May 22, 1934. H. C. KELLOGG 1,959,366

DRINKING FOUNTAIN

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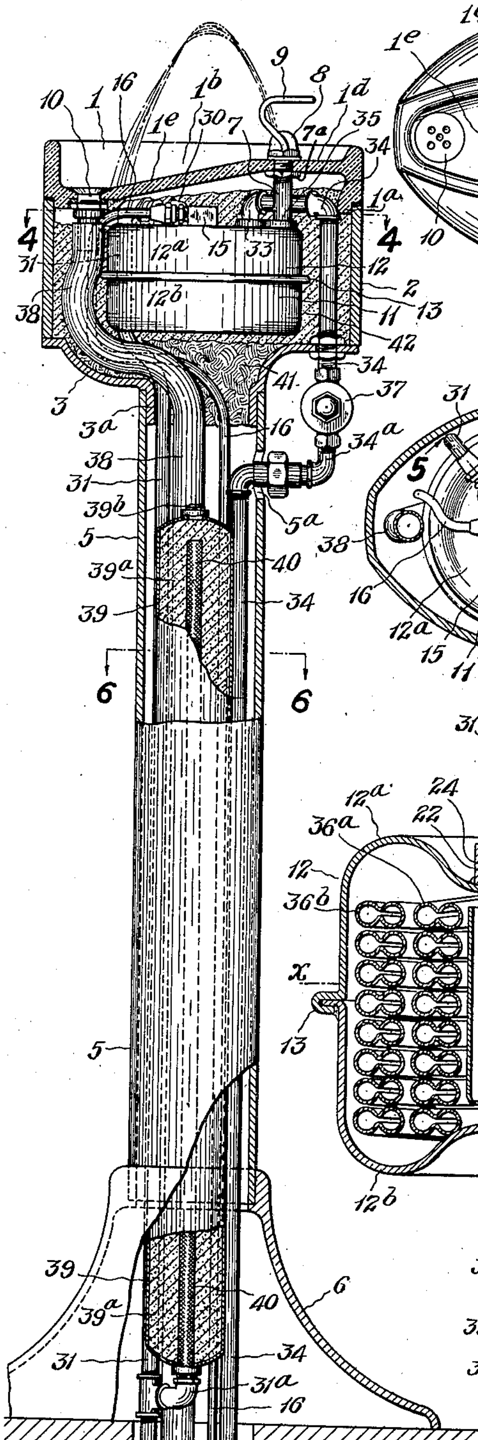

FIG. 1

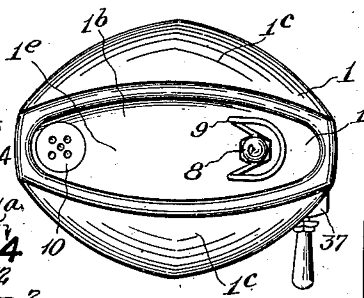

FIG. 2

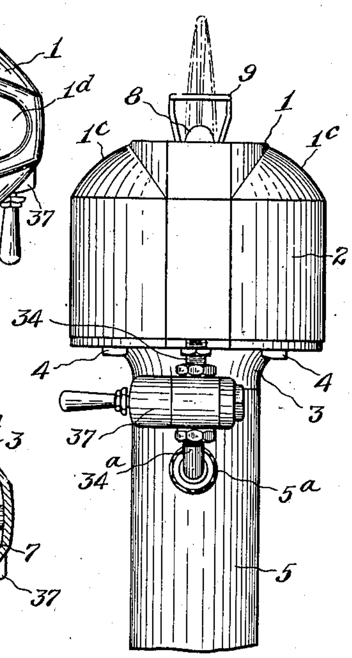

FIG. 3

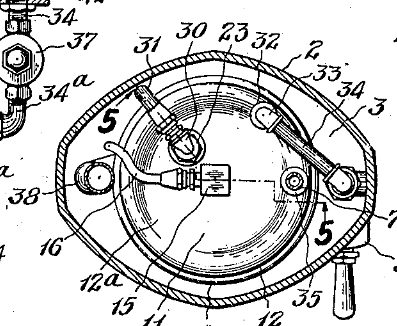

FIG. 4.

