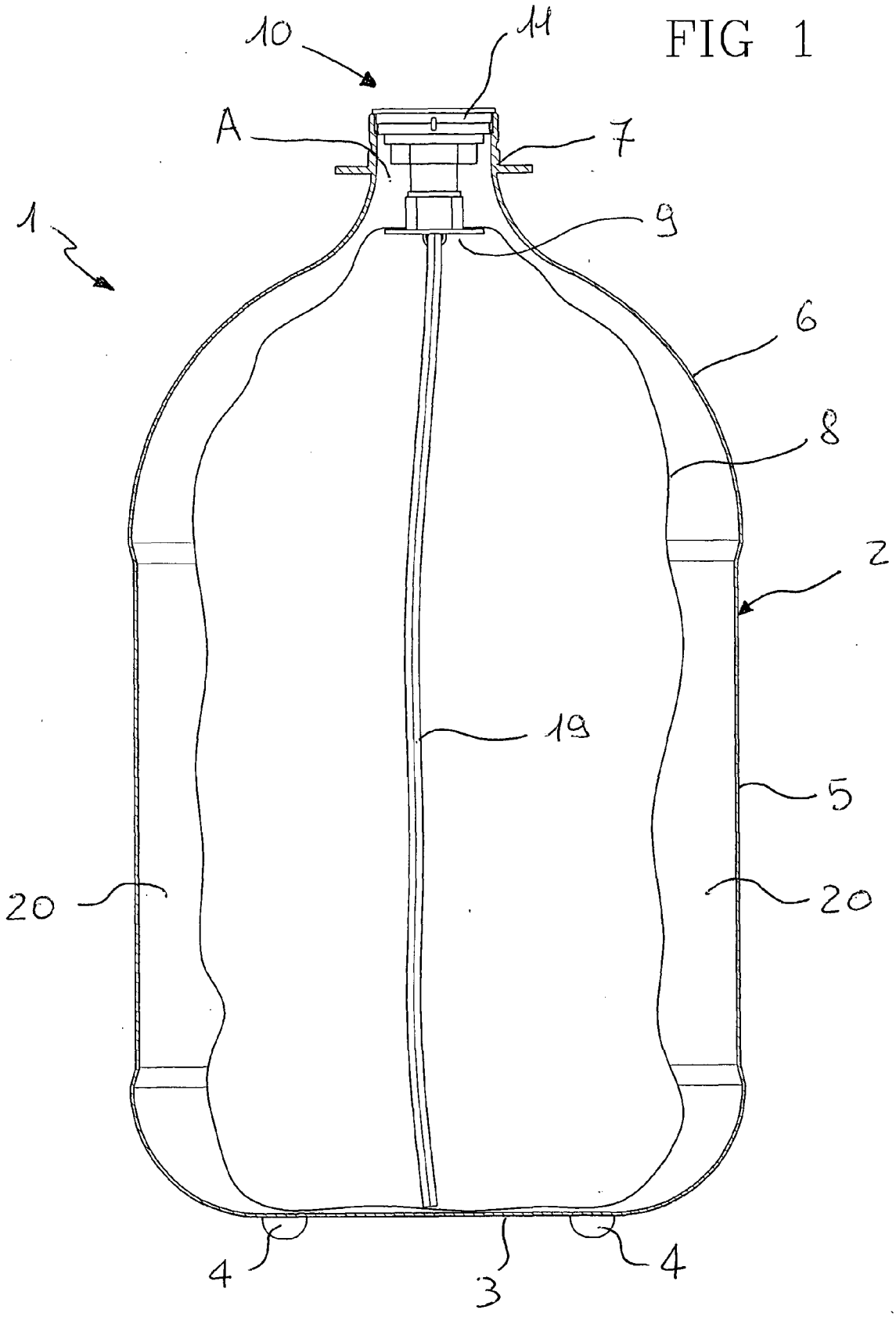
8. A device as claimed in anyone of the preceding claims, **characterised in that** the outer container (2) comprises a substantially flat or lightly convex bottom (3) preferably having suitable feet (4) to enable a steady resting of the device on a surface.

9. A device as claimed in claim 8, **characterised in that** the outer container (2) comprises a substantially cylindrical side wall (5) and a substantially hemispherical upper portion (6) which has a collar (7) defining the delivery mouth (A).

10. A device as claimed in anyone of the preceding claims, **characterised in that** the delivery means (10) comprises at least one valve (11) to be secured close to said delivery mouth (A) and opening (9), said valve (11) selectively allowing filling/emptying of the inner container (8) with said liquid and introduction/emission of fluid under pressure into and from a hollow space (20) defined between the outer container (2) and inner container (8).

11. A device as claimed in claim 10, **characterised in that** said valve comprises a lower body (11a) and an upper body (11b) to be removably secured to the preceding one, a channel for filling/emptying the inner container (8) which has a closure member held in place by a respective spring to enable a selective opening of the channel, and a channel for feeding/delivering the fluid under pressure into/from the hollow space (20) which has a respective closure member held in place by a corresponding spring, the closure member being selectively drivable to open the channel for feeding/delivering the fluid under pressure.

