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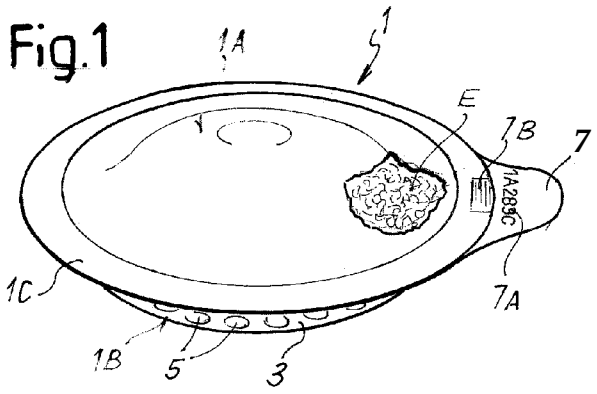
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(54) Title: PACKAGE AND SYSTEM FOR THE PREPARATION OF BEVERAGES



(57) **Abstract: A** package (1) for the preparation of beverages is disclosed. The package comprises inlet side (1A), through which water enters the package (1), and an outlet side (IB) wherethrough a beverage exits the package. The outlet side (IB) of the package is at least partly formed by a liquid-pervious wall, and an apertured film (3) is removably applied to the outlet side (IB) of the package (1).

PACKAGE AND SYSTEM FOR THE PREPARATION OF BEVERAGES

TECHNICAL FIELD

The subject matter disclosed herein relates to the field of beverage preparations. More specifically, the subject matter disclosed herein relates to capsules, pods, cartridges, sachets or any other kind of single-use disposable packages containing ingredients for the preparation of beverages by means of water flowing through the package.

BACKGROUND ART

Several machines and devices are known, for the preparation of beverages from single packages containing edible products. Capsules, pods and similar packages are used, for example, for the preparation of coffee or espresso coffee. A pod is usually understood as being a soft package which is partly or preferably entirely made of flexible, water permeable material, such as paper or nonwoven. An example of a pod for the preparation of beverages is known from WO-A-02/28241.

A capsule or cartridge is usually understood as being a rigid or semi-rigid container, made of plastic, aluminum or other suitable material, and containing the beverage ingredients. Capsules can be entirely sealed, with a pierceable water inlet side and a pierceable beverage outlet side. These capsules are pierced on both sides upon closure of the brewing unit or when pressurized water is fed into the capsule. Other kinds of known capsules have one or both the water inlet side and beverage outlet side which is permeable to liquids and does not require piercing.

Examples of capsules for the preparation of beverages are disclosed in US Pat. Nos. 7,543,527 and 7,552,672.

The beverage quality is dependent upon several factors. For example, when coffee is produced, the pressure of the brewing water plays an important role. Low pressure and high flow rates are used to prepare an American-style coffee, or a fresh coffee, while reduced flow rates and high pressure are used for the preparation of espresso-style coffee, characterized by a layer of crème, which is generated by the high pressure of the water flowing through the coffee powder in the capsule or pod. In order to achieve a high brewing pressure inside the package, a counter-pressure member is usually provided at the exit of the

beverage. The counter-pressure member obstructs the liquid flow through the brewing chamber such that the pressure inside the package increases to the desired value. In some cases the counter-pressure member is provided by a valve, which opens only when a sufficient brewing pressure has been achieved in the brewing chamber. In other known machines and systems, the counter-pressure is provided by suitably shaping the piercers on the beverage outlet side of a brewing chamber and/or by suitably designing the apertures of the outlet side wall of the capsule.

Attempts have been made to provide a machine or device which can be adjusted to modify the brewing pressure such that different kinds of coffee beverages can be prepared. Such a device is disclosed in US Pat. N. 7,856,920.

SUMMARY OF THE INVENTION

The subject matter disclosed herein provides for a package containing at least an edible product for the preparation of a beverage and comprising an inlet side, through which water enters the package , and an outlet side through which a beverage exits the package. Moreover, the outlet side is at least partly formed by a liquid-pervious wall and an apertured film is removably applied to the outlet side.

The user can use the package selectively with or without the apertured film. If he wishes to use the package without the apertured film, he can simply peel it off by pulling the apertured film away from the package. If the apertured film is maintained attached to the package, brewing will occur at higher pressure and lower flow rate. Conversely, if the film is removed, brewing will occur at a lower pressure and higher flow rate. Depending upon the brewing pressure, beverages of different organoleptic characteristics are obtained with the same package.

Brewing shall be construed as any process which allows a beverage to be prepared by flowing (preferably hot) water through the interior of the package, where edible ingredients for the preparation of the beverage are contained. The beverage can be obtained by dilution, extraction or any other process performed on the ingredients contained in the package.

Package means any container, which contains ingredients or edible products for the preparation of a beverage by causing water to flow through said ingredients or products. The package can be in the form of a pod, cartridge, capsule, sachet, packet or the like.

