



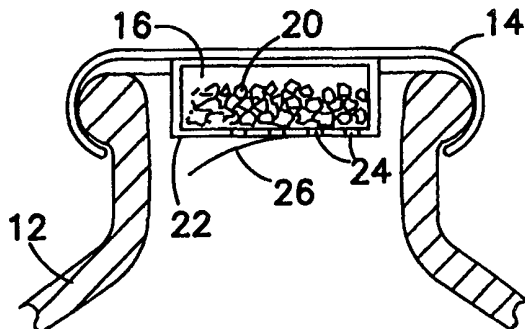
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<p>(21) International Application Number: PCT/US99/16020</p> <p>(22) International Filing Date: 14 July 1999 (14.07.99)</p> <p>(30) Priority Data: 09/138,452 21 August 1998 (21.08.98) US</p> <p>(71)(72) Applicant and Inventor: IGGULDEN, Jerry [US/US]; 21600 Cleardale Street, Santa Clarita, CA 91321 (US).</p> <p>(74) Agents: HOOVER, George, W. et al.; Blakely, Sokoloff, Taylor & Zafman, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025-1026 (US).</p>	<p>(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p>	

(54) Title: METHOD AND APPARATUS FOR COMBINING AN ADDITIVE WITH A LIQUID

(57) Abstract

A container (12) for a liquid has a cap or lid (14) with a compartment (16) for storing a liquid-soluble additive (20). The contents of the compartment may be selectively mixed with the liquid to a desired degree of concentration by a consumer. As provided to the consumer, the contents of the compartment are separated from the liquid with a seal (26). When the consumer wishes to mix the liquid and the additive, the seal is removed to expose the contents of the compartment to the liquid. The container is agitated until the desired amount of additive has been dissolved.



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**METHOD AND APPARATUS FOR COMBINING
AN ADDITIVE WITH A LIQUID**

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

This invention relates generally to the field of containers for liquids. More particularly, the invention relates to a container having a selectively openable compartment for an additive to be combined with the liquid.

2. PRIOR ART

It is well-known that there is great diversity in the taste preferences of humans. This can be observed, for example, in the context of sweetened beverages, such as iced tea. Some people prefer iced tea unsweetened, whereas others prefer a very sweet drink. This poses a dilemma for manufacturers of bottled beverages, since any degree of sweetness in the bottled beverage will inevitably prove to be too sweet for some and not sweet enough for others. Since one of the principal reasons for purchasing a bottled beverage is convenience, consumers will frequently not have a supply of sweetener readily available to add to a bottled beverage in order to achieve a desired degree of sweetness.

One prior art approach for adding a desired amount of sweetener to a beverage involves the use of sugar or other sweetener in the form of a stick that is used to stir the beverage. The more the beverage is stirred, the more sweetener is dissolved. A variation on this approach is disclosed in U.S. Patent No. 5,440,976 issued to Giuliano, et al. This patent discloses a stirring stick that stores

granulated sugar or artificial sweetener within a plurality of perforated compartments. The stick is extended from a protective sleeve to expose the desired number of compartments. When the beverage is stirred, the sweetener within the exposed compartments is dissolved in the beverage.

Various types of compartmented containers are known for separately storing ingredients that are later mixed within the container and consumed. For example, U.S. Patent No. 3,779,372 issued to de Lloret discloses a dual container for separately storing two components of a mixed drink. The container has a main compartment containing a first beverage and a hollow cap for the main compartment which contains a second beverage. A pointed lever attached to a pull ring is used to rupture the hollow cap and dispense the second beverage into the first.

U.S. Patent No. 5,529,179 issued to Hanson discloses a dispensing lid for a beverage container, such as a Styrofoam coffee cup. The lid incorporates a plurality of frangible vessels containing condiments which are ordinarily added to popular beverages. Application of finger pressure to the top of the vessel ruptures the underside and dispenses the contents into the beverage container.