FIG 1



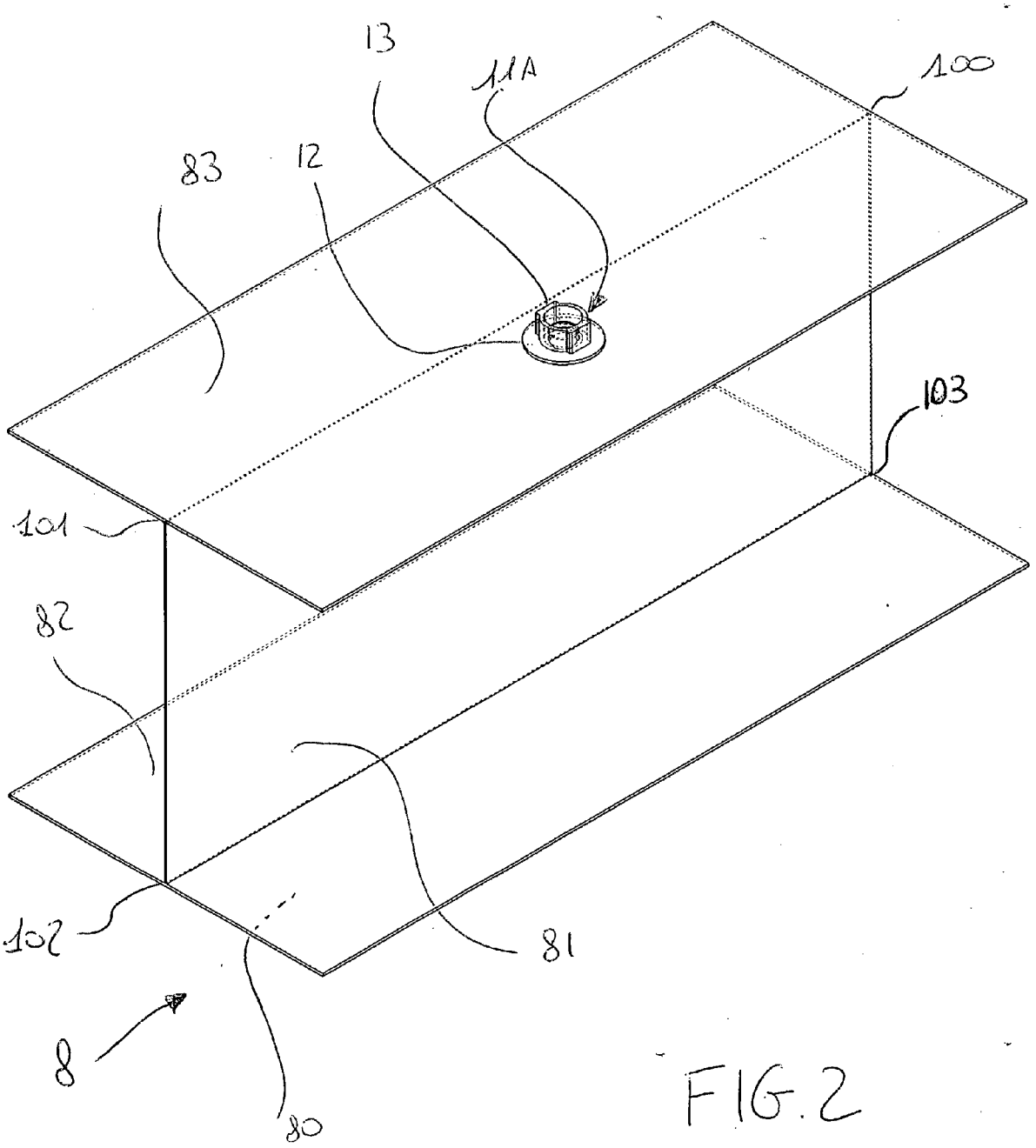


FIG.2

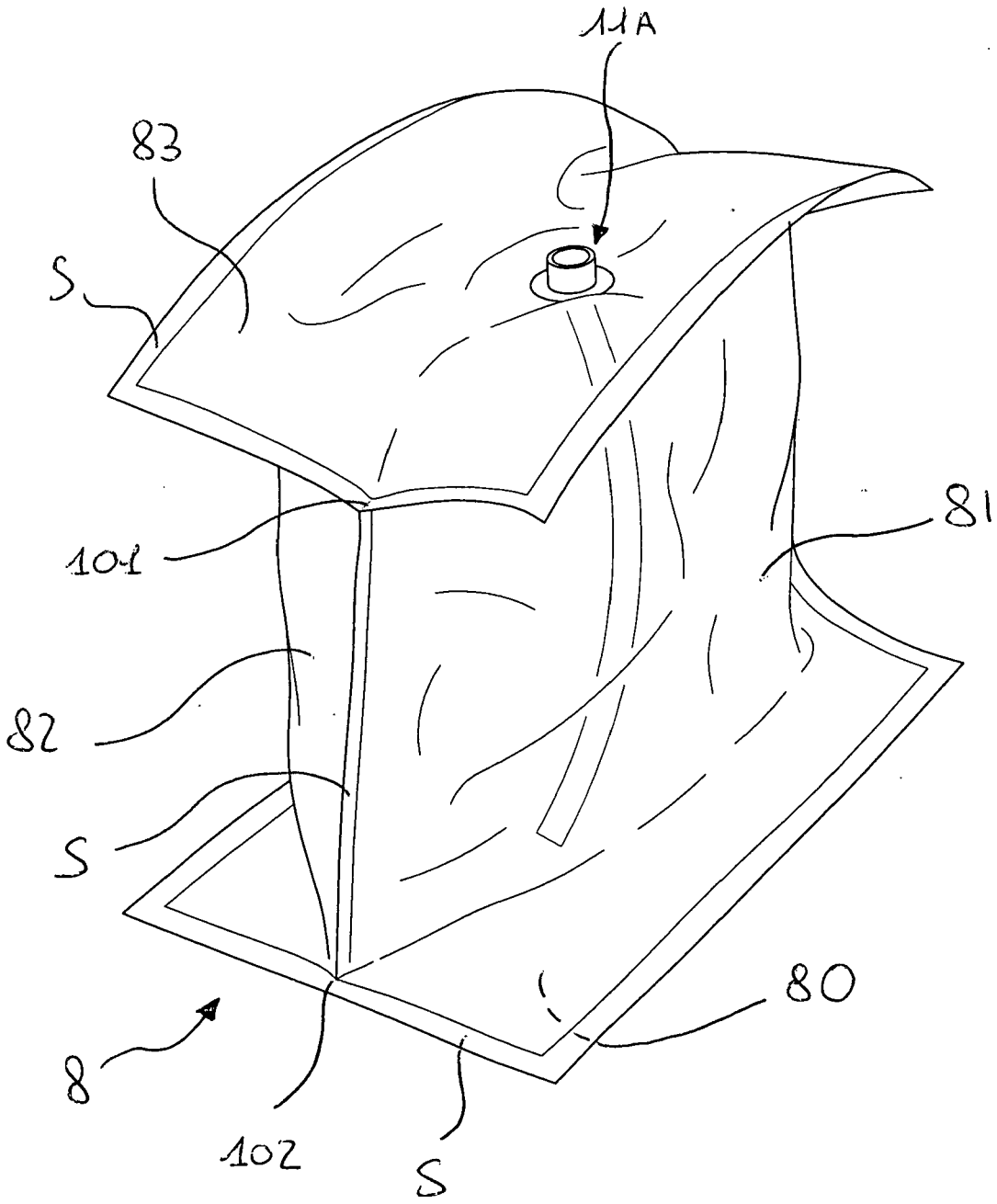