The apertured film can be made of plastic material, suitable to withstand the pulling force required to detach it from the package. The apertured film can be attached to the package by means of welding, gluing or the like. Preferably, if glue is used, edible gluing substances are used. In some embodiments the apertured film can be welded along an edge of a semi-rigid or rigid side wall of the package, e.g. if the package is in the form of a capsule or cartridge. In such case the aperture film can also be partly torn when removed from the capsule, instead of being peeled-off the package. When the package is in the form of a soft pod, made e.g. of nonwoven or paper material, the apertured film is preferably glued on the outer surface of the pod such that it can be peeled-off without damaging the pod, in particular without tearing or opening the pod.

In some embodiments the apertured film comprises a projecting tab, laterally extending from the package to make peeling-off of the film easier.

The tab can carry a package recognition element, which enables a beverage preparing machine to detect whether the film is still attached to the package or whether it has been removed and/or to distinguish one package from another, for example in order to automatically set one or more parameters of the beverage preparing machine. In some embodiments, the package recognition element can be used to set the delivery pressure of a water pump. In some embodiments the package recognition element can be placed partly on the tab and partly on the package, such that the removal of the apertured film will alter the package recognition element and the beverage preparing machine is capable of recognizing whether the apertured film is still present on the package or whether it has been removed there from. It is also possible to provide a first package recognition element applied on the apertured film and a second package recognition element or a part thereof on a surface of the package which is usually covered by the apertured film. The removal of the apertured film will uncover the second package recognition element. Also in this case the package recognition element is altered by removal of the apertured film.

According to a further aspect, the subject matter disclosed herein concerns a system for the production of beverages, comprising a package as disclosed above and a brewing unit forming a brewing chamber arranged and designed to receive said package, said brewing chamber comprising a water inlet and a beverage outlet.

Brewing unit shall be understood as any unit, device, apparatus, mechanism, instrumentalities or machine, which is/are suitable to receive at least one package as described above and cause water to flow into and through the package at the required

pressure and temperature conditions to prepare a beverage with the edible ingredients contained in the package.

The system can include a water pump in fluid communication with the water inlet of the brewing unit. The water pressure at the water inlet of the brewing chamber can be adjustable so that it can take up at least two different values, depending on whether said apertured film is attached to the package or is removed from said package, when said package is in said brewing chamber.

According to some embodiments, the system comprises a package recognition arrangement, designed and arranged to determine whether the apertured film is attached to the package or has been removed from the package when the package is in said brewing chamber. The package recognition system can also be designed to distinguish among different kinds of packages, irrespective of whether the apertured film is attached thereto or has been removed from the package.

Features and embodiments are disclosed here below and are further set forth in the appended claims, which form an integral part of the present description. The above brief description sets forth features of the various embodiments of the present invention in order that the detailed description that follows may be better understood and in order that the present contributions to the art may be better appreciated. There are, of course, other features of the invention that will be described hereinafter and which will be set forth in the appended claims. In this respect, before explaining several embodiments of the invention in details, it is understood that the various embodiments of the invention are not limited in their application to the details of the construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which the disclosure is based, may readily be utilized as a basis for designing other structures, methods, and/or systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the disclosed embodiments of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Fig. 1 illustrates a top perspective view of a pod embodying the invention;

Fig.lA illustrates an enlarged detail of a modified embodiment of the pod;

Fig.2 illustrates a bottom perspective view of the pod of Fig. 1;

Fig.3 illustrates a side view of the pod of Figs. 1 and 2;

Fig.4 illustrates a schematic view of a beverage preparing machine and the main components thereof;

Figs.5 and 6 illustrate a schematic cross section of a brewing unit with a pod inserted therein;

Figs 7 and 8 illustrate perspective views of a capsule embodying the invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The following detailed description of the exemplary embodiments refers to the accompanying drawings. The same reference numbers in different drawings identify the same or similar elements. Additionally, the drawings are not necessarily drawn to scale. Also, the following detailed description does not limit the invention. Instead, the scope of the invention is defined by the appended claims.

Reference throughout the specification to "one embodiment" or "an embodiment" or "some embodiments" means that the particular feature, structure or characteristic described in connection with an embodiment is included in at least one embodiment of the subject matter disclosed. Thus, the appearance of the phrase "in one embodiment" or "in an embodiment" or "in some embodiments" in various places throughout the specification is not necessarily referring to the same embodiment(s). Further, the particular features, structures or characteristics may be combined in any suitable manner in one or more embodiments.

In the following description reference will specifically be made to a coffee machine and to packages intended for the preparation of a coffee-based beverage. It shall however be understood that the subject matter disclosed herein can be embodied also in pods, cartridges, capsules, sachets, or other single-serving packages intended for the preparation of

different kinds of beverages, such as teas, infusions etc. by means of suitably designed machines or appliances.

Referring first to Figs 1 to 3, in a first embodiment a single-serving package is provided in the shape of a soft pod 1. In some embodiments the pod can be formed by sheets of a soft, pliable and flexible material, which is permeable to liquids. Suitable materials are nonwoven and paper. The pod 1 comprises a water inlet side 1A and a beverage outlet side IB, both defined by liquid-pervious walls formed by soft, pliable and flexible sheet material. The water inlet side 1A is the side or face of the pod 1 through which brewing water is introduced in the interior of the pod 1, wherein a dose of at least one edible product E is contained. The edible product E contains at least one ingredient for the preparation of the beverage. For example, pods intended for the preparation of coffee contain coffee powder. Other ingredients or products can be used in addition to or instead of coffee powder, depending on the kind of beverage the pod is intended for.

