

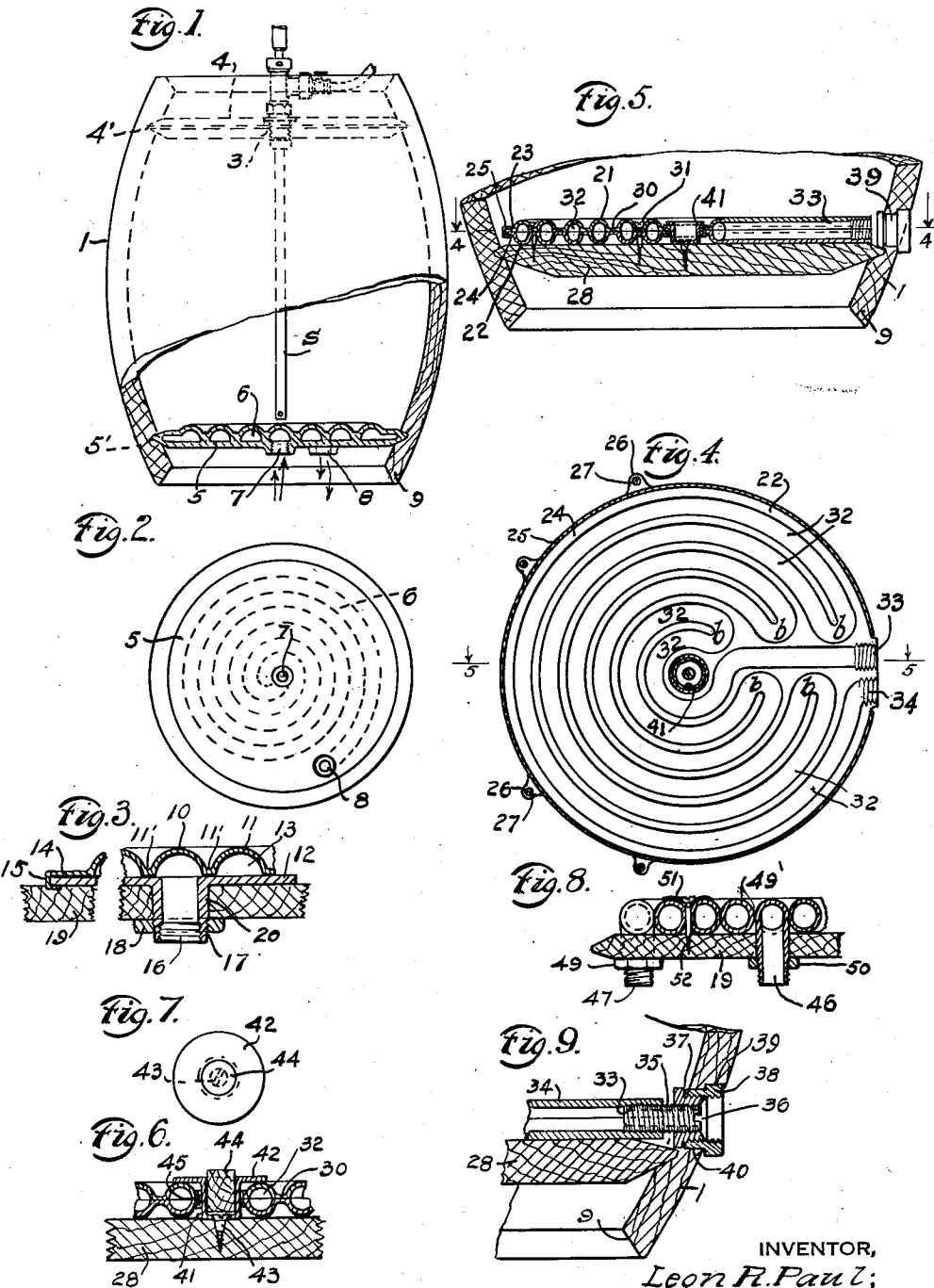
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BEVERAGE BARREL COOLER

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BEVERAGE BARREL COOLER

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The present invention relates to the cooling of beverages, and, specifically, to the maintenance of barreled beer, in the original containers at desired low temperatures, preferably at, and during the time of dispensing said beer.