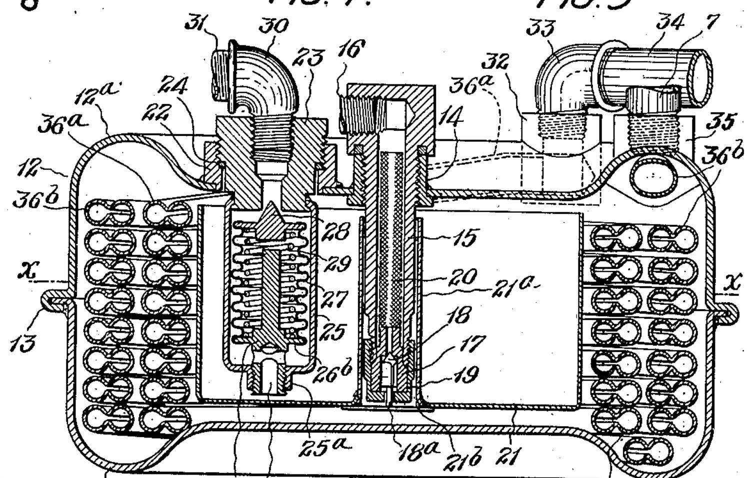

FIG. 5

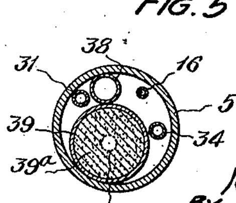

FIG. 6

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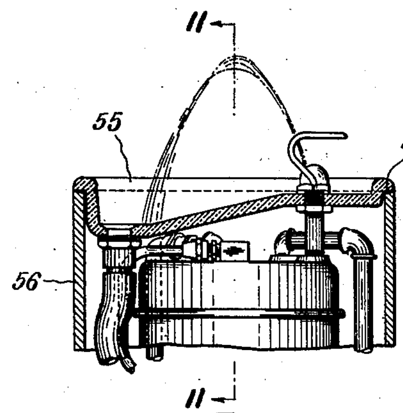