FIG 2a

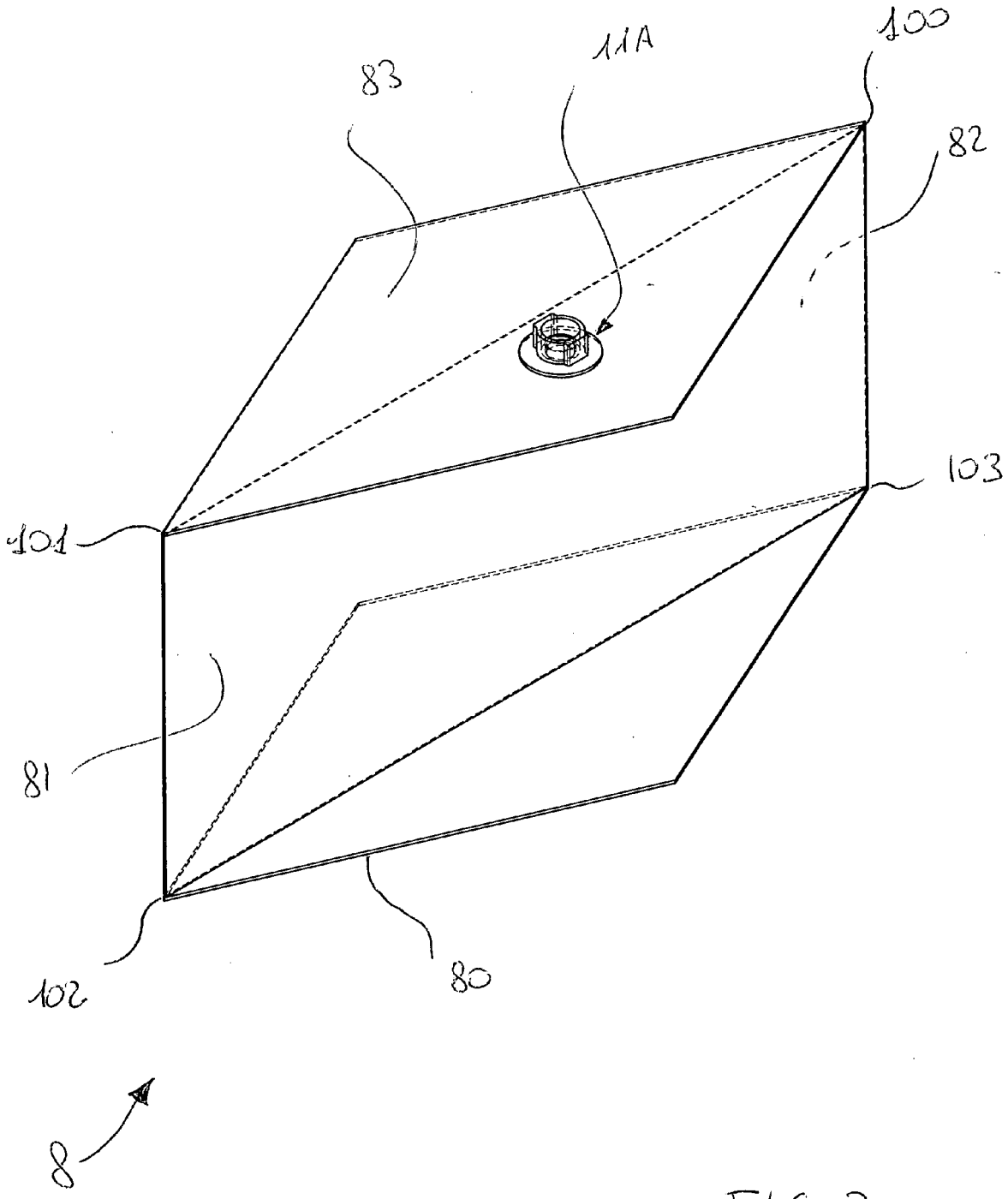


FIG. 3