One of the important features of the present improvement is the provision of cooling means associated with, mounted upon, or substituted for, one head of the keg or barrel, the said head being the lower head of the barrel, when the barrel is in upright dispensing position.

Thus, a firm anchorage of the cooler unit is obtained, against loosening, due to the rough treatment such containers are normally subjected to.

The kegs may be of wood, or metallic construction, wooden kegs being preferable under some conditions, owing to the wood thereof having satisfactory temperature insulation qualities.

In the forms shown herein the main feature of anchoring the cooler unit to the head end of the keg by various suitable means, is one important feature, and in such a manner that the liquid contents rest upon the cooler unit, during the gradual withdrawing of the liquid, so that the last remains of liquid are cooled until the keg or container is completely emptied.

A further feature is that in mounting the cooler unit at the bottom of the keg, the coolest beer is adjacent the inlet end of the dispensing spigot.

The foregoing and other features of advantage will be apprehended as the herein description proceeds, and it will be obvious that modifications may be made in the structure herein, without departing from the spirit hereof or the scope of the appended claims.

In the drawing,

Fig. 1 is a transverse, partially sectioned view, in elevation, of a barrel showing one form of the present liquid cooling means;

Fig. 2 is a bottom view of the cooling head of Fig. 1, removed from the barrel;

Fig. 3 is an enlarged, fragmentary section of a cooling head, similar to that of Figs. 1 and 2, slightly modified;

Fig. 4 is an enlarged plan view of the cooler unit of Fig. 5, in section, taken on the line 4-4, Fig. 5, looking in the direction of the arrows;

Fig. 5 is an enlarged, fragmentary sectional view, in elevation, of a modified form of cooling unit, taken on line 5-5, Fig. 4, looking in the direction of the arrows;

Fig. 6 is an enlarged, fragmentary sectional view of the central portion of Fig. 5;

Fig. 7 is a plan view of the cushion holder of Fig. 6, removed from cooler unit;

Fig. 8 is an enlarged, fragmentary, sectional view of a modified cooler unit construction; and

Fig. 9 is an enlarged, fragmentary view of the coupling construction of Figs. 4 and 5.

It has heretofore been the practice to cool beverages, such as beer, in barrel containers with an internally arranged cooling coil system, through which is circulated chilled water, or refrigerants, of desired temperature, to cool the beverage, especially during dispensing thereof from the container or barrel.

In the case of beer, such a mode of cooling directly in the container and dispensing directly therefrom, has numerous known advantages, is more sanitary, requires less labor in handling, and delivers a better product.

In the methods, and structures heretofore utilized for the present purposes, the cooling units, usually in coil form have been suspended within the barrel, so that the suspended cooling unit is subject to the shocks of the rough handling usually encountered in the handling of such containers, with the result that the cooling units are badly shaken and sometimes bent or distorted.

To avoid these troubles, and to increase cooling efficiency the present construction places the cooling unit at the lowermost position of the keg when it is set on one end for dispensing purposes, as indicated in Fig. 1.

To the foregoing ends, there is disclosed in Fig. 1, in vertical section, a beer keg or barrel of characteristic construction, with respect to its general details of the staves 1, the bung spud 3 and the top head 4, and the mode of mounting said head, these features being of usual and known practice.

The lower head 5 of Fig. 1, has a triple function as it not only forms the head for the lower end of the keg, as viewed in said Fig. 1, but it also forms the cooler unit for the contents and provides means 7 and 8, external to the barrel for temporary connection to a source of liquid refrigerant supply, not shown, but will be understood in this art.

The connections 7-8 are in the form of internally threaded, extending nipples, having ports therein to permit of the admission and exhaust of refrigerant to the interior passage 6, of the said cooling head, the travel of the refrigerant being indicated by the associate arrows shown adjacent the nipples 7 and 8.