FIG. 10

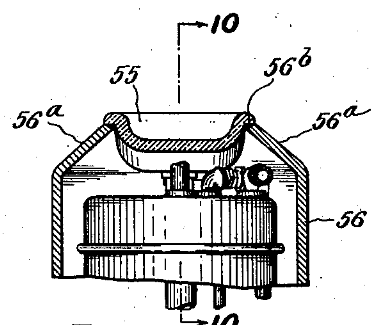

FIG. 11

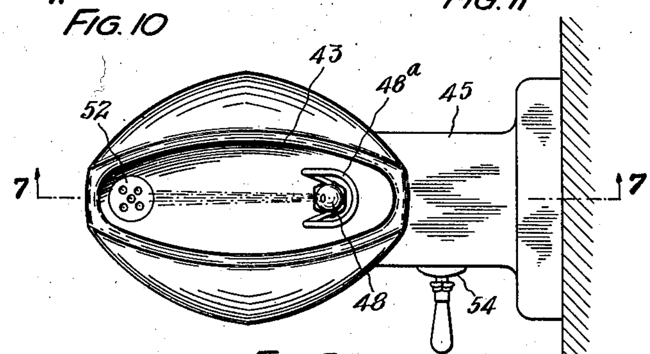

FIG. 9

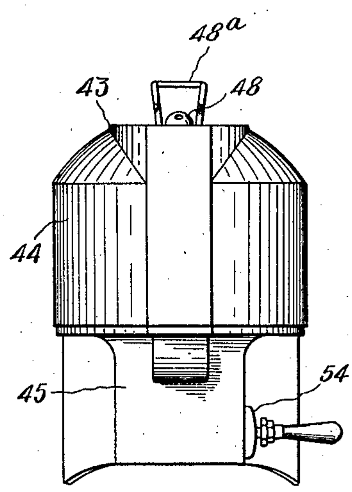

FIG. 8

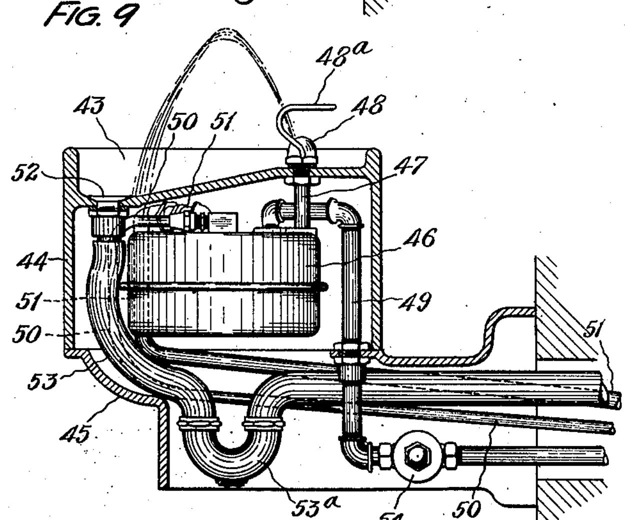

FIG. 7

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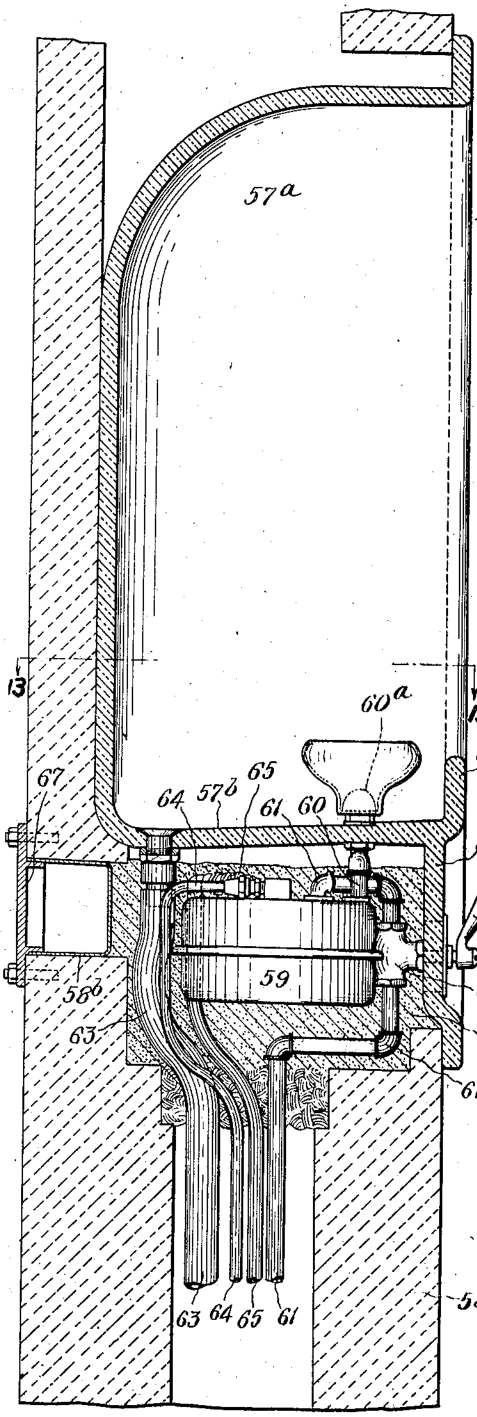

