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(71) Applicant: **Hau, Pakman**
Shenzhen, Guangdong 518031 (CN)

(72) Inventor: **Hau, Pakman**
Shenzhen, Guangdong 518031 (CN)

(74) Representative: **Langley, Peter James**
Origin Limited,
52 Muswell Hill Road
London N10 3JR (GB)

(54) **BEVERAGE CONTAINER FOR SEALED BEVERAGE AND SPOUT PLUG THEREFOR**

(57) A beverage container (5) for sealed beverage is totally or partially made of antibacterial packing paper on which two or more openable closed holes (1, 3) are provided. When opened, one (3) of the closed holes (1, 3) is adapted to communicate the beverage in the container with an atmosphere, the other one (1) or the others to expeditely pour the beverage out. A spout plug (21, 22; 31; 41; 51; 61) is used to open and close said beverage container, which mates tightly with said holes of the beverage container and can be used again and again. The spout plug can be provided with a through hole, or screw threads or tapered threads, or fastening screws with an inclined plane, which can be used in a form of a piece with two heads or in a combining form with two or more pieces. The inventive container and the spout plug are more sanitarian, safer and more convenient in use.

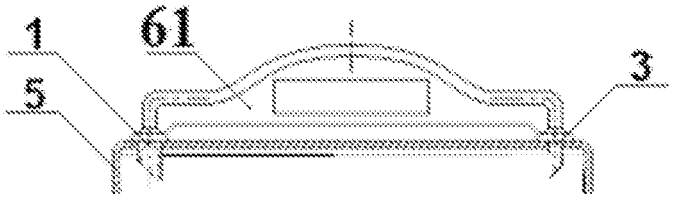

FIG 6C

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Description

Field of Invention

[0001] The present invention relates to a beverage container for sealed beverage, and in particular to a beverage container for sealed beverage on which two or more holes are provided and a spout plug thereof.

Background of the Invention

[0002] At present, when beverage products/liquid food products sealed in beverage containers, including those that need to be stored in the refrigerator to keep fresh, or those that are antibacterial, fresh-keeping and allowed to be stored under normal room temperature and light, or those contained in sealed aluminum cans, metal cans, glass bottles, plastic bottles, etc., need to be poured out, the following several ways/methods are used:

A) At present, many beverage containers are made of a kind of composite paper, which is combined with paper, aluminum foil, and multiple inter-layers of plastic films. The aluminum foil can keep off light to prevent oxidizing; the paper possesses certain hardness; the multiple plastic films are agglutinated, printed and pressed with the food- protection-level film forming the inner-surface. This package material produced with inter-layers will be referred to as "composite paper" or "antibacterial paper" in the following text. During the process of producing the antibacterial paper, first, a round hole is punched on the paper layer that will be positioned at the top of a container to be produced. The diameter of the hole is slightly bigger than that of a straw. Then, after punching, the packing composite paper is formed by pressing the paper layer with other composite inter-layers of materials. So the consumer only needs to use a straw to penetrate the aluminum foil and plastic film of the composite packaging material for the purpose of drinking. Since the aluminum foil keeps off sunlight and oxygen, only if the package and the beverage therein have been sterilized, the beverage in the sealed-up package can keep fresh under normal temperature for more than 6 months without the need to be kept in a refrigerator. The most typical product is the beverage sterilized by UHT or HTST and contained in the cubic packing boxes made of said material. However, if it is necessary to pour the beverage out of the paper package into a cup, a corner of the package needs to be cut off with scissors. But the paper package cannot be sealed up again once it is opened. Therefore, this method only applies to drinking with a straw, or pouring out all contained beverage for consumption. And for such purposes apparently only small packages are suitable. Besides, it is not always easy to find a pair of scissors.

B) A round bottle mouth and a cover are provided on a beverage container, which enable the beverage to be poured out of the container many times if the cover is turned off and also in some instances the film sealing up the bottle mouth is torn off. This method is often used for big-capacity containers for drinks like milk, soybean milk and fruit juice. And usually a plastic screw cap is added on the mouth at the top of the packing box. It is easy to open the cap and pour out the drink repeatedly. However, as the materials of the additional plastic cap and the packing box are different, which are plastic and paper respectively in this case, the tightness and the reliability of long time sealing are difficult to guarantee. Therefore, beverages in such packages are only suitable for being kept in refrigerators. Pasteurized milk is a good example. However, it will increase the packing cost if an antibacterial fresh-keeping package suitable for normal temperature and lamplight with a bottle mouth and a cap added is designed and made.

C) Of cubic packages made of antibacterial paper, a big-capacity container of beverage can contain many cups at one time, or be consumed by one person for several times. The method mentioned in the above Part A can then be used, where the package is cut for pouring the beverage, but in this case the re-sealing is impossible and the beverage left in the container can hardly be kept fresh. To solve this problem, one invention is to provide a "pouring-spout device" on one of the corners at the top of the antibacterial paper cubic container. When serving the beverage, first open the plastic cover on the pouring-spout device, and then, for one design, tear off the fresh-keeping film sealing up the pouring-spout, and for the other, press down a plastic piece to break the bacteria-free paper at the position of the hole to open the beverage pouring-spout. Anyway, once the beverage spout is open, it is allowed to pour out the beverage out of the container by the assistance (guide) of the spout. When there is no need to pour the beverage, the plastic cover of the device can be buckled back to cover the opening of the container. The biggest problem of this device is sanitation:

(1) To tear off the fresh-keeping film on the sealed spout with fingers (putting aside the sealing reliability of the fresh-keeping paper itself), or in case of the other design, to press the plastic piece to break the bacteria-free paper at the position of the hole, will invariably leave hidden dangers of sanitation, once the fingers (for example, of a waiter or waitress in a restaurant) are not clean, i.e. covered with bacteria.

(2) Another even bigger hidden trouble of insanitation exists in the transportation and storage of such packages. Once dirty water (body fluid,

secretion of animals, birds or insects), dust, and unsafe materials (including those purposely involved in crimes) flow or fall on said "pouring-spout device", remain in the clearance between the device and its bacteria-free layer and the edges and corners of the complicated-shaped device, these dirty things will be flushed into the beverage when opening the spout device to pour out the beverage. This is obviously unsanitary and unsafe and will endanger the health of beverage drinkers.

D) Among packages made of bacteria-free paper, there is also a kind of box package sealed up with a tag on the top thereof, which can be torn off by hand. After tearing open a "peach-shaped" opening, it is possible to drink either by putting the box against the mouth or by inserting a straw into the box. For the sake of sanitation, this sealing-tag made of aluminum foil is not fixed to the opening of the box by glue or self-contained adhesive. Instead, it is directly combined (interlayer adhesion) to the plastic film "suitable for food packing" which is the inner most layer of the package by following the antibacterial principle of above-said antibacterial paper. Once the tag is torn off, it is impossible to "stick" it up again to restore the cover. Therefore, this design is mostly used for beverages in small packages.