U.S. Patent No. 5,052,553 issued to De Sanctis discloses a container for a food, such as yogurt, having a cover with a plurality of frangible compartments. The compartments contain an additive, such as gelatin, which is intended to be added to the food in the container. As the cover is removed from the container, the compartments are ruptured and the contents thereof are automatically dispensed into the container.

U.S. Patent No. 4,195,730 issued to Hunt discloses a cap for a bottle-shaped beverage container. The cap includes a compartment that holds a material

to be added to the beverage, such as a flavoring. As the cap is removed, the compartment is automatically opened and the contents are dispensed into the beverage container.

U.S. Patent No. 5,772,017 issued to Kang discloses a beverage container and cap somewhat similar to that of Hunt. The cap of Kang's device includes a plunger that can be screwed down or pressed down to open a pop-out lid on the bottom of a compartment that holds an ingredient to be added to the beverage.

All of the known prior art container designs for separately storing a beverage or the like and an ingredient to be added thereto automatically dispense the entire amount of the ingredient. None of these container designs permits a consumer to mix the ingredients in proportions other than that established at the time the ingredients were packaged in the container.

SUMMARY OF THE INVENTION

The present invention provides a container for storing both a liquid and a liquid-soluble additive that may be selectively mixed to a desired degree of concentration by a consumer. An exemplary embodiment of the invention provides a beverage container for storing an unsweetened and/or unflavored beverage. A lid for the container has a compartment for storing a beverage sweetener and/or flavoring disposed on the underside thereof. The compartment has a plurality of small holes or equivalent means for admitting the beverage into the interior of the compartment. The beverage sweetener and/or flavoring is contained within the compartment in the form of a pellet or relatively large granules that will not pass through the holes. The holes in the compartment are sealed with a peel-off cover. Prior to the time of consumption, the consumer removes the lid from the beverage container and removes the peel-off cover. The lid is then replaced and the container is shaken until a desired quantity of the beverage sweetener and/or flavoring has been dissolved in the beverage. Separate compartments may be provided for different beverage additives.

In an alternative embodiment of the invention, the compartment is sealed with a movable cover. The cover has one or more apertures that can be moved into alignment with apertures in the wall of the compartment, thereby exposing the contents of the compartment. The cover can be moved to regulate the degree of such exposure and can also be moved to re-seal the compartment.

In another alternative embodiment of the invention, the lid is offered to the consumer separate from the beverage itself. Still other alternative embodiments provide individual storage compartments for a plurality of additives, dispense liquid additives, and are integrally molded within a wall of the container.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a cross-sectional view of a first embodiment of the present invention.

Figure 2 illustrates an alternative embodiment of the present invention.

Figure 3 is a cross-sectional view of another alternative embodiment of the present invention.

Figure 4 illustrates another alternative embodiment of the present invention having multiple storage compartments.

Figure 5 is a cross-sectional view of another alternative embodiment of the present invention.

Figure 6 is a cross-sectional view of another embodiment of the present invention wherein storage compartments are molded into a container wall.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, for purposes of explanation and not limitation, specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that the present invention may be practiced in other embodiments that depart from these specific details. In other instances, detailed descriptions of well-known methods and devices are omitted so as to not obscure the description of the present invention with unnecessary detail.

Figure 1 illustrates an exemplary embodiment of the present invention for use with a beverage container, such as bottle **12**. A lid **14** forms a leak-resistant seal against the neck of bottle **12** and is held in place by a threaded coupling, snap-on fitting or equivalent means. A storage compartment **16** is secured to the underside of lid **14** with a suitable adhesive or other equivalent means. Compartment **16** contains a beverage additive such as sweetener **20** in the form of a tablet or large granules. Wall **22** of compartment **16**, which faces towards the interior of bottle **12**, is perforated with holes **24**. These holes are sealed by a peel-off cover **26**.

The beverage in bottle **12** is provided to the consumer in an unsweetened form. If the consumer wishes to add sweetener, the consumer removes lid **14** and peels off cover **26** to expose holes **24**. Lid **14** is then replaced on bottle **12** and tightened to reestablish a leak-resistant seal. Bottle **12** is then gently shaken, allowing the beverage to enter compartment **16** and mix with sweetener **20**. Agitation of the beverage allows sweetener **20** to dissolve therein, the amount dissolved being roughly proportional to the amount of agitation. The consumer

can thus add any desired amount of sweetener prior to consuming the beverage in bottle **12**.