FIG. 12

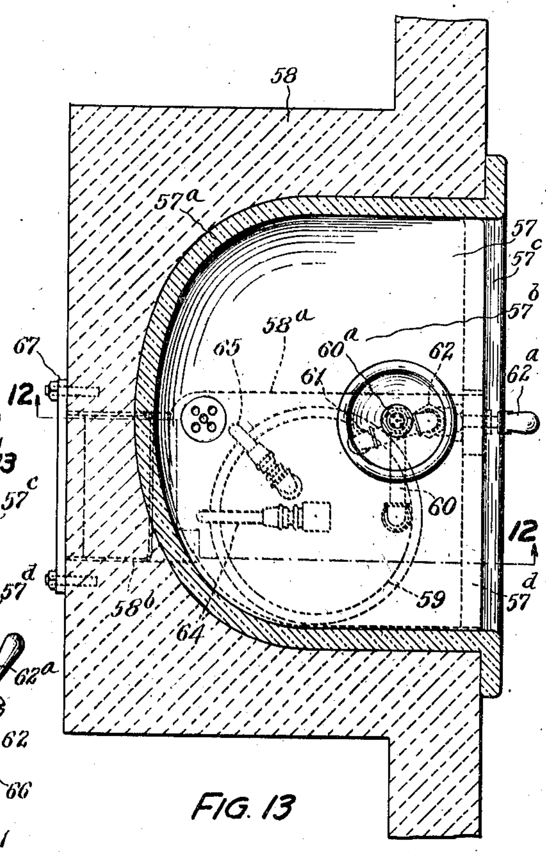

FIG. 13

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UNITED STATES PATENT OFFICE

1,959,366

DRINKING FOUNTAIN

Herbert C. Kellogg, Detroit, Mich., assignor to Liquid Cooler Corporation, Detroit, Mich., a corporation of Michigan

Application June 27, 1929, Serial No. 374,071

4 Claims. (Cl. 62—141)

The invention in some of its aspects relates to liquid cooling generally while in still other aspects it has to do more particularly with improvements in drinking water coolers and drinking fountains.

One object of the invention is the provision of an improved type of drinking fountain which in general form, size and appearance may closely approximate the widely used fountains of the floor pedestal type or the wall bracket type or the wall niche type, but which is radically distinguished from such prior fountains by having a water-cooling unit built into the fountain casing structure directly beneath the receptor thereof, and preferably having the receptor constituting a part of the enclosing casing for the unit.

Another object of the invention is the provision of a floor pedestal type of fountain of the character last referred to which is adapted to constitute a part of a refrigerating system such as is disclosed in my copending application Serial No. 369,669, filed June 10, 1929, and which has the equalizing tank or chamber of the system enclosed within the supporting column of the fountain.

Other objects of the invention more or less incidental or ancillary to the foregoing will appear from the following description which sets forth in connection with the accompanying drawings several preferred forms of the invention.

In the drawings, Fig. 1 is a view partly in side elevation and partly in vertical section of a drinking fountain of the floor pedestal type which embodies my improvements.

Fig. 2 is a plan view of the upper part of the fountain shown in Fig. 1.

Fig. 3 is a side elevation of the structure shown in Fig. 2, looking in a direction at right angles to the line of sight in Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a vertical sectional view on an enlarged scale of the cooling unit of the fountain shown in Fig. 1, the section being taken on the broken line 5—5, Fig. 4.

Fig. 6 is a section taken on the line 6—6, Fig. 1.

Fig. 7 is a vertical sectional view of a wall or bracket type of drinking fountain embodying my improvements.

Fig. 8 is a front elevation of the fountain shown in Fig. 7.

Fig. 9 is a plan view of the fountain shown in Fig. 7.

Fig. 10 is a fragmentary vertical section showing a modified form of construction which may be applied to the fountain as shown in Fig. 1 or the fountain shown in Fig. 7.

Fig. 11 is a fragmentary sectional view taken on the line 11—11, Fig. 10.

Fig. 12 is a vertical section showing a wall niche type of fountain embodying my improvements, the section being taken on the broken line 12—12, Fig. 13.

Fig. 13 is a section on the line 13—13, Fig. 12.

Referring in detail to the construction illustrated and first to the form of construction shown in Figs. 1 to 6, inclusive, the upper part of the fountain shown in said figures presents a chambered structure or casing which comprises a receptor or basin 1 of vitreous china which constitutes the top wall of the said casing structure as well as performing the usual functions of the receptor of fountains of the receptor type, a side wall section 2 and a bottom wall section 3. The casing sections 2 and 3 are preferably made of vitreous enameled iron and are connected together by screws 4, Fig. 3, the section 2 being formed on its inner side with lugs (not shown) to receive said screws. The receptor 1 has a depending flange 1^a which fits within the side wall 2 and the two sections 1 and 2 are firmly secured together by cementing the joint between them in accordance with usual practice in structures of this character.