In the embodiment disclosed in the figures the liquid-permeable material forming the exterior of the pod 1 is comprised of a first portion IX and a second portion 1Y (see Fig. 3) forming an inlet filter and an outlet filter of the pod. In some embodiments the two portions IX, 1Y can be symmetrical and can be in the form of a valve or shell, with a respective annular flange 1C and ID. The two valves are bonded along the annular flanges IC, ID by gluing, mechanical bonding, hot melting or in any other suitable manner, as well known to those skilled in the art.

On the outlet side IB, formed by portion 1Y of the pod, a film 3 is removably attached, e.g. by means of a detachable glue or in any other suitable manner, e.g. by partial local fusion of thermoplastic fibers contained in the nonwoven material forming the pod.

The film 3 is apertured, i.e. it is provided with through holes, apertures or slots, schematically shown at 5. In the drawings the apertures 5 are represented as relatively large holes, but this is for the sake of pictorial representation only. In actual fact, the dimension of the apertures 5 is chosen such that the apertured film 3 increases the flow resistance through the pod 1, i.e. when the apertured film 3 is attached to the pod output side IB, the beverage flowing through the output side IB and the apertured film 3 will have to overcome a flow resistance, which is substantially higher than the flow resistance generated by the flexible material forming the pod portion 1Y alone.

The apertured film 3 can be made of a plastic or aluminum foil. Preferably the apertured film 3 is made of a material having a sufficient tensile resistance such that the apertured film 3 can be easily removed or peeled-off the the pod 1 without breaking or

tearing the soft material forming the surface of the pod 1 on which the apertured film 3 is attached.

In some embodiments the apertured film 3 is provided with a side tongue or tab 7 projecting laterally beyond the outer edge of the flanges 1C, ID. The tab 7 provides a grip surface, which makes the removal of the apertured film 3 from the pod 1 easier. The user can remove the apertured film 3 from the pod 1 by simply pulling the tab 7 as shown in Fig. 3.

Additionally, in some embodiments a pod recognition element is provided, i.e. a means which enables a machine receiving the pod to recognize the kind of pod introduced in the machine. The pod recognition element can include a barcode or an OCR code or any machine readable code printed on the tab 7. In the drawings the pod recognition element is in the form of an OCR code 7A (Fig. 1) or in the form of a barcode (Fig.lA, see below) provided on one surface of the tab 7.

Other pod recognition elements can be used, such as for example marks or added-on elements capable of interacting with magnetic, optical, capacity sensors and the like. In other embodiments the pod recognition element can include electrically conducting strips, dots or marks, co-acting with electric contacts provided in the beverage preparing machine receiving the pod 1. Different pod recognition elements can be used in combination.

Irrespective of the kind of pod recognition element or elements used, such arrangement allows the machine receiving the pod to recognize whether the apertured film 3 has been removed or not and, if it has not been removed, what kind of film is present. Different films, with for example different apertured areas can be provided for different beverages.

In simpler cases, the pod recognition element can be absent or represented simply by the tab 7 of the apertured film 3 being opaque or electrically non-conducting or can be made of a material which can be detected e.g. by a proximity sensor. This will enable the machine to distinguish between a pod 1 provided with an apertured film 3 and a pod 1 from which the apertured film 3 has been removed.

In some embodiments the information generated by the tab 7 and any possible pod recognition element 7A combined thereto can be used to simply inform the user that a pod of a given type or a pod with/without apertured film 3 has been introduced in a brewing unit of the machine.

In other embodiments, the above mentioned information can be used to provide a signal to control one or more functions of the machine and/or to adjust one or more operative parameters of the machine. For example, the information given by the pod

recognition element can be used to set the delivery pressure or the flow rate of a pump, which feeds water to the brewing unit.

In some embodiments a first part 7A of the information allowing the pod recognition function can be provided on the tab 7 of the removable apertured film 3 and a second part of the information can be provided on a portion of the package, e.g. a portion of the pod 1. The two pieces of information can be provided for example in the form of a barcode which is partly on a surface portion of the pod 1 (or other package) which is not removed, and part on the removable tab 7 of the apertured film 3.

Fig. 1A shows an enlargement of a portion of the pod 1 and tab 7, showing a barcode which is partly (7B) printed on the flange 1C of the pod 1 and partly (7A) on the tab 7.

When a double or dual information is provided, partly on the package or pod 1 and partly on the tab 7, the information can be detected by a single sensor on the beverage preparing machine, making the machine design simpler and less expensive. The provision of a pod recognition or package recognition element on a different surface of the package or pod is not excluded. For example, a printed machine-readable code can be provided in the central area of the portion 1A of the pod 1 in combination with a pod recognition element on the tab 7. In this case two sensors, i.e. a dual pod recognition arrangement or package recognition arrangement must be provided in the beverage preparing machine.