The passage 6, in head 5 may be tortuous, or

as in the present instance, in the form of an involute, commencing at the center, or inlet 7, as in Figs. 1 and 2, and, after a sufficient number of coils, the outer end of the coil ends at the outlet, Fig. 2, and is integrally connected to nipple 8.

The nipples 7 and 8, are of sufficient length to allow of easy connection thereto of suitable couplings from the refrigerant supply, but the threaded ends of said nipples are kept within the confines, and protection of the chime 9, Fig. 1.

The outer periphery 5' of the cooling coil-head 5 is chamfered, like the perimeter 4' of head 4 and is mounted in the staves in the usual annular, angled seat or groove.

As thus described there are no pipe connections within the barrel interior. When the barrel of Fig. 1 is completed as above described, in assembly it is then pitched, over its entire interior area, in the customary manner and, thus the head 5, preferably made of cast metal, is protected against contact with the beer, without any appreciable reduction of temperature exchanging efficiency between the head and the beer.

In Fig. 3, there is shown a slightly modified form and assembly of a cooler unit, in which the cooler unit, generally denoted by 10, comprises two coacting sheet metal discs 11 and 12, the upper plate being stamped to provide an involute passage 13 and intermediate baffles 11' from the threaded inlet nipple 17 to the outlet, not shown, but which is similar to the plan view, Fig. 2.

The lower plate 12, preferably flat, carries the threaded inlet nipple 17, which extends through the wooden head 19 of the barrel by means of the bore 20, and a threaded clamping ring 18 is screwed over the external threads of nipple 17, thus to draw the assembled plate 12 into intimate contact with the inner face of head 19 and effectively seal plate 12, and its nipple 17 in assembly with head 19, in a liquid tight manner.

The outer edge of disc 12 is clamped, by the rolled over, perimetral edge 15 of flange 14 of the upper disc 11. The inner bore of nipple 17 is provided with coupling threads 16 to receive the refrigerant coupling, not shown.

As thus described, and shown in Fig. 3, the cooler unit 10 is clamped by the clamp rings 18 of the inlet and outlet nipples to the inner face of the wooden head 19, which acts as a protective support and an external insulator for said cooler unit.

Fig. 4 illustrates, in slightly enlarged plan, a further modified cooling head coil formed of an involute stamped upper baffle plate 21 and a lower involute stamped baffle plate 22, Fig. 5, both plates being of stamped sheet metal and having their flanged perimeters 23 and 24, clamped together by a ferruled clamp ring 25. This ring may be provided with extending ears, such as 26—26 on its perimeter to receive therein headed wood screws, shown in section at 27—27, Fig. 4, to hold the cooler unit to the wooden head 28, or the contacting baffles 30 between the matching involute passage forming members may be drilled to receive eyelets with headed wood screws, such as 31, Fig. 5, passing therethrough to hold the cooler unit to the wooden head 28.

As thus constructed, the convoluted plates 21 and 22, form a duplex refrigerant passage 32, Fig. 4, the threaded inlet 33, passing radially to the central coil 32, with a bend *b* connecting the next reverse circular coil 32, each coil 32 being connected to its reverse associate coil by bends *b*, until the last outer coil 32 terminates in a

threaded outlet connection 34. As thus described, the refrigerant passing from the inlet 33 to the outlet 34, is reversed in its flow from one coil 32 to its next associate coil 32, until it passes outlet 34.

As in Figs. 5 and 9 the inlet 33 and outlet 34 terminate at the periphery of the cooler unit, and in the plane of the cooler unit, so that the coil lies flat on the bottom barrel head 28, with the inlet and outlet in parallel relation.