The casing or chambered structure thus constituted is supported upon the top of a tubular column 5, the bottom wall section 3 having a large aperture with depending annular flange 3^a which fits within the upper end of the column 4. The said column is in turn supported upon a floor pedestal or bell 6. The tubular column 5 and the floor pedestal or bell 6 are preferably finished with vitreous enamel to match the sections 2 and 3 of the upper casing structure.

The receptor section 1 of the fountain is formed in a manner that will be clear from an inspection and comparison of Figs. 1, 2 and 3. It will be observed that the basin 1^b of the receptor takes an elongated oval form, the length of the basin extending to the full diameter of the receptor while its width is considerably less, the sides of the basin being flanked by the sloping sides 1^c. The bottom of the basin has an elevated section 1^d which is apertured to receive a water supply pipe 7 upon the upper end of which is mounted a nozzle 8 fitted with a sanitary guard 9. The threaded upper end of pipe 7 is fitted with a nut 7^a to adjustably engage the under side of receptor 1 and the base of nozzle 8 is made hexagonal in form to be engaged by a wrench to screw the nozzle upon pipe 7. The bottom wall of the basin slopes at 1[e] to greater depth and is apertured to receive a drain fitting 10 for the discharge of waste water.

Within the chamber directly beneath and partly enclosed by the receptor 1 is arranged a water cooling unit 11, the construction of which is best shown in Fig. 5. This unit comprises an evaporator casing or shell 12 which is preferably formed from two drawn steel members 12^a and 12^b and secured together at 13 by a flanged and hermetically sealed joint. As shown the casing is cylindrical in form and has its top and bottom walls centrally recessed. The top wall of the casing is formed with a central aperture in which an internally threaded fitting 14 is hermetically secured. In this threaded fitting is mounted a depending tubular fitting 15 which, at its upper end, has a threaded aperture to receive the end of a tube 16 which serves to supply liquid refrigerant to the cooling unit. At its lower end the tube 15 carries an inlet valve device which comprises a valve seat member 17 which fits tightly within the lower end of the tube 15, a needle valve 18 and a threaded and apertured cap 19 which is screwed on the lower end of the tube 15 and tightly clamps the valve seat member 17 in position. The cap 19 also serves to retain the needle valve in operative position, the said valve having a reduced rod-like extension 18^a which projects through the aperture of the cap 19. The needle valve 18 is formed from triangular stock so that while it is guided within the passage of the valve seat member 17, free passages are provided for liquid to flow past the valve. The valve seat member 17 also is fitted at its upper end with a tubular strainer or filter 20 of fine wire gauze.

Centrally arranged within the shell of the evaporator is a large open-topped, cup-shape float 21. This float has its bottom wall formed with a central aperture in which is mounted an upstanding tube 21^a which loosely engages the depending tube 15 and serves to guide the float thereon for vertical movement. A metal plate or strap 21^b is secured to the bottom of the float so as to underlie and engage the end of the valve extension 18^a so that when the float rises it carries the valve upward against its seat. The float thus serves to control the valve 18 so as to maintain a body of liquid refrigerant in the shell. The float has its weight and size so proportioned that it is adapted to maintain the normal liquid level at the line x—x in Fig. 5.

