

Description

[0001] This invention concerns improvements in or relating to beverage dispense. More specifically, the invention relates to apparatus for dispensing beverages in which the apparatus includes a dispense head provided with a dispense tap for dispensing a beverage and with cooling means for creating condensation or ice on an external surface of the dispense head. The invention also includes a method of dispensing a beverage using the apparatus.

[0002] Alcoholic draught beverages such as beer, lager, cider etc are typically delivered to a dispense head such as a font mounted on a bar top for dispense from a tap. The beverage is normally stored in a keg at a remote location such as a cellar and is delivered to the dispense head in a supply line. The supply line may pass through one or more chillers or similar devices for cooling the beverage to the dispense temperature.

[0003] Usually, the supply line is contained in a so-called "python" provided with a coolant re-circulation loop for maintaining the desired dispense temperature of the beverage. The supply line may deliver beverage to a plurality of dispense heads via branch lines tapped from the supply line. Typically, the python and branch lines are insulated to maintain the desired dispense temperature of the beverage.

[0004] In periods of low demand and/or overnight, the beverage remaining in the branch line between dispenses may warm up and this can affect the temperature of the next dispensed volume of beverage.

[0005] It is already known to cool an outer surface of the dispense head separately from the beverage to cause condensation or ice to form on the outer surface of the dispense head to create the impression of dispensing a cooled beverage. For example EP 1 234 708 discloses forming ice on an imitation glass forming part of the dispense head.

[0006] The present invention seeks to provide further improvements in the dispense of beverages employing apparatus in which condensation or ice is formed on an external surface of a dispense head and to a method of dispensing a beverage employing the apparatus.

[0007] According to a first aspect of the invention, we provide apparatus for dispensing a beverage comprising a dispense head provided with a dispense tap, a chamber for circulating coolant such that condensation or ice forms on an outer surface of the dispense head, and a supply line for beverage delivered to the dispense tap in heat exchange relationship with the chamber.

[0008] By this invention, the circulation of coolant employed to cause condensation or ice to form on the dispense head is also used to cool the beverage delivered to the dispense tap. The cooling may prevent the beverage warming up between dispenses and/or may provide additional cooling to trim the temperature of the beverage to the desired dispense temperature.

[0009] According to a second aspect of the invention,

we provide a method of dispensing a chilled beverage comprising the steps of providing a dispense head with a dispense tap for dispensing a beverage, providing a supply line for delivering beverage to the dispense tap, providing a re-circulation loop for circulating a coolant to cause condensation or ice to form on an outer surface of the dispense head, and cooling the beverage in the supply line by heat exchange with coolant in the re-circulation loop.

[0010] According to a third aspect of the invention, we provide apparatus for dispensing a chilled beverage comprising a dispense head with a dispense tap for dispensing a beverage, a supply line for delivering beverage to the dispense tap, a re-circulation loop for circulating a coolant to cause condensation or ice to form on an outer surface of the dispense head, and arranging the supply line and the re-circulation loop so that beverage in the supply line is cooled by heat exchange with coolant in the re-circulation loop.

[0011] The invention will now be described in more detail by way of example only with reference to the accompanying drawings in which:-

Figure 1 is an exploded view of parts of a dispense apparatus embodying the invention; and

Figure 2 is a perspective view of the parts of the apparatus shown in Figure 1 assembled.

[0012] With reference to the accompanying drawings, there is shown a panel 1 forming part of a dispense head (not shown) in the form of a font to be mounted on a counter top such as a bar. The panel 1 has a front or outer surface 2 which in use faces the customer and a rear or inner surface 3 on the inside of the font.

[0013] The inner surface 3 is provided with a chamber 4 having an inlet 5 and an outlet 6 for connection to supply and return lines (not shown) of a re-circulation loop for circulating a coolant through the chamber 4 as shown by the single headed arrows in Figures 1 and 2. The coolant may be water or a mixture of ethylene glycol and water and the re-circulation loop may pass through a remote cooler (not shown) such as an ice bank cooler or a thermoelectric cooler for cooling the coolant to a temperature of the order of 0°C to 2°C where the coolant is water or -2°C or lower where the coolant is a mixture ethylene glycol and water. It will be understood that these temperatures are exemplary only and the invention is not limited thereto.

[0014] In use, circulation of the coolant through the chamber 4 cools the outer surface 2 of the panel 1 and causes moisture to condense on the outer surface. The moisture (water droplets) may freeze to form a layer of ice on the outer surface 2. The formation of condensation and/or ice on the outer surface 2 provides an interesting visual effect that enhances the "theatre" of dispense for the customer as well as creating the impression that the beverage is being dispensed at low tem-

perature - "ice cooled".

