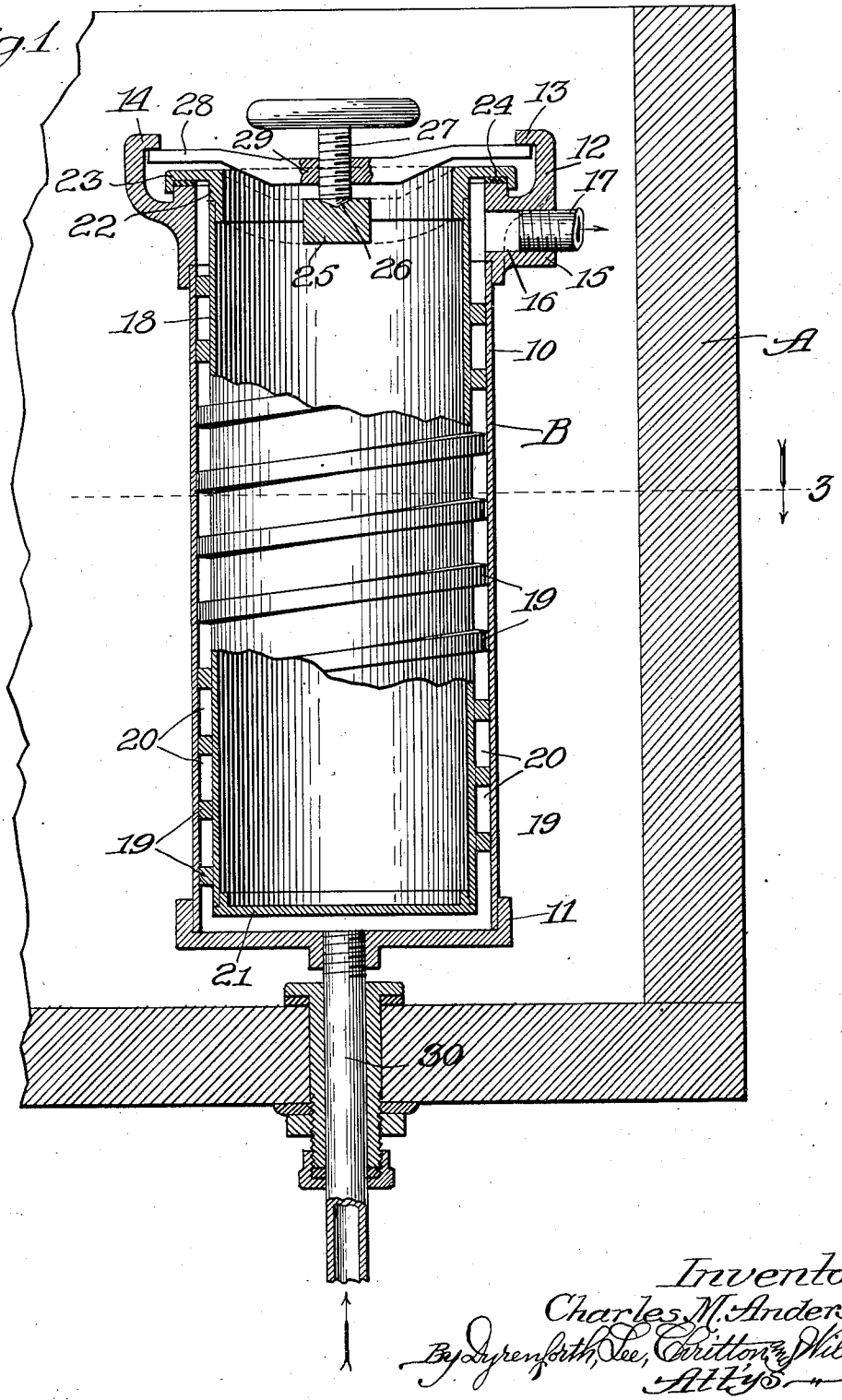
March 24, 1936. C. M. ANDERSON 2,035,213

COOLER

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Fig. 1.



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Fig. 2.