The top wall of the evaporator shell is also apertured to receive a threaded fitting 22 which is hermetically connected to the shell. Mounted in this fitting 22 is an automatic valve device which comprises a tubular valve seat fitting 23 which is screwed into the fitting 22 with a soft metal packing 24 interposed between the two parts. To the lower end of the fitting 23 is secured the upper open end of a cylindrical casing member 25, the lower end of which is contracted and formed with an internally threaded collar 25^a. In this collar is mounted a fitting 26 the lower end of which is formed with a passage 26^a which affords communication from the exterior to the interior of the cylindrical casing member 25. The member 26 also is formed with a flange 26^b to which is secured the lower end of a metallic bellows 27 which has its upper end secured to the flange of a valve member 28 which cooperates with the valve seat member 23 as clearly shown in Fig. 5. Interposed between the flange of the member 26 and the flange of the valve 28 is a coil spring 29. The member 26 extends upward within the bellows and the coil spring to a point slightly below the valve 28 so as to afford a stop to limit the opening movement of the valve. In the upper threaded aperture of the valve seat member 23 is secured an elbow fitting 30 to which is connected a tube 31 adapted to conduct vaporized or gasified refrigerant from the evaporator shell to the inlet of a suitable compressor. It will be seen that the gaseous refrigerant within the evaporator shell can enter the passage 26^a of the valve device and thus gain access to the interior of the casing member 25 so as to subject the flanged valve 28 to a pressure tending to open the valve against the tension of the spring 29; and by suitably adjusting the member 26 in the threaded nipple 25 the valve can in effect be adjusted toward its seat and thus adapted to open or close at different vapor pressures.

The top wall of the evaporator shell is further provided with a threaded inlet fitting 32 to receive an elbow 33 to which in turn is connected an inlet water pipe 34. And the said shell is also provided with an apertured water discharge fitting 35 to which is connected the water pipe 7 which supplies water to the nozzle 8. Within the evaporator shell and occupying a considerable part of the annular space between the side wall of said shell and the side wall of the float 21 are disposed a pair of metal cooling coils 36^a and 36^b, the coil 36^a being connected at its upper end to the water inlet fitting 32 and at its lower end to the lower end of the coil 36^b which in turn has its upper end connected to the water discharge fitting 35. The tubing forming the two coils is preferably formed of copper or other suitable metal of high thermal conductivity and is drawn to the form illustrated in Fig. 5 which, in cross section, resembles the figure 8 and which, because of its out-of-round form, is adapted to expand without injury in case water should inadvertently be frozen in the coils.

The water supply pipe 34 passes downward through the casing section 3 and then turns inward through an aperture 5^a in the upper part of the tubular column 5 and extends downward through said column and the floor pedestal 6 and from there may extend through a suitable hole or channel in the floor structure as will readily be understood. In the short section 34^a of the water supply pipe which is disposed outside of the casing and column structure of the fountain it is provided with a manual control valve 37 which may be of any construction commonly used for such a purpose. The drain fitting 10 of the receptor at its lower end has a slip connection with the usual drain pipe 38 which extends downward through the casing structure that encloses the cooling unit 11 and thence down through the tubular column 5, paralleling the water supply pipe 34. The liquid refrigerant supply pipe 16 and the gaseous refrigerant discharge pipe 31 are bent down and around the cooling unit 11 and are also carried downward through the column 5, as indicated, and may extend through suitable floor channels or ducts to any desired point where the compressor and condenser of the system are located, it being understood that a number of fountains with individual cooling units may thus be connected to the same compressor and condenser.

Within the column 5 is also enclosed an equalizing tank or chamber 39 which is supported by a branch fitting 31^a through which the gaseous refrigerant pipe 31 is connected with the interior of the tank. A foraminous tube 40 which may have its wall made of fine wire gauze is axially disposed in the tank 39 and connected at its lower end with the pipe fitting 31[a], and the space in the tank surrounding the tube 40 is filled with granular solid adsorbent material 39[a] such as silica gel, adsorbent charcoal, or the like, said material being adapted to adsorb relatively large quantities of the gaseous refrigerant. The upper end of the tank 39 has a filling aperture closed by a suitable screw plug 39[b].

To minimize adsorption of heat from the atmosphere the cooling unit 11 is preferably insulated, and this may conveniently be done by packing some suitable fibrous material, such as mineral wool, into the casing section 3 as shown at 41 and then filling the casing cavity around the cooling unit 11 with a suitable insulating material such, for example, as granulated cork, as shown at 42. It will be understood that the insulating material can be introduced before the receptor member 1 of the fountain is finally placed in position. This is made possible by the nature of the above-described connections of the water supply and drain pipes with the receptor. The slip joint between the drain fitting 10 and pipe 38 permits the drain connection to be made by simply lowering the receptor into operative position and the only other mechanical connection is effected by the nozzle 8. The nut 7[a] having first been positioned by trial on pipe 7, it is a simple matter to lower the receptor into position and secure it by screwing nozzle 8 on the pipe 7. Cement can then be applied to the joint between the receptor and side wall 2.