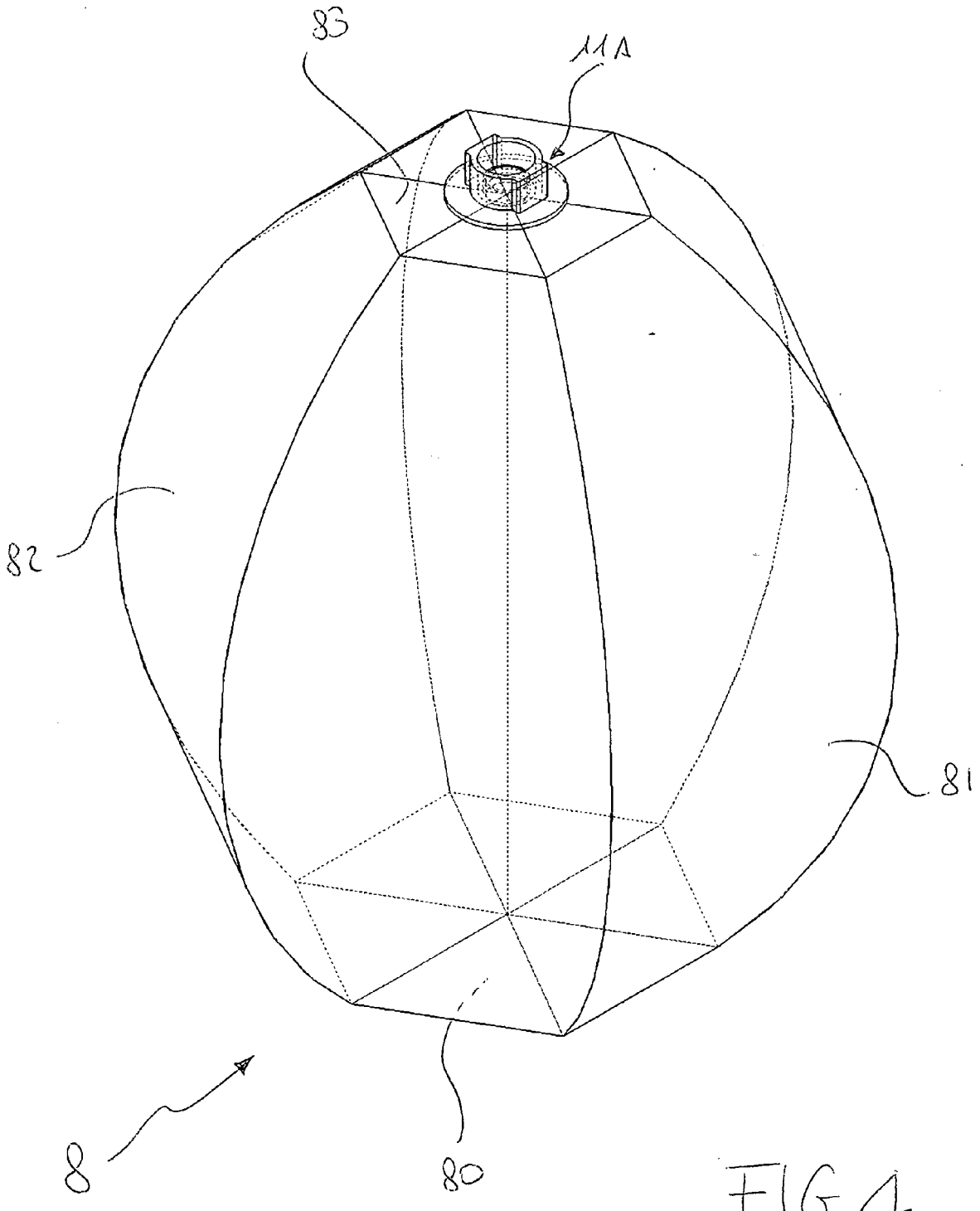


FIG. 4

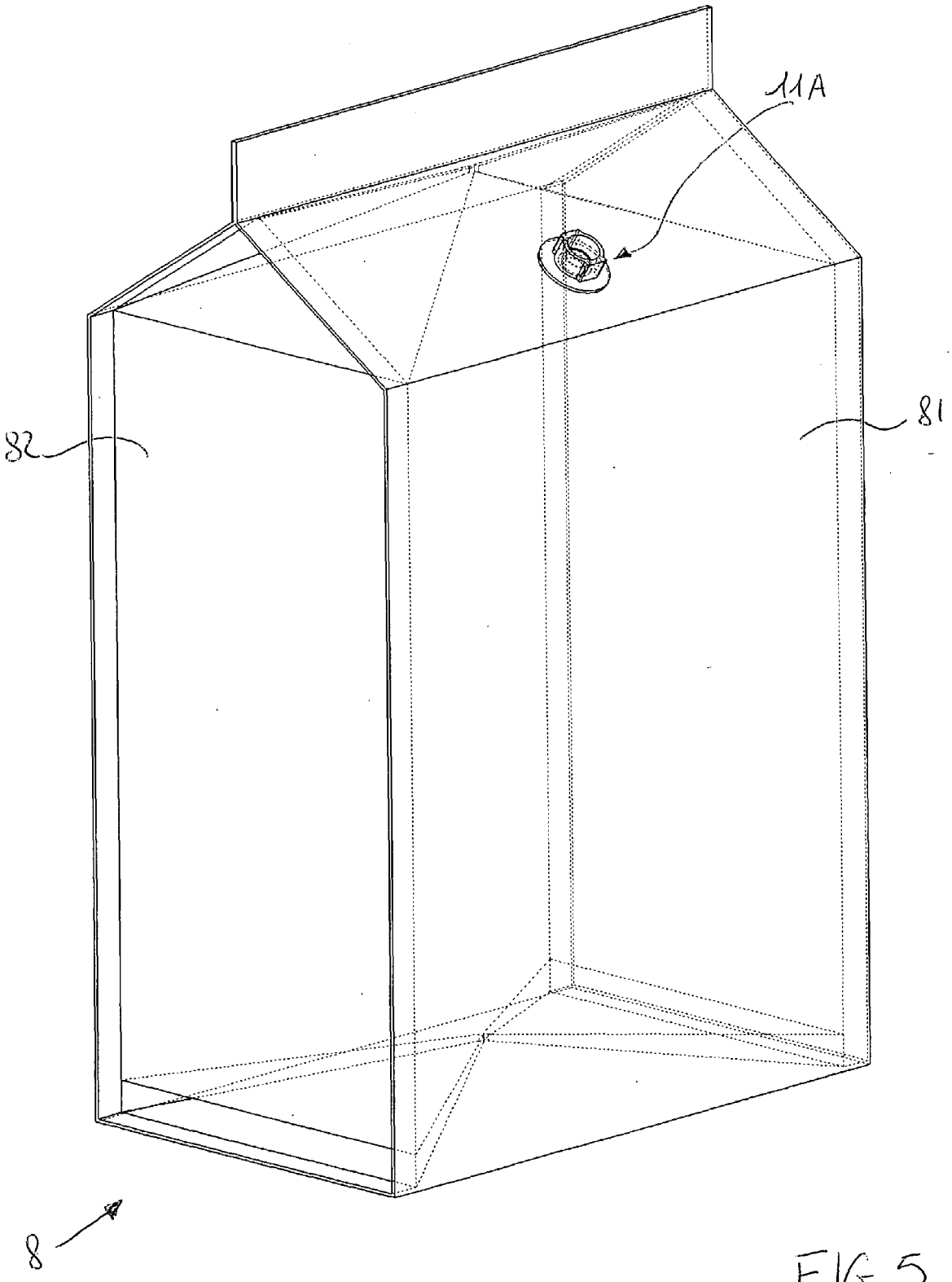