In other embodiments a first pod recognition element can be print on the outer surface of the apertured film 3, and a further, second pod recognition element can be printed on the surface of the pod 1 where the apertured film 3 is applied, in a position aligned with the position of the first pod recognition element. In this manner a single sensor can detect either the first or the second pod recognition element, depending on whether the apertured film 3 is attached to the pod 1 or has been removed therefrom.

By providing a dual package recognition element, or pod recognition element (being it entirely readable by one sensor or split into two distantly arranged elements) allows the machine to detect whether the apertured film 3 has been removed or not, and also to recognize the pod or package irrespective of the presence or absence of the apertured film. It is thus possible for example to provide different ingredients in pods or packages intended for the same machine, wherein at least one parameter of the machine can be set based on the kind of pod or package used, and not only based on the information regarding the presence/absence of the apertured film 3.

Fig. 4 schematically shows a coffee machine 11 provided with a brewing unit 13 in which a pod 1 can be introduced for the preparation of a beverage. The machine is illustrated schematically only. It shall be understood that the machine can include additional components, instrumentalities, elements, or parts in addition to those diagrammatically shown in Fig.4 and shortly described herein below.

The coffee machine 11 comprises a water container 15, a duct 17 connecting said water container 15 to a pump 19, a duct 20 connecting said pump to a water heater 21 and a pipe 23 connecting the water heater 21 to the brewing unit 13. The brewing unit 13 is in fluid communication with a beverage dispensing spout 24, arranged above a cup supporting grid 25 provided in a base portion of the coffee machine 11. The beverage prepared by the coffee machine 11 can be collected in a cup C placed on the grid 25 underneath the beverage dispensing spout 24. An electronic control unit is diagrammatically shown at 22. The electronic control unit 22 can be connected to a pod recognition arrangement associated to the brewing unit 13. The electronic control unit 22 can additionally be connected to the water heater 21, the pump 19, a flow meter (not shown), the water container 15, a user interface (not shown) and other electronic components of the coffee machine 11, in order to control the machine and execute instructions and commands, which the user can input for example via said interface.

Figs. 5 and 6 show a diagrammatic enlargement of a brewing unit 13. The brewing unit is shown as an exemplary and simplified embodiment. It shall be understood that the structure and features of the brewing unit 13 can be different and depend for example upon the shape of the pod 1 and the manner in which the pod is introduced in the machine.

In the exemplary embodiment shown the brewing unit 13 comprises a first portion 13A and a second portion 13B. Said first and second portions 13A, 13B are movable one with respect to the other to selectively open and close a brewing chamber 27 formed therein. A water inlet 28 places the brewing chamber in fluid communication with the pipe 23 and with the water heater 21. A beverage outlet 29 provided in the second brewing unit portion 13B fluidly connects the brewing chamber 27 with the beverage dispensing spout 24.

In the exemplary embodiment shown in Figs. 5 and 6 a pod recognition arrangement, e.g. including a sensor 31, is placed in the brewing unit 13. The sensor 31 is arranged and designed to detect a pod recognition mark or element 7A on the tab 7 of the apertured film 3. In the embodiment shown, the position and dimension of the sensor 31 is such that also an additional pod recognition element 7B, or a portion of a pod recognition

element 7B provided on a non-removable portion (such as portion 1C) of the pod 1 can be detected by the same sensor 31.

The presence of the tab 7 assists the user in correctly placing the pod 1 with the apertured film 3 attached thereto in the brewing unit 13 so that the tab 7 is properly positioned in alignment with the sensor 31. If the apertured film 3 and therefore the tab 7 are removed from the pod 1, the pod recognition element or portion of the pod recognition element 7B can still be visible and used to introduce the pod 1 in the correct position. If, on the contrary, no such pod recognition element 7B is provided, once the apertured film 3 has been removed the angular position taken by the pod in the brewing unit becomes irrelevant. The absence of the apertured film will anyhow be detected irrespective of the angular position taken by the pod 1.

In Fig. 5 a pod 1 has been introduced in the brewing unit 13 after removal of the apertured film 3. In Fig. 6 the pod 1 has been introduced in the brewing unit 13 along with the apertured film 3.

The sensor 31 is capable of detecting the presence (Fig. 6) or absence (Fig. 5) of the tab 7 and therefore can distinguish between a situation in which the apertured film 3 has been removed or maintained on the pod 1. If the apertured film 3 has been maintained, depending upon the kind of information provided on the tab 7 and on the kind of sensor used, the machine can be able to collect further information on the kind and nature of the pod 1, for example.

The information can be used to control the pump 19 of the machine 11. For example, the pump can be set to provide higher pressure and less flow rate when the apertured film 3 is present and a higher flow rate at a reduced pressure when the apertured film 3 has been removed.

