June 15, 1937. K. A. ZIMMERER 2,083,629

BEER DISPENSING APPARATUS

Filed Nov. 21, 1935 2 Sheets-Sheet 1

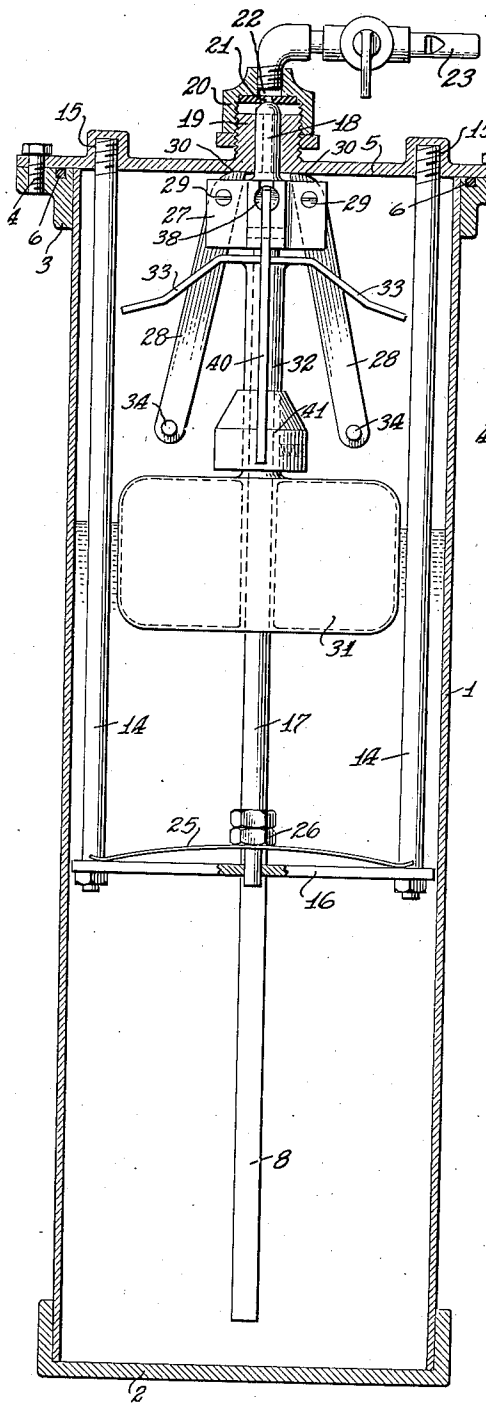

Fig. 1.

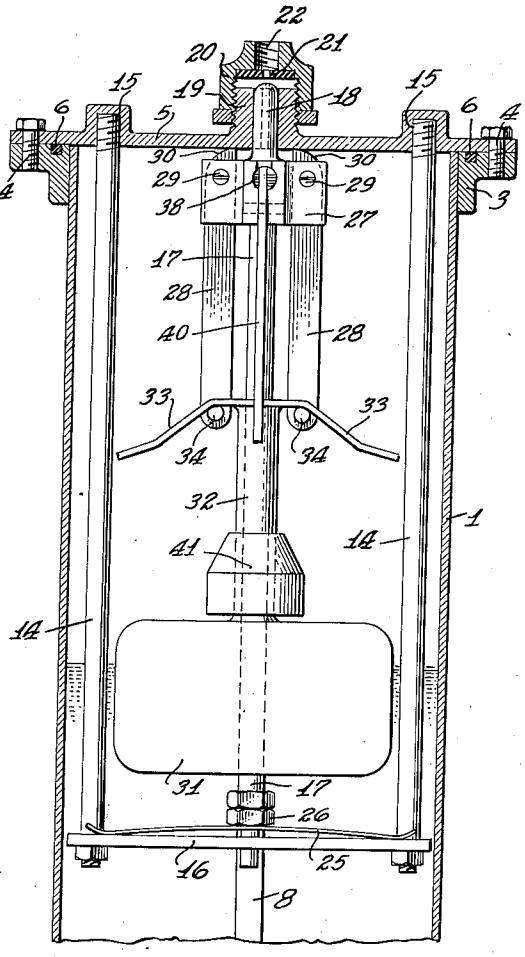

Fig. 2.