The mounting of the receptor is also advantageous in connection with inspection and servicing of the cooling apparatus. It will be observed that all of the refrigerant and water connections of the cooling unit 12 are on the top of the unit. Hence by simply removing the receptor all of these connections are exposed for inspection and test and the liquid refrigerant float valve assembly and the suction line cut-off valve assembly each can then easily be removed from the cooling unit.

The operation of the fountain as above described will now be explained, it being understood that the fountain constitutes a part of a refrigerating system of the character disclosed in my previously mentioned copending application Serial No. 369,669. It will suffice here to state that the said system comprises a suitable motor driven refrigerant compressor which has its discharge connected with a condenser in which the compressed gaseous refrigerant discharged by the compressor is cooled and liquified. This condenser is in turn connected with the liquid refrigerant supply pipe 16 above described. The suction inlet of the compressor is connected with the gaseous refrigerant pipe 31 above described. At some point between the cooling units of the system and the compressor the suction return pipe 31 is connected with a switch which controls the electric motor that drives the compressor, said switch being actuated by the pressure in the low side of the system and being adapted, according to its adjustment, to start the motor when the pressure rises to a certain predetermined point and to stop the motor when the pressure falls to a certain lower point. For example, where drinking water is desired at an average temperature of 50° F. the said switch might be set to close when the refrigerant pressure in the low side of the system rose to a point corresponding to a temperature in the evaporating chamber of the cooler of 53° and to open when the pressure falls to a point corresponding to a temperature of 47° F. As the motor-driven compressor, condenser and switch mechanism of the character described are well known in the art, I have not deemed it necessary to illustrate them, though reference may be had to my said copending application Serial No. 369,669 for a diagrammatic illustration of the system.

When the manual valve 37 is operated to draw water by a user of the fountain, the water entering through the supply pipe 34 passes through the cooling coils 36[a], 36[b] and thence through the discharge pipe 7 to the nozzle 8 which projects a stream or jet of the water in the well known manner as illustrated in Fig. 1, the user drinking directly from the jet and the waste water flowing to the drain fitting 10 through which it passes to the discharge pipe 38. The relatively warm water entering the cooling coils has its heat absorbed directly through the walls of the coils by the liquid refrigerant in which the major parts of the coils are immersed. The operation of the cooling unit, which is similar to that described in my copending application Serial No. 369,669, is characterized by certain novel features incident to the use of the improved type of float valve illustrated, said float valve and its method of operation being the joint invention of the present applicant and Edward M. May as set forth in the application Serial No. 295,174, filed July 25, 1928 (Letters Patent No. 1,885,836). While in the use of such a float valve various different refrigerants can be employed, such as sulphur dioxide, methyl chloride, and ethyl chloride, it may be assumed for the purpose of the present explanation that the refrigerant employed is sulphur dioxide and that the usual mineral oil suitable for lubricating the compressor is charged into the system along with the refrigerant. When water is drawn through the cooling coils in the manner above stated the absorption of heat by the liquid refrigerant causes ebullition of the latter with resultant release of gaseous refrigerant and a corresponding increase in pressure within the evaporator shell and throughout the low side of the system, it being assumed that the automatic cut-off valve 28 is more or less open, as shown in Fig. 5. The pressure in the low side having been reduced to the point corresponding to 47° F. by the previous operation of the compressor, the latter remains idle while the pressure is gradually increasing incident to the draft of the water to the point corresponding to the temperature of 53°, whereupon the automatic switch starts the motor and the compressor in operation. The period necessary for the rise of the pressure through the range specified is in the present apparatus very substantially lengthened by the provision of the equalizing tank 39, the adsorbent material therein being adapted to adsorb a considerable mass of the refrigerant and thus give the effect of a much larger low side capacity.

