June 12, 1934. T. S. MURRAY ET AL 1,962,322

COOLING APPARATUS FOR BEER OR OTHER BEVERAGE CONTAINED IN CASKS

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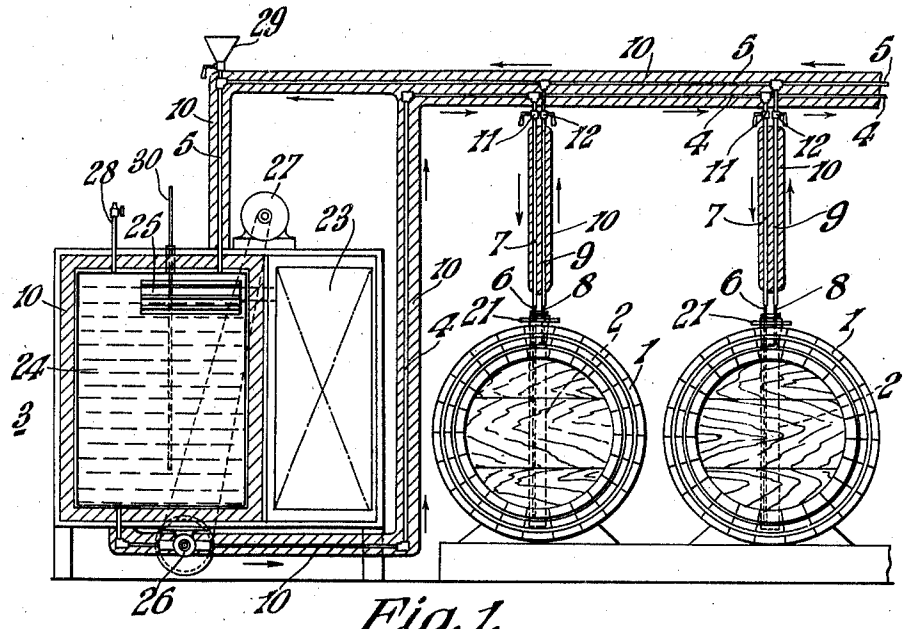


Fig. 1.

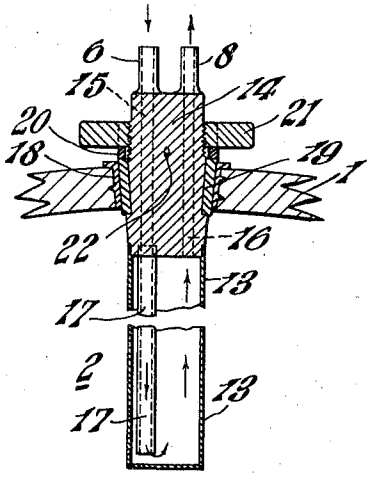


Fig. 2.

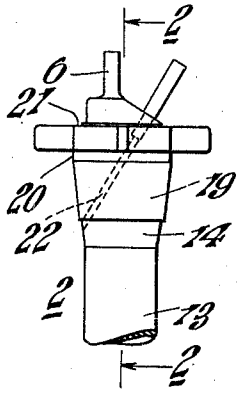


Fig. 3.

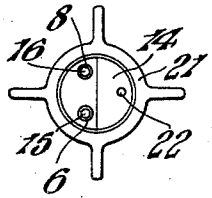


Fig. 4.

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# UNITED STATES PATENT OFFICE

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## COOLING APPARATUS FOR BEER OR OTHER BEVERAGE CONTAINED IN CASKS

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Application October 31, 1933, Serial No. 696,070
In Great Britain October 18, 1932

1 Claim. (Cl. 257—15)

This invention relates to cooling apparatus for beer or other beverage contained in casks.

The object of the invention is the provision of improvements in such apparatus and the invention consists broadly of apparatus comprising a heat interchanger constituting a self contained unit adapted to be mounted in the bung hole or other single hole in the wall of the cask so as to project into the beverage, said heat interchanger being adapted to be connected to an outside refrigerating system whereby a refrigerant is continuously circulated through it from said system, for cooling the beverage.

In order that the invention may be the more clearly understood a beer cooling system in accordance therewith will now be described, reference being made to the accompanying drawing, wherein:—

Figure 1 is a sectional elevation illustrating said system.

Figure 2 is a sectional elevation to an enlarged scale of one of the heat interchangers employed in said system, the section being taken on line 2—2 of Figure 3.