E) Usually for beverages packed in aluminum cans, a lift-ring type tear-off lid is provided. The lid and body of the can are produced separately, and the can is filled before sealing. Between the round plate of the lid and the cylindrical can body, there is a circular pressing-processed groove and a circular seam, and meanwhile, a clearance between the lift-ring device on the round plate and the round plate itself. The groove, seam and clearance are the places to keep dirt. So it is extremely unsanitary for a consumer to drink by putting the can against his mouth. Even if the beverage is poured into cups, it is the same unsanitary, for the beverage passes the groove and the seam on the top. Therefore the can is more suitable for drinking with a straw, rather than for drinking by putting the can against the mouth or by pouring out the beverage from the can.

F) Said aluminum round plate with the lift-ring type tear-off device described in the above Part E is also pressed and fixed into a plastic cylindrical wide-mouthed bottle, to form another kind of package container. Since the design of the lift-ring type tear-off device is the same as that of said aluminum can described in the above Part D, the problems of insanitation can not be avoided either.

[0003] Said aluminum round plate with the lift-ring type tear-off device described in the above Part E is also designed to be made of thin iron, and pressed onto a container punched out from thin iron (a food can, for example) to form another kind of beverage package container. Since the design of the lift-ring type tear-off device is the same as that of said aluminum can described in the above Part D, with only the change of the materials, the problems of insanitation can not be avoided either.

[0004] To solve the problems existing with the present beverage containers, it is very necessary to design a new packing form which makes it possible to pour beverage many times in a more sanitary and more convenient way.

Summary of the invention

[0005] The present invention is made for overcoming the above-mentioned problems, and the object of the present invention is to provide a beverage container and a spout plug for sealed-up beverage, which can make beverage consumption more sanitary, safer and more convenient.

[0006] The solution of the present invention for the achieving of the above goal is: on the beverage container totally made of antibacterial packing paper or partially made of antibacterial packing paper, prefabricate more than two (including two) sealed-up holes to be penetrated (opened) by the consumer. By "prefabricate", it is meant that during the process of producing the antibacterial paper, according to the designed number (more than two, including two), shape, size and position, the holes are punched (while the holes are small, the section circled by the closing curve of the hole is punched off), or the broken-lined outlines of the holes are punched (while the holes are bigger, the section circled by the closing curve of the hole is punched to form a broken-lined circle, the paper is cut, but the section circled is still linked to the paper, not totally punched off, only small fragments are punched off). Then, the punched paper is combined with other inter-layers of materials (aluminum foil and plastic film, for example) thus forming the composite packing paper, which is called antibacterial paper, too. The hardness of the prefabricated holes is very low, as there are only aluminum foil and plastic film closing the holes, which can be easily penetrated by the designed spout plug to be described in following text, and can be penetrated to form wanted shapes and sizes.

[0007] In the present invention, the more than two (including two) prefabricated sealed-up holes can be shaped round or non-round, and their sizes can be either identical or different. However, according to the different uses of the sealed-up holes, they can be classified into three kinds:

(1) The air hole: A hole used to let the beverage inside the container to get in touch with the atmosphere outside while the beverage is poured.

(2) The hole for pouring out the beverage: A hole used for pouring the beverage out by inclining the

container.

(3) The preparatory hole for pouring out the beverage: The "preparatory hole" for short in the following text, or the "third-kind hole" or more of the "sealed-up holes", all designed to increase the speed of pouring out the beverage. The consumer can either open the "preparatory hole" or keep it closed. Obviously, the more "preparatory holes" are opened, the higher the speed of pouring out the beverage is.

[0008] In the present invention, said hole for pouring out the beverage and air hole should be separated and located apart from each other as far as possible, whereas the preparatory hole for pouring out the beverage and the hole for pouring out the beverage should be located as close to each other as possible.

[0009] In the present invention, after the filling of the beverage and the sealing of the package, one or more "cleaning-keeping tags" are stuck on the more than two sealed-up holes prefabricated on the beverage container made of antibacterial composite packing paper, and the tags have the following features:

(1) The size of the tags is bigger than the sealed-up holes.

(2) The tag has on the periphery around itself plastic film with self-drying glue, or aluminum plastic composite film with glue, or plastic sticky film without glue, or transparent plastic adhesive film.

(3) Said tags can be printed with figures and characters, and can even be used for quality examination or for a sealing purpose.

The main use of these tags is to keep the sanitation of the prefabricated holes and their vicinities, and to prevent these parts from pollution during transportation and storage after production. But when the consumer needs to open the sealed-up holes, he first has to partially or totally lift these "cleaning-keeping tags" to expose the sealed-up holes, and he can then, use the spout plug to open the holes.

[0010] Another usage of these tags is to, after said air holes or holes for pouring out the beverage are opened, and when the beverage does not need to be poured out temporarily, cover the opened holes to keep the beverage left in the container sanitary on condition that the package container is kept vertically. However, since the tag does not keep off sunlight and oxygen completely, the beverage in the container can not keep fresh for long under normal room temperature.

[0011] Another technical solution proposed by the present invention is: the beverage container can be equipped with a device called "the spout plug", which is used to open said prefabricated holes on the beverage container for sealed beverage. Besides, the spout plug matches tightly the two holes of the beverage container in size and can be used repeatedly.

[0012] The spout plug has a sharpened end or blade, which is the special tool to open the sealed-up holes of the sealed container, and can open all of the prefabricated holes on the sealed beverage container completely made of antibacterial composite paper or partially made of antibacterial composite paper. The prefabricated holes for pouring out the beverage, air holes and preparatory holes for pouring out the beverage on said beverage package can be opened in an extremely easy and convenient way. The spout plug can also be used to plug said beverage container for said sealed beverage.

[0013] Said spout plug can be a spout plug with a through-hole, and the spout plug can be inserted into the hole for pouring out the beverage of the beverage container, and matches the hole tightly. When the beverage is being poured out of the beverage container, the mouth of the spout plug can help guide the pouring direction. The spout plug can be made into a threaded one having tapered threads or fastening screws with an inclined plane, which can be screwed into the hole for pouring out the beverage of the beverage container until it is completely fastened. A spout plug with a central through-hole such as a tube spout plug can be adopted, which is screwed into the hole for pouring out the beverage and matches the hole tightly, and when the beverage in the beverage container is poured out, the tube mouth of the central through-hole of the spout plug can help guide the direction of the beverage being poured out.

[0014] Said spout plug may be one piece, of which the two ends can be used respectively to plug the two opened sealed-up holes on the top of the beverage container. Said spout plug may be a combination of more than two (including two) pieces, of which the components can be used respectively to plug the two (or more than two) opened sealed-up holes on the top of the beverage container.

[0015] The spout plug of the present invention, no matter it is the one-piece type or the multi-piece type, has at least one piece that can be used to penetrate and insert said prefabricated hole for pouring out the beverage. And the spout plug included in the beverage container can either be inserted (while the spout plug is designed for insertion) or screwed (while it is designed for screwing) into the holes. And in both cases the spout plug matches the holes tightly. If there is a through-hole in the center of the spout plug for pouring the beverage out, the spout plug inserted or screwed depending on the different designs, can be used as a kind of "pot spout" to help guide the direction of the beverage being poured out of the container.