Figure 2 illustrates a modification of the above-described embodiment. The storage compartment is substantially identical to that of the previously described embodiment, but is not sealed with a peel-off cover. Instead, cover **30** is rotatably attached to the compartment. Cover **30** has a plurality of apertures **32**, which may be selectively aligned with the underlying holes **24** in the storage compartment. Preferably, the apertures **32** and/or holes **24** are configured so that the area of the openings into the interior of the storage compartment may be varied by rotation of cover **30**. Cover **30** also permits holes **24** to be resealed once the desired amount of sweetener **20** or other beverage additive has been dissolved. Thus, if the beverage container is subsequently transported or otherwise subjected to agitation, additional sweetener will not be inadvertently dissolved in the beverage.

Figure 3 illustrates another alternative embodiment of the present invention. In this embodiment, lid or cap **50** is intended for use as an accessory to a separately bottled beverage. For example, cap **50** may contain a flavoring that is added to an unflavored beverage, such as bottled water. Cap **50** may also be used to add an additional flavoring to a flavored beverage, such as a cola or the like. A display of caps **50** containing a variety of flavorings may thus be advantageously placed in retail establishments in proximity to bottled waters and other beverages.

Cap **50** preferably has a plurality of internally threaded portions, such as **52** and **54**, to permit cap **50** to be applied to a variety of beverage containers. A compartment **56** contains a flavoring or other beverage additive **60**. Compartment **56** includes a plurality of openings **58**. As in the previously described

embodiment, additive **60** is preferably in the form of a tablet or large granules which will not readily pass through openings **58**.

To use cap **50**, the consumer first removes the cap with which the beverage container is sealed. Cap **50** is then applied to the top of the beverage container. In the case of non-carbonated beverages, the container may be gently shaken to dissolve a portion of additive **60** into the beverage. In the case of a carbonated beverage, the container may be simply inverted to permit additive **60** to mix with the beverage. In either case, the amount of additive **60** that is dissolved is readily controlled by the consumer.

Since cap **50** is not supplied to the consumer as part of a beverage container, the sealing requirements for compartment **56** are not as severe as the previously described embodiments. For example, cap **50** could be offered in a "blister" package which would protect the contents of compartment **56**. Alternatively, a protective cover could be retained by threaded portions **52** or **54**.

Figure 4 illustrates yet another embodiment of the present invention. Lid **70**, the underside of which is shown, is generally similar to lid **14** described above. A storage compartment **72** is secured to the underside of lid **70** with a suitable adhesive or other equivalent means. Compartment **72** is divided into a plurality of individual compartments **74**. These individual compartments may be used to store portions of a single additive or may be advantageously used to store a plurality of additives. For example, some of compartments **74** may be used to store a sweetener, whereas others may be used to store a flavoring. Alternatively, some of compartments **74** may be used to store a natural sweetener, whereas others may be used to store an artificial sweetener.

Storage compartments **74** are sealed with a peel-off cover **76** as in the embodiment first described above. Cover **76** includes perforations **78** which align with the individual storage compartments **74** so that the cover may be selectively removed from any one or more of the individual storage compartments. Since there are a plurality of individual compartments **74**, the additive stored therein may be in the form of a powder or a liquid, all of which will be dispensed into the container when the corresponding portion of cover **76** is removed. The user can regulate the amount of additive used by selectively exposing some or all of the individual compartments **74**.

Still another embodiment of the present invention is illustrated in **Figure 5**. Lid **80** is particularly adapted for storing an additive **84** in the form of a liquid or viscous gel. Additive **84** is contained in a pliable capsule **82** which is secured to lid **80**. A portion **86** of the capsule wall on the underside of lid **80** is thinned and/or provided with a pinhole opening. Application of finger pressure to the top of capsule **82** forces a portion of additive **84** into container **12**. Repeated or extended pressure on the top of capsule **82** increases the amount of additive **84** dispensed, and thus the amount may be readily controlled by the user.