The coupling of the inlet and outlet is illustrated in the enlarged, fragmentary, transverse section, in Fig. 9, wherein one or more of the staves 1 are bored with two shouldered bores one, 39 being shown in Fig. 9, and in Fig. 5. As both of these connections are alike, a description of the structure of the inlet connection, as in Fig. 9, will suffice for both connections. As in Figs. 4 and 9, both the inlet and outlet passages 33—34 are interiorly threaded, and a threaded nipple 35 is screwed into the inlet passage 33 through shouldered bore 39, by a suitable tool entered into its outer end slot 36. After this nipple has been seated tightly in inlet 33, a shouldered, interiorly and exteriorly threaded bushing 37, previously and loosely threaded on nipple 35, and introduced into the interior of the barrel bore 39 before closing the barrel, is then engaged on its exterior threads by an interiorly threaded lock bushing 38, from the exterior of the barrel and the two bushings 37 and 38 are then screwed together, until they are both firmly clamped and seated in shouldered bore 39. It is understood that these connections are all made in a liquid tight manner, so that there will be no leakage from the barrel or the coil. The exposed inner threads of the bushing 38 are utilized to connect the refrigerator couplings, not shown, thereto.

As in Figs. 4 and 5, the coil may be provided with a centrally located flanged thimble or cup, 41, which, as shown in Figs. 6 and 7, passes through a bore 45, located centrally of the coils 32, the flange 42 of the cup resting upon the outer face of coil 32, thus to clamp the same down upon wooden barrel head 28, when a headed wood screw 43 is passed through the bottom of the cup. The cup is further provided with a soft wooden cushion plug 44, which is so located, that when the spigot extension S, similar to that of Fig. 1, is forced down through bung 3, the end of the extension S will be cushioned by the block 44, and thus be protected from injury to itself, or the coil.

In Fig. 8 there is fragmentarily shown in section, a further modified form of cooler unit, and in the present instance, this comprises a single length of ductile metal tubing, such as copper or the like, which is bent, starting from its central, angled threaded inlet extension 46, which passes through a central bore in wooden head 19, in a closed involute, the successive coils touching one another, as at 49', and terminating in a threaded angled outlet extension 47, which passes through a suitable bore in head 19. Both extensions 46 and 47 are provided with lock nuts 49—50 to clamp the cooler coil to the inside face of the wooden head 19, similar to the structure described for Fig. 3.

As a further means for affixing the coil of Fig. 8 to the wooden head 19, a formed metal stirrup strap 51, embracing at least two of the adjacent coils, is provided with a headed wood screw passing through said stirrup and between the adjacent coils, and into said head 19.

From the foregoing, it will be noted that all

of the modifications herein possess a common feature, in that the cooler units are substantially flat and control the flow of the refrigerant in a single plane from inlet to outlet, in a continuous passage. The units, further are so located as to form a compact unit at the bottom of the barrel, when in dispensing position.

The cooling units either form the bottom head or are closely associated with the wooden head of the barrel, in the latter instance the head forms a protector and insulator.

No part of the cooler units are directly or indirectly exposed to the contents of the barrel, due to being coated with pitch.

The cooler units herein disclosed may be built into new barrels or may be mounted into old barrels, with a minimum of expense and labor.

In the modifications of Figs. 3, 4, 5 and 6, where the cooler units are made of stamped sheet metal, it is not necessary to seal the intra-marginal depressed baffle portions 11', of Fig. 3, and 30 of Figs. 4, 5 and 6, between the coil forming sections, as any slight leakage from one coil to the other is permissible. The main flow of the refrigerant is through the coils, and the loosely contacting portions 11' and 30 act as baffles for the direction of the refrigerant flow from inlet to outlet.

Having thus described the invention, what is claimed is:

1. A beverage container, comprising a barrel and two closing heads therefor, one of said heads being provided with a flat, passaged, refrigerant coil and an inlet and an outlet for said passage at its extremities, said inlet and outlet being extended outwardly from said coil, the perimeter of said passaged head being chamfered.

2. A beverage container, comprising a barrel and two closing heads therefor, one of said heads supporting an interiorly mounted, flat, passaged, refrigerant coil, an inlet and an outlet joining said passage at its extremities, said inlet and outlet extending outwardly, and connecting means rigid with said coil and its supporting head.

3. A beverage dispensing container, comprising a barrel having an upper and lower head, when the barrel is in upright, beverage dispensing position, said upper head having a dispensing spigot located therein, said lower head interiorly incorporating a cooler apparatus provided with baffled, refrigerant directing means therein, said means forming a continuous passage and inlet and outlet means at the extremities of said passage, said inlet and outlet means extending exteriorly of said barrel.

