

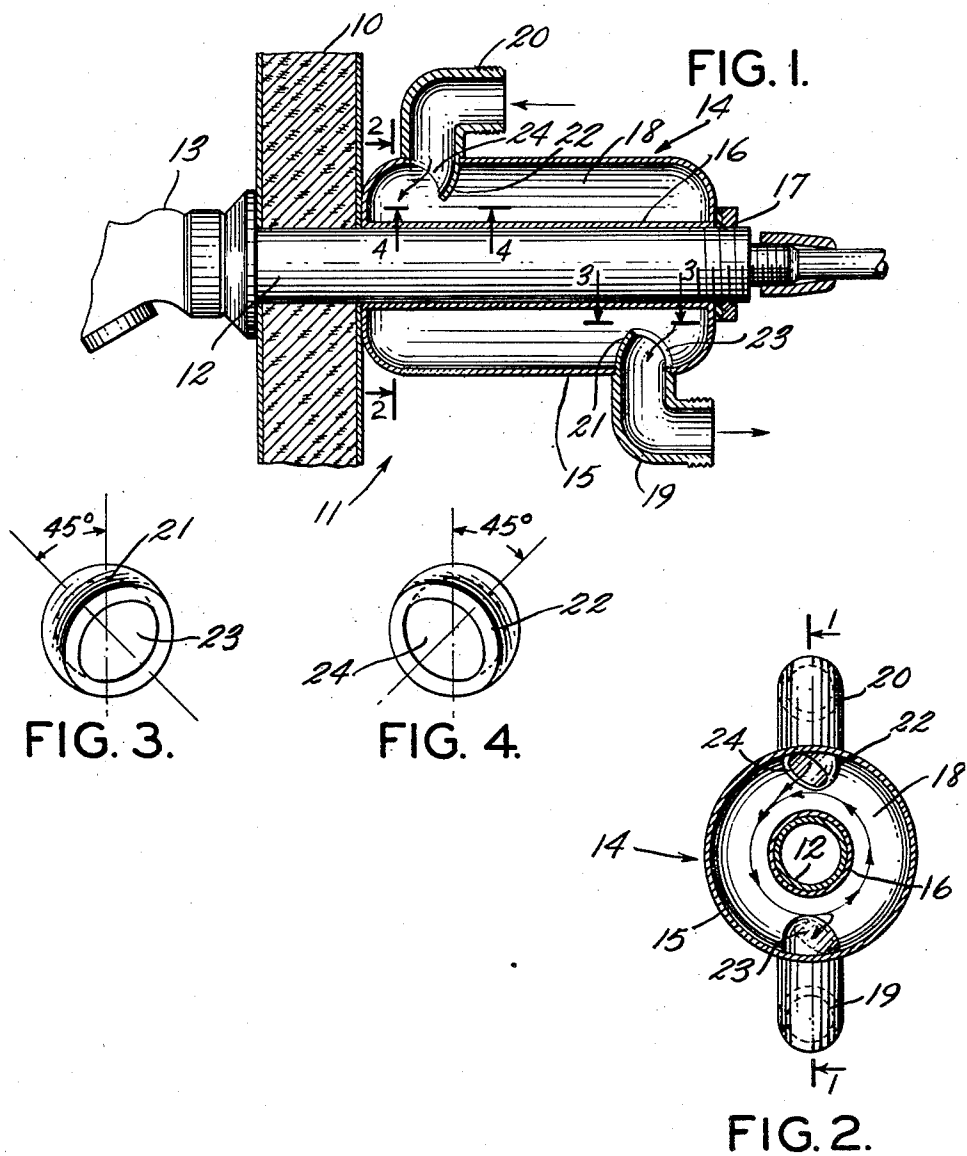
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COOLING JACKET FOR BEVERAGE DISPENSERS

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1

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COOLING JACKET FOR BEVERAGE DISPENSERS

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1 Claim. (Cl. 257—246)

This invention relates to cooling jackets and has particular reference to a jacket for cooling beverages at the dispensing point, although the invention is not limited to that use.