Figure 3 is an outside elevation of the same looking from the left of Figure 2.

Figure 4 is a plan of the same.

Referring to the drawing the numeral 1 designates the barrels in which the beer is contained. Each barrel is provided with a heat interchanger 2 immersed in the beer content and adapted to have circulated through it a cold liquid which absorbs heat from the beer and thereby maintains the same at a suitably low temperature.

The cold liquid for all the heat interchangers is supplied from a common, refrigerating apparatus 3, said liquid being pumped from said apparatus along a flow conduit 4 and returning to said apparatus by way of a return conduit 5. The inlet nipples 6 of the several heat interchangers 2 are connected by way of conduits 7 to the flow conduit 4, and the outlet nipples 8 of said heat interchangers are connected by way of conduits 9 to the return conduit 5. Thus cold liquid from the flow conduit 4 will flow through the several heat interchangers 2 and will return at a higher temperature to the return conduit 5.

It will be observed that the several conduits are heavily lagged with suitable heat insulating material 10. The flow and return conduits 4 and 5 throughout the major portion of their length are provided with a common jacket of said material as shown and each pair of conduits 7 and 9 is similarly provided with a common jacket.

The conduits 7 and 9 are provided with respective cocks 11 and 12 as shown so that said conduits can be controlled and cut off at will from the flow and return conduits 4 and 5.

Each heat interchanger 2 comprises an upright metal cylinder 13 having its lower end closed and joined coaxially at its upper end to a metallic body 14 of roughly cylindrical form. The inlet nipple 6 and the outlet nipple 8 project integrally upwards from the upper surface of said body 14 and the bore passages 15 and 16 of said nipples extend completely through said body to the interior of the cylinder 13. The passage 15 is continued at its lower end by means of a tube 17 which extends nearly to the bottom of said cylinder 13. It will thus be seen that the cold liquid from the conduit 7 flows down the passage 15 and the tube 17 and enters the cylinder 13 at the bottom thereof. It then flows up through said cylinder 13 increasing in temperature due to absorption of heat from the beer, and passes through the passage 16 to the conduit 9.

Each heat interchanger is mounted in place of the usual bung in the metallic bush 18 provided in the wall of the barrel for receiving said bung. To this end the body 14 is provided with a coned rubber ring 19 surrounding it and abutting at its lower end against a shoulder circumscribing said body. On the upper end of said ring 19 a loose metal ring or washer 20 is rested, and above said washer and in screwed engagement on said body 14 is a ring nut 21. The cylinder 13 is passed through the bung hole until the rubber ring 19 engages within the bush 18, and the wing nut 21 is then screwed down tight. This compresses the two ends of said rubber ring 19 between the washer 20 and the shoulder at its lower end, thereby tending to expand said rubber ring in a radial sense and causing it to form a hermetic seal between the body 14 and the bush 18.

The numeral 22 designates a vent passage passing at an angle through the body 14 from the interior of the barrel to the atmosphere for the purpose of giving egress to the gases generated in the interior of the barrel.

The refrigerating apparatus may be of any suitable kind. In the present arrangement it comprises a refrigerating unit 23 located in a compartment adjacent the cold liquid tank 24 and having its chilling coils 25 extending into said tank. The liquid is circulated by means of a pump 26 driven by an electric motor 27. The numeral 28 designates an air vent and the numeral 29 a filling funnel. The temperature in

the tank is measured by means of a thermometer 30.

The temperature of the liquid in the tank is regulated by means of thermostat which causes the speed of the motor driving the refrigerating apparatus to vary in response to variations in the tank temperature in such a way that said tank temperature is maintained at a given selected value.

What we claim and desire to secure by Letters Patent is:—

In apparatus for regulating the temperature of beer or other beverage contained in a cask, a heat exchange unit comprising an upper bung section adapted to engage the walls of the bung hole of said cask, and a lower gas-tight casing section adapted to be immersed in said beverage, an air vent disposed at an angle in said bung and communicating with the interior of said cask, an inlet passage in said bung communicating with the interior of said gas-tight casing, said inlet passage having an extension thereto terminating adjacent the bottom of said casing, an outlet passage in said bung terminating adjacent the top of said casing, means including an expansible ring about said bung for tightly securing said bung to said cask, and means for passing a temperature regulating fluid into said casing through said inlet passage and out of said casing through said outlet passage.

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