Dec. 26, 1939. E. C. DEIBEL 2,184,380

THERMAL EXCHANGE BARREL

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FIG 1

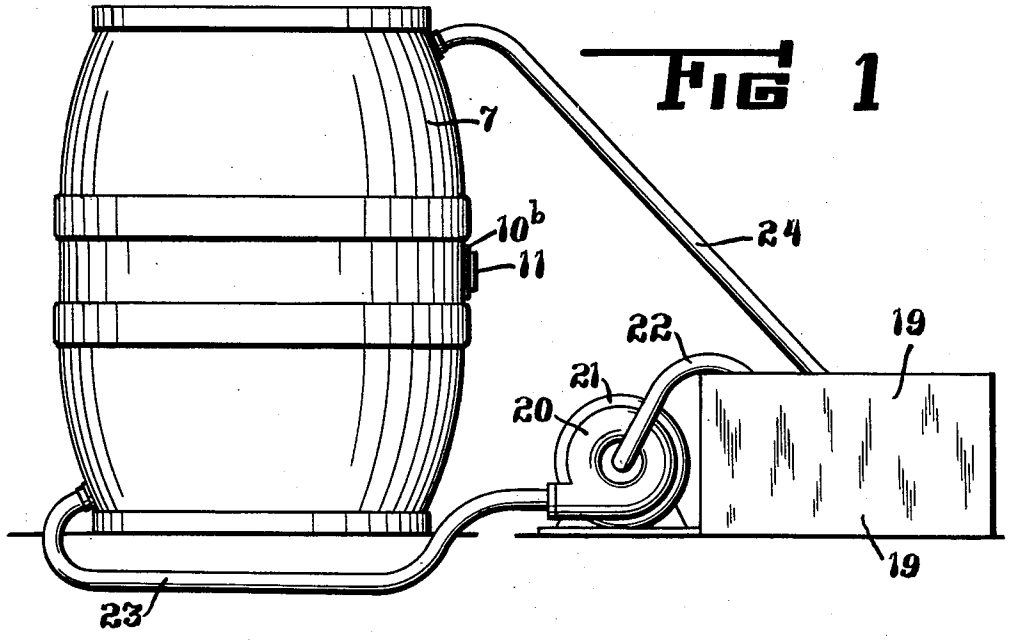
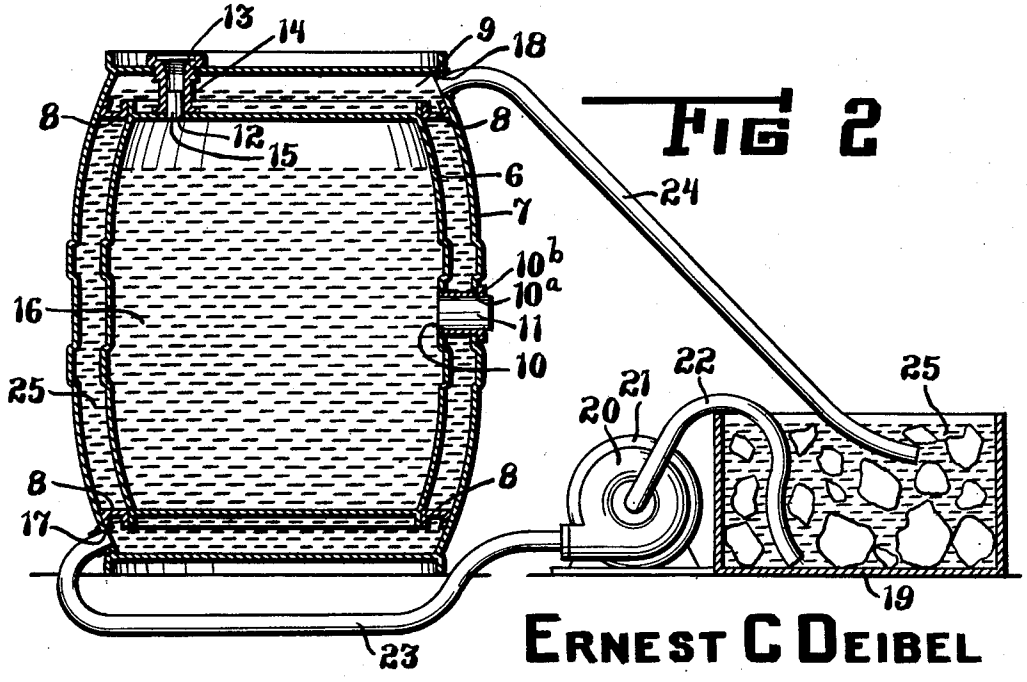


