DEVICE FOR INSTANT COOLING OF LIQUIDS, BEVERAGES AND FOOD

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ABSTRACT

Device and system for producing instant cooling, particularly for lowering the temperature of liquids and beverages contained in bottles. The same device can be used, by means of appropriate positioning of the diffusers in specific trays, for cooling foods. Moreover, the diffusers appropriately positioned in insulated containers act as portable refrigeration cabinet for foods, beverages and any product or material that requires to be preserved at low temperatures. The particular characteristic consists in the fact that the device makes use of a container having parts suitable to be filled with gas. Said container has one part acting as a chamber which stores the dry ice formed by the gas and one part made of sintered metal through which heat exchange is triggered when in contact with the product to be cooled.
DEVICE FOR INSTANT COOLING OF LIQUIDS, BEVERAGES AND FOOD

[0001] The present invention relates to a device and a system for producing instant cooling of liquids, beverages and food. In particular, the present invention relates to a device and a system for lowering the temperature of liquids and beverages contained in bottles and for cooling foods and maintaining them at low temperatures.

[0002] As it is known, in the food and beverage field bottles of beverages, e.g. wine, are placed in ice buckets containing part water and part ice to take the wine or beverages to the serving temperature, which is on average below 10°.

[0003] This effective but obsolete system has several drawbacks. Firstly, ice must be produced with specific machines, which operate with electricity and are therefore costly. In summer months the ice produced is often insufficient to manage the wine and beverage service, and therefore action must be taken to procure ice from specific suppliers.

[0004] It is also known that the use of ice buckets has bothersome drawbacks, such as the continuous need to dry bottles during pouring; often water is spilled onto tables or the bottle drips onto the clothing of those seated at the table; another noteworthy drawback is that the labels identifying the wine or beverage become unstuck from the bottles.

[0005] To overcome the drawbacks caused by the use of ice, chillers are used where possible; these are able to lower the temperature of the bottles in a few minutes, so that they are ready to be served. Although widely used, this system has the drawback of having a short duration, with the wine or beverage passing from a temperature generally below 10° to room temperature in a very short time, as it cannot be kept cool for the whole of the time required for its consumption.

[0006] Moreover, in the catering and banqueting field, there is an increasing need to maintain foods and beverages at low temperatures, particularly during summer months.

[0007] When preparing buffets, where foods in general are on display and require to be kept cool and there are no available devices, such as trays or containers, that are able to satisfy these needs, it is always necessary to use ice with the consequent problems that this creates as it melts to water.

[0008] The main aim of the present invention is to provide a device and a system for producing instant cooling, particularly for use in the food and beverage, catering, banqueting and food transport sectors having the particular characteristic of maintaining and controlling the low temperature for the whole of the period necessary.

[0009] Within this aim, an object of the present invention is to provide a device and a system for producing instant cooling and for maintaining the low temperature that can be used in different places where necessary as it is easy to transport, unlike chillers, which owing to their structure are not portable.

[0010] Another object of the present invention is to provide a device and a system for producing instant cooling and maintaining the low temperature with control and management of the temperature required by means of a gas dosing device with the aid of an electronic control capable of introducing the quantity of gas required for this purpose.

[0011] Yet another object of the present invention is to provide a device and a system for producing instant cooling and maintaining the low temperature with immediate availability, and little or no preparation in advance required.

[0012] Another object of the present invention is to provide a device and a system for producing instant cooling and maintaining the low temperature that is environmentally friendly.

[0013] This aim, and these and other objects, which will be more apparent below, are achieved by a device for cooling beverages and food which is characterized in that it comprises a container provided with a cavity and with a storage chamber for a liquid gas which is transformed into dry ice when in contact with air, said chamber facing on said cavity and being sealed toward the interior of the container by a diffuser made of porous sintered material capable of releasing the old transmitted by the dry ice present in said chamber.

[0014] In practice the device of the present invention is provided with one part acting as a gas container for a gas which is transformed into dry ice and one part made of sintered metal or heat insulating material suitable to absorb the low temperature produced by said gas, thereby gradually releasing over a period of time, through contact, the low temperature produced by the dry ice placed in the containers sealed thereto, and maintaining the product at the desired temperature for a long time. The cavity is normally shaped so as to properly house the object to be cooled, e.g. a bottle or a food container. The device can then be refilled with gas at any time according to the needs and requirements of the user thereof.