[0016] After said beverage package container is opened for pouring out some of the beverage, and when there is no need temporarily to pour out more, the spout plug can be used to plug the opened holes, or the central channel of the spout plug can be covered again, for the purpose of keeping sanitation. In the present invention,

the design of the beverage container equipped with the hole to pour out beverage and the spout plug to open the hole is easy for manipulation, and increases sanitation and safety.

[0017] The embodiments of the present invention will be further described with reference to the following accompanying drawings. These and other objectives and advantages of the present invention will become readily apparent upon further review of the following specification and drawings, and will become apparent to those skilled in the art.

Brief description of the drawings

[0018]

Figure 1A - Figure 1F are the design diagrams of the round-and-round connected-hole type beverage-pouring holes.

Figure 2A -Figure 2D are the diagrams of the first embodiment of the beverage container for sealed beverage with two holes and the spout plug.

Figure 3A, Figure 3B and Figure 3C are the diagrams of the second preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug.

Figure 4A, Figure 4B and Figure 4C are the diagrams of the third preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug.

Figure 5A, Figure 5B and Figure 5C are the diagrams of the fourth preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug.

Figure 6A - Figure 6C are the diagrams for the fifth preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug.

Figure 7A - Figure 7F are the design diagrams of the different shapes of the beverage spout holes and air holes.

Detailed Description of the Invention

[0019] The description of the embodiments will start with the round-shaped holes. This is because the round-shaped holes have advantages in terms of production cost, mold design and mold life, and they are simple and easy to accomplish. Therefore, for specific examples, the various embodiments of the round-shaped beverage-pouring hole and the matching spout plug will be discussed first. Then, the embodiments of non-round holes and their matching spout plugs will be described.

[0020] In the present invention, a preferred embodiment of the round-and-round connected-holes type beverage-pouring hole of the beverage container is as follows:

Round-shaped beverage-pouring holes are of good strength; the molds for making the holes can be easily made; the spout plug can be inserted through it in any direction; and the round hole is suitable for a threaded spout plug to be screwed in. So the design of the round-shaped beverage-pouring holes, including "the preparatory holes" is discussed first.

Figure 1A - Figure 1F are the design diagrams of the round-and-round connected-holes type beverage-pouring holes Wherein, 1 stands for a beverage-pouring hole, and 11 and 12 stand for "preparatory beverage-pouring holes". The diameters of the holes are the same D1, just in order to enable the convenient use the same spout plug, which can open all the beverage-pouring holes.

Figure 1A: There is only one beverage-pouring hole, without any "preparatory beverage-pouring hole".

Figure 1B: There is one beverage-pouring hole and one "preparatory beverage-pouring hole".

Figure 1C: There is one beverage-pouring hole and two "preparatory beverage-pouring holes", arranged in a straight line.

Figure 1D: There is one beverage-pouring hole, and two "preparatory beverage-pouring holes", arranged in a triangle.

Figure 1E: There is one beverage-pouring hole and two "preparatory beverage-pouring holes". Wherein, the two "preparatory beverage-pouring holes" form a round-and-round connected hole, and can be penetrated in turn.

Figure 1F: There is one beverage-pouring hole and two "preparatory beverage-pouring holes". Wherein, the two "preparatory beverage-pouring holes" can be penetrated in turn to form a connected hole formed by three round holes.

Figure 1A- Figure 1F show the design of several kinds of sealed-up holes for pouring out beverage used with the cylindrical spout plugs, which is simple, and easy to enforce.

[0021] The preferred embodiment of the spout plug of one set of two pieces used with the beverage container in the present invention is as follows:

Figure 2A -Figure 2D are the diagrams of the first

preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug. Wherein, the two spout plugs in one set are both cylindrical.

[0022] Showed specifically in Figure 2A are two connected cylindrical spout plugs 21 and 22 in a cleaning-keeping bag 9; Figure 2B shows two spout plugs connected by their ends and inserted into (covering) the beverage-pouring hole 1 and the air hole 3; Figure 2C shows two spout plugs separated from each other, which can pour out the beverage 6 from the container 5; Figure 2D shows that only the cylindrical spout plug 21 is inserted, and air 8 enters into the air hole 3 while the beverage is poured, and the beverage is poured out of the beverage-pouring hole 1, through the mouth 7 of the cylindrical spout plug 21.

[0023] Said spout plug consists of the cylindrical tube plug 21 for pouring the beverage and the cylindrical tube plug 22 for ventilation. The two cylindrical tube plugs can be connected by insertion to form a "C"-shaped accessory, and then packaged into a small plastic cleaning-keeping bag 9. What Figure 2A shows will be adhered onto the beverage container's outer surface as an accessory by the factory.

[0024] When the consumer wants to drink the beverage, he takes out said "C"-shaped accessory in Figure 2A, and inserts its two sharpened ends respectively into the readily-made sealed-up holes 1 and 3 on the top of beverage container 5. When the beverage is poured, as shown in Figure 2C, the cylindrical tube plug is separated into two pieces: the cylindrical tube plugs 21 and 22, respectively inserted into two holes 1 and 3 of the beverage container. And when the container is poured, the beverage comes out of the mouth 7 of the cylindrical tube plug 21, and meanwhile, air 8 enters through the hole of the other cylindrical tube plug. When the beverage does not need to be consumed temporarily, the two cylindrical tube plugs can be connected (by inserting 22 into 21) with their ends vertically inserted respectively into the two sealed-up holes 1 and 3 of the beverage container. In this way, the cylindrical tube plugs completely seal up the openings of the beverage container again.

[0025] It is necessary to mention that each of the two cylindrical tube plugs can be produced by the existing equipment for producing the current beverage straws in the same production principle, but of course, the diameter needs to be increased a lot.

[0026] When the beverage is poured, the cylindrical tube plug 22 for ventilation may not be inserted into the hole 3 in Figure 2C, and the beverage can be poured out (see Figure 2D) as well. While the beverage is being poured, the cylindrical tube plug 22 for ventilation can be reversed to have its longer section inserted into the beverage container. The advantage in reversing the cylindrical tube plug 22 for ventilation is obvious: it makes the section of the cylindrical tube plug for ventilation exposed outside the container shorter, and this makes it easier to manage the inclining degree of the container to have the beverage poured out properly.

[0027] Figure 3A, Figure 3B and Figure 3C are the diagrams of the second preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug. Wherein, the set of two pieces to work in combination consists: a screw-type spout plug with a "pot mouth" and a cylindrical tube plug.

[0028] Figure 3A shows the screw-type spout plug 31 with a "pot mouth" screwed tightly into the beverage spout 1, and the cylindrical tube plug inserted into the air hole 3. The set of two pieces is sealed into an accessory, a plastic cleaning-keeping bag 9. 311 is a double-bladed "razor" of the screw-type spout plug with a "pot mouth" to open the beverage-pouring hole. 312 is the threads, 313 is the "butterfly wings" to screw the spout plug with a "pot mouth" tightly into the beverage-pouring spout. Figure 3B shows the two spout plugs connected and inserted (covering) respectively into the beverage-pouring hole 1 and the air hole 3. Whereas Figure 3C shows the two spout plugs separated, where the beverage 6 in the container 5 can be poured out, and air 8 enters through the hole, and the beverage is poured out of the tube mouth 7.