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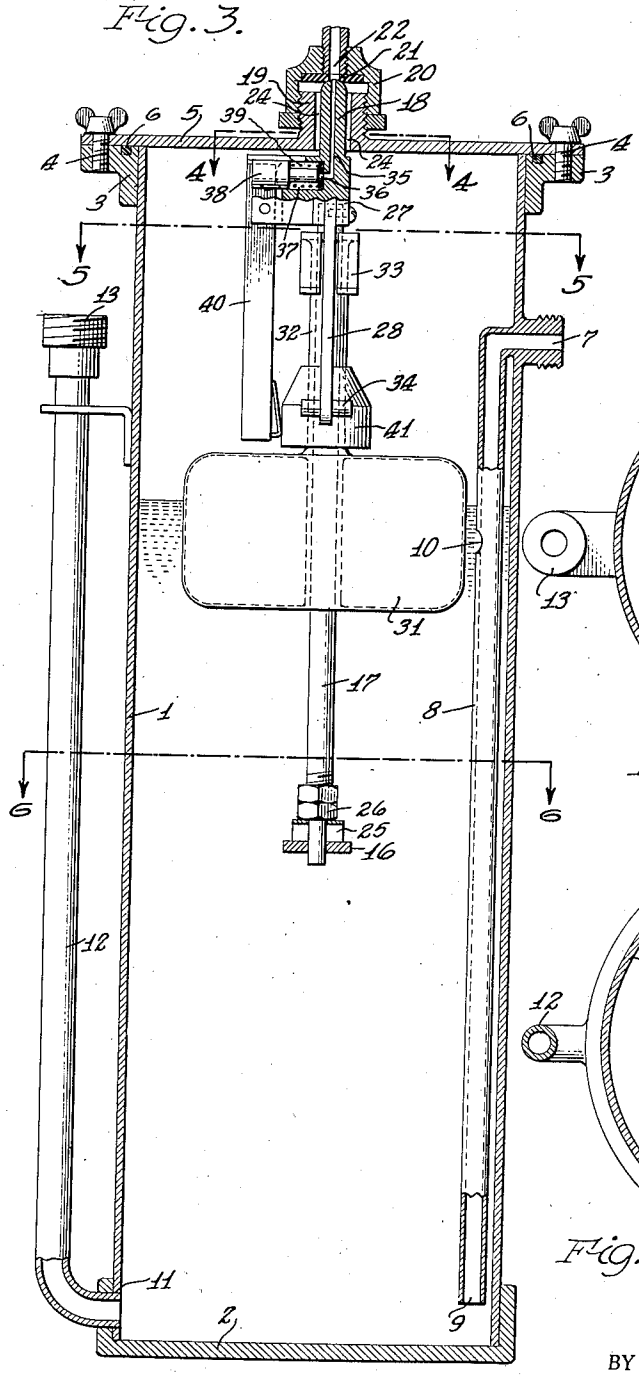
Fig. 3.



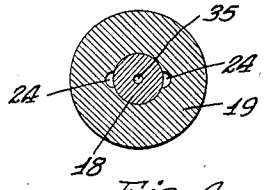


Fig. 4.

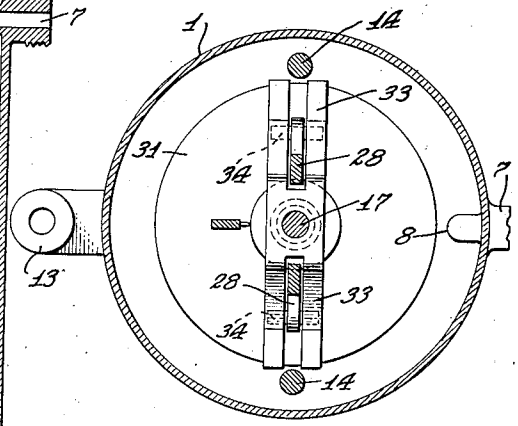


Fig. 5.

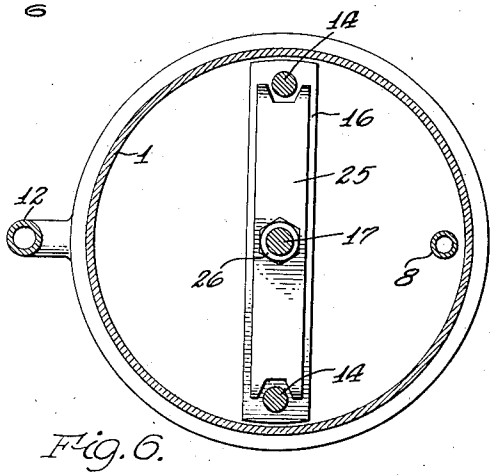


Fig. 6.

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Patented June 15, 1937 2,083,629

UNITED STATES PATENT OFFICE

2,083,629

BEER DISPENSING APPARATUS

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Application November 21, 1935, Serial No. 50,804

10 Claims. (Cl. 225—9)

The present invention pertains to a novel cooling apparatus for beverages and the like.