FIG. 5

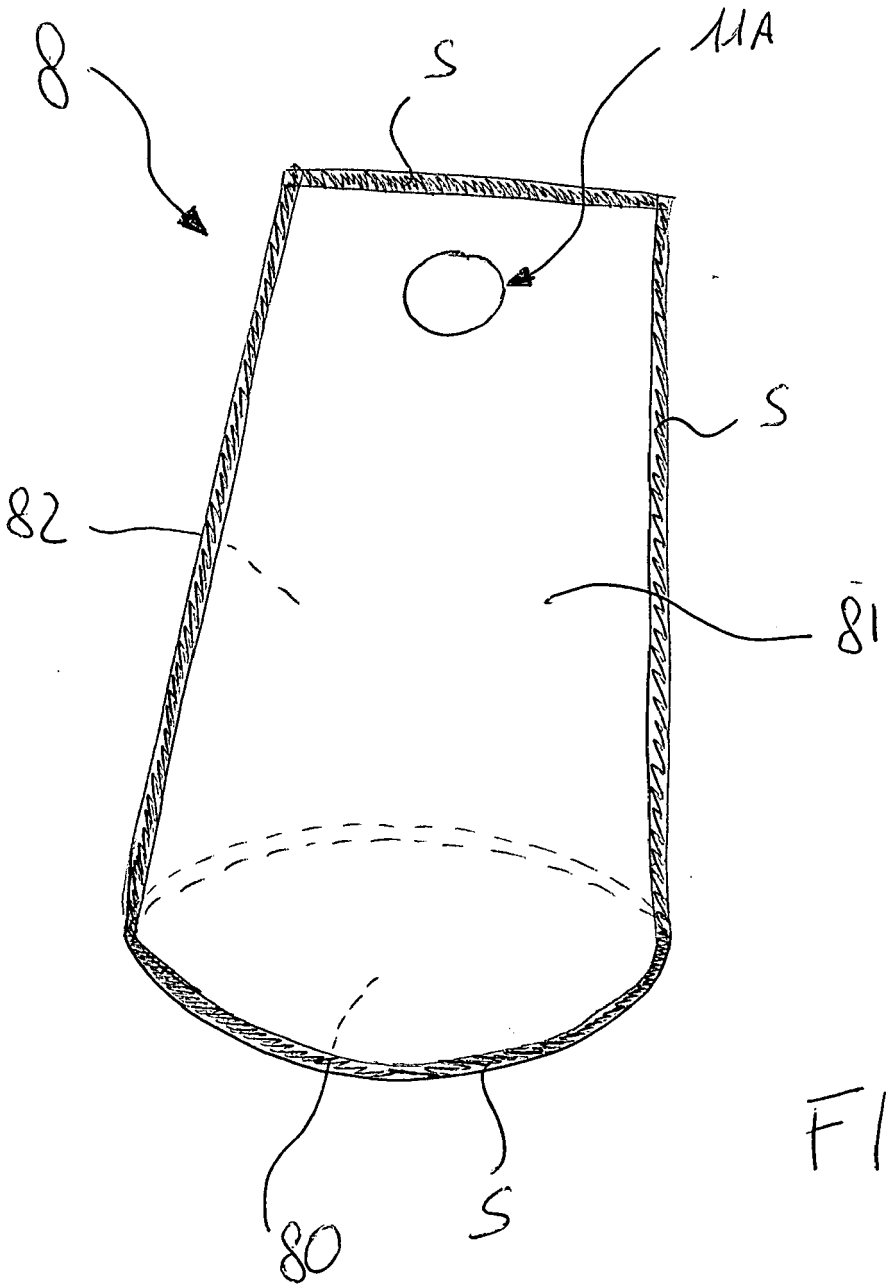


FIG. 6