[0029] The characteristic of this preferred embodiment is the spout plug of the beverage-pouring spout with a "pot mouth", which is a piece of molded plastic. It is screwed into the beverage-pouring hole 1 through the threaded mouth, and the section screwed in has the double-bladed razor 311 to open the preparatory sealed-up holes. The threads 312 at the threaded mouth is very short, and the plastic spout plug can be screwed in tightly or, to be more exact, fastened, only after it is screwed for 45 to 180 degrees. The "butterfly wings" 313 are designed to be fixed onto the screw-type spout plug 31 with a "pot mouth" to help fasten the spout plug. The butterfly wings 313 in a lied-down position are kept on the same plain as that of the bent spout plug in order to reduce the thickness of two objects when they are packed into the plastic cleaning-keeping bag 9 (see the thickness P-P in the perspective view in Figure 3A).

[0030] The through-hole of the screw-type spout plug with a "pot mouth" leads to the "pot mouth" for the beverage to be poured out from. When the beverage container in Figure 3C inclines leftward, air 8 enters through the hole, and meanwhile, the beverage is poured out through the tube hole 7. Same as the principle shown in Figure 2A-Figure 2D, when the beverage is poured out, the cylindrical tube plug 22 for ventilation in Figure 2A-Figure 2D may not be inserted. It may be reversed to have its longer section inserted into the air hole 3 of the beverage container 3.

[0031] When there is no need temporarily to pour out the beverage for consumption, the spout plug with a beverage-pouring mouth can be screwed inward, and then, insert one end of the cylindrical tube plug 22 into the "pot mouth" of the beverage-pouring spout, and the other end into the air hole 3 of the beverage container (see Figure

3B). In this way, the beverage container is sealed up again and the purpose of keeping sanitation is reached.

[0032] Figure 4A, Figure 4B and Figure 4C are the diagrams of the third preferred embodiment of the beverage container for sealed beverage with two holes and the spout plug. Wherein, the set of two pieces used consists of a plastic spout plug 41 with a dustpan-like mouth 411 and a cylindrical tube plug 22.

[0033] Figure 4A shows the plastic spout plug 41 with a dustpan-like beverage-pouring mouth 411 to be screwed tightly into the beverage-pouring hole 1, and the cylindrical tube plug 22 to be inserted into the air hole 3, both of which are packed before use in a plastic cleaning-keeping bag 9. Figure 4B shows the plastic spout plug 41 with a dustpan-like pouring mouth screwed into the beverage-pouring hole 1, and one end of the U-shaped cylindrical tube plug 22 inserted into (covering) the through-hole of the plastic spout plug 41 with a dustpan-like pouring mouth and the other end into the air hole 3. As shown in Figure 4C, when the beverage is poured, it comes out of 7, and air 8 enters through the air hole 3.

[0034] The characteristic of this preferred embodiment is the spout plug for the beverage-pouring hole, which is a plastic spout plug 41 made of molded plastic with a dustpan-like pouring mouth. The plastic spout plug with a dustpan-like pouring mouth is screwed through a threaded hole into the beverage-pouring hole 1. The section screwed in has a double-bladed razor to open the preparatory sealed-up holes, and the threads for screwing in is very short, so the plastic spout plug with a dustpan-like pouring mouth can be screwed in tightly or actually fastened by turning it for only 45-180 degrees. The other piece of the two-piece set is the U-shaped cylindrical tub plug 22, and the outer diameter of the cylindrical tube plug 22 matches tightly the inner hole of the plastic spout plug with a dustpan-like mouth. The set of two pieces is packed in a plastic cleaning-keeping bag 9.

[0035] The through-hole of the plastic spout plug with a dustpan-like mouth is the hole for pouring out the beverage. When the beverage container in Figure 4C is inclined leftward, air 8 enters through the air hole 3 in Figure 4C, and meanwhile, the beverage is poured out through the tube hole 7.

[0036] Same as the principle in said first and second preferred embodiments, when the beverage is poured, the cylindrical tube plug 22 may not be inserted, as shown in Figure 4C.

[0037] When there is no need temporarily to pour out the beverage for consumption, the left end of the U-shaped cylindrical tube plug 22 can be inserted into the plastic spout plug with a dustpan-like mouth, and meanwhile, the right end of the cylindrical tube plug 22 may be inserted into the air hole 3, as shown in Figure 4B. In this way, the cylindrical tube plug 22 is inserted into the beverage-pouring spout and the air hole at the same time, and thus the sanitation of the beverage 6 in the container is protected.

[0038] The embodiment of the one-piece double-hole spout plug used in the present invention is as follows:

Figure 5A, Figure 5B and Figure 5C are the diagrams of the fourth preferred embodiment of the beverage container for sealed beverage with two holes and a spout plug. This preferred embodiment shows the one-piece double-hole spout plug in the form of a bent tube.

Figure 5A shows the one-piece double-hole spout plug in the form of a bent tube 51 in the cleaning-keeping bag 9. The double-hole plug 51 is the simplest double-hole spout plug with both ends of its tube bent. Figure 5B shows the one-piece double-hole spout plug in the form of a bent tube 51 inserted into the beverage-pouring hole 1 and the air hole 3. Figure 5C shows that the beverage 6 is poured out of the container 5 through the beverage-pouring spout 1 after the double-hole spout plug in the form of a bent tube 51 is pulled off. The beverage 62 is poured out, and meanwhile, air 8 enters into the air hole 3.

Figure 6A-Figure 6D are the diagrams of the fifth preferred embodiment of the beverage container for sealed beverage with two holes and a spout plug. This preferred embodiment shows the shows the one-piece double-hole spout plug made of molded plastic.

Figure 6A shows the one-piece double-hole spout plug made of molded plastic in the cleaning-keeping bag 9. 661 is a "razor" of the one-piece double-hole spout plug made of molded plastic to open the beverage-pouring spout. 111 and 112 in Figure 6B are the sanitary tags stuck on the beverage-pouring spout 1 and the air hole 3 of the sealed container 5. In Figure 6C, the one-piece double-hole spout plug made of molded plastic 61 is inserted into the beverage-pouring hole 1 and the air hole 3. Please note that at this time, the sanitary tags 111 and 112 shown in Figure 6B have already been torn off before opening. In Figure 6D, the double-hole plug is pulled off, and the beverage 6 can be poured out of the container 5 through the beverage-pouring hole 1, and meanwhile, air 8 enters into the air hole 3.

Both Figure 5 and Figure 6 show the designs of the plastic one-piece double-hole spout plug. The characteristic thereof is that the two ends of the one-piece double-hole spout plug can seal up the beverage-pouring spout and the air hole at the same time.

Figure 5A shows the design of the one-piece double-hole spout plug in the form of a bent tube.

Figure 6A shows the design of the one-piece double-hole spout plug made of molded plastic.