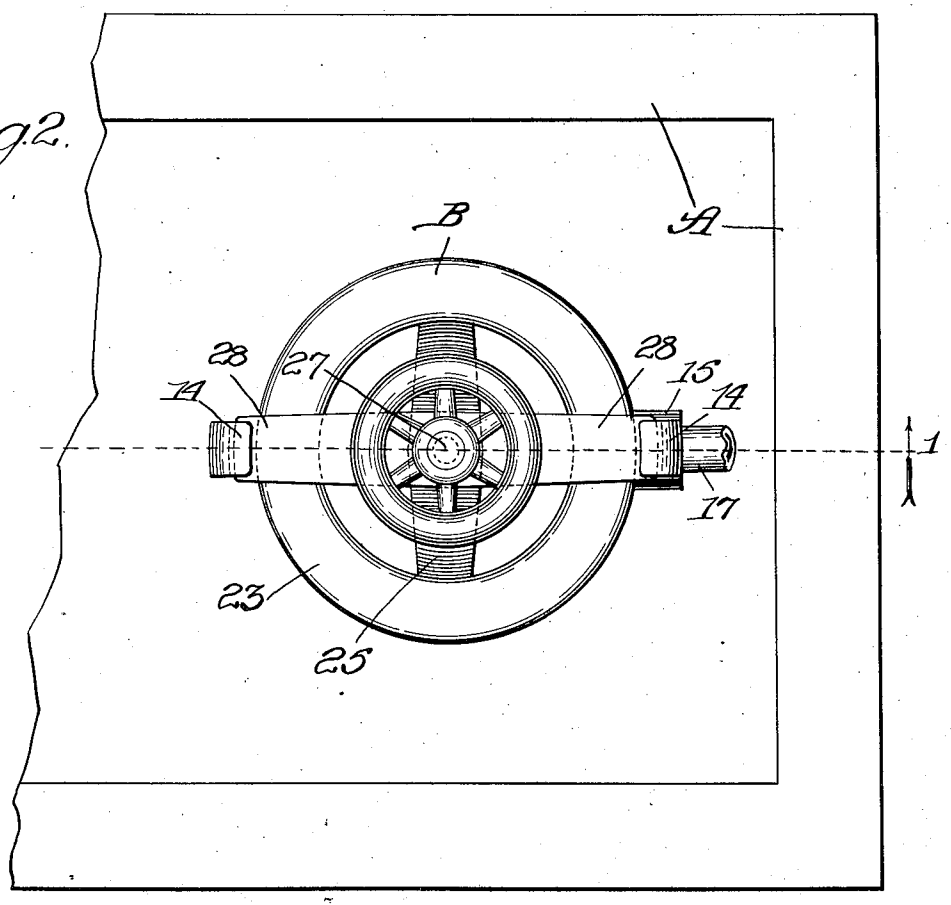
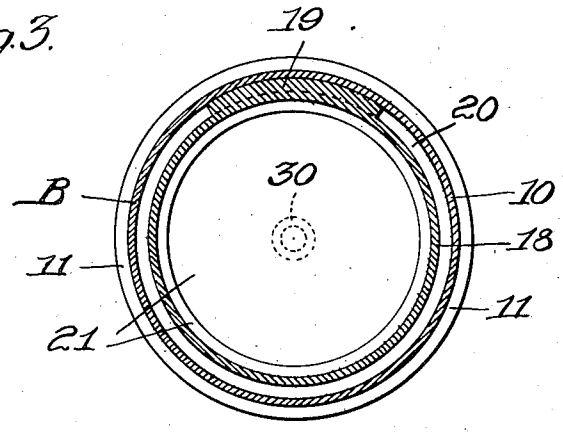


Fig. 3.



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COOLER

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Fig. 4.