FIG 2



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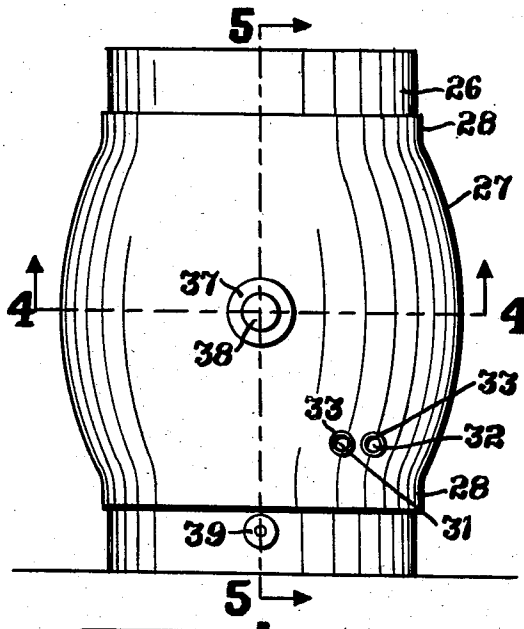


FIG 3

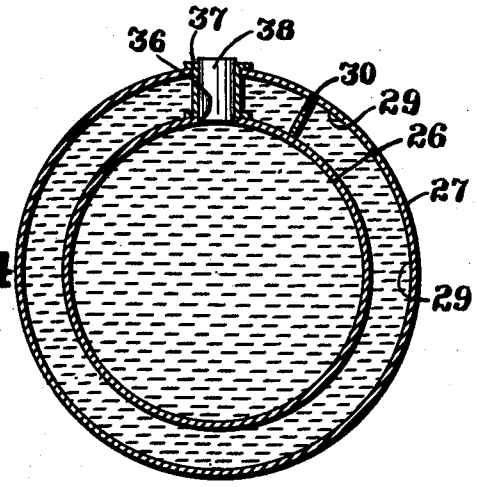


FIG 4

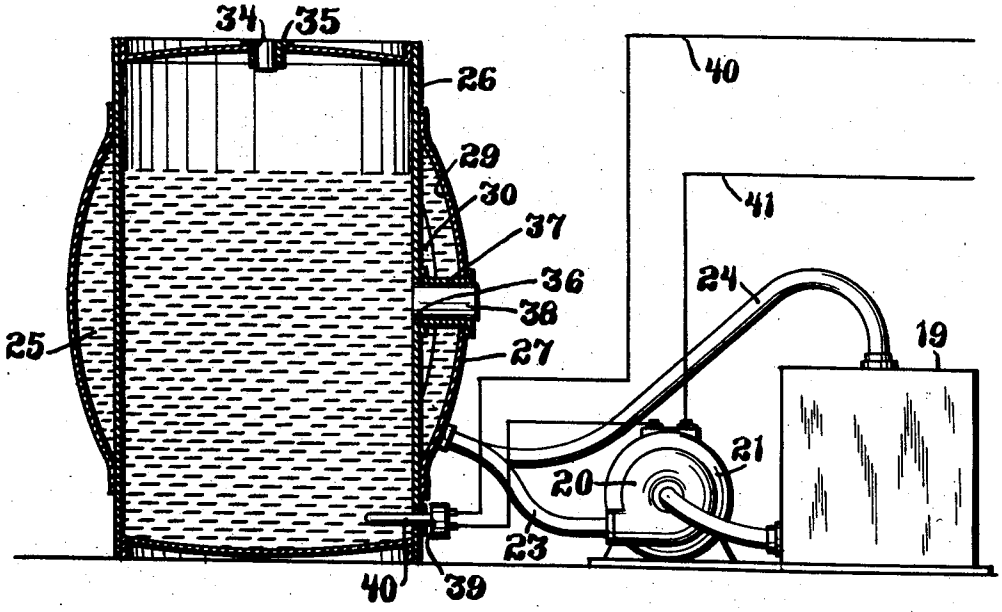


FIG 5

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THERMAL EXCHANGE BARREL

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Application December 28, 1936, Serial No. 117,697

2 Claims. (Cl. 62—144)

This invention relates to improvements in containers having means for bringing the contents thereof to a desired temperature and maintaining the same at said temperature.