[0039] In comparison, the advantages and disadvantages of the above two double-hole spout plugs are seen as follows:

a. The molded plastic double-hole spout plug in the form of a bent tube 51 in Figure 5A can be produced by the equipment for producing normal straws for drinking, and as an accessory, it is small and light. Furthermore, for small-capacity packages, on which the area needed for the beverage-pouring hole is smaller, the design of the tube double-hole spout plug is reasonable and practical. Of course, one end of the double-hole spout plug in the form of a bent tube 51, as the beverage-pouring hole, can be made thicker, which is not difficult technically.

b. The double-hole spout plug of casting plastic 61 in Figure 6A is produced with a plastic injector and mold. Its characteristic is that it may have a large variety of designs and shapes, and especially. It is possible to change the size and the shape of the two sealed-up holes to make the beverage-pouring hole much bigger than the air hole, which is very important when the beverage is a kind of liquid food of high viscosity. Besides, the beverage-pouring hole can be of a non-round shape. The details of this will be described in the following text and Figure 7 which show several different designs of the double-hole shape.

c. When there are several beverage-pouring holes, for example, 2 in Figure 1B, 3 in Figures 1C and 1D, or even more, the left-side plug of the double-hole spout plug 61 made of molded plastic in Figure 6A can be designed as a multi-headed spout plug that can be inserted into and block up all the beverage-pouring holes at one time. In order to make hole-opening convenient, all the sealed-up holes are made in the same size, that is, all of them can be opened by the right-side plug of the spout plug 61.

[0040] The disadvantage of the one piece double-hole spout plug is that the plugs are normally inserted instead of being screwed into the two holes of the container. However, for the package made of composite interlayer paper, the screw-in method can be adopted by designing the end for the "beverage-pouring hole" as a screwing and, whereas the other end of the double-hole spout plug can be inserted into the air hole by utilizing the flexible deformation of the paper packaging. Of course, the question of doing so is that the hole for pouring beverage must be a round hole to make the screwing possible. Obviously, ellipse, triangle, and other non-round abnormal shapes are not workable.

[0041] In the present invention, some preferred embodiments adopt different shapes of double-holes. Figure 7A-Figure 7F are the design diagrams of different shapes of beverage-pouring holes and air holes.

[0042] For the implementation of the double-hole spout plugs, Figure 7A -Figure 7F provide different shapes of several kinds for the beverage-pouring holes and air holes of the sealed beverage container, with the top of the package being rectangular. The design can be similar when the top of the package is round, square, or roof-shaped, or of other shapes. Figure 7A-Figure 7F are the top views of 6 kinds of different openings on the top of a rectangular paper packaging container. In the left top corners of the views are the beverage-pouring holes, while on the right are the air holes.

[0043] Except for the double round holes in Figure 7A, the beverage-pouring holes are non-round openings in all the designs. In Figure 7A- Figure 7F, the beverage-pouring holes are all much bigger than their corresponding air holes, and so the beverage, especially the liquid food of high viscosity, can be poured out much more easily. The two holes in each of the designs in Figure 7A-Figure 7F are located as distant to each other as possible, and the most distant design is in Figure 7F. In Figure 7B, 7D and 7F, the beverage-pouring holes are long and narrow, and this makes the thickness of the double-hole spout plug smaller, and consequently the spout plug, as an accessory, can be more easily attached to the side wall of a package box. Of course, to make the spout plug narrower, or to make thick parts thereof into narrow components that can be assembled, are both good ways to make flatter the accessory, the spout plug.

[0044] Although the air holes can be made into various different shapes, the air holes in the figures are all designed as round holes. This is because the cost for processing a mold for a round hole is lower, and the life of such a mold is longer.

[0045] In the present invention, the design of the beverage container with beverage-pouring holes and the spout plug makes actual manipulation easier, and increases sanitation and safety.

[0046] Of course, the present invention may have other embodiments, but it will be apparent to people skilled in the art that modifications may be made without departing from the spirit and substance of the invention, and all such modifications and equivalents thereof are intended to be covered by the following claims.

Claims

1. A beverage container for sealed beverage, wherein, said beverage container for sealed beverage is totally made of antibacterial packing paper or partially made of antibacterial packing paper, on the beverage container, more than two (including two) openable closed holes are provided, one of these holes is adapted to communicate the beverage in the container with air, whereas the other one or the others to smoothly pour the beverage out.

2. The beverage container for sealed beverage accord-

ing to claim 1, wherein said more than two (including two) openable sealed holes are shaped round or non-round, the size thereof can be the same or different.

3. The beverage container for sealed beverage according to claim 1 or 2, wherein said hole to communicate the beverage in the container with air is separated and far apart from the hole to pour the beverage out; whereas the holes to pour the beverage out, if more than one, are arranged next to each other or overlapped to form a connected hole.

4. The beverage container for sealed beverage according to claim 3, wherein after filling the beverage and sealing, a film tag is stuck onto the outer surface of the closed hole; said file tag which is bigger than the closed hole can be plastic film with self-drying glue on the periphery, or aluminum plastic composite film with glue on the periphery, or plastic sticky film without glue, or transparent plastic film; said film tag is printed with figures or characters and colors; when it is necessary to open the closed hole, the film tag should be lifted partially or totally to disclose said closed hole.

5. A spout plug of beverage container for sealed beverage, wherein the spout plug used to open and close said beverage container for sealed beverage has an inclined end or blade adapted to open all the closed holes on the antibacterial packing paper at the top of the beverage container, the spout plug mates tightly with the opened more than two (including two) holes of the beverage container, said spout plug can be used repeatedly.

6. The spout plug of beverage container for sealed beverage according to claim 5, wherein said spout plug is a spout plug with a through hole, or a spout plug with threads, or a spout plug having fastening screws with an inclined plane, or a tube spout plug with a center through hole, the end part of the spout plug mates tightly with said opening of the beverage container for sealed beverage to be plugged.

7. The spout plug of beverage container for sealed beverage according to claim 5 or 6, wherein said spout plug is a piece with two ends, both ends thereof can tightly plug into the two opened sealed holes on the top of beverage container respectively.

8. The spout plug of beverage container for sealed beverage according to claim 5 or 6, wherein said spout plug is a set consisting of more than two (including two) components, each of which can tightly plug into the two opened sealed holes on the top of beverage container respectively.

Amended claims under Art. 19.1 PCT

1. A beverage container for sealed beverage, wherein, said beverage container for sealed beverage is totally made of antibacterial packing paper or partially made of antibacterial packing paper, on the beverage container, two openable sealed holes are provided, open the sealed holes before pouring the beverage in the container, so that one of these holes is adapted to communicate the beverage in the container with air, whereas the other one to smoothly pour the beverage out, said two holes are separated and far apart from each other, the size of the hole to communicate the beverage in the container with air is smaller than the size of the hole used to pour the beverage out.

2. The beverage container for sealed beverage according to claim 1, wherein the shapes of said two openable sealed holes are round or triangle or polygon or abnormal.

3. A beverage container for sealed beverage, wherein, said beverage container for sealed beverage is totally made of antibacterial packing paper or partially made of antibacterial packing paper, on the beverage container, three or more than three openable sealed holes are provided, one of these holes is adapted to communicate the beverage in the container with air, whereas the others to smoothly pour the beverage out.