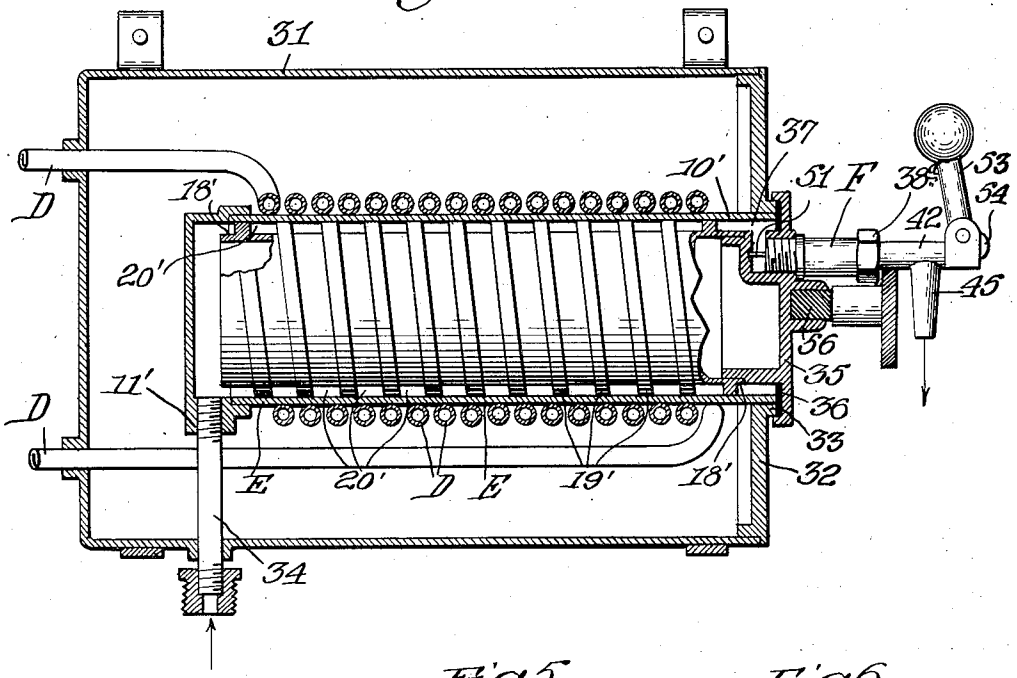


Fig. 5.

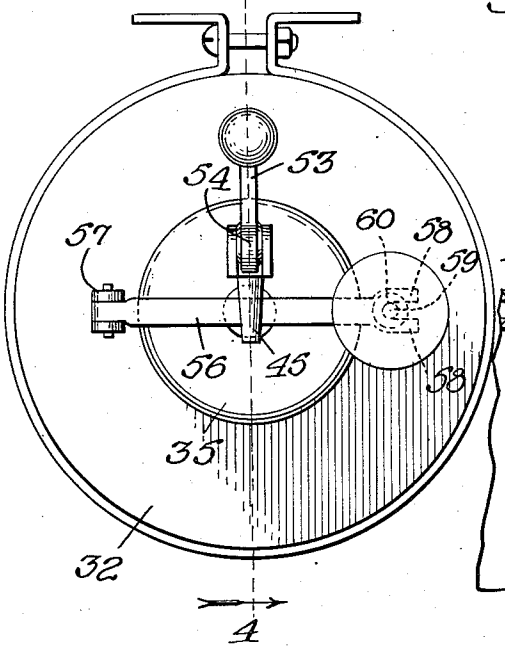
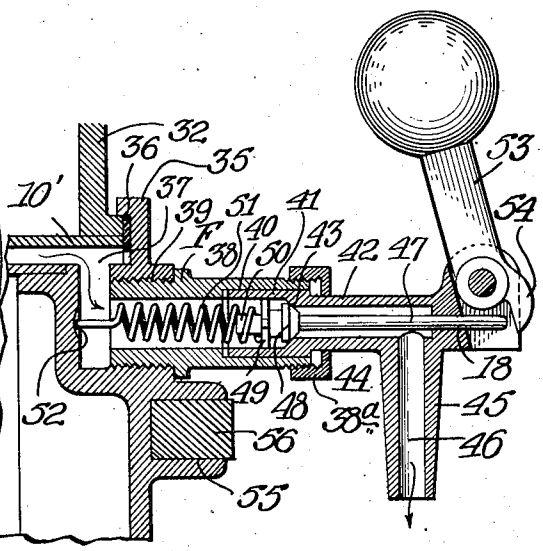


Fig. 6.



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COOLER

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Fig. 7.

