Feb. 2, 1937. E. J. LAGOMARSINO 2,069,374

BEVERAGE COOLER

Filed Jan. 16, 1935

Fig. 1.

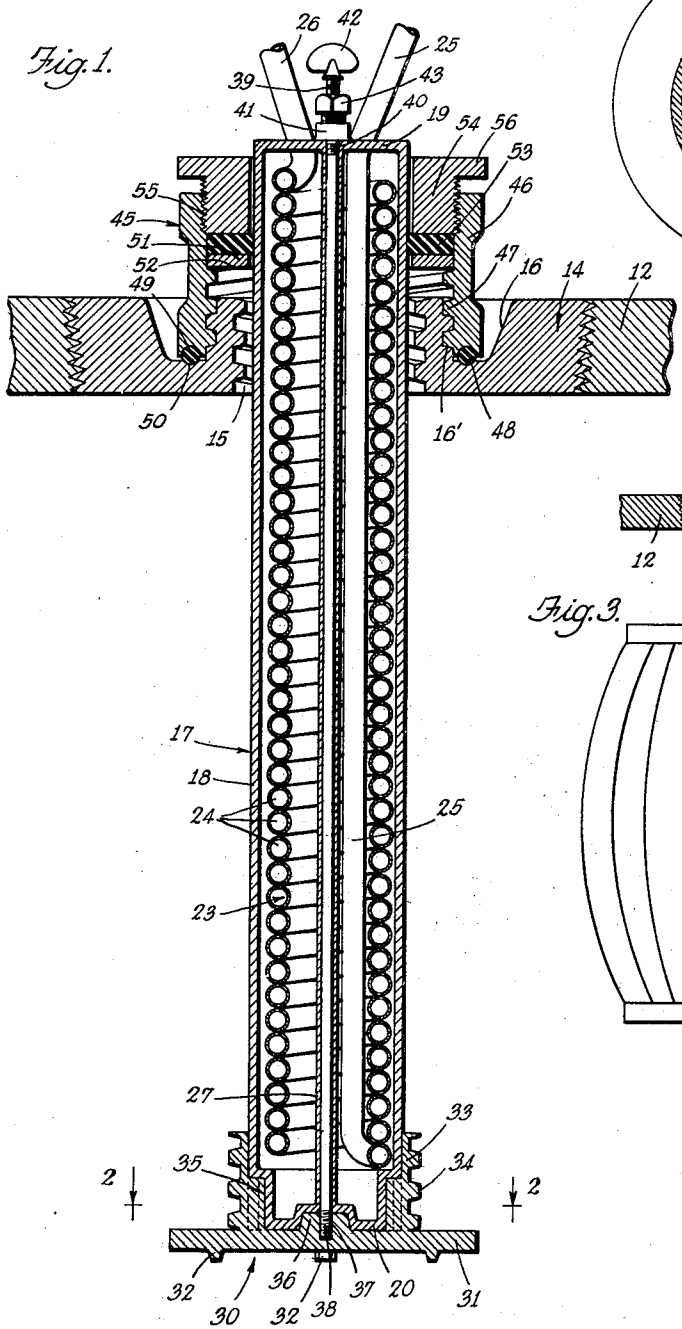


Fig. 2.

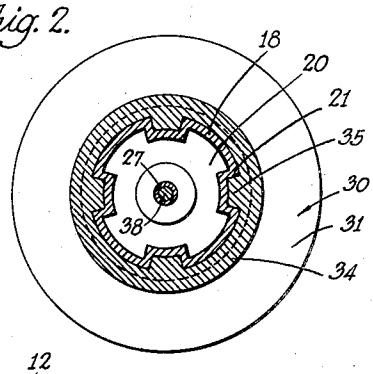


Fig. 4.

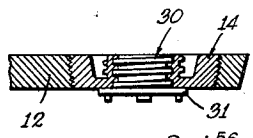
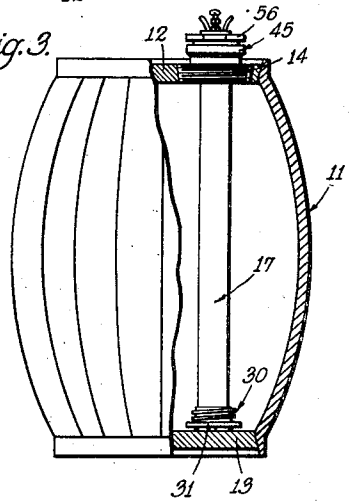


Fig. 3.