The primary object of the present invention is to provide a beverage cooling apparatus, suitable for use in dispensing beer and the like, wherein all parts are readily accessible for the purpose of cleaning the same. More particularly, the invention provides a tank, adapted to be submerged or partially submerged in refrigerant, the tank having means associated therewith for the purpose of connecting it to a source of supply and to a dispensing faucet, and in combination therewith is provided a novel valve arrangement for operating a signal to automatically indicate that the supply source is about to be exhausted.

Another object of the present invention is to provide a cooling tank with a valve mechanism for operating a signal, the said valve mechanism and signal being permanently associated with a removable head or cover plate whereby upon removal of the head for the purpose of cleaning the tank the valve mechanism is entirely removed therefrom so that it may be thoroughly cleaned.

Stil another object of the invention is to provide a liquid cooling tank with a double acting valve mechanism which functions to operate a signal device, and as a whistle, when the liquid level therein becomes low as a result of an exhausted supply source and which functions to provide a relatively large opening for the escape of air from the tank when the latter is empty or nearly empty and is being filled with liquid from a new supply source.

With the above and other ends in view the invention consists in matters hereinafter set forth and more particularly pointed out with reference to the accompanying drawings, in which

Figure 1 is a vertical cross section of the device;

Fig. 2 is a fragmentary vertical cross section illustrating another stage of operation;

Fig. 3 is a vertical cross section taken on a plane at right angles to Fig. 1;

Figs. 4, 5, and 6 are cross sections taken respectively on lines 4—4, 5—5, and 6—6 of Fig. 3.

Like characters of reference are employed throughout to designate corresponding parts.

The numeral 1 designates a cylindrical tank closed at the bottom as indicated at 2. Permanently secured to the upper end is a flanged collar 3 receiving thumb screws 4 for removably securing a cover plate 5 thereon. In the flanged collar 3 is mounted a packing element 6. Adjacent to the upper end of the tank is provided a nipple 7 which is adapted to be connected, in a manner well known in the art, to a key or barrel containing the beverage to be cooled. Connected with the nipple 7 is a tube 8 which extends downwardly so that its outlet end 9 is disposed in close proximity to the bottom of the tank 1. Slightly spaced downwardly from the upper end of the tube 8 is provided an outlet port 10.

An outlet port 11 is provided in the tank 1, preferably close to the bottom 2, and has a tube 12 extending upwardly therefrom outside of the tank and provided with means 13 for attaching a pipe line thereto for conveying liquid from the tank 1 to a dispensing faucet, the latter not being shown here.

A pair of spaced apart rods 14 have their upper ends secured as at 15 in the cover plate 5 and secured to their lower ends is a cross bar 16. Slidably received in an aperture in the cross bar 16 is a valve stem 17 having a valve 18 on its upper end slidably received in a valve nipple 19 on the cover plate. Secured on the valve nipple 19 is a hollow fitting 20 containing a valve seat 21 with which the valve 18 cooperates. The fitting 20 has an exhaust port 22 and a whistle 23 is connected to the exhaust port. The bore in the valve nipple 19 in which the valve 18 is received is provided with lengthwise extending grooves 24 so that air (under pressure as will hereinafter appear) in the tank 1 may pass through the grooves 24 to enter the hollow fitting 20 but is prevented from escaping from the fitting through its exhaust port 22 by seating of the valve 18 on the valve seat 21. In order to maintain the valve 18 against the seat 21 a spring 25 is mounted on the cross bar 16 to engage the adjustable elements 26 to resiliently urge the valve stem 17 upwardly to thereby seat the valve 18.

Adjacent to the upper end of the valve stem 17 is provided a fixed head 27 having levers 28 pivoted at 29 therein. The upper ends of the levers 28 are provided with cam parts 30 adapted to engage the bottom surface of the cover plate 5 so that when the levers are in the position shown in Fig. 1 they permit spring 25 to seat the valve 18 and when they are in the position shown in Fig. 2 they force the head 27 and stem 17 downwardly, thus compressing spring 25 and unseating valve 18. The spring 25 is constructed sufficiently strong so that, in the absence of pressure on the levers 28, it will cause the levers 28 to move from the position shown in Fig. 2 to that shown in Fig. 1 and will normally maintain them in the latter position.

The means for applying pressure on the levers 28 to cause them to unseat the valve 18 com-

prises a float 31 which is slidably mounted, as a matter of convenience, on the valve stem 17. The float 31 has a tubular extension 32 carrying a pair of cam arms 33 adapted to cooperate with pins 34 on the free ends of the levers 28. The cam arms 33 function when the float 31 lowers by engaging the pins 34 so that the weight of the float causes the levers 28 to pivot from their position of Fig. 1 to that of Fig. 2 wherein the valve 18 is unseated.