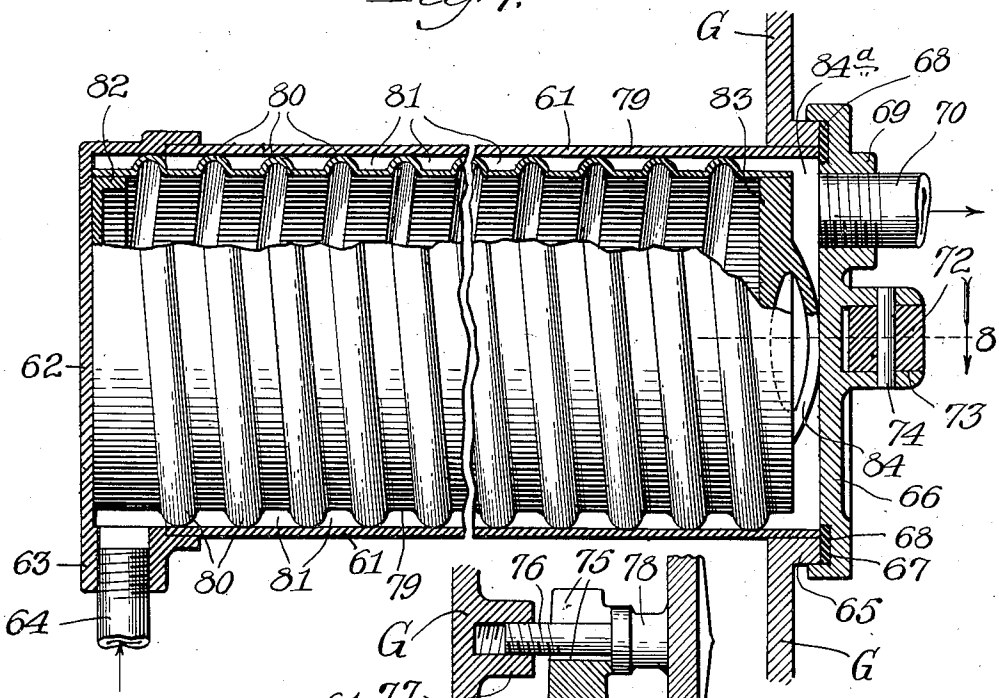
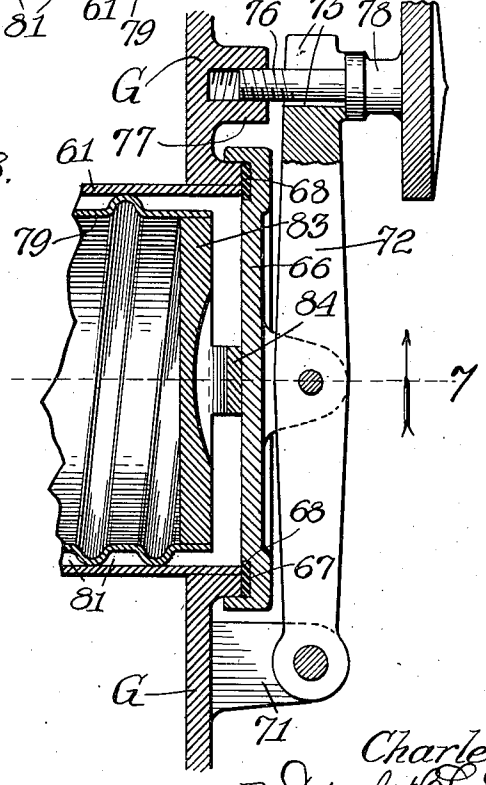


Fig. 8.



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Patented Mar. 24, 1936 2,035,213

UNITED STATES PATENT OFFICE

2,035,213

COOLER

Charles M. Anderson, Kenosha, Wis.

Application July 29, 1933, Serial No. 682,877

5 Claims. (Cl. 257—195)

This invention relates to a cooler for fluids. It is well adapted for the cooling of beer, etc.

Beer coolers now in use comprise pipe coils placed in ice water, ice boxes, etc. Cleaning of the coils after they have become contaminated is an extremely difficult operation, and the task of removing the coils from the box or tank is so onerous that many bartenders allow the coils to go for considerable lengths of time without cleaning. It is found that the contaminated coils destroy the flavor of the new beer and give it a flat taste. When the pipe coils are cleaned, the beer in the coils is allowed to go to waste, and this loss during the period of the year becomes considerable.