Referring to **Figure 6**, another embodiment of the present invention is shown. Container **90** for a beverage or other liquid is molded of a suitable plastic material. One or more storage compartments **92** are molded into the container wall in a suitable location. For example, storage compartments **92** may be molded into the "feet" that are commonly provided on larger bottles of soda and other beverages. As with the last-described embodiment, a portion **96** of the wall of storage compartment **92** is thinned and/or provided with a pinhole for dispensing additive **94**. Finger pressure applied to the bottom or sides of storage

compartment **92** forces a portion of additive **94** to be dispensed into the main volume of container **90**.

The foregoing embodiments of the invention have been generally described in the context of sweetener and/or flavoring additives for beverages. However, the invention is not limited in this regard. The invention may also be utilized in other applications requiring the mixture of a liquid and a liquid-soluble additive. Such other applications may include, without limitation, other types of food products, food colorings, pharmaceuticals, cosmetics, paints, etc.

It will be recognized that the above described invention may be embodied in other specific forms without departing from the spirit or essential characteristics of the disclosure. Thus, it is understood that the invention is not to be limited by the foregoing illustrative details, but rather is to be defined by the appended claims.

CLAIMS

WHAT IS CLAIMED IS:

1. A lid for a liquid container comprising:
means for establishing a leak-resistant seal with a liquid container;
a compartment having an outer wall with at least one aperture therein;
an additive stored within the compartment, at least a portion of the additive having dimensions to prevent passage through the aperture.
2. The device of claim 1 wherein said at least one aperture is one of a plurality of apertures perforating the outer wall.
3. The device of claim 1 further comprising means for at least partially sealing the aperture.
4. The device of claim 3 wherein the means for at least partially sealing the aperture comprises a peel-off cover.
5. The device of claim 3 wherein the means for at least partially sealing the aperture comprises a movable cover.

6. The device of claim 1 wherein the additive is granulated.
7. The device of claim 1 wherein the additive comprises a tablet.
8. The device of claim 1 wherein the liquid is a beverage.
9. The device of claim 8 wherein the additive is a sweetener.
10. The device of claim 9 wherein the sweetener is a natural sweetener.
11. The device of claim 9 wherein the sweetener is an artificial sweetener.
12. The device of claim 8 wherein the additive is a flavoring.
13. The device of claim 1 wherein the means for establishing a leak-resistant seal comprises means for engaging threads on a neck of a liquid container.

14. The device of claim 1 wherein the compartment is one of a plurality of compartments, each containing an additive.

15. The device of claim 14 wherein one of the plurality of compartments contains an additive different from the additive contained in another of the plurality of compartments.

16. A method of combining a beverage and a beverage additive comprising the steps of:

providing a container for the beverage;

providing a lid for the container, said lid having means for establishing a substantially leak-proof seal with the container, said lid further having a compartment;

providing a beverage additive stored in the compartment;

removing the lid from the container;

exposing the beverage additive stored in the compartment;

replacing the lid on the container;

agitating the container to place the exposed beverage additive in contact with the beverage, thereby dissolving a portion of the beverage additive in the beverage.

17. The method of claim 16 wherein the step of exposing the additive comprises removing a peel-off cover from the compartment.

18. The method of claim 16 wherein the step of exposing the additive comprises moving a cover that is movably coupled to the compartment.

19. A lid for a liquid container comprising:
means for establishing a leak-resistant seal with a liquid container;
a plurality of compartments, each of the compartments containing an additive;
means for sealing each of the plurality of compartments, said means for sealing being selectively removable from selected ones of the plurality of compartments.

20. The device of claim 19 wherein the means for sealing comprises a peel-off cover.

21. The device of claim 20 wherein the peel-off cover is perforated between adjacent ones of the plurality of compartments.