[0015] The panel 1 may be detachable from the font for access to facilitate servicing or repair. Alternatively, the panel 1 may be an integral (permanent) part of the font with access being provided by other means, for example the font may be open on the side facing away from the customer.

[0016] The front or outer surface 2 may be adapted to provide an interesting visual display in response to creation of condensation and/or ice. For example, the panel 1 may be provided with graphics or other form of display on which the condensation and/or ice is formed to create a visual display. Thus, the condensation and/or ice may depict a logo, brand name, slogan or other form of information to be displayed to the customer. Other applications and uses of the condensation and/or ice to provide an interesting visual display will be apparent to those skilled in the art.

[0017] The dispense head is also provided with a dispense tap (not shown) for dispensing a beverage such as beer, lager, cider or the like. The dispense tap may be of any suitable type and includes a valve operable either manually, for example by a handle, or electrically, for example a solenoid valve operated by a push button or the like. The dispense tap is connected to a remote source of the beverage, for example a keg located in a cellar or cold room for storing the beverage at low temperature, for example of the order of 12°C.

[0018] A supply line (not shown) extends from the keg to the vicinity of the dispense head and a branch line 7 extends from the supply line to the tap. The supply line may deliver beverage to a plurality of dispense heads at different locations. As shown, the branch line 7 has a portion 7a that is received in a groove 8 in the back of the chamber 4 and is retained in place by a removable cover plate 9 secured to the back of the chamber 4.

[0019] In use, the supply line passes through one or more remote coolers, for example ice bank coolers or thermoelectric coolers, to reduce the temperature of the beverage from the keg prior to dispense.

[0020] The supply line passes from the cooler(s) along a "python" (not shown) provided with a re-circulation loop for circulating a coolant such as chilled water to maintain the beverage at the desired temperature as it passes along the supply line. The supply line and re-circulation loop are bundled together and wrapped in insulation to prevent heat loss. The python may contain several supply lines for the same or different beverages and the dispense head may have more than one tap for dispensing a range of beverages.

[0021] The python brings the supply line to the vicinity of the dispense head and the branch line 7 connecting the supply line to the dispense tap is of relatively short length. The beverage passes through the branch line 7 in the direction indicated by the double headed arrows in Figures 1 and 2 and is cooled by heat exchange with coolant in the chamber 4 which prevents the beverage warming up to any appreciable extent. In this embodi-

ment, the branch line 7 is insulated on either side of the portion 7a to assist in maintaining the beverage temperature. It will be understood however, that insulation of the branch line 7 may not always be required.

[0022] Alternatively or additionally, the beverage cooling provided by the chamber 4 may be employed to reduce the temperature of the beverage to a desired dispense temperature immediately prior to dispense. For example, beer may be maintained at a temperature of about 2°C to 10°C in the python and the temperature reduced to about 1°C to 6°C in the branch line 7 for dispense. It will be understood that these temperatures are exemplary only and the invention is not limited thereto.

[0023] In this way, the final cooling provided by the chamber 4 ensures that the dispense temperature of the beverage is controlled for dispense of the beverage at the optimum temperature.

[0024] In a modification (not shown) we may provide the branch line 7 with a by-pass line that delivers the beverage to the tap without additional cooling by heat exchange with the chamber 4. A valve (not shown) may be provided for user selection of a dispense with or without additional cooling. In this way, the beverage may be dispensed at either one of two temperatures according to customer preference.

[0025] We may arrange for coolant to be circulated through the chamber 4 in response to actuation of a dispense so that the condensation and/or ice forms on the outer surface 2 of the panel 1 as the beverage is dispensed. For example the coolant may be circulated by a pump (not shown) switched on in response to actuation of a dispense or after a pre-determined period of time.

[0026] Between dispenses, the coolant may be circulated through the chamber 4 at pre-determined intervals if no dispense is actuated to prevent the static volume of beverage in the branch line 7 warming up to any appreciable extent.

[0027] Other modifications and changes that can be made will be apparent to those skilled in the art and are deemed within the scope of the invention.