In dispensing a beverage, whether carbonated or still, it is essential that it be cold when served, not only for taste and flavor, but also to preclude the excessive waste that occurs when the beverage is warm. In patent Re. No. 20,981, there is disclosed a beverage serving system whereby the beverage is maintained at the proper low temperature from the cold storage point to the dispensing point, even when these points are a considerable distance apart. That system has proven to be eminently satisfactory and part of it includes a jacket enclosing the shank of the dispensing faucet at the bar, through which a cooling fluid is circulated, not necessarily to cool the beverage within the faucet shank, but principally to keep it cool. Although the cooling jacket of the patented system is adaptable to use with any circulating coolant whether a secondary such as brine, or a primary such as a normally gaseous refrigerant, the cooling tends to short-circuit its course between the inlet to and the outlet from the jacket so that the cooling effectiveness of the coolant is impaired and that appears to be more marked when a primary coolant is employed.

It has been suggested in said patent and by others that the course of the coolant through the jacket might be directed by the use of baffles such as spiral fins in the jacket or spiral strips wound around the faucet shank, but these expedients introduce the objections that the cooling effect is not uniform, the cubical content of the jacket is decreased and, in the case of a primary coolant, they may reduce rather than augment cooling effectiveness. Nevertheless, the general principle of guiding or directing the coolant through the jacket is beneficial, and the present invention utilizes that principle to a degree.

In accordance with the present invention, a cooling jacket for beverage dispensing systems is provided, which is simple and effective and which increases the cooling capacity of the coolant without increase in its quantity or increase in size of the jacket.

In a preferred embodiment of the invention, a jacket for receiving the coolant surrounds a thin-walled tube of good thermal conducting material adapted to closely fit over the shank of the faucet or other pipe, the jacket having coolant inlet and outlet connections provided with diagonal deflecting means opposite the corresponding coolant opening for directing the incoming coolant in a generally circulatory direction without confining it in its circulation and for collecting the outgoing coolant in such a way that short-circuiting of the coolant without thorough circulation through the jackets is precluded.

For a more complete understanding of the invention, reference may be had to the accompanying drawings, in which:

Figure 1 is an axial section through a cooling jacket embodying the present invention, as seen along the line 1—1 of Fig. 2;

Fig. 2 is a transverse section through the jacket as seen along the line 2—2 of Fig. 1; and

Figs. 3 and 4 are respective interior views of the coolant intake deflector and outlet collector, as seen along the lines 3—3 and 4—4 of Fig. 1.

Referring to Fig. 1 of the drawings, numeral 10 designates the wall of the insulated compartment 11 through which extends the shank 12 of the faucet 13 and in which the beverage flowing through the shank 12 and the en-

2

tire faucet is maintained cool in the general manner disclosed in said patent. Instead of the specific cooling means described in said patent, a jacket 14, comprised generally of the housing 15, brazed, welded or soldered to the ends of a thin-walled tube 16 is closely fitted over the shank 12 and held in place thereon by a nut 17. The tube 16 is preferably formed of copper or other good heat conducting material and fits as intimately around the shank 12 as convenient assembly and disassembly will permit, thus insuring good heat transfer between the interior 18 of the jacket 14 and the contents of shank 12. The housing 15 may be of any suitable material such as copper, although its degree of heat conductivity is not of great moment.

Inserted and soldered or brazed fluid-tightly in suitable holes in the wall 15 of jacket 14 are coolant outlet and inlet pipes 19 and 20 respectively. Preferably, the inlet 20 is positioned at the end of jacket 15, that is, nearest the wall 10, and the outlet 19 is positioned at the other or outer end of the jacket, in order to maintain the beverage and the faucet cool as it stands in and flows through the faucet shank 12 counter to the general direction of coolant flow through the jacket 14. The outlet and inlet pipes 19 and 20 may be elbows threaded at their ends for the reception of the coolant circulating pipes, not shown, but leading to and from the remote refrigerating equipment.