4. The beverage container for sealed beverage according to claim 3, wherein said hole to communicate the beverage in the container with air is separated and far apart from the holes to pour the beverage out, the holes to pour the beverage out are arranged next to each other or overlapped to form a connected hole.

5. The beverage container for sealed beverage according to claim 3 or 4, wherein said size of the hole to communicate the beverage in the container with air is smaller than the size of the hole to pour the beverage out.

6. A spout plug of beverage container for sealed beverage, wherein said spout plug is a two-piece connected spout plug that has an inclined end or blade, which is adapted to open and close all the sealed holes on the antibacterial packing paper at the top of the beverage container, the spout plug mates tightly with all or some of the opened holes of the beverage container, said spout plug can be used repeatedly.

7. The spout plug of beverage container for sealed beverage according to claim 6, wherein said spout

plug is a spout plug with a through hole, or a spout plug with threads, or a tube spout plug with a center through hole.

8. The spout plug of beverage container for sealed beverage according to claim 6 or 7, wherein the size of one end of said two-piece connected spout plug is bigger than that of the other end.

9. A spout plug of beverage container for sealed beverage, wherein said spout plug is a two-head spout plug that has an inclined end or blade, one of the ends has threads, which is adapted to open and close all the sealed holes on the antibacterial packing paper at the top of the beverage container, said spout plug mates tightly with all or some of the opened holes of the beverage container, said spout plug can be used repeatedly.

10. The spout plug of beverage container for sealed beverage according to claim 9, wherein said threads are tapered threads or fastening screws with an inclined plane.

11. The spout plug of beverage container for sealed beverage according to claim 10, wherein the size of one end of said two-head spout plug is bigger than that of the other end.

12. A cooperative structure of beverage container for sealed beverage and spout plug thereof, wherein, on top of said beverage container, two openable sealed holes are provided, one of these holes is adapted to communicate the beverage in the container with air, whereas the other one to smoothly pour the beverage out, said two holes are separated and far apart from each other, the size of the hole to communicate the beverage in the container with air is smaller than the size of the hole to pour the beverage out; said spout plug is a two-piece connected spout plug or two-head spout plug, the sizes and shapes of both ends of said spout plug mate with the size and shape of the holes of the beverage container, said spout plug is used to open and close the holes of the beverage container.

13. The cooperative structure of beverage container for sealed beverage and spout plug thereof according to claim 12, wherein said spout plug is a spout plug with threads and a through hole.

14. A cooperative structure of beverage container for sealed beverage and spout plug thereof, wherein, on the beverage container, three or more than three openable sealed holes are provided, one of these holes is adapted to communicate the beverage in the container with air, whereas the others to smoothly pour the beverage out; said spout plug is a two-piece connected spout plug or a two-head spout plug or a multi-head spout plug, the sizes and shapes of two or more ends of said spout plug mate with the size and shape of the holes of the beverage container, said spout plug is used to open and close all or some of the holes of the beverage container.

15. The cooperative structure of beverage container for sealed beverage and spout plug thereof according to claim 14, wherein said hole to communicate the beverage in the container with air is separated and far apart from the holes to pour the beverage out, said holes to pour the beverage out are arranged next to each other or overlapped to form a connected hole.