The purpose of the present invention is to overcome the above mentioned disadvantages by providing cooling apparatus in which closed coils are dispensed with, and in which the parts may be readily separated and cleaned. A further object is to provide apparatus in which beer or other fluids may be quickly cooled to the desired temperature and maintained at that temperature. A further object is to provide separable cooler parts which may be removed for cleaning with a minimum of effort, and a construction in which the chill of the cooling medium is transmitted readily and over wide surfaces to the flowing stream of beer. A further object is to provide improved valve or faucet mechanism having its operating parts removable for quick cleaning. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in its preferred embodiments, by the accompanying drawings, in which—

Fig. 1 is a broken view in elevation of a cooler embodying my invention; Fig. 2, a broken top plan view; Fig. 3, a transverse sectional view, the section being taken as indicated at line 3 of Fig. 1; Fig. 4, a longitudinal sectional view of a modified form of cooler embodying my invention, the section being taken as indicated at line 4 of Fig. 5; Fig. 5, a front end view of the cooler shown in Fig. 4; Fig. 6, an enlarged detail sectional view, the section being taken on line 4 of Fig. 5; Fig. 7, a broken longitudinal sectional view of a modified form of cooler embodying my invention, the section being taken as indicated at line 7 of Fig. 8. Figure 8 is a sectional view taken on the line 8 of Figure 7.

In the illustration given in Figs. 1 to 3, inclusive, A designates a cooling box or vat which may contain a cooling fluid; and B designates a cooler supported within box A.

The cooler B is provided with an outer cylindrical wall 10 secured at its bottom to bottom cap 11 by solder or other suitable means. At its top, the cylinder 10 is secured to collar 12. The collar 12 is provided with diametrically opposed locking lugs 13 and 14. Below the lug 13 is a boss extension 15 which is provided with an outlet opening 16 adapted to receive the outlet pipe 17.

Within the outer cylinder 10 is positioned an inner tube or cylinder 18. The cylinder 18 is provided on its outer wall with inclined ribs 19 which bridge the space between cylinders 10 and 18, and form a helical channel 20 through which the beer may pass in its travel between the two cylinders. Secured to the bottom of cylinder 18 is a bottom disk 21. At the top of cylinder 18 is a collar 22 having an outwardly and downwardly extending flange 23. The flange 23 extends about collar 12 and forms a tight seal therewith. If desired, a gasket 24 may be placed between the collar 12 and flange 23. The collar 22 is also provided with a centrally disposed bridge member 25 having a depression 26 in the center of its top surface and adapted to receive the end of locking screw 27.

A locking bar 28 having arms engaging lugs 13 and 14 of collar 12, is provided centrally with a nut 29 threadedly receiving the locking screw 27.

The inlet pipe 30 from the beer supply is illustrated as threadedly secured to the bottom disk 11 and extends through suitable fitting and packing members in the bottom of box A.

It will be understood that the outlet pipe 17 is connected to a suitable valve or faucet from which beer may be drawn. For example, a faucet of the type shown in Fig. 4 may be employed. The pipe 17, as is shown in Fig. 1, communicates with the top round of the helical passage 20.

In the operation of the cooler, a cooling fluid, such as ice water may be placed in box A and, if desired, within the inner container 18. The beer, or other fluid, travels from a source of supply through pipe 30 into the space between the cylinders 10 and 18 and passes upwardly until it communicates with outlet pipe 17, where it is drawn off through the faucet. In cleaning the cooler, it is only necessary to release the locking screw 27, swing the locking bars 28 out of engagement with lugs 13 and 14, and then lift the entire inner cylinder 18 out of container 10. This leaves an open cylinder 10 which may be cleaned in a very few moments. The removed mechanism exposes the space between ribs 19 for the direct application of a cleansing liquid,

and all foreign material can be readily removed. In replacing the inner cylinder 18, the reverse of the process described is followed.

In the construction shown in Figs. 4, 5 and 6, C represents an insulation box; D, refrigerant coils; and E, the inner cooler mechanism.

The box C may be of any suitable material adapted to enclose insulation about the coils D and cooler E. It consists of a casing 31 having an open top closed by head 32. Head 32 is equipped on its inner side with a raised collar 33.

The refrigerant coils D comprise a series of coils wound about the cooler E and leading to a source of refrigerant supply. The cooling medium may be supplied by mechanical refrigeration, gas, etc. To conserve the cold supplied by coils D, any suitable amount of insulation may be packed around the coils and within the horizontal casing C.