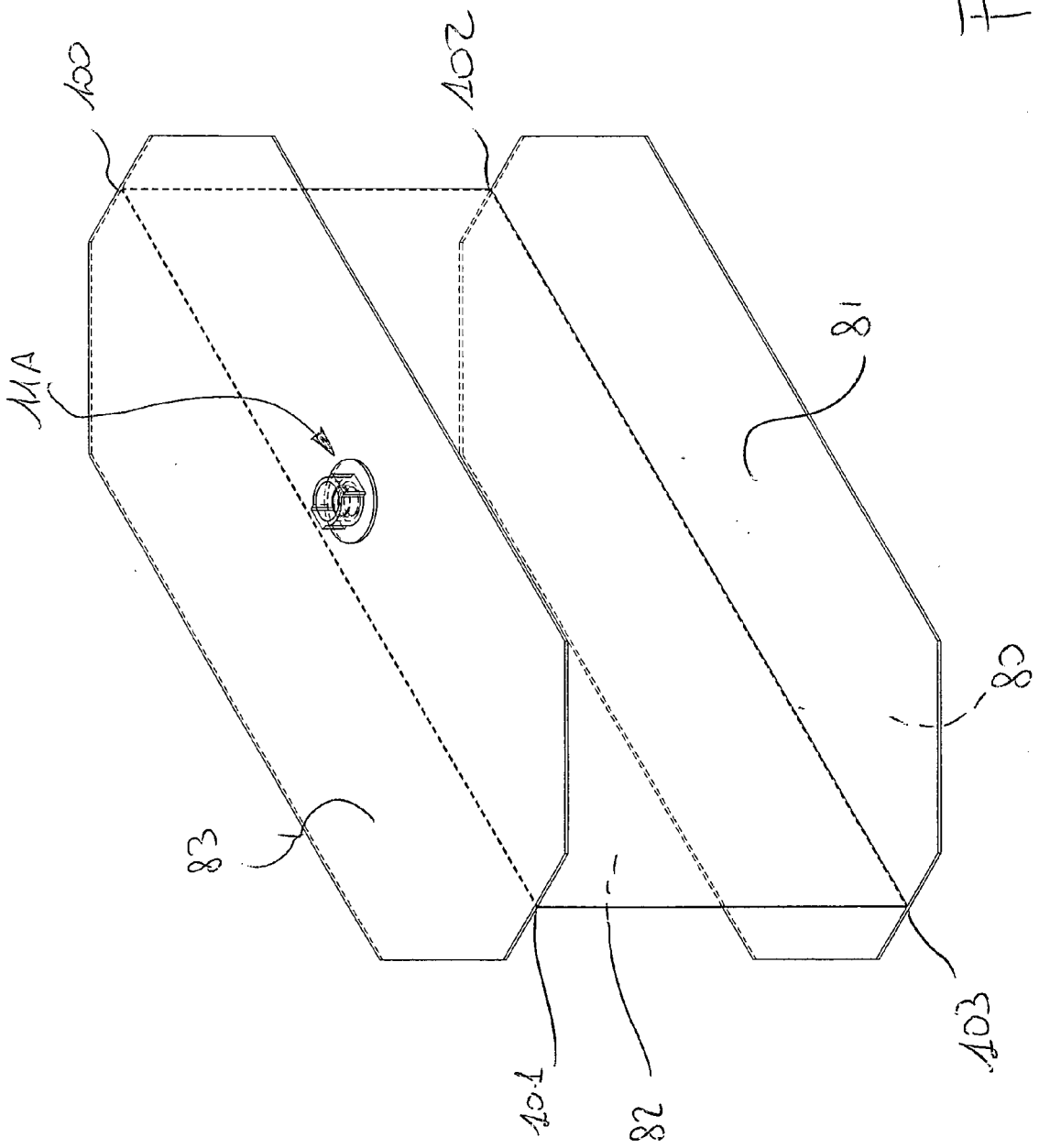


FIG. 7

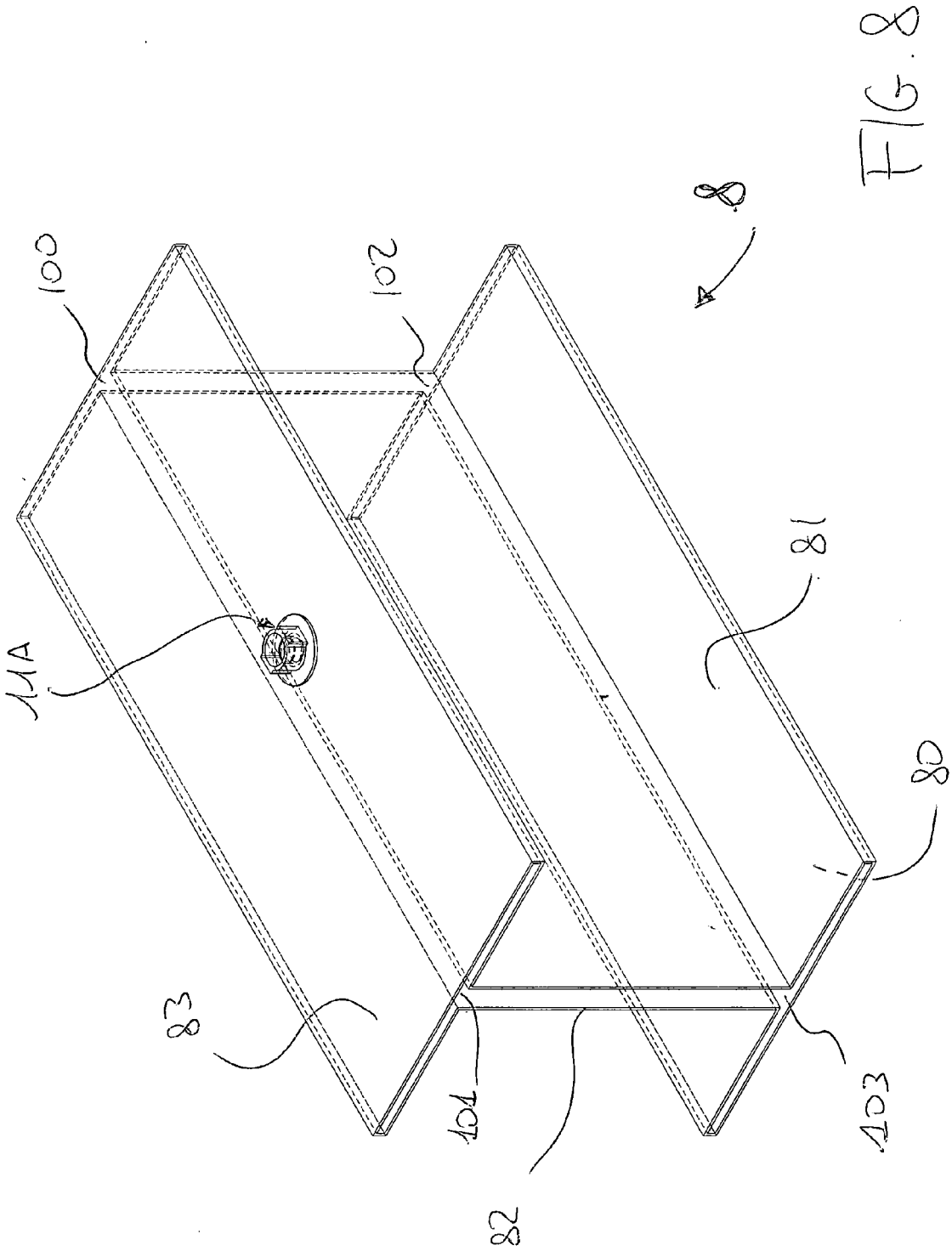


FIG. 8