In some embodiments the pump 19 can be self-adjusting, i.e. the pump will deliver water at a higher or lower pressure depending upon the counter-pressure generated along the flow path extending from the pump 19 to the exit of the beverage delivery spout 24. The presence of the apertured film 3 increases drastically the head loss along the flow path, i.e. increases the counter-pressure. If the apertured film 3 is present, the pump 19 will therefore provide a reduced water flow rate at a higher pressure. The beverage will be brewed at a higher pressure and reduced flow rate. If the apertured film 3 is removed, the pump will automatically adjust to work in a different point of the characteristic head-flow rate curve delivering a higher amount of water per unit of time at a lower pressure.

The presence of a pod recognition element 7A allows a better control of the pump. In some instances, in fact, the removal of the apertured film 3 would reduce the counter-pressure to such an extent that a self-adjustment of the pump 19 would result in too a high water flow rate, which might result in a low-quality beverage. In some embodiments, therefore, the pod recognition element 7A (or 7A, 7B) and the pod recognition arrangement 31 will provide sufficient information for the control unit 22 to modify the operation of the pump 19 accordingly. For example, the flow rate can be reduced by electronically choppering the voltage of the pump.

The invention can be embodied also in different kinds of single serving packages or packets, as mentioned above. For example, also a semi-rigid or rigid capsule or cartridge can be provided with a removable apertured film 3 on the outlet side thereof for the same purposes discussed above.

Figs 7 and 8 illustrate a capsule 41 containing ingredients, e.g. coffee powder, for the preparation of a beverage. The capsule 41 comprises an inlet side 41A, an outlet side 41B and a lateral wall 41L. In some embodiments the lateral wall 41L can be cylindrical or frustum conical. The inlet side 41A can be water impervious, e.g. it can be sealed by means of a plastic or aluminum foil, or any other water tight and preferably air tight protecting foil. In this case the brewing unit will be provided with means to pierce, perforate or rupture the sealing foil. A pin or a set of pins can be provided for this purpose. Alternatively, the foil can be broken by the water pressure.

In other embodiments the inlet side 41A can be provided with a water permeable wall, e.g. a filter formed by a disk of paper or nonwoven. In this case the brewing unit will not require a perforator to pierce the inlet side 41A.

In some embodiments the outlet side 41B is provided with a filter 41F. In some embodiments the filter can be formed by a disk of paper or nonwoven, supported e.g. by a perforated plastic wall forming the bottom of the capsule 41. A liquid-pervious wall is thus defined on the outlet side of the capsule 41.

The outlet side 41B is provided with an apertured film 43 which is removably attached to the capsule 41. The apertured film 43 is provided with through holes, slits or apertures 45. The apertures 45 are shown in the form of holes of remarkable dimension for pictorial reasons only, but it should be understood that in actual fact the dimensions of the holes or apertures 45 will be substantially smaller than those shown in the drawing. As mentioned above, also in this embodiment the percentage of apertured area of the apertured film 43 is such that with the apertured film 43 attached to the capsule 41 a remarkably higher

counter-pressure will be generated during brewing, than with the apertured film 43 removed. In other words, the dimensions and number of the apertures 45 will be such that the head loss along the flow path in the beverage preparing machine increases substantially when the apertured film is present, with respect to a condition where the apertured film is removed.

In some embodiments the apertured film 43 can be welded or glued along an edge 4IE of the capsule 41. The apertured film 43 can be provided with a side tongue or tab 47 for the purpose of easy gripping and detaching the apertured film by pulling it away.

The capsule or cartridge 41 can be provided with one or more package recognition elements, or capsule recognition elements, similar to the pod recognition elements 7A and 7B described in connection with Figs 1 to 3. For example one capsule recognition element can be associated to the removable apertured film 43, while another capsule recognition element or a part thereof can be associated to the capsule.

While the disclosed embodiments of the subject matter described herein have been shown in the drawings and fully described above with particularity and detail in connection with several exemplary embodiments, it will be apparent to those of ordinary skill in the art that many modifications, changes, and omissions are possible without materially departing from the novel teachings, the principles and concepts set forth herein, and advantages of the subject matter recited in the appended claims. Hence, the proper scope of the disclosed innovations should be determined only by the broadest interpretation of the appended claims so as to encompass all such modifications, changes, and omissions. In addition, the order or sequence of any process or method steps may be varied or re-sequenced according to alternative embodiments.

CLAIMS:

1. A package (1; 41) containing at least an edible product for the preparation of a beverage, comprising an inlet side (1A; 41A), wherethrough water enters said package (1; 41), and an outlet side (IB; 4IB) wherethrough a beverage exits said package; wherein said outlet side (IB, 4IB) is at least partly formed by a liquid-pervious wall, and wherein an apertured film (3; 43) is removably applied to said outlet side (IB, 41B).

2. Package according to claim 1, wherein said apertured film (3; 43) is made of plastic material.

3. Package according to claim 1 or 2, wherein said apertured film (3; 43) comprises a projecting tab (7, 47) laterally extending from said package (1; 41).

4. Package according to one or more of the preceding claims, comprising a package recognition element (7A, 7B).

5. Package according to claims 3 and 4, wherein said package recognition element (7A, 7B) is at least partly carried by said projecting tab (7; 47).

