

Aug. 24, 1937.

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2,091,074

LIQUID COOLER

Filed Sept. 2, 1936

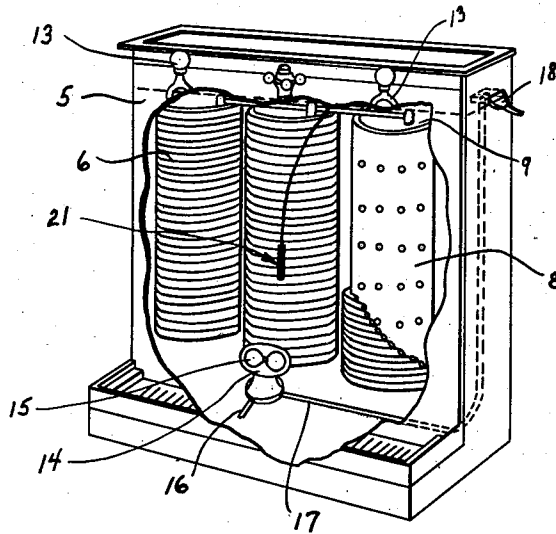


Fig. 1.

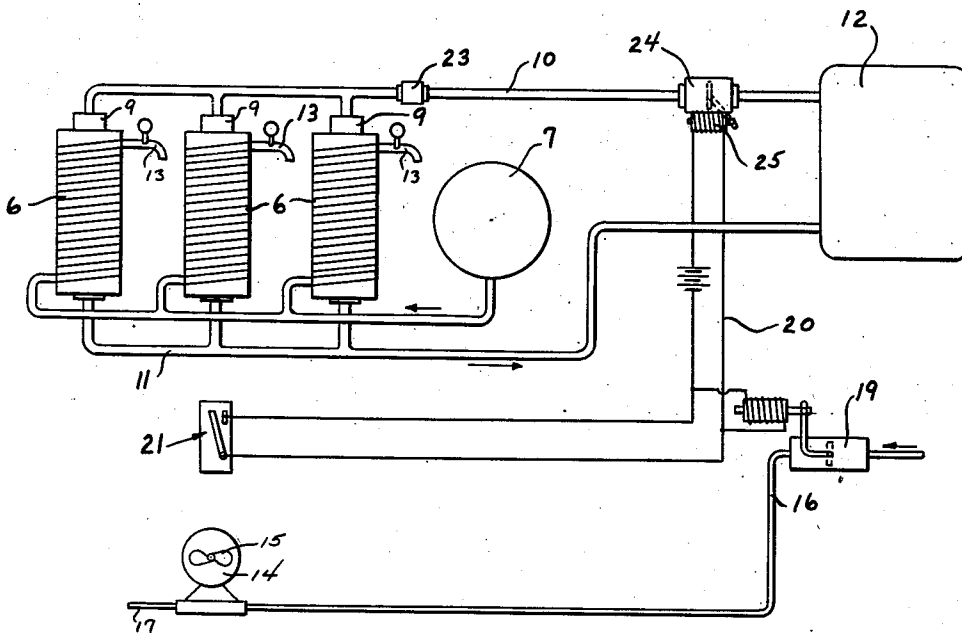


Fig. 2.

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2,091,074

LIQUID COOLER

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Application September 2, 1936, Serial No. 99,011

3 Claims. (Cl. 62-141)

This invention relates to apparatus for cooling liquids and has particular reference to a device for cooling beer.

The principal object of the invention is the provision of a device of the character referred to which will automatically maintain an even temperature in the beer or other liquid desired to be cooled.

Another object of the invention is the provision of a cooling system which is automatic in operation and controllable by the slightest change of temperature which may occur in the liquid to be cooled.

A further object of the invention is the provision of a device which is economical to manufacture, easy to install, and simple in operation.

A further object of the invention is the provision of a device of the character referred to which may be effectively used in connection with small domestic refrigerating plants.

A further object of the invention is the provision of a device which will insure proper circulation of the liquid bath during the operation of the refrigerating unit so as to effect a uniform temperature throughout the bath in which is immersed the coils carrying the liquid to be cooled.

In rapidly dispensing beer from the present known beer coolers the water or bath around the coolers warms up rapidly in the immediate vicinity, thereby causing the beer to become warm. It has also been discovered that the so-called dry coolers which are in common use today for cooling liquids are efficient only during continuous operation. If allowed to stand for a short period of time the liquid in the coils becomes warm and in order to withdraw a quantity of cool liquid the warm liquid must first be withdrawn, thereby causing considerable waste.

These disadvantages are obviated with the use of my improved cooling system. Further objects of the invention will become more apparent as the description proceeds, reference being made to the accompanying drawing, wherein:

Fig. 1 is a perspective view of a device embodying my invention.