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2,069,374

BEVERAGE COOLER

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Application January 16, 1935, Serial No. 2,017

15 Claims. (Cl. 62—141)

My invention relates to a type of beverage cooler in which the liquid may be cooled while in a container such as a barrel, cask, or the like. The present invention is particularly adapted and constructed for cooling beer in barrels and casks.

An object and feature of my invention as applied to an internal cooler for barrels or casks or similar containers for beverages involves a construction by which a tube or pipe extends between the ends of the barrel and through one end, which tube may be sealed at its outlet from the barrel, and in the tube I employ cooling coils through which a cooling fluid may be passed thus chilling the tube or pipe and extracting heat from the beverage in the barrel. On account of the beverage being removed from the barrel it is necessary to have the cooling coil extend the full length of the tube so that the residual beverage in the barrel will be adequately cooled.

In another construction an object and feature of my invention is an arrangement by which the tube with the cooling coil may be inserted in and removed from the barrel, in which case the tube is sealed in the barrel to prevent loss of the carbon-dioxide gases in the beverage or used to expel the beverage. In this construction I also use a removable plug connected to the inner end of the tube which may form a closure plug for the head of the barrel after removal of the cooling tube. A further detailed feature of my invention relates to using a removable cap preferably threaded into the head of the barrel, and in this cap I provide a screw-threaded opening, the screw threads being utilized to form a screw-threaded connection with the plug, this plug being threaded into the cap from the inside of the barrel on removal of the cooling tube, and vice-versa, when the cooling tube is inserted in the barrel I have means for attaching the tube to the plug, unthreading the plug from the cap and then inserting the tube until the plug rests on the bottom of the barrel on the inside thereof and thus forms a support for the tube and the cooling coils.

Another detail feature of my invention in this type of cooler involves a collar threaded onto the barrel cap and having a packing ring or washer therein to form a gas-tight seal with the outside of the cooling chamber. Another feature of my invention relates to the construction of the cooling unit this being a tube with a cooling coil of small size pipe wound thereon and having an inlet and outlet at the outer or closed end of the tube whereby the cooling fluid may be circulated through the coil and develop a heat transfer between the beverage and the cooling tube. A further and detailed feature of the cooling tube connection to the plug involves interconnecting lugs by which the tube may be used to rotate the plug for unthreading from the cap and thread again into the cap, the tube being attached to the plug by a rod, or the like, extending longitudinally through the tube and attached to the plug.

My invention is illustrated in connection with the accompanying drawing, in which:

Fig. 1 is a vertical section through one form of my beverage cooler when inserted in a barrel, or the like.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1 in the direction of the arrows illustrating, mainly, the attachment of the cooling tube and the closure plug.

Fig. 3 is a side elevation of a barrel broken away to show my invention installed therein.

Fig. 4 is a section through the cap of the barrel showing the plug forming the closure and with the cooling unit removed.

In my invention the barrel is identified by the numeral 11 this having a head 12 and a base 13. The head is provided with a cap 14 attached to the head proper by a screw-threaded connection. As my invention principally applies to a wood or metal barrel construction the head 12 is usually made of wood or metal, but the cap 14 may be made of metal. The cap has a central threaded opening 15, the threads of which are combined and of cross pitch, thus, there are a plurality of entrance ends at the thread so that a quick attachment and detachment of the plug hereinafter described may be made of the plug to and from the cap. The cap is preferably provided with an annular recess 16 having external screw-threads 16'.

The cooling assembly designated by the numeral 17 employs a cooling tube or pipe 18, this being preferably cylindrical and having a closed top 19. The lower end of the tube has a closure 20 with a central socket and on the sides there are a plurality of short vertical recesses 21. A cooling coil 23 is inserted preferably permanently in the cooling tube. This is illustrated as having a series of helically wound sections of the tube 24 and a vertical section 25 extending from the bottom of the coil upwardly inside of the coil. There are two ends 25 and 26 of the cooling coil pipe which extend through openings in the head 19 and are sealed thereto preferably by welding, or the like. The thin tube 27 connects between the closures 19 and 20 at opposite ends of the tube this being for the purpose of

passing an attaching rod hereinafter described through this tube 27.