[0015] Preferably, the device for cooling beverages and food according to the present invention comprises an inlet valve for refilling said chamber with said liquid gas.

[0016] According to a first embodiment of the device for cooling beverages and food according to the present invention, said container is provided with a cavity that has a substantially cylindrical shape suitable for housing bottles.

[0017] In such a case, said container preferably comprises a plurality of said chambers circumferentially positioned around said cavity.

[0018] According to a second embodiment of the device for cooling beverages and food according to the present invention, said container is substantially flat and comprises a plurality of diffusers facing toward its interior.

[0019] In such a case, said container is preferably suitable to be housed in a lid for cooling food and maintaining it at low temperatures.

[0020] In general, in the devices for cooling beverages and food according to the present invention the chamber and the corresponding diffuser are preferably shaped so as to be suitable to be housed inside containers for transporting foods or beverages in general.

[0021] In a further aspect, the present invention also relates to a system for cooling beverages and food, characterized in that it comprises a device as described herein.

[0022] Preferably, the system for cooling beverages and food according to the present invention comprises a gas-containing refilling bottle connected to said device through a refilling line. In such a case, advantageously, said refilling line is connectable to an inlet valve of said chamber.

[0023] Advantageously, in the system for cooling beverages and food according to the invention, the gas-containing refilling bottle is connectable to a plurality of devices through a dispenser; preferably, said dispenser is provided with solenoid valves which control the pressure and amount of gas delivered.

[0024] Further characteristics and advantages of the invention will be more apparent from the description of a preferred, but not exclusive embodiment of the device according to the
invention, shown by way of non-limiting example in the accompanying drawings, wherein:

[0025] FIG. 1 shows a perspective view of a system according to the present invention.

[0026] FIG. 2 shows a perspective view of a detail of a first embodiment of the device of the present invention;

[0027] FIG. 3 shows a perspective view of a first embodiment of the device of the present invention;

[0028] FIG. 4 shows a perspective view of a detail of a second embodiment of the device of the present invention;

[0029] FIG. 5 shows a perspective view of a second embodiment of the device of the present invention.

[0030] With reference to the figures, the system according to the present invention, indicated as a whole with the reference numeral 1, comprises gas distribution lines 5, which are appropriately connected to a bottle 2 containing liquid gas, allowing the introduction of gas into the containers 8.

[0031] Preferably, the passage of the gas toward the containers 8 is managed by means of a dispenser provided with solenoid valves 4, which appropriately control the pressure and dose of gas.

[0032] The gas is conveyed into chambers 6 specifically housed in the containers 8, according to the use required. In case of a system provided with a multiplex dispenser as in FIG. 1, the refilling of the individual containers 8 can be managed separately.

[0033] With reference to FIGS. 2 and 3, in a first embodiment of the device 3 according to the present invention, the container 8 has one part that acts as a chamber 6 to store the gas transformed into dry ice. The gas is introduced by an appropriately dimensioned inlet 9 until complete or partial filling of the chamber 6. The chamber 6 is closed on one side by a thickness of sintered metal or insulating material 7 appropriately sealed to the chamber 6, which is a porous coldly transmitted by the dry ice stored in the chamber 4.

[0034] In the embodiment of FIGS. 2 and 3, the container 8 is provided with a cavity 81 that has a substantially cylindrical shape and is suitable for housing bottles. In such a case, the container 8 preferably comprises a plurality of chambers 6 circumferentially positioned around said cavity 81. Preferably, the assembly of the container 8 is such that the chambers 6 can be removed for e.g. refilling and then put again in place. Alternative embodiments in which the chambers 6 are fixed to the structure of the container 8 in a non-removable manner are also possible.

[0035] With reference to FIGS. 4 and 5, in a second embodiment of the device 30 according to the present invention, the container 80 is substantially flat and comprises a plurality of diffusers 70 facing toward its interior. The diffusers 70, appropriately filled with gas and housed in special seats in the base of a tray 80, which can be used immediately to maintain foods at low temperature according to need. The same diffuser 70 appropriately filled with gas can be housed in the lid 10 of a special container for immediate use suitable to transport foods and beverages, with the object of maintaining the content at low temperature.