Fig. 2 is a diagrammatic view of my system showing the relation of the several elements comprising my combination.

Referring now more particularly to the drawing it will be seen that in the embodiment herein disclosed my device is housed within a suitable liquid tight container 5, which may be made any desirable size and shape. Positioned within the container 5 are a plurality of coils 6 which

are connected at one end to a liquid reservoir 7, (Fig. 2) which may be a beer keg or the like. The coils 6 are tightly wound about perforated cylinders 8 which in turn are preferably press fitted over standard evaporator units 9 (Fig. 2) which comprises part of a small refrigerating system in which 10 indicates the liquid line, 11 indicates the suction line and 12 indicates the compressing and condensing units. I prefer to wind the coils 6 upon the perforated cylinders 8, so that the coils are rigidly supported and at the same time are provided with metal to metal contact, in order that the maximum efficiency may be obtained during the cooling cycle. The opposite ends of the coils 7 are connected to faucets 13, in order that the liquid to be cooled may be readily withdrawn.

The cabinet 5 is filled with either a brine or sweet water bath to a depth sufficient to cover the connections to the faucets 13, and in order to provide a constant temperature throughout the bath I propose to introduce an agitator 14, which in this instance is a small water driven motor operating a suitable impeller 15. The motor 14 is connected to a water inlet 16 and to a water exhaust line 17, which line is preferably heat insulated and is connected to an overflow pipe 18, which in turn is connected to a sewer or other drain connection.

The water motor 14 is controlled by means of a solenoid valve 19 positioned in the water line 16. The solenoid 19 is connected to an electric circuit 20 which in turn is controlled by a thermostatic control 21 which I prefer to place in the bath preferably in the stream caused by the agitation of the water motor 14.

The liquid line 10 is provided with the customary expansion valve 23. In addition to the expansion valve 23, which is normally positioned near the evaporators 9, I insert in the line 10 a secondary valve 24 which is operated by the solenoid 25, which is also positioned in the electric circuit 20. I prefer to position the secondary valve 24 between the expansion valve 23 and the compressor and condenser 12, in order that the flow of the refrigerant may be controlled independent of the operation of the customary expansion valve 23. Although I have illustrated the impeller 14 as being positioned near the bottom of the coils 6, it is within the contemplation of the invention that this agitator may be positioned at any other place within or without the bath so long as the proper agitation of the bath may be effected through its operation.

The operation of my improved cooling system

is simple. As the liquid to be cooled is withdrawn from the faucets 13 and new liquid is introduced into the coils 6, the temperature of the liquid constituting the bath surrounding the coils 6 is raised. When the temperature of the bath reaches a predetermined point the thermostatic control 21 is actuated causing the electric circuit 20 to be closed whereby the solenoid valves 19 and 25 are opened, permitting the refrigerant to flow through the line 10, and water to flow through the line 16, the latter causing the water motor 14 to become operative to agitate and circulate the bath about the coils. With this combination and arrangement of parts it is obvious that there will be a constant agitation and circulation of the bath around and about the coils at all times when the refrigerating unit is in operation, and at such other times as the temperature of the bath rises to a point sufficient to actuate the thermostatic control 21. It is obvious, therefore, that a liquid cooler employing the principles of my invention will enable the user to dispense a liquid which is uniformly refrigerated regardless of the speed with which the liquid may be drawn through the coils and regardless of the fact that the withdrawal of liquid may be extremely intermittent.

Although I have herein disclosed a certain embodiment of my invention it will be understood that various modifications may be employed without violating the spirit of the invention, all of which are intended to be within the scope of the appended claims.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A cooling system comprising the combina-

tion of a container, a liquid bath in said container, an evaporator in said bath, a fluid line communicating with said evaporator and the compressor and condenser of a refrigerating machine, a perforated member about said evaporator, a coil containing a liquid to be cooled about and supported by said perforated member, an agitator in said bath, and thermostatic means in said bath arranged to control means for operating said agitator independent of the motor of the refrigerating machine.

2. A liquid cooler comprising the combination of a container, a liquid bath in said container, the evaporator of a refrigerating machine in said bath, a perforated cylindrical member around said evaporator and in contact therewith, a coil containing a liquid to be cooled around and supported by said perforated cylinder and in contact therewith, an agitator in said bath, means independent of the refrigerating machine to operate said agitator, and thermostatic means in said bath arranged to simultaneously control said last named means and a valve in one of the lines connected to said evaporator.

3. In a liquid cooler, including the evaporator of a refrigerating machine, a coil carrying a liquid to be cooled and a bath, the combination of a perforated heat conductive cylindrical member about, and in contact with, said evaporator and supporting said coil, a hydraulically operated agitator submerged in said bath, a hydraulic connection between said agitator and a source outside said bath, and thermostatic means in said bath for controlling said hydraulic connection.

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