4. A beverage dispensing container, comprising a barrel having an upper and lower head, when the barrel is in upright, beverage dispensing position, said upper head having a dispensing spigot located therein, said lower head interiorly supporting a cooler head provided with baffled, refrigerant directing means therein, said means forming a continuous passage and inlet and outlet means at the extremities of said passage, said inlet and outlet means extending exteriorly at right angles to said passage through said lower head.

5. A beverage dispensing container, comprising a barrel having an upper and lower head, when the barrel is in beverage dispensing position, said upper head having a dispensing spigot located therein, said lower head interiorly supporting a flat cooler head provided with baffled, refrigerant directing means therein, forming a continuous passage, angled inlet and outlet means at the

extremities of said passage, said inlet and outlet extending exteriorly through said lower head, and means for locking said cooler head to said lower head.

6. A cooler head for a beer barrel, comprising a flat disc-like structure of circular contour having an interior chamber therein provided with interiorly located refrigerant directing baffles thereon to form a continuous passage, and inlet and outlet means at the opposite end of said passage, the perimeter of said structure being chamfered.

7. A barrel comprising in combination a head having a winding refrigerating passage therein, and means associated with said head whereby to connect the ends of said passage with a refrigerating system.

8. The combination, in a liquid cooling apparatus, of a barrel comprising a substantially flat head including a refrigerating passage, said passage being of winding formation, and means extending outwardly from said head for connecting said passage with the supply and return lines of a refrigerating system.

9. A liquid cooling apparatus comprising in combination a barrel including an uppermost head, an opposite head having coacting projections extending upwardly from substantially the entire area of its inner face, there being narrow depressions between said projections, said opposite head having a substantially plain outer surface, and connecting means disposed between said surface and said depressions, said means providing intercommunicating refrigerating passages in the projections, said passages having exterior inlet and outlet means adapted to be connected with the supply and return lines of a refrigerating system.

10. A barrel comprising in combination with a body including staves and having a top head, an opposite head having a winding passage therein for accommodating a refrigerating agent, said passage having an exterior inlet formed on one end thereof, and an exterior outlet for the other end of the passage.

11. A barrel comprising in combination with a body including staves and having a top closing head, and a bottom closing head having a flat refrigerating coil intimately associated therewith, said coil having external inlet and outlet means disposed substantially interiorly of the outer boundary surface of the barrel.

12. A beverage dispensing apparatus comprising in combination a barrel having a lower head including an outer surface, said head having incorporated therewith a flat refrigerating coil, said coil having the upper surface of its turns forming the inner surface of said head; exterior inlet and outlet means for connecting the opposite ends of said coil with a refrigerating system; a top head; and a dispensing spigot extending through said top head and having its intake end closely adjoining said inner surface.

13. The combination with a wooden barrel having at one of its ends a head, of a metal head member mounted in the other end of the barrel and having parallel with its plane a tortuous passage, said passage being defined by baffles in said member, and inlet and outlet means disposed at right angles to said plane, said means being in communication with the opposite extremities of said passage.

14. The combination of a wooden barrel having at one of its ends a head; a metal head mounted in the opposite end of the barrel and having its outer surface disposed interiorly of the

plane of the outermost part of the chime of the barrel thereat, said metal head having therein and parallel with said plane a winding refrigerant passage, and inlet and outlet connections extending through said surface and being in communication with the extremities of said passage, said connections being also disposed interiorly of said plane.

15. A barrel comprising in combination a body having at its opposite ends closing heads, a flat cooler head disposed in intimate relation with the

inner face of one of said heads, said cooler head being provided with a passage in the form of a flat coil the turns of which are disposed in parallel relation with the plane of the associated end head, the outer turn of the coil having a terminal adjacent said body, the inner turn of the coil having a central terminal, said terminals having inlet and outlet connections extending through the barrel, and means rigidly attaching said cooler head to said associated head.

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