The valve 18 has an axial bore 35 which is in constant communication with the outlet port 22 regardless of whether the valve 18 is seated or unseated. The bore 35 communicates with a valve seat 36 in a valve chamber 37 containing a sliding valve 38. A coiled spring 39 is mounted in the valve chamber 37 and normally urges unseating movement of the valve 38. A lever 40 is pivotally mounted so that its upper end engages the valve 38 and its lower end cooperates with a cam 41 carried by the float 31. When the cam 41 engages the lever 40 as in Fig. 3 the the lever is rocked so as to seat valve 38 and when the float 31 is lowered so that cam 41 is out of engagement with lever 40 the spring 39 forces valve 38 away from the valve seat 36.

In describing the operation it will be assumed that nipple 7 is connected to a source of supply, such as a barrel and means for applying air pressure to the liquid in the barrel to cause it to flow into the tank 1. In as much as barrel tapping apparatus for supplying liquids to coolers is well known in the art the same has not been shown here. As the liquid begins to enter the tank 1 it is necessary to exhaust the air therefrom and in the present case the float 31 will be positioned as in Fig. 2, the valve 18 will be unseated, and the air escapes through the grooves 24 and outlet port 22. Air may also escape at this time through valve chamber 37 and bore 35. As the tank is filled the liquid lifts the float 31, the spring 25 seats valve 18, and the cam 41 engages lever 40 to seat valve 38.

The cam 41 is made sufficiently long that a certain amount of fluctuation in the liquid level may take place without allowing lever 40 to pivot and permit opening of the valve 38. However, when the liquid level drops beneath a predetermined point valve 38 will be unseated and the whistle 23 will function to signal the fact that the liquid level is getting low. If the liquid level continues to drop valve 18 will be unseated and a greater volume of air will be permitted to escape from the tank. This latter feature has utility in that the rapid escape of air while the tank is being filled is desirable.

Although a specific embodiment has been shown and described it will be understood that various changes may be made within the scope of the claims without departing from the spirit of the invention, and such changes are contemplated.

What I claim is:—

1. In combination with a tank having means adapted to be connected to a source for supplying liquid thereto under pressure, said tank having an air outlet port through which air may exhaust to permit the liquid to enter said tank, different capacity air valve mechanisms connected with said outlet, and means controlled by the liquid level in said tank for causing said air valve mechanisms to function successively to exhaust air from said tank at different rates.

2. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure whereby to create an air head therein, said tank having an air outlet port, different capacity air valve mechanisms connected with said outlet, and means for causing said air valve mechanisms to function as a result of different liquid levels in said tank.

3. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure whereby an air head is formed therein, different capacity air valve mechanisms in said tank, means controlled by the liquid level in said tank for operating said air valve mechanisms at different levels to exhaust air therefrom, said tank having an outlet port common to both of said valve mechanisms, and an air operated signal device in communication with said outlet port.

4. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure, a plurality of valve mechanisms in said tank and adapted to cause and prevent exhaust of air from said tank, a float movable in said tank as a result of changing liquid level therein, and means associated with said float for causing successive operation of said valves.

5. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure, a plurality of air valve mechanisms in said tank, an outlet common to both of said valves, an air operated signal device connected with said outlet, and a float for successively operating said air valves.

6. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure, said tank having an outlet provided with a valve seat, a valve associated with said seat, a stem on said valve, resilient means normally urging said valve against said seat, a float slidable on said stem, cam elements carried by said stem and adapted to unseat said valve, and means on said float adapted to engage said cam elements to cause unseating of said valve.

7. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure, said tank having an outlet provided with a valve seat, a valve associated with said seat, a stem on said valve, resilient means normally urging said valve against said seat, a float slidable on said stem, cam elements carried by said stem and adapted to unseat said valve, means on said float adapted to engage said cam elements to cause unseating of said valve, said valve having a bore in constant communication with said outlet, and a valve operated by said float for controlling said bore.

8. In combination with a tank having means adapted to be connected to a source for supplying fluid thereto under pressure, said tank having an outlet provided with a valve seat, a valve associated with said seat, a stem on said valve, resilient means normally urging said valve against said seat, a float slidable on said stem, cam elements carried by said stem and adapted to unseat said valve, means on said float adapted to engage said cam elements to cause unseating of said valve, said valve having a bore in constant communication with said outlet, a cam actuated valve for controlling said bore, and a cam on said float for actuating said cam actuated valve.

9. In combination with a tank having means adapted to be connected to a source for supply-

ing fluid thereto under pressure, a plurality of cam actuated valves for controlling the exhaust of air from said tank, and a float in said tank having cam means for successively actuating said valves.

10. In a tank adapted to contain liquid and air under pressure, a plurality of air valve mechanisms, an outlet common to said air valve mechanisms, a movable float, and means on said float for actuating said valves at different stages of movement of said float to exhaust air from said tank.

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