[0036] Operation of the device according to the present invention is as follows.

[0037] When requiring to cool a bottle containing e.g. wine or beverages in general, the user inserts the container 8 into the system of FIG. 1. By operating a specific button the system introduces a certain quantity of liquid gas, which is immediately transformed into dry ice, into the chambers 6 of the container 8 through a suitably dimensioned inlet 9. The containment chambers 6 of the container 8 have the task of maintaining the dry ice stored until complete release through the insulating material or sintered metal diffuser 7 which is in contact with the bottle inside the cavity 81 and lowers its temperature until it reaches the desired value.

[0038] Due to the outer coatings, the container 8 maintains the low temperature for a long time and once heat exchange has been exhausted it can be immediately re-used, by repeating the previous procedure.

[0039] The system according to the present invention as shown in FIG. 1 is appropriately housed in a specific cabinet can be easily transported to the places required with the aid, e.g., of wheels mounted on the base of the container cabinet.

[0040] In an alternative embodiment, the device 30 allows use of the container 80 for cooling and maintaining at low temperature foods placed on said container shaped as specific trays 80, which due to circumstances and characteristics must be maintained at low temperature for consumption.

[0041] Another possible application according to the invention provides for use of the container 80 which specifically placed in the lid 10 or inside portable containers for foods, allowing the foods or beverages to be preserved at low temperatures and facilitate transport thereof, particularly during summer months.

[0042] The device and the system thus conceived are susceptible to numerous modifications and variants, all falling within the inventive concept; moreover, all details can be replaced by other technically equivalent elements. In practice, the materials employed, and the dimensions and contingent forms, can be any according to requirements and to the state of the art.

1. A device for cooling beverages and food, wherein it comprises a container provided with a cavity and a storage chamber for a liquid gas which is transformed into dry ice when in contact with air said chamber facing on said cavity and being sealed toward the interior of the container by a diffuser made of porous sintered material capable of releasing the coldly transmitted by the dry ice present in said chamber.

2. The device for cooling beverages and food according to claim 1, wherein it comprises an inlet valve for refilling said chamber with said liquid gas.

3. The device for cooling beverages and food according to claim 1, wherein said cavity has a substantially cylindrical shape suitable for housing bottles.

4. The device for cooling beverages and food according to claim 1, wherein said container comprises a plurality of said chambers circumferentially positioned around said cavity.

5. The device for cooling beverages and food according to claim 1, wherein said container is substantially flat and comprises a plurality of diffusers facing toward its interior.

6. The device for cooling beverages and food according to claim 1, wherein said container is suitable to be housed in a lid for cooling food and maintaining it at low temperatures.

7. The device for cooling beverages and food according to claim 1, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

8. A system for cooling beverages and food, characterized in that wherein it comprises a device according to one or more of the previous claims claim 1.
9. The system for cooling beverages and food according to claim 8, wherein it comprises a gas-containing refilling bottle connected to said device thorough a refilling line.

10. The system for cooling beverages and food according to claim 8, wherein said refilling line is connectable to an inlet valve of said chamber.

11. The system for cooling beverages and food according to claim 9, wherein said gas-containing refilling bottle is connectable to a plurality of devices through a dispenser.

12. The system for cooling beverages and food according to claim 11, wherein said dispenser is provided with solenoid valves which control the pressure and amount of gas delivered.

13. The device for cooling beverages and food according to claim 2 wherein said cavity has a substantially cylindrical shape suitable for housing bottles.

14. The device for cooling beverages and food according to claim 2, wherein said container is substantially flat and comprises a plurality of diffusers facing toward its interior.

15. The devices for cooling beverages and food according to claim 2, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

16. The devices for cooling beverages and food according to claim 3, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

17. The devices for cooling beverages and food according to claim 4, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

18. The devices for cooling beverages and food according to claim 5, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

19. The devices for cooling beverages and food according to claim 6, wherein said chamber and the corresponding diffuser is suitable to be housed inside containers for transporting foods or beverages in general.

20. A system for cooling beverages and food, wherein it comprises a device according to claim 2.