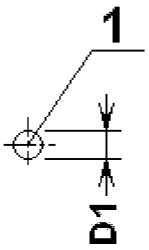

FIG 1A

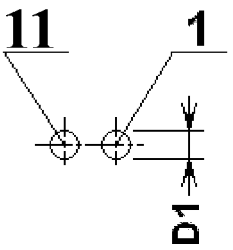

FIG 1B

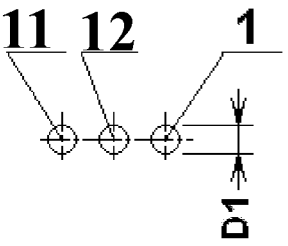

FIG 1C

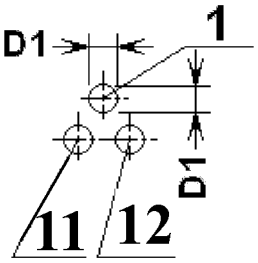

FIG 1D

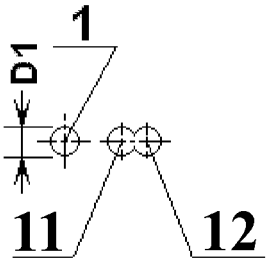

FIG 1E

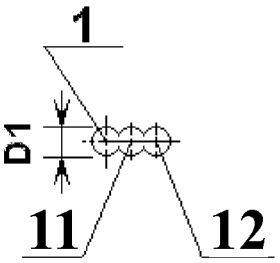

FIG 1F

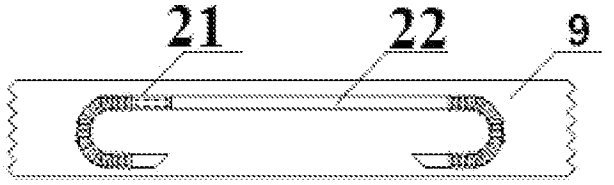

FIG 2A

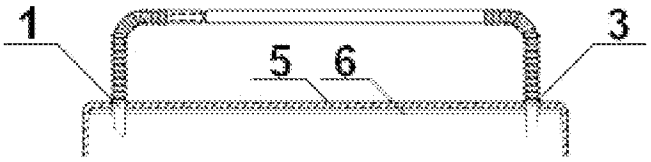

FIG 2B

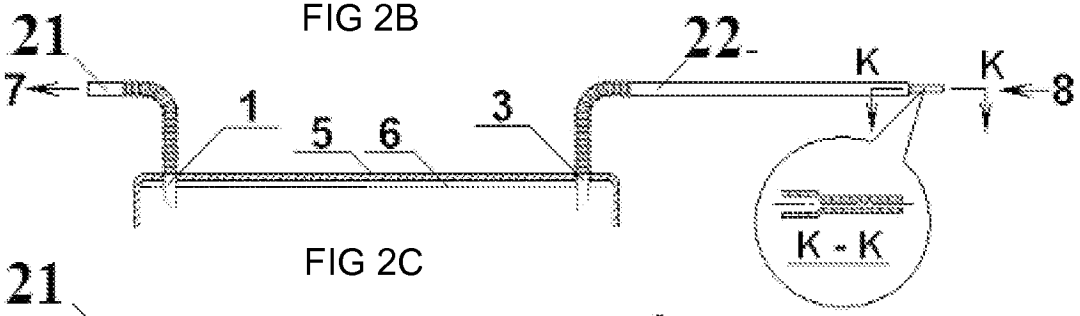

FIG 2C

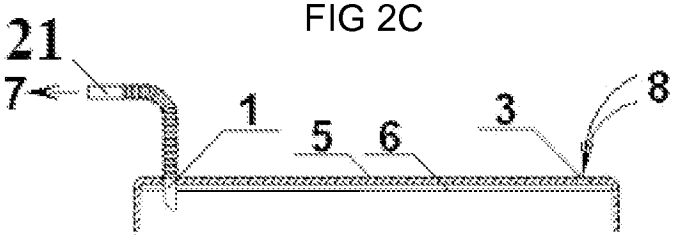

FIG 2D

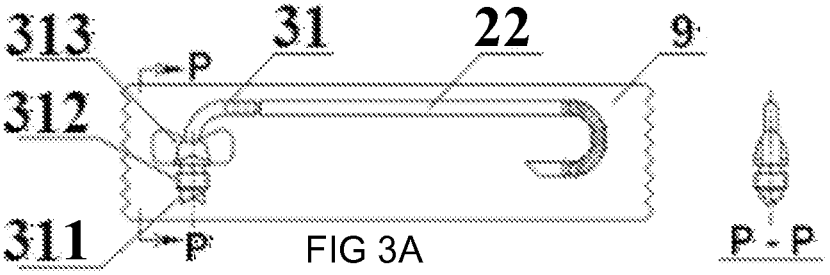

FIG 3A

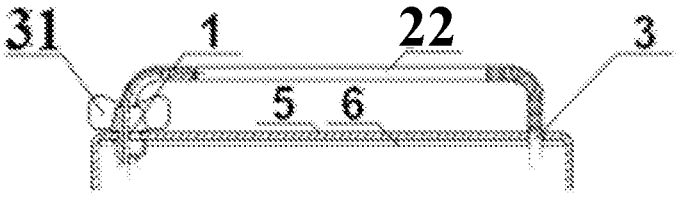

FIG 3B

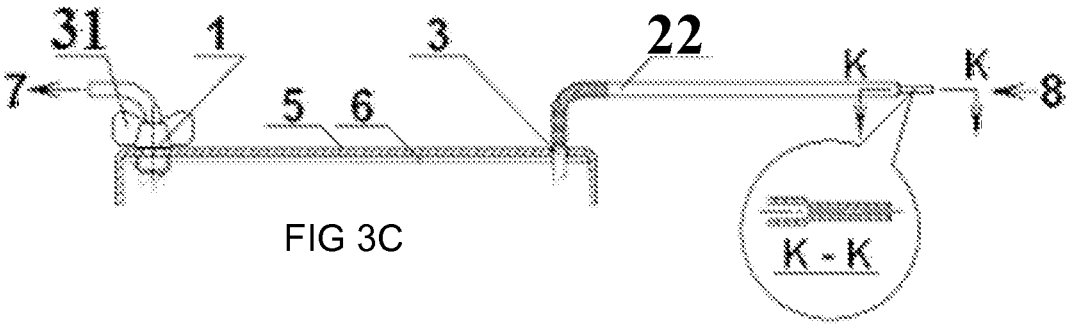

FIG 3C

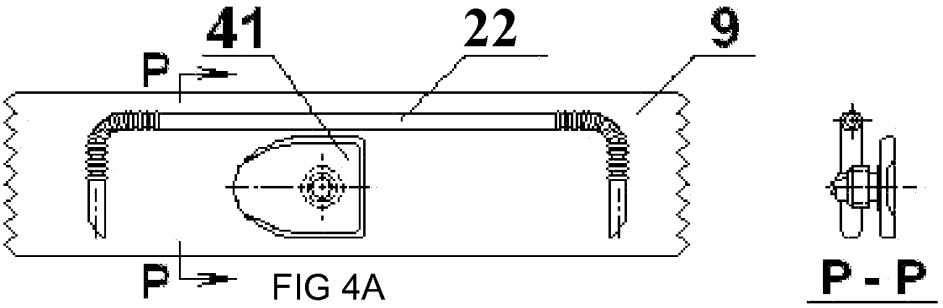

FIG 4A

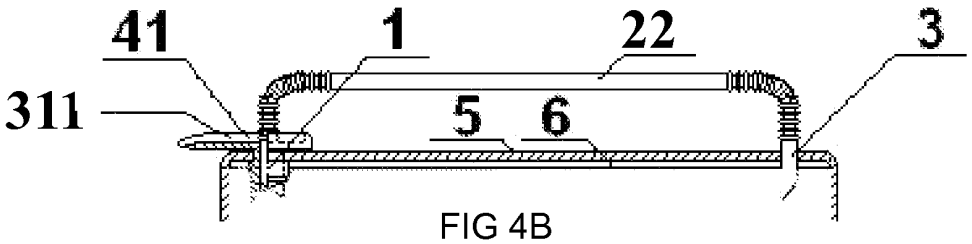

FIG 4B

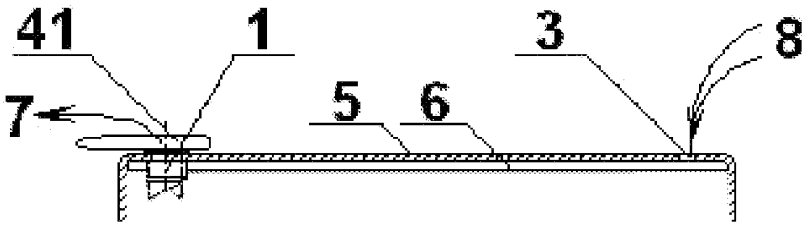

FIG 4C

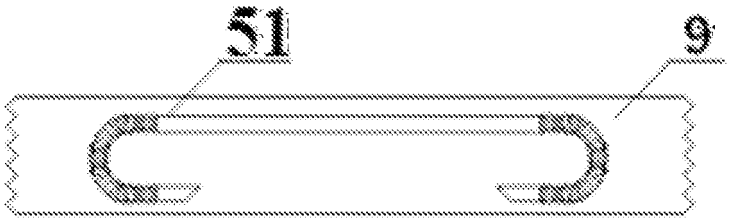

FIG 5A

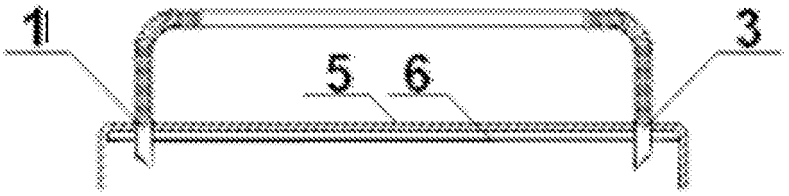

FIG 5B

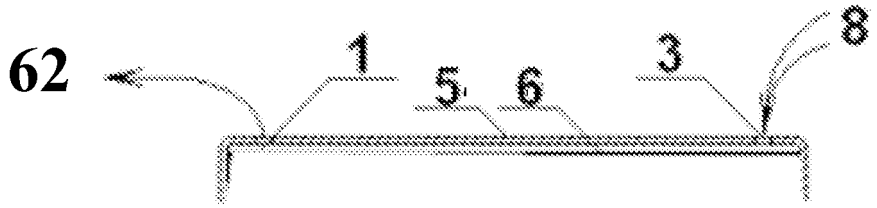

FIG 5C

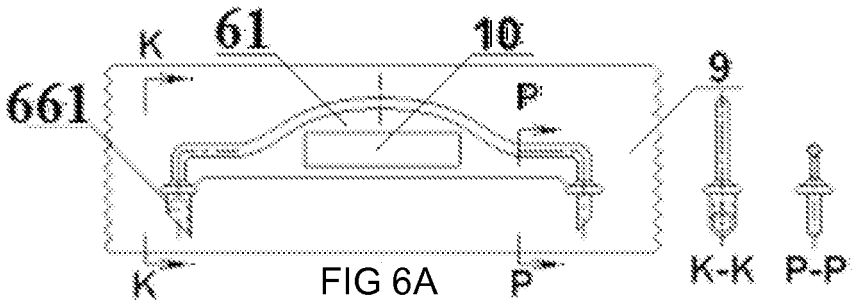

FIG 6A

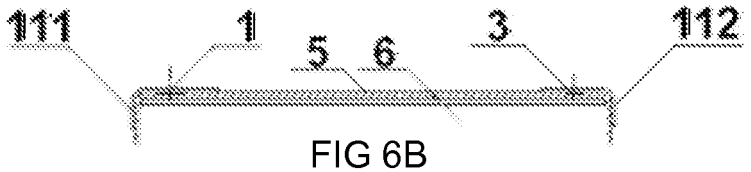

FIG 6B

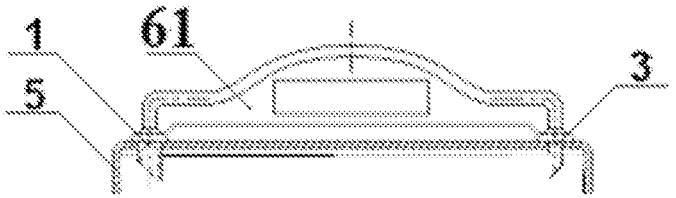

FIG 6C

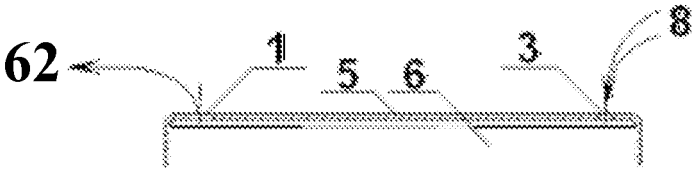

FIG 6D

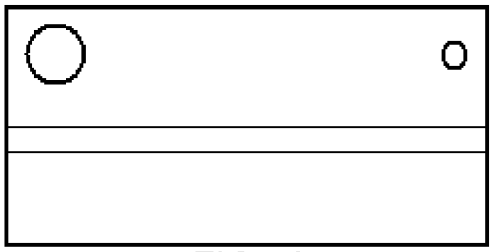

FIG 7A

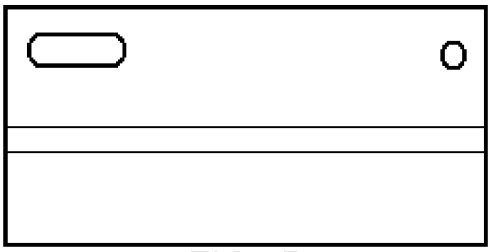

FIG 7B

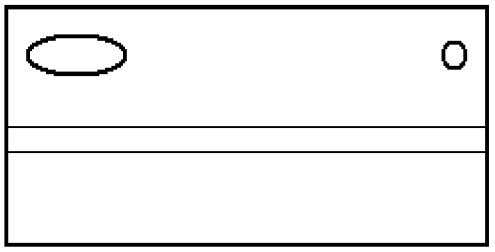

FIG 7C

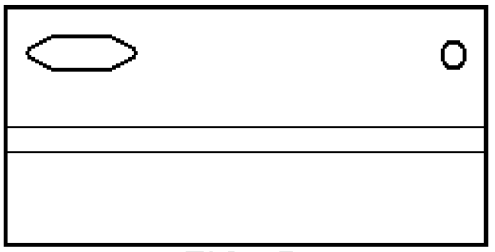

FIG 7D

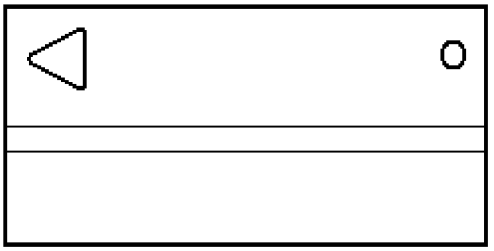

FIG 7E

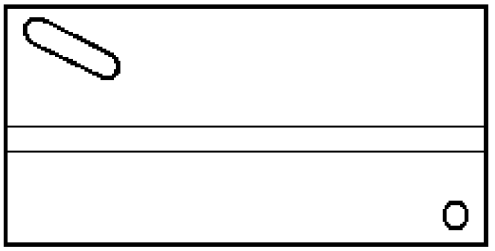

FIG 7F

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2006/001512

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

IPC **B65D 47/04, B65D 47/06, B65D 51/00, B65D 51/16, B65D 85/72, B65D 77/24, B65D 77/28**

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)