22. A lid for liquid container comprising:
means for establishing a leak-resistant seal with a liquid container;
a pliable capsule secured to the lid, said capsule containing an additive and having a wall portion adapted to dispense the additive into the liquid container upon application of pressure to the capsule.

23. The device of claim 22 wherein the additive is a liquid.

24. The device of claim 22 wherein the additive is a gel.

25. The device of claim 22 wherein the capsule has a pressure-application surface disposed above an upper surface of the lid and wherein the wall portion adapted to dispense the additive is disposed below a lower surface of the lid.

26. The device of claim 22 wherein the wall portion adapted to dispense the additive contains a pinhole.

27. A liquid container comprising:
a container wall defining a main volume;
at least one compartment integral with the container wall;
an additive stored within the compartment;
said container wall having a portion adapted to dispense the additive into the main volume upon application of external pressure to the compartment.

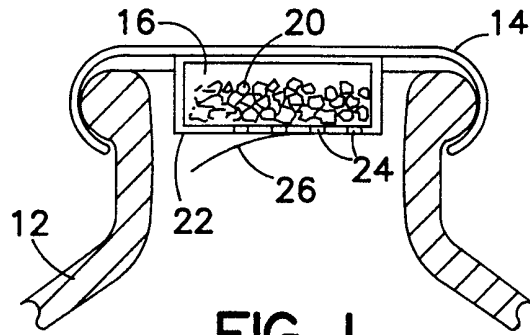


FIG. 1

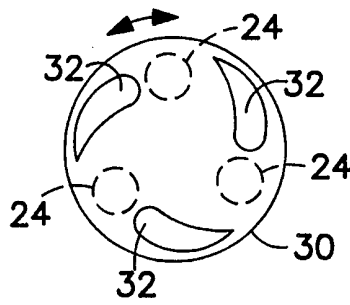


FIG. 2

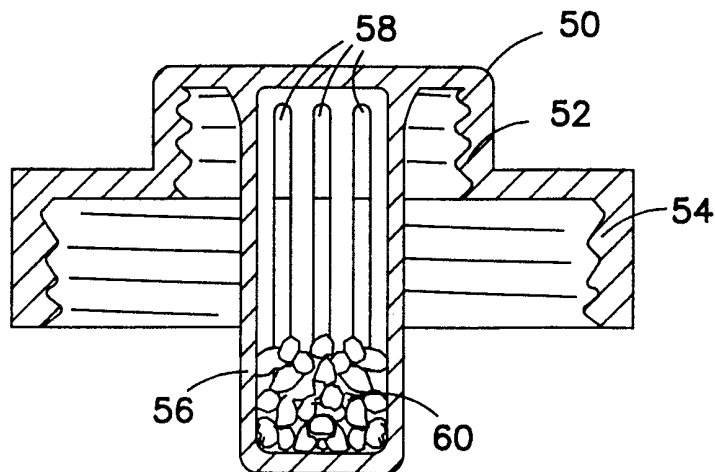


FIG. 3

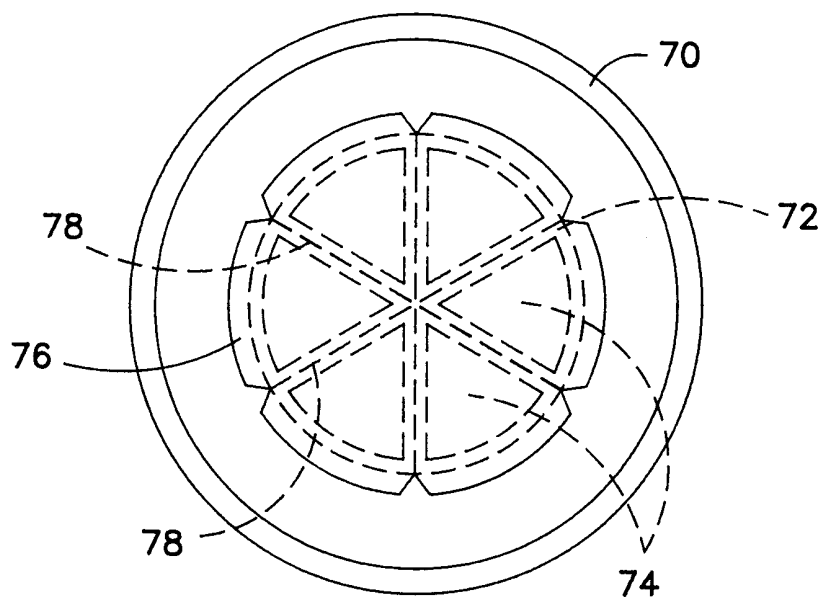


FIG. 4

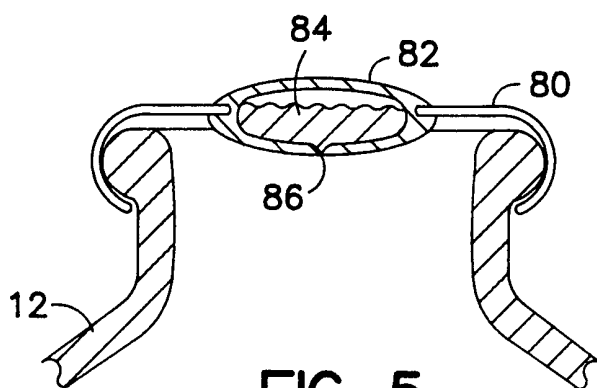


FIG. 5

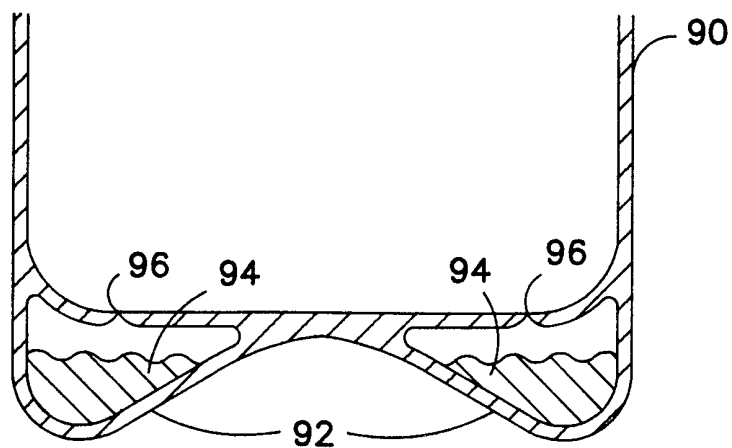