The closure plug designated by the assembly numeral 30 has a foot or base 31 with short legs 32 to rest on the base 13 of the barrel, a sleeve 33 extends upwardly from the base 31 and has exterior threads 34, these being combined to mesh with the threads 15 of the cap 14. The sleeve 33 is also provided with a series of internal lugs 35 which fit in the short recesses 21 in the cooling tube 18. At the center of the base 31 there is a boss 36 having an internally threaded socket 37 to which may be attached an attaching rod 38 screw-threaded at its lower end. This rod is threaded at its upper end 39 and is threaded in an internally threaded opening 40 in the closed head 19 of the tube 18, and also preferably in a boss 41 on the top of this closed head. A finger grip 42 or a wrench head is used for rotating the head to thread it in and out of the screw-threaded recess or socket 37. A packing gland 43 threaded in the boss 41 is used to form a gas-tight seal on the rod 38.

When the rod is attached to the plug 30 and thus the cooling assembly 17 is likewise attached to this plug they act as a unit. Before attaching the tube to the plug the plug is secured in the cap 14 and thus forms a closure for the threaded opening 15. Thus, when the cap 14 and the plug 30 are connected together the barrel may be shipped properly sealed. To attach my cooling unit to the plug the lower end of the tube 18 is interfitted with the plug so that the recess 21 in the tube 18 and the internal lugs 35 on the shoe interengage and the rod is threaded into the socket 37 and screwed up tight so that there is a snug assembly of the cooling tube with its cooling coils therein and the plug. The plug may then be unthreaded from the cap 14 and the cooling assembly with the plug moved downwardly in the barrel until the legs 32 rest on the base 13 of the barrel.

In order to form a gas-tight seal surrounding the pipe or tube 18, I employ a sealing assembly 45, which employs a collar 46. This collar has internal threads 47 to mesh with the threads 17 on the cap 14. A circular packing ring 48 interfits with a circular groove 49 on the lower edge of the collar and a circular groove 50 at the base of the annular recess 16 in the cap 14. A washer 51 is inserted in the collar 46 and rests on shoulder 52 formed at the upper ends of the internal threads 47 on this collar. A compressible packing gasket in the form of a ring 53 is inserted in the collar resting on the washer 52 and is squeezed tightly to expand the gasket against the external surface of the tube 18 by a ring 54 having a threaded connection 55 with the upper end of the collar and preferably internal thereto. The ring 54 may have projecting wrench grip lugs 56 for screw-threading in place.

It will thus be seen that when the cooling unit is assembled in the barrel that the cooling tube 18 passes through the opening 15 in the cap, which, in shipment of the barrel, was closed by plug 30. The lower end of the cooling assembly rests on the bottom 13 of the barrel. The collar 46 with the assembly units therein forms a tight seal on the tube 18 and also on the cap 14.

The tube or pipe 18 preferably contains alcohol or other suitable liquid for heat transference between the cooling coils 23, this tube 18 and the beverage. When the assembly is thus inserted in the barrel, a cooling fluid may be circulated through the cooling coils, which, as above mentioned, have connections 25 and 26 exterior of the tube 18 for attachment to any suitable means for circulating a refrigerated fluid.

On account of having the refrigerating coil pipes extending the full length of the cooling tube 18, when the barrel is full there is a heat transfer between the full contents of the barrel and the cooling assembly. The beverage contents of the barrel may be drawn off for dispensing in any suitable and known manner, and as the beverage level descends in the barrel there is always the lower portion of the cooling tube immersed in the residual beverage contents. Therefore, such beverage is adequately cooled until the barrel is completely empty. After such emptying of the barrel the pressure on the packing gasket 53 may be released by unthreading the ring 54. The collar assembly 45 may then be removed, the tube 18 elevated, and by turning this tube, the plug 30 may be attached to the inside of the cap 14 and thus form a complete closure for the threaded opening 15. The barrel is then in a condition to be returned for refilling and the cooling unit may be used on another barrel.