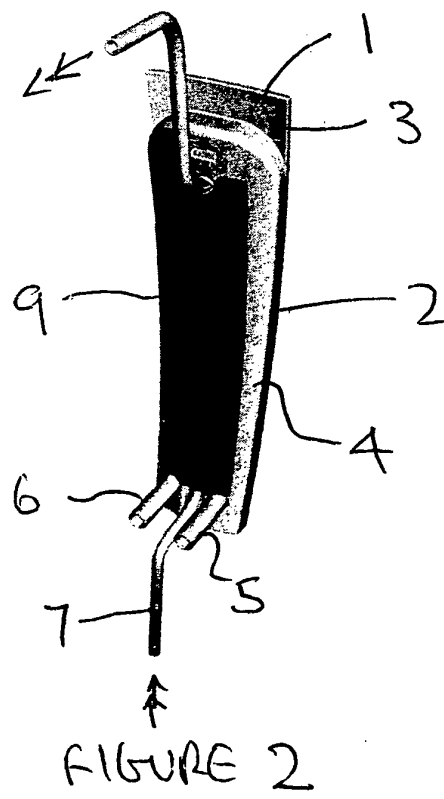
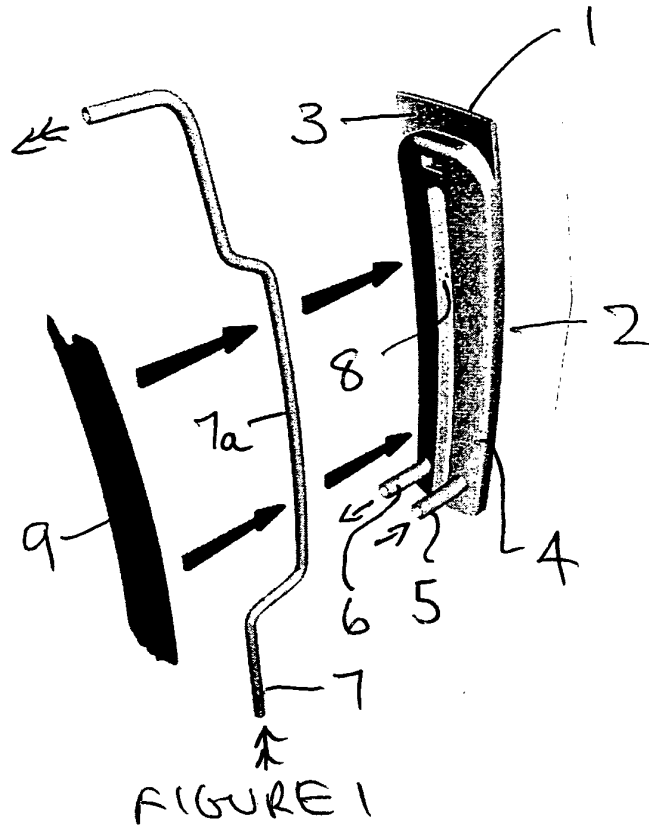
Claims

1. Apparatus for dispensing a beverage comprising a dispense head provided with a dispense tap, a chamber for circulating coolant such that condensation or ice forms on an outer surface of the dispense head, and a supply line for beverage delivered to the dispense tap in heat exchange relationship with the chamber.
2. Apparatus according to claim 1 wherein a re-circulation loop is provided for circulating coolant through the chamber, and the re-circulation loop optionally passes through a remote cooler for cooling the coolant to a desired temperature.

3. Apparatus according to any preceding claim wherein the outer surface of the dispense head includes a front surface of a panel and the chamber is provided on a rear surface of the panel, and the panel is optionally detachable. 5
4. Apparatus according to claim 3 wherein the front surface of the panel is adapted to provide a visual display in response to creation of condensation and/or ice, for example the visual display may include graphics. 10
5. Apparatus according to any preceding claim wherein the chamber has a formation such as a groove in the back of the chamber for locating the supply line in heat exchange relationship therewith. 15
6. Apparatus according to any preceding claim wherein means is provided for circulating coolant through the chamber in response to actuation of a dispense. 20
7. Apparatus according to any preceding claim wherein means is provided for circulating coolant through the chamber at pre-determined intervals between dispenses. 25
8. Apparatus according to any preceding claim wherein the supply line includes a line by-passing the chamber whereby beverage can be dispensed with or without cooling by coolant in the chamber. 30
9. A method of dispensing a chilled beverage comprising the steps of providing a dispense head with a dispense tap for dispensing a beverage, providing a supply line for delivering beverage to the dispense tap, providing a coolant chamber and circulating coolant through the chamber to cause condensation or ice to form on an outer surface of the dispense head, and cooling the beverage in the supply line by heat exchange with coolant in the chamber. 35 40
10. A method according to claim 9 wherein the chamber is connected to a re-circulation loop for circulating coolant through the chamber in response to actuation of a dispense, and the supply line preferably includes a line by-passing the chamber allowing beverage to be dispensed with or without cooling by the heat exchange with coolant in the chamber. 45

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↑ - coolant
 ↑ - beverage



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 5054

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 40 31 777 A (JW KUEHL GERAETE BAU GMBH) 16 May 1991 (1991-05-16) * column 4, line 42 - line 55; figures 1,3,4 *	1-4,9	B67D1/08
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B67D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 November 2004	Examiner Müller, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 25 5054

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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18-11-2004

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