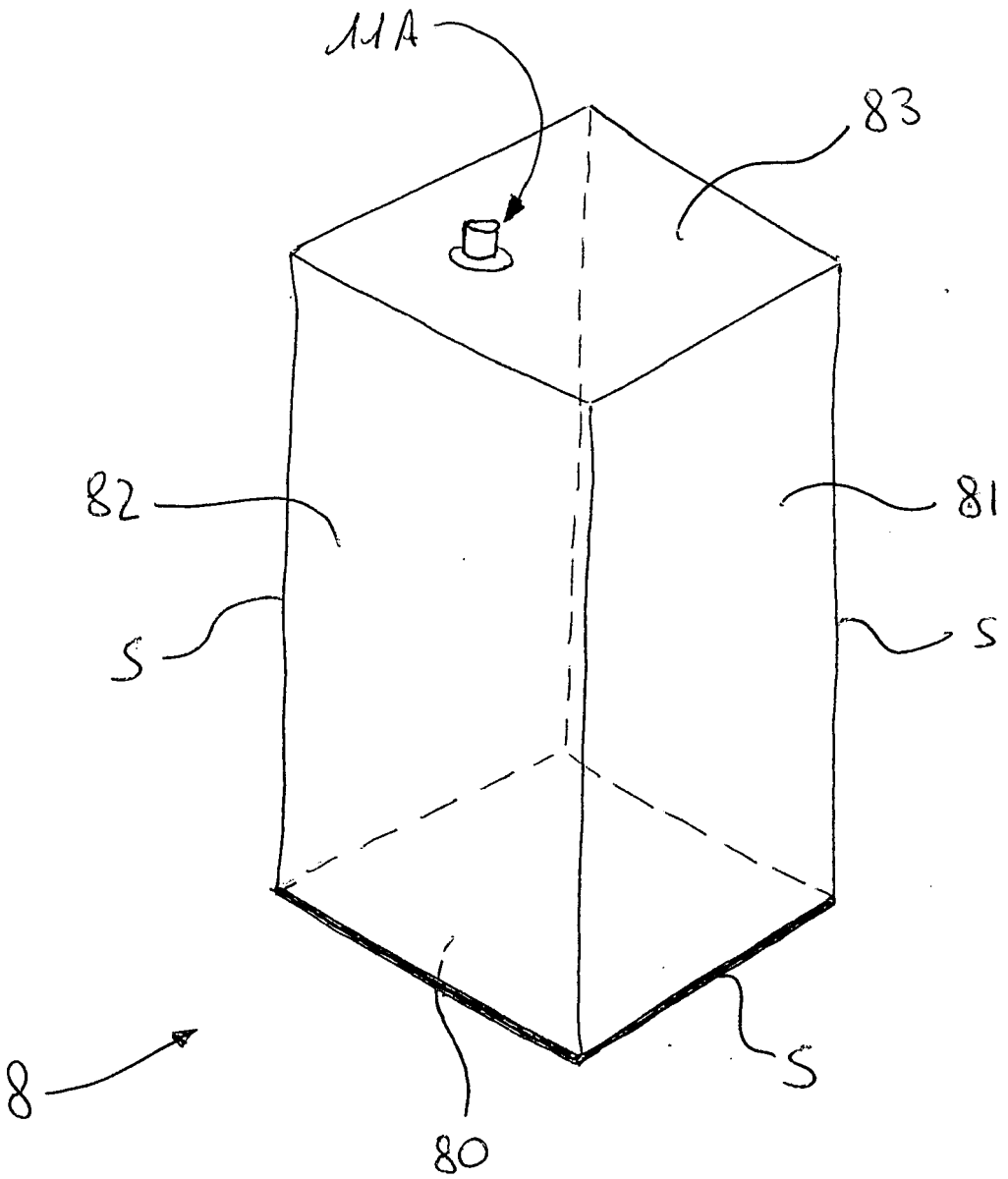
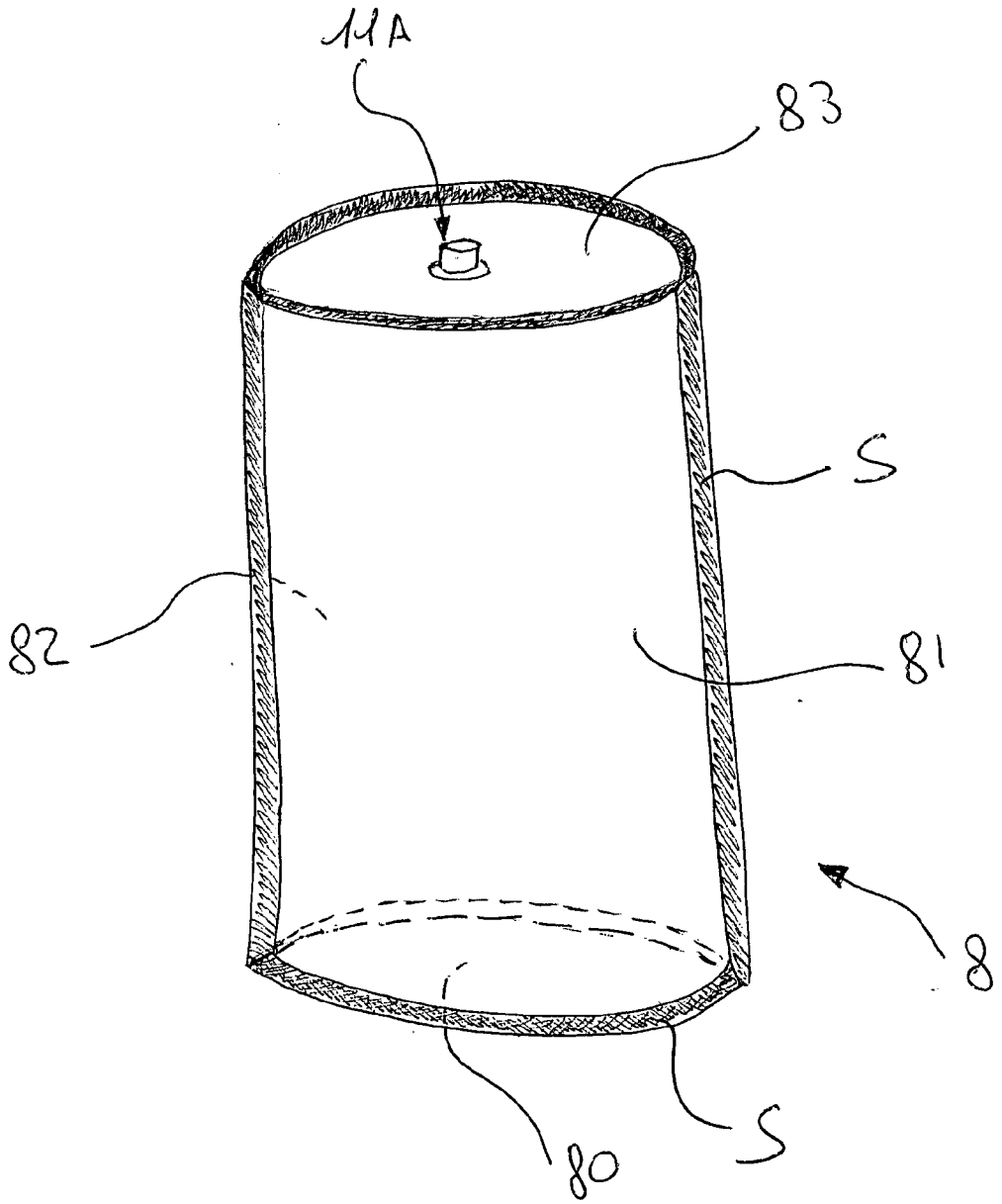