From the above construction it will be seen that a gas-tight seal may be made by the packing ring 53 on the outside of the tube 18 before this is engaged with and attached to the plug 30, and that while the plug is being unscrewed from the cap 14 this gas-tight seal is maintained, and also when the cooling unit with the plug 30 is forced downwardly into the barrel the gas-tight seal is still maintained. Thus, when a beverage contains a gas such as the carbon dioxide gas in beer, this cannot escape from the barrel. Therefore a pressure may be built up by injecting additional carbon dioxide gas expel the beverage if this should be beer or a similar beverage or a gas which does not have a deleterious effect on the beverage.

It will thus be seen from my concept that I have not only developed an appliance for cooling a beverage in a container and forming a gas-tight seal, but, also I have developed a manner or method of cooling in which there is a heat transfer between the beverage in the barrel or other container and the cooling unit internally of the container while the beverage is maintained under pressure in the container, this pressure being that due to the gas contained in the beverage some of which escapes and also the pressure gas used to dispense the beverage. This transfer of heat internally of the container thus affords a more economical manner of cooling a beverage in which the cooling unit may be substantially centrally located in the beverage than the present methods in which attempts are made to cool the beverage through the walls of the container. Where a beverage such as beer is contained in wooden barrels or casks it is quite a slow procedure to cool this through wooden walls of the barrel on account of the heat insulating properties of the barrel itself, and likewise, my procedure facilitates the cooling of beverages contained in metal barrels, or the like.

It will be apparent that if desired, a pipe may be permanently connected either to both ends of the barrel to extend through the beverage or to one end of the barrel and extend therein to the other end so that the cooling tube assembly 17 may be inserted to this pipe and the heat transfer take place between the cooling coils in the pipe of the cooling unit through the permanent pipe to the

beverage in the barrel. This construction is preferably used with metal barrels.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as described in the appended claims.

I claim:

1. In a beverage cooler, the combination of a container having an opening, a structure having a cooling means insertable in said opening, means forming a gas tight closure between the container and the said structure to prevent outlet of gas through the opening, a closure plug for the opening, the said structure and plug having an attaching means whereby the cooling structure may be attached to the plug and utilized to remove the plug from the opening for inserting of the said structure in the container and again for attaching the plug to the container at the opening for removal of the cooling structure.

2. In a beverage cooler the combination of a beverage container having an opening, a tube insertable in said opening and having a cooling medium in the tube to cool the beverage in the container, and means forming a gas tight closure between the container and the tube to prevent escape of gas at the said opening, a closure plug for the opening, an inter-engagement between the plug and the container to prevent escape of gas from the container when the plug is attached to the said opening, an inter-engaging means between the plug and the tube for attaching the tube to the plug and removing the plug from the container to pass the tube through the opening into the container, the said inter-engaging means between the tube and the plug also being operative to again attach the plug to the container at the opening on removal of the tube from the container.

3. In a beverage cooler, the combination of a container having an opening, a tube closed at its outer end and having a cooling coil therein for insertion through the opening, means to form a gas-tight seal between the container and the tube and thereby prevent escape of gas from the container or through the tube while the beverage in the container is being cooled by transference of heat between the beverage and the cooling coil, the said opening having screw threads, a plug having complementary screw threads, an attaching means for inter-engaging the end of the tube to be inserted in the opening and the said plug whereby the plug may be unscrewed from the opening of the container and lowered by the tube into the container, the said attaching means also being operative to thread the plug into the threads of the opening on removal of the tube from the container, the tube being detachable from the plug whereby the plug forms a liquid and gas tight closure for the container.

4. In a beverage cooler the combination of a container having an opening, a closure plug for said opening attachable to and detachable from the opening from the inside of the container, a cooling assembly having means for attaching the assembly to and detaching the assembly from the plug, the cooling assembly having means to disengage the plug from the container opening and to lower the plug with part of the cooling assembly into a beverage in the container and also to attach the plug to the container opening for removal of the cooling assembly.