6. Package according to claim 4 or 5, wherein said package recognition element (7A, 7B) is altered when said apertured film (3; 43) is removed from said package (1; 41).

7. Package according to one or more of the preceding claims, wherein said package is formed by pliable, liquid-permeable material, forming both said inlet side (1A), said outlet side (IB) and a lateral wall.

8. Package according to claim 7, wherein said pliable, liquid-permeable material is paper or nonwoven.

9. Package according to claim 7 or 8, comprising two portions of said pliable, liquid-permeable material, each portion having a central area surrounded by a flange (1C, ID), said two portions being bonded to one another along said respective peripheral flanges (1C, ID).

10. Package according to claim 9, wherein said apertured film (3) extends over the central area and at least part of the respective flange (1C, ID) of one of said portions of pliable, liquid-permeable material.

11. Package according to claims 3 and 10, or 5 and 10, wherein said tab (7) of said apertured film (3) projects radially beyond said flanges (1C, ID).

12. Package according to one or more of claims 1 to 6, wherein said package comprises a liquid-impervious side wall (41L).

13. Package according to one or more of claims 1-6 and 12, wherein said inlet side (41A) is formed by a pierceable, water-impervious material.

14. Package according to one or more of the preceding claims, wherein the flow resistance through said outlet side (IB; 41B) is higher when said apertured film (3; 43) is attached to said outlet side (IB; 4IB) and is lower when said apertured film (3; 43) is removed from said outlet side (IB; 41B).

15. A system for the production of beverages, comprising a package (1; 41) according to one or more of the preceding claims and a brewing unit (13) forming a brewing chamber (27) arranged and designed to receive said package (1; 41), said brewing chamber comprising a water inlet (28) and a beverage outlet (29).

16. System according to claim 15, further comprising a water pump (19) in fluid communication with said water inlet (28), wherein the water pressure at the water inlet (28) of said brewing chamber (27) is adjustable at at least two different values, depending on whether said apertured film (3; 43) is attached to the package (1; 41) or is removed from said package (1; 41), when said package is in said brewing chamber (27).

17. System according to claim 15 or 16, comprising a package recognition arrangement (31), designed and arranged to determine whether said apertured film (3; 43) is attached to the package or has been removed from the package (1; 41) when the package is in said brewing chamber (27).

18. System according to claims 16 and 17, wherein said pump (19) is adjusted depending upon a signal provided by said package recognition arrangement (31).