Projecting into the annular interior 18 of jacket 14, and preferably formed integrally with the inner ends of elbow pipes 19 and 20, are the coolant directing and collecting scoops 21 and 22, respectively. Both the outlet scoop 21 and the inlet scoop 22 are positioned opposite the corresponding opening, and may have the same configuration in that they are generally spoon-shaped and lie at a suitable angle preferably about 45° to the common axis of the jacket 15 and the center lines of the outlet 19 and the inlet 20, but their respective orifices 23 and 24 are directed in opposite directions, as is shown especially in Figs. 2, 3 and 4.

Referring particularly to Fig. 2, it will be seen that the angular relation of the respective outlet and inlet orifices 23 and 24 and the inclination of the corresponding scoops 21 and 22 are such that the incoming fluid is directed generally in a tangential or spiral direction and, at the same time, is directed toward the front end of the jacket 14 as indicated by the outflow arrows in Figs. 1 and 2 adjacent the scoop 24.

On the other hand, the outflow orifice 23 and its scoop 21 are disposed in an anti-spiral or opposite direction to the flow of the coolant and away from the intake end of the jacket 14, so that the coolant must reverse its direction and turn an angle to enter the outlet orifice 23, as is indicated by the outgoing arrows in Figs. 1 and 2.

In operation of the cooling jacket of this invention the coolant, either a primary refrigerant like Freon, sulfur dioxide or the like, or a secondary coolant like brine, glycol solution or the like, flows into the inlet pipe 20 under pressure. Upon entering the interior 18 of the jacket, the coolant strikes the spoon-shaped scoop 22 and is deflected thereby so that it emerges from orifice 24 in a tangential and forward direction as shown by the corresponding arrows in Figs. 1 and 2. Because of this tangential and forward deflection, the coolant scours the front end of the interior 18 of the jacket 14, thus precluding pocketing of the coolant and consequent "dead" zones.

In its spiral rearward course from the front end of the jacket 14, the coolant is required to proceed to the extreme rear end of the jacket before it can escape, thereby again precluding pocketing. Even then it is not scooped or caught in its spiral flow by exit scoop 21 because the latter faces in the opposite direction, so that the coolant must reverse its course to enter the outlet orifice 23, as is shown by the corresponding exit arrows in Figs. 1 and 2.

By reason of the direction of the scoops and orifices of the coolant inlet and outlet, the coolant is caused to thoroughly circulate through the jacket 14 which is uniformly cooled throughout its length and consequently, the beverage in faucet shank 12 and the entire faucet are uniformly cooled. The arrangement of the outlet and

3

inlet orifices 23 and 24, respectively, not only precludes pocketing of the coolant, but they also prevent short-circuiting of the coolant between the inlet and the outlet, so that the residence time of the coolant in the jacket 14 is of the proper length and impaired or partial refrigeration does not occur.

It will be observed that lowermost point of outlet orifice 23 is flush with the inner surface of jacket 15, so that gas entrained compressor lubricant collected in the jacket 14 will drain through outlet orifice 23 and outlet pipe 19.

Although the preferred embodiment of the invention has been illustrated and described herein, it is to be understood that the invention is not limited thereby, but is susceptible to changes in form and detail within the scope of the appended claim.

I claim:

In apparatus for controlling the temperature of a liquid supplied through a conduit, the combination of a jacket enclosing a predetermined length of said conduit, an inlet pipe extending through the wall of said jacket and terminating adjacent one end thereof and having an opening leading to the interior of said jacket for supplying a fluid coolant thereto, an outlet pipe extending through the wall of said jacket and terminating adjacent the other end thereof and having an opening leading to the interior

4

of said jacket for receiving the coolant therefrom, and spoon-shaped deflectors mounted in said jacket opposite each of said openings and arranged at an angle to the corresponding axes thereof, said inlet opening deflector being inclined for directing the coolant flowing there-through in a spiral direction and toward said one end of said jacket and said outlet opening deflector being inclined against the spiral flow direction and toward said other end of said jacket to cause the direction of spiral flow of the coolant to be reversed in passing from said jacket into said outlet opening.

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