While intended for use generally wherever it may be advantageously applied, the invention is particularly adapted for use in a cooling barrel for beer, ale, etc., in which connection it will be illustrated in the drawings and hereinafter described.

Objects of the invention are to provide a barrel of simple, economical construction, which will be strong and durable, which may be used to contain beer or other liquid and to provide conveniently usable means for quickly and efficiently bringing the contents of the barrel to a desired temperature.

A further object is to provide a jacketed barrel which may be used for cooling purposes as hereinafter set forth and which will be strong and durable and can be used and reused for a relatively long period of time.

An additional object is to provide a barrel permanently enclosed within a fluid tight casing with a completely enclosed space between the barrel and the casing; which may be utilized to thermally insulate the barrel; to hold a medium adapted to retain the contents of the barrel at a desired temperature for a certain length of time or for receiving a thermal exchange medium for changing the temperature of the contents of the barrel and maintaining the same at a desired temperature.

The above and other objects and advantages are accomplished by the novel construction herein described with reference to the particular adaptation thereof shown in the drawings, it being understood that the invention may be adapted in various ways to various purposes and that changes and modifications may be made which come within the scope of the claims hereunto appended.

In the drawings:

Figure 1 is an elevational view of a barrel constructed in accordance with this invention, the same being shown with cooling apparatus operatively attached thereto;

Figure 2 is a central, vertical, sectional view of same, the parts shown in elevation;

Figure 3 is an elevational view of a modified form of the invention;

Figure 4 is a cross sectional view of same taken as indicated by the lines 4—4 of Figure 3;

Figure 5 is a central, vertical, sectional view taken as indicated by the lines 5—5 of Figure 3 and also illustrating in side elevation and by diagram temperature changing mechanism operatively attached thereto.

Proceeding now to a detailed description of the invention with reference to the particular adaptation thereof disclosed in the drawings, the numeral 6 denotes a barrel which is completely enclosed within the casing 7. The barrel and the casing are of similar shape and the barrel 6 is held in a central position within the casing 7 by means of a plurality of spaced brackets 8 thereby providing an enclosed space 9 which completely surrounds the barrel 6. The barrel 6 is provided on one side thereof with a suitable bung-hole 10 and the casing 7 is provided with a like coinciding opening 10*a*.

A tube 10*b* is positioned through the opening 10 in the casing 7 and through the hole 10*a* in the barrel 6 and is welded or otherwise suitably secured to form a fluid tight joint between the tube 10*b* and the barrel 6 and the casing 7. The numeral 11 denotes a bung which may be employed to close the pipe 10.

One head of the barrel is likewise provided with an opening 12 and the adjacent head of the casing 7 is provided with the opening 13. A tube 14 is secured to the barrel by welding or any suitable means to communicate with the opening 12 and to project through and completely close the opening 13 in the casing 7. The tube 14 is closed with a suitable plug 15 and is interiorly threaded at the upper end thereof to receive a beer pump or other fluid tapping device which may be inserted through the tube 14 to draw beer or other fluid 16 from the barrel 6.

The casing 7 is provided adjacent the lower end thereof with an opening 17 and is provided adjacent the upper end thereof with an opening 18. A thermal exchange fluid 25 may be pumped or otherwise introduced into one of the openings 17 to completely fill the space 9 between the barrel 6 and the casing 7.

In the drawings, there is shown a tank 19 which is filled with ice water. The pump 20 driven by an electric motor 21 has an intake pipe 22 positioned within the tank 19 and an outlet pipe 23 which is operatively attached to the opening 17. A discharge pipe 24 is operatively attached to the opening 18 with the discharge end thereof leading to the tank 19. When it is desired to cool the liquid 16 the pump 20 is operated to draw cold water 25 or other thermal exchange medium from the tank 19 through the opening 17 into the space 9 until the space 9 is completely filled and overflows through the pipe 24 back to the tank 19.

As the temperature of the thermal exchange liquid is raised by the contents 16 the warmer liquid 25 will rise to the top and be discharged through the pipe 24. As the thermal exchange liquid completely surrounds the barrel the liquid 16 will be quickly and efficiently cooled to the desired temperature. By regulating the operation of the pump 20 this temperature may be indefinitely maintained. In Figures 3, 4, and 5 there is illustrated a barrel 26 which is similar to the barrel 6 and which is provided around the middle portion thereof with a jacket 27.