Fig.1

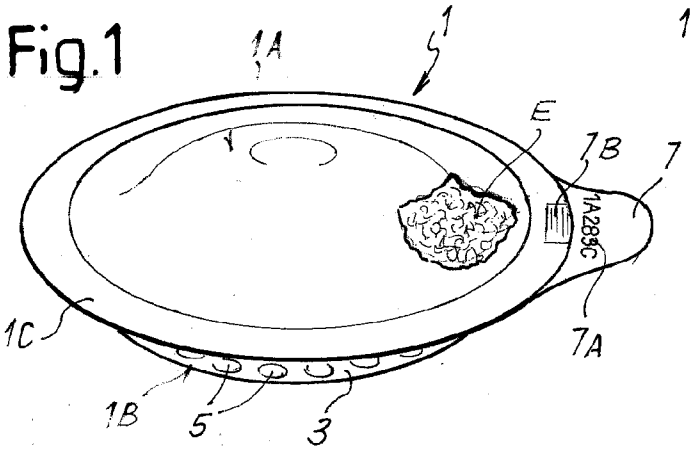


Fig.1A

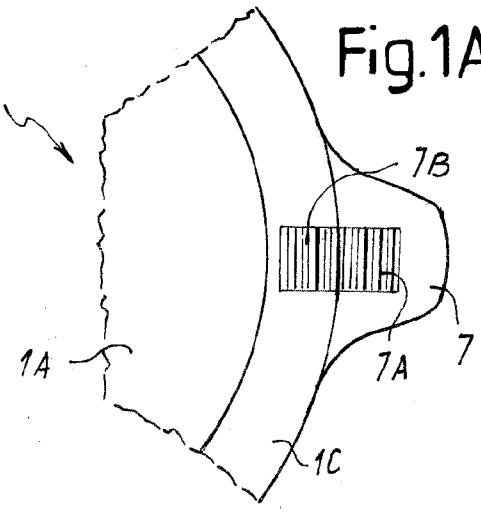


Fig.2

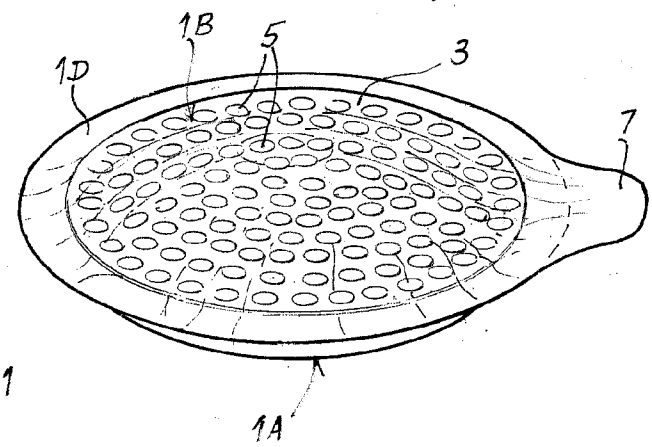


Fig.3

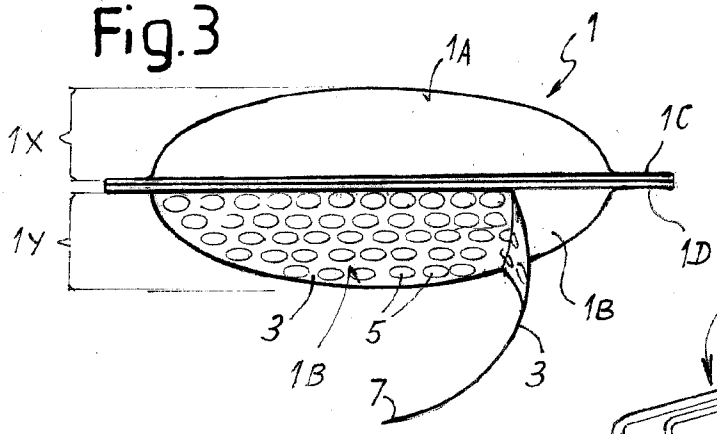
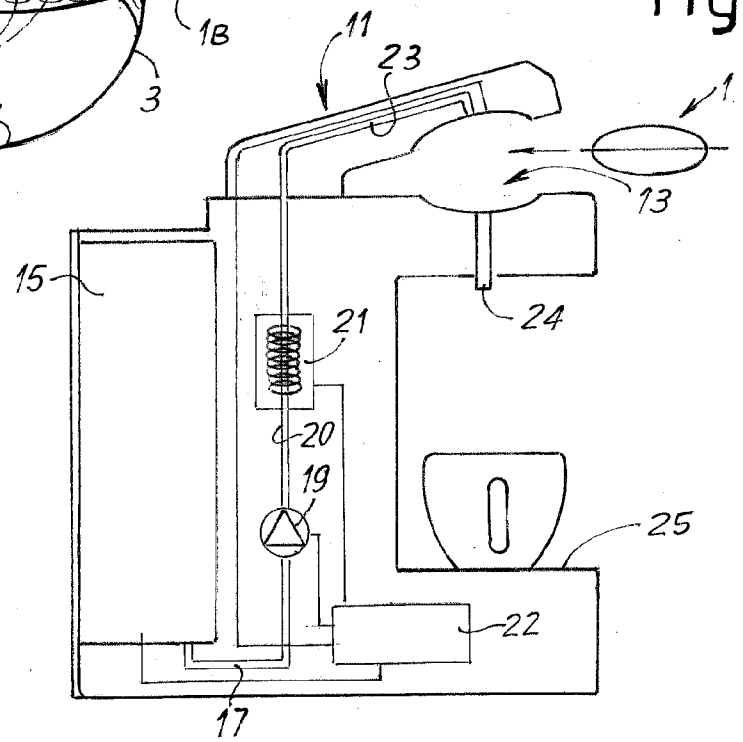