5. In a beverage cooler as claimed in claim 4, a sealing means removably attachable to the container and surrounding the said opening in the container and having means to form a gastight seal with the cooling assembly to prevent escape of gas from the container while the plug is being removed and lowered in the beverage and while the beverage is being cooled.

6. In a beverage cooler, the combination of a container having a screw threaded opening, a threaded plug threaded in said opening from the inside of the container, a cooling assembly having means for attaching said assembly to the plug from outside of the container, an inter-engaging means between the plug and the cooling assembly for unscrewing the plug from the opening and lowering the plug with the cooling assembly in a beverage in the container whereby the cooling assembly may effect a heat transference between the beverage and the cooling assembly.

7. In a beverage cooler as claimed in claim 6, a collar attached to the container and surrounding the container opening and a packing means between the collar and the cooling assembly to prevent escape of gas from the container while the plug is being removed and the cooling assembly lowered into the container during the cooling of the beverage.

8. In a beverage cooler, the combination of a container having a screw threaded opening, a plug threaded in the said opening from the inside of the container, a cooling assembly having a tube closed at its inner and outer ends, means for attaching the tube to the plug from outside of the container, interengaging means between the inner end of the tube and the plug for unscrewing the plug from the opening, and again for screwing the plug into the opening, the said tube being insertable in part through the opening for cooling of beverage in the container.

9. In a beverage cooler as claimed in claim 8, the container having a packing means surrounding the container opening and having a resilient packing material engaging the exterior of the tube to prevent escape of gas from the container during the removal of the plug from the container and the lowering of the plug and part of the tube into the container.

10. In a beverage cooler, the combination of a container having a screw threaded opening, a plug having threads thereon to engage the threads of the opening and to be threaded therein from the inside of the container, a tube closed at its inner end, complementary recesses and lugs inter-engaging the inner portion of the tube and the plug, an attaching means extending through the tube and secured to the plug for attaching the plug in the tube, rotation of the tube in one direction having an unthreading action on the plug to remove the plug from the opening whereby the tube with the plug may be lowered into a beverage in the container, a sealing means between the container and the tube at the opening to prevent escape of gas from the container, and means in the tube to effect a cooling of a beverage in the container when the tube and plug are lowered into the container, the said tube being operative by again engaging the threads of the plug with the threads of the opening to screw the plug into the opening, the attaching means being detachable from the plug for removal of the tube from the plug after the plug forms a closure for the said opening.

11. In a beverage cooler, the combination of a container having a screw threaded opening, a plug having external threads threaded therein from inside the container and forming a closure seal for the opening, a tube closed at both ends

and having an inner pipe connecting the heads, a rod extending through the inner pipe and attachable to the plug, the plug and the inner portion of the tube having complementary recesses and lugs whereby on rotation of the tube when attached to the plug the plug may be unthreaded from the opening and lowered in the container, the said tube having cooling coils therein and said tube being adapted to contain a heat transfer liquid to surround said coils in the tube.

12. In a beverage cooler as claimed in claim 11, the container having an annular recess surrounding the said opening, a collar threaded into the said recess and thereby detachably connected to the container, a rigid washer in the collar surrounding the tube and supported by the collar, a resilient packing gasket resting on the washer and a ring threaded in the upper end of the cooler to expand the gasket and form a gas-tight seal between the gasket and the tube.

13. In a beverage cooler, the combination of a container having an opening, a closure plug for said opening attachable to and detachable from the opening, a tube having means for attachment to the plug from outside of the container, whereby the plug may be removed from the container and the plug with a portion of the tube extend into the container, the tube being adapted for heat transference.

14. In a beverage cooler as claimed in claim 13, a collar secured to the container and surrounding the opening having a plug and a gas sealing means between the collar and the tube whereby the tube may be inserted in the container while maintaining a gas-tight seal between the tube and the collar.

15. In a beverage cooler, the combination of a container having an opening, a closure plug attached to said opening and detachable therefrom inwardly of the container, a collar structure connected to the outside of the container and surrounding the opening, a tube inserted through the collar, a sealing means between the tube and the collar, an interengaging means including an attaching rod extending through the tube for attachment to the plug, for removing the plug from the opening and inserting the tube with the plug in the container, the said tube being adapted for heat tranference.

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