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/16020

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : B65D 41/00, 25/08, 21/00, 39/08, 81/32

US CL : 426/ 86, 112, 115, 120

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 426/ 86, 112, 115, 120

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,824,010 A (PEDERSEN) 18 FEBUARY 1958, Figs. 1, and 2, col. 2, lines 30-40.	1, 3-4, 8, 12, 22, 25, 26
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Y		2, 5, 7, 13, 6,9, 10, 11, 14-15, 20, 21, 23, 24
X	US 3,326,363 A (BENNETT ET AL) 20 JUNE 1967, figs. 4-6, col. 3, lines 20-25	19
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Y		20-21
X	US 5,052,553 A (DE SANCTIS) 1 OCTOBER 1991, figs. 1-6, col. 3, lines 60-62, col. 4, lines 50+	16-18
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Y		20-21, 24

 Further documents are listed in the continuation of Box C.
 See patent family annex.

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Authorized officer:

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3,643,831 A (CASPER) 22 FEBUARY 1972, fig. 1	5
Y	US 4,785,931 A (WEIR ET AL) 22 NOVEMBER 1988, col. 2, lines 45-50	7
Y	US 4,195,730 A (HUNT) 1 APRIL 1980, abstract, col. 4, lines 50-55	13
Y	US 5,529,179 A (HANSON) 25 JUNE 1996, fig. 2, col. 1, lines 20+	6, 9, 10, 11, 14-15, 23
X	US 3,040,897 A (HOLMAN) 26 JUNE 1962, figs. 1-12	27