FIG. 9

FIG. 10



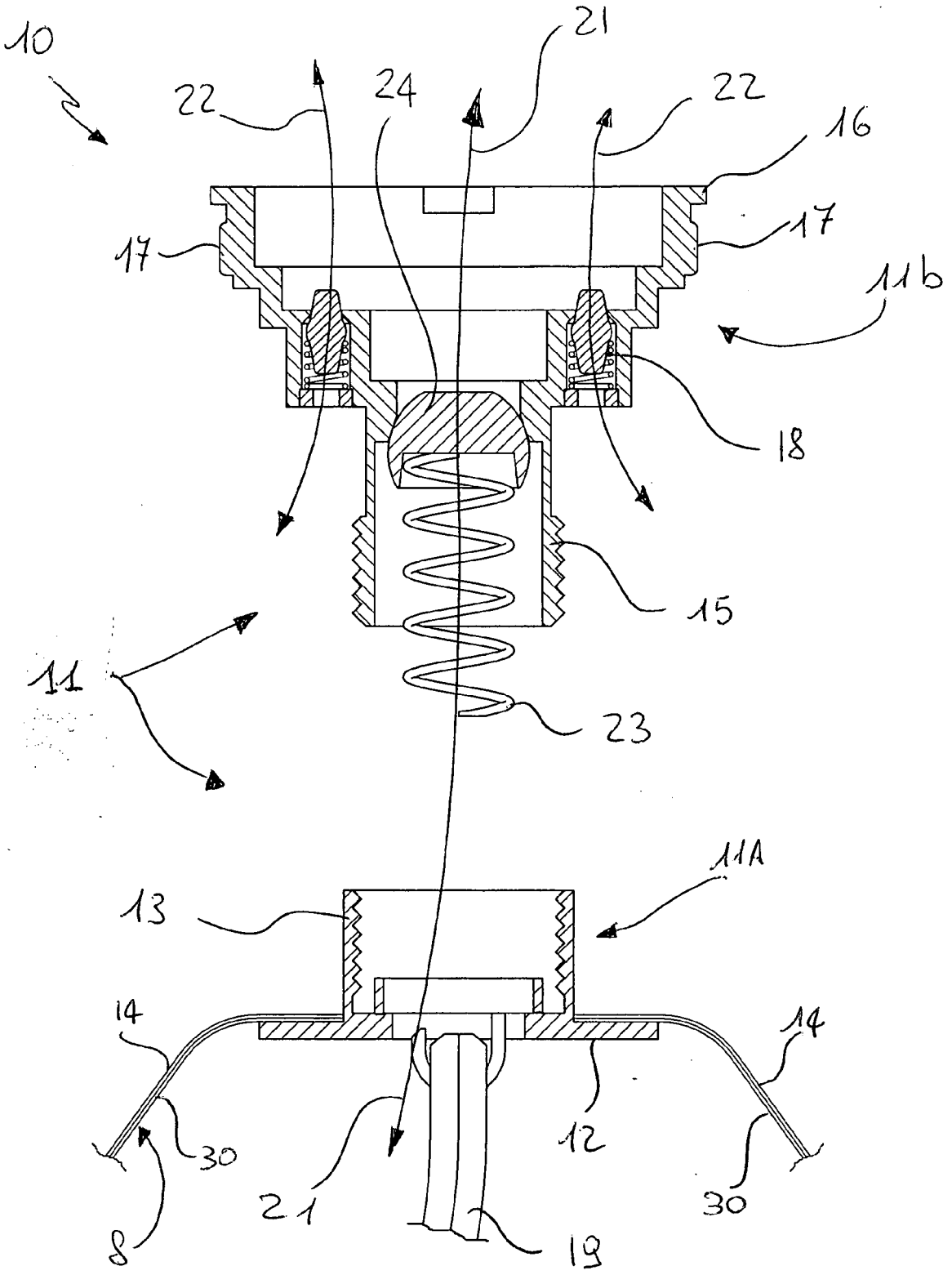


FIG 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5937

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2004/022440 A (SMQ GROUP B.V; DE MUINCK, EBO, JACQUES) 18 March 2004 (2004-03-18)	1-5	INV. B65D77/06 B65D23/02
Y	* page 13, line 29 - page 14, line 27; figure 5 *	6,7	
Y	WO 91/10604 A (THE COCA-COLA COMPANY) 25 July 1991 (1991-07-25) * page 4, lines 8-26 *	6,7	
A	US 3 363 807 A (POWELL HOWARD P) 16 January 1968 (1968-01-16) * column 4, line 24; figures 1,3,4,9 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
Munich	25 April 2006	Cazacu, C

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

EPO FORM 1503 03.82 (P04C01)

European Patent Office

Application Number
EP 05 42 5937

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-7

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 05 42 5937

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-7

construction of the inner container
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2. claims: 8-9

construction of the outer container
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3. claims: 10-11

delivery means

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 42 5937

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-04-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004022440 A	18-03-2004	AU 2003252583 A1	29-03-2004
		NL 1021401 C2	08-03-2004
WO 9110604 A	25-07-1991	AU 7245791 A	05-08-1991
US 3363807 A	16-01-1968	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82