In the particular adaptation of the invention illustrated in Figure 3 the barrel 26 is cylindrical and the jacket 27 has cylindrical end portions 28 in which the barrel is snugly received and which is welded or otherwise suitably secured thereto to form a fluid tight juncture therebetween. The central portion of the jacket is bulged outwardly thus materially strengthening the barrel 26 and forming a circumferentially extending middle raised portion on which the barrel may be conveniently rolled.

The outwardly bulged portion of the jacket forms a fluid tight space 29 which completely surrounds the middle portion of the barrel. The numeral 30 denotes a partition which is disposed longitudinally of the barrel and extends between the barrel and the jacket. The partition 30 is welded or otherwise suitably secured therein to extend entirely across the space 29. The jacket 27 is provided on one side of the partition 30 with an inlet opening 31 and on the other side thereof with an inlet opening 32. Suitable nipples 33 are secured in said openings for operatively attaching the inlet hose 23 to the inlet opening 31 and an outlet hose 24 to the outlet opening 32.

The barrel 26 is provided in one head thereof with an opening 34 in which is fitted the nipples 35 which is of conventional design and which is adapted to operatively receive a beer pump or other liquid drawing device which may be inserted therein.

The barrel 26 is provided on one side thereof with a bung-hole 36 having a tubular extension 37 which projects through the space 29 and through the jacket 27 and is welded or otherwise suitably secured to the jacket and the barrel to form a liquid tight joint therebetween.

The numeral 38 denotes a bung or other closure member which may be inserted in the tube 37 to close the barrel. In Figure 5 there is shown substantially the same thermal changing unit as is illustrated in Figures 1 and 2. In this figure the temperature changing medium is drawn from the tank 19 by the pump 20 and delivered through the hose 23 to the inlet opening 31. The space 19 is thus filled with a temperature changing medium which must pass entirely around the barrel to the outlet opening 32 on the opposite side of the partition 30. As the temperature changing medium is forced into the space 29 by the pump 20 and as it flows therefrom through the hose 24 by gravity, the space 29 may be completely filled with a temperature changing medium.

In Figure 5 there is also shown a thermostatic means for controlling the operation of the motor 21 and it is understood that this means may be applied to the adaptation shown in Figures 1 and 2.

While any suitable thermostatic controlling means may be employed, I have shown a circuit closing thermostat 39 having a thermometer 40 projecting into the barrel 26. The thermostat 39 is operatively interposed in one of the lines 40 and 41 in the electric circuit of the motor 21. It will be seen that the thermostat may be set to close the circuit of the motor 21 and maintain the circuit in a closed condition as long as the contents of the barrel is above the desired temperature and that as soon as the liquid within the barrel has been reduced to a predetermined temperature the thermostatic closing device 39 will break the circuit thus stopping the flow of the thermal exchange liquid to the jacket cavity 19.

It will be understood that the tank 19 may be in the form of an ice machine or any suitable temperature changing means and that the temperature changing liquid 25 may be a brine or other suitable liquid cooled by the temperature changing means. It will also be understood that any form of thermostatic control may be employed to regulate any suitable means which maybe employed to circulate the temperature changing medium.

It will thus be seen that I have provided simple, highly efficient means which can be conveniently employed to accurately regulate the temperature of beer or other liquid.

Having thus illustrated my invention and described the same in detail, what I claim as new and desire to secure by Letters Patent is:

1. In a device of the character described, a barrel, a jacket enclosing a space around said barrel, said jacket having an inlet opening at one extremity of said space and an outlet opening at the other extremity thereof; means to cool a thermal exchange liquid to a desired temperature and means operative to force said liquid through said inlet opening to said space to fill the same therewith and cause the same to flow therethrough and be discharged from said outlet opening, and thermostatic means controlled by the temperature of the contents of the barrel for regulating the flow of the liquid.

2. In a refillable barrel for beer or the like, a container, a continuous jacket completely surrounding said container with an enclosed space therebetween, said jacket having an inlet and an outlet opening leading to said space; means to cool a thermal exchange liquid, an electrically driven pump having a discharge pipe operatively connected to said inlet opening, said pump operable to deliver said liquid from said cooling means to said space and circulate the same therethrough and thermostatic means regulated by the temperature of the contents of said container for controlling the operation of said pump substantially as and for the purpose herein set forth.

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