The cooler E is in principle the same as the cooler shown in Fig. 1. It is mounted, however, in horizontal position, and the beer inlet pipe 34 extends vertically through wall 31 and into the bottom portion of the cooler E. The cooler consists of an outer wall 10' and an inner wall 18', the inner wall being provided with inclined ribs 19' forming helical channels 20'. The bottom of cylinder 10' is closed by header 11'. A common header 35 closes both the inner cylinder 18' and the outer cylinder 10, a gasket 36 being preferably disposed between the top of cylinder 10', collar 33 and the head 35. Head 35 also provides at its top a chamber or passage 37 which communicates with the helical passage 20'.

Threadedly connected to head 35 and communicating with passage or chamber 37 is a faucet F. The faucet consists of a hollow body member 38 having a threaded base 39 engaging a portion of head 35 and communicating with chamber 37. The outer portion of the body member 38 is provided with an enlarged recess 40 adapted to receive an enlarged portion 41 of the valve casing 42. A threaded cap 38a locks the enlarged portion 41 within the body 38. The enlarged valve portion 41 is provided on its interior with a valve seat 43 communicating with a longitudinal passage 44 through the casing 42. A spout 45 is provided with a passage 46 communicating substantially at right angles with flow passage 44. A valve stem 47 extends through a bearing wall 48 in the front portion of casing 42, and at its rear side, is provided with a valve body 48 shaped to conform with valve seat 43. The stem 47 extends rearwardly of the valve body 48 and carries a spider guide 49. The member 49 is provided with arms which engage the inner wall of member 40 and serve to maintain the stem centrally within the chamber. An extension 50 of stem 47 serves as an anchor for coil spring 51. The inner free end of spring 51 is received within a slight recess 52 in the head 35.

The faucet casing 42 is provided with a weighted handle 53 pivotally secured to the end of the casing and provided with a downwardly curved lug 54 adapted to engage the projecting free end of valve stem 47.

The head 35 may be releasably locked in position in any suitable manner. In the illustration given, the head is provided with a U-shaped recess 55, open at its top to receive a locking bar 56. The locking bar is pivoted to the head 32 of casing C at 57. At its other end, the bar is provided with bifurcations 58 which engage a stud 59 carried by head 32. The stud 52 is threaded at its upper end and adapted to be engaged by a lock nut 60.

In the operation of the modification shown in Figs. 4 and 5, beer passes through inlet tube 34 into the helical passage 20 between the cylinders 10' and 18' until it reaches chamber 37. From chamber 37, the beer is drawn off through faucet F. The refrigerating coils D maintain the cooler E at a temperature so that the beer in passing through the helical coils is quickly cooled to and maintained at the desired temperature. When it is desired to clean the mechanism, the locking bar 56 may be released from stud 59 by unscrewing nut 60 and swung back. The inner cylinder 10' together with head 35 may then be removed and readily cleaned. Faucet F may be cleaned at the same time by unscrewing the cap 38a and withdrawing the casing 42. If desired, the body casing 38 may also be removed by unscrewing it from its connection with head 35.

In the operation of the faucet F, the weighted handle 53 is drawn forward so as to bring lug 54 into contact with stem 47. The valve 48 is forced away from valve seat 43, thus providing a flow passage through which beer may pass from chamber 37 into flow passage 44 and out through spout 45.

In the modification illustrated in Figs. 7 and 8, the outer cylinder 61 is substantially the same as outer casing 10 and 10' heretofore described. The cylinder is secured at one end to a head 62 equipped with a hollow boss 63 receiving the beer inlet pipe 64. At its other end, the cylinder is embraced by a collar 65 carried by the casing G (shown only in part). A closure 66 is provided with a recessed flange 67 receiving both the collar 65 and the top portion of cylinder 61. If desired, a sealing gasket 68 may be employed. The closure 66 is provided with a hollow boss 69 receiving an outlet pipe 70 leading to a faucet, preferably of the type described in connection with Fig. 4. Secured to casing G is a boss 71 to which is pivotally secured a locking bar 72. The locking bar 72 passes through a U-shaped recess 73 formed integral with closure 66 and is secured thereto by pin 74. The free end of bar 72 is recessed at 75 to receive locking stud 76 which is secured to boss 77 of casing G. The upper end of threaded stud 76 is engaged by nut 78, by which the bar 72 is releasably confined to stud 76.