Fig.4



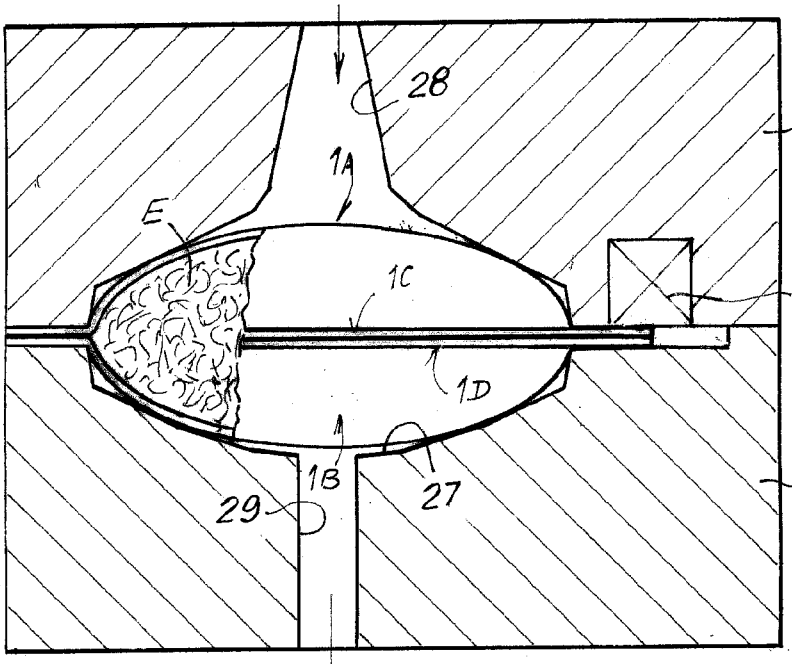


Fig. 5

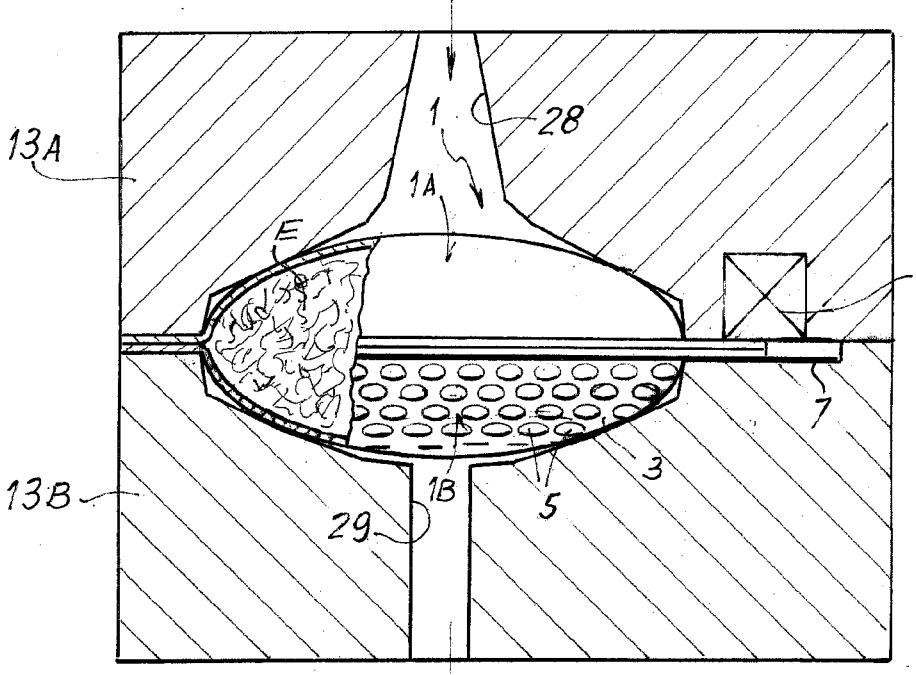


Fig. 6

Fig. 7

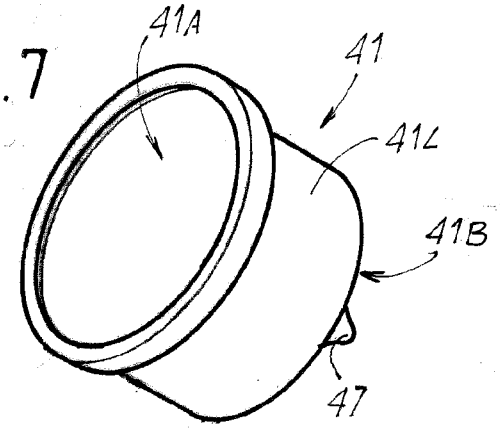
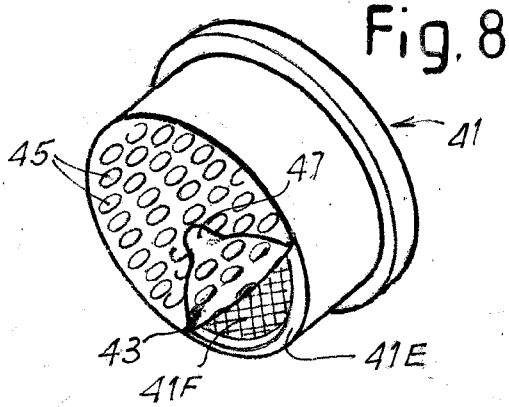


Fig. 8



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/056413

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D85/804 A47J31/24
ADD.

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)
B65D A47J

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)
EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/247975 Al (RAPPARINI GINO [IT]) 13 October 2011 (2011-10-13) paragraph [0078] - paragraph [0082] figure 13	1,2, 12-16
A	US 2010/239717 Al (Y0AKIM ALFRED [CH] ET AL) 23 September 2010 (2010-09-23) paragraph [0060] figures 2-5	2

☐ 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" documentwhich may throw doubts on priority claim(s) orwhich 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
28 February 2013	17/05/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Due, Emmanuel

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2012/056413

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1, 2, 12-16

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2, 12-16

   Package wherein the apertured film is made of plastic material

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2. claim: 3

   Package wherein the apertured film comprises a projecting tab laterally extending from said package.

   ---

3. claims: 4-6, 17, 18

   Package comprising a package recognition element

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4. claims: 7-11

   Package formed by pliable, liquid-permeable material forming said inlet side

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2012/056413

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011247975 Al	13-10-2011	CA 2795507 Al	13-10-2011
		CA 2795508 Al	13-10-2011
		EP 2555997 A2	13-02-2013
		EP 2555998 A2	13-02-2013
		US 2011247975 Al	13-10-2011
		Wo 2011124988 A2	13-10-2011
		Wo 2011124989 A2	13-10-2011
US 2010239717 Al	23-09-2010	CN 101953634 A	26-01-2011
		EP 2364930 A2	14-09-2011
		US 2010239717 Al	23-09-2010