EPODOC, WPI, PAJ, CNPAT: container, vessel, cup, can, case, box, bottle, hole, open, aperture, cavity, bore, orifice, howe, passsage, spout, vent, seal, close, film, membrane, beverage, juice, liquid, water.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN2789156Y (HOU, Bowen), 21.JUN.2006(21.06.2006), page 6, lines 11-24, abstract, figures 1A, 1B and 1C	1—3
Y		4—8
Y	CN2193342Y (SHENZHEN HUOLIBAO CO LTD), 29.MAR.1995(29.03.1995), page 2, abstract, figure 1	4
Y	CN2053874U (HANGZHOU NON FERROUS METALS DE), 07.MAR.1990(07.03.1990), page 2, figure 1	5—8
A	JP2004359319A (MORINAGA MILK INDUSTRY CO LTD), 24.DEC.2004(24.12.2004), pages 4-6, figures 1-12	1—8
A	JP2001335008A (NIPPON TANSAN GAS CO LTD), 04.DEC.2001(04.12.2001), abstract, paragraphs [0017]-[0029], figures 1-3	1—8
A	CN2172776Y (ZOU, Jinghua), 27.JUL.1994(27.07.1994), abstract	1—8

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14.MAR.2007 (14. 03. 2007)	29 MAR 2007 (29 · 03 · 2007)
Name and mailing address of the **ISA/CN** The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. **86-10-62019451**	Authorized officer **CAO, Chuanlu** Telephone No. **86-10- 62084408**

Form PCT/ISA /210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2006/001512

CLASSIFICATION OF SUBJECT MATTER

B65D 47/06 （2007.01） **i**
B65D 51/16 （2007.01） **i**
B65D 85/72 （2007.01） **i**
B65D 77/28 （2007.01） **i**

Form PCT/ISA /210 (extra sheet) (April 2005)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2006/001512

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN2789156Y	21.06.2006	NONE	
CN2193342Y	29.03.1995	NONE	
CN2053874U	07.03.1990	NONE	
JP2004359319A	24.12.2004	NONE	
JP2001335008A	04.12.2001	NONE	
CN2172776Y	27.07.1994	NONE	

Form PCT/ISA /210 (patent family annex) (April 2005)