The inner cylinder 79 is provided with a number of integral ribs 80 which are inclined so as to form a helical passage 81 between walls 61 and 79. The ribs or worms 80 may be formed by spinning or rolling the wall 76 into the shape illustrated. A bottom wall 82 is secured to the lower portion of cylinder 79. The other end of cylinder 79 is provided with a closure 82 which, in turn, is provided centrally with a handle 84.

In the operation of the apparatus, beer, or other fluid, flows through inlet pipe 64 from a source of supply, into the helical flow passage 81 to the top of the cooler, where it may be withdrawn through outlet pipe 70. It will be noted that handle 84 extends above cylinder 71, and spaces closure 83 from the closure 66, thus providing a chamber 84a. With this modification, the closure 66 may be opened and closed without moving the inner cylinder 79. When it is desired to clean cylinder 79, the closure 66 may be first opened and then the inner cylinder 79 lifted out by means of handle 84. The rolled ribs 80 not only make for a cheaper and sturdier construction, but also facilitate the cleaning operation, the rounded corners permitting the

cleansing apparatus to readily remove all foreign materials.

While in the foregoing description, I have specified certain arrangements with cooling liquids and with refrigerants, it will be obvious that other arrangements may readily be made by a mechanic skilled in the art. The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

I claim:

1. In cooling apparatus of the character set forth, a container, a pair of nested open-topped receptacles within said container, the inner receptacle being spaced from the outer, an inclined rib secured to the outer wall of the inner receptacle and providing a helical flow passage between the walls of the receptacles, flange means secured to said inner receptacle and engaging the upper edge of said outer receptacle for suspending the inner receptacle freely within the outer receptacle so that its bottom wall extends above the bottom wall of the outer receptacle, and inlet and outlet connections with said outer receptacle, said inlet connection extending through the bottom wall of said outer receptacle said inner receptacle being withdrawable through the upper end of said outer receptacle.

2. In cooling apparatus of the character set forth, a pair of telescoping cylindrical walls, bottom walls closing the lower ends of said cylindrical walls, an inlet opening through the bottom wall of the outer cylinder, partitions secured to the inner cylindrical wall providing a helical flow passage between the cylindrical walls, and a collar secured to the inner wall and provided with an outwardly extending flange resting upon the outer cylindrical wall and suspending the inner cylinder freely within the outer so that its bottom wall is spaced above the bottom wall of said outer cylinder, said inner cylinder being withdrawable through the upper end of the outer cylindrical wall.

3. In cooling apparatus of the character set forth, a pair of telescoping cylinders of uniform diameters, each being provided with bottom walls, means for freely suspending the inner cylinder within the outer so that its bottom wall is spaced from the bottom wall of the outer cylinder, an inlet extending through the bottom wall of the outlet cylinder and opening into the space between said bottom walls, and a helical partition secured to the inner cylinder extending longitudinally between the inner and outer cylinders to provide a helical flow passage between said cylinders.

4. In cooling apparatus of the character set forth, a container, a pair of telescoping cylinders of uniform diameter within said container, each cylinder being provided with a bottom, inlet and outlet connections with said outer cylinder, interlocking flange connections between the inner and outer cylinder at their upper ends whereby said inner cylinder is freely suspended within the outer so as to support the outer wall of the inner cylinder at a spaced distance above the bottom of the outer cylinder, and an inclined rib secured to said inner cylinder extending between the walls of the inner and outer cylinders to provide a helical flow passage therebetween.

5. In cooling apparatus of the character set forth, a container, an open topped receptacle supported within said container, an inner receptacle suspended freely within said outer receptacle by means of a laterally extending flange secured to the inner receptacle and engaging the top edge of the outer receptacle, a resilient sealing gasket between said flange and the top of said outer receptacle wall, releasable clamping means for compressing said gasket between said flange and the top wall of the outer receptacle wall, an inclined rib secured to the inner receptacle between the inner and outer receptacle walls for providing a helical flow passage, and inlet and outlet connections with said outer receptacle, said inner receptacle being withdrawable through the upper end of said outer receptacle.

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