When the compressor is started in the manner stated the reduction of the pressure within the shell of the cooling unit hastens the ebullition of the refrigerant therein with the result that the bubbles of gas, rising through the liquid refrigerant and the superposed stratum of lubricant cause the vigorous foaming at the surface of the liquid until the mass of bubbles or foam is great enough to rise above the edge of the float valve 21 and fall over into the cavity of the float from which it is drawn through the inlet opening 26^a of the valve device 25 and into the tube 31, and thus finds its way back to the compressor. In this manner the surplus oil which enters the cooling unit dissolved in the refrigerant and there accumulates, incident to the evaporation of the refrigerant, is automatically returned to the compressor. As has been explained in my copending application Serial No. 369,669 as well as in the aforesaid application of the applicant and Edward M. May, Serial No. 295,174, the float 21 can, if desired, have its height so proportioned to its weight that the temporary rise of the liquid level in the evaporator chamber when the compressor is first started will be just sufficient to cause some of the stratum of lubricant floating on the refrigerant to flow over the rim of the float; and then with continued operation of the compressor the level falls somewhat and thereafter additional surplus lubricant will be removed from the cooling unit by the formation and discharge of foam as above described.

It will, of course, be understood that evaporation of liquid refrigerant in the cooling unit causes a corresponding lowering of the liquid level and this results in a lowering of the float 21 sufficient to permit the needle valve 18 to be forced from its seat by the pressure of the liquid refrigerant in the high side of the system, so that the supply of liquid refrigerant in the unit is renewed, and the normal liquid level maintained with relatively slight variations. The rise and fall of the float 21 to effect this result is very slight.

In case of a prolonged draft of water through the cooling unit, the compressor may continue in action for a more or less correspondingly long period of time, depending upon the capacity of the compressor and of the number of fountains or cooling units served thereby. Where there are a number of cooling units and two or more of them chance to be in simultaneous operation, the operation of the compressor is of course likely to be correspondingly prolonged. In any case, either by virtue of the surplus capacity of the compressor in comparison with the unit or units that chance to be in operation, or by reason of the termination of the draft of water, the pressure on the low side is finally reduced by the action of the compressor to the cut-out point of the switch and the compressor is then stopped. The period of operation of the compressor, however, is prolonged by reason of the added capacity afforded by the equalizing tank 39 and the adsorbent material therein. The equalizing tank thus has the effect of increasing the length of the compressor periods of operation and idleness and consequently of reducing the frequency of starting and stopping of the apparatus with corresponding reduction in the wear and depreciation thereof.

The automatic cut-off valve mechanism 25, for the service in question, would ordinarily have its valve 28 so adjusted in relation to its seat that if the automatic switch were tampered with by an attendant, say for example, so as to lower the cut-out temperature, the said valve 28 would be closed by the spring 29 when the pressure in the cooling unit fell to a point somewhat below that corresponding to the temperature of 47°, say to the pressure corresponding to 45°. Continued operation of the compressor after the closure of the valve 28 would not in such case further lower the temperature within the cooling unit and consequently any danger of freezing up the cooling coils by an improper setting of the control switch is obviated. It may be observed, however, that such a continued operation of the compressor after closure of the valve 28 would have the effect of further lowering the pressure in the low side of the system between the valve 28 and the compressor and would correspondingly more thoroughly evacuate the equalizing tank 39 and the adsorbent material therein, thus correspondingly lengthening the operating cycle. Inasmuch as the automatic cut-off valve 25 is sealed within the evaporator shell it is impossible to tamper with it without opening up the refrigerant system and this an ill-advised attendant would seldom if ever attempt. However, even if this were done and the system were operated in a manner to completely freeze up the cooling coils 36^a and 36^b, no injury to the apparatus would result because the form of the coil tubing is such as to permit repeated expansions incident to freezing without injury.

In the form of fountain shown in Figs. 7, 8 and 9 my improvements are applied to the wall or bracket type of fountain and the fountain receptor 43 is formed integral with the side wall 44 of the casing structure which encloses the cooling unit, the said casing being completed by the wall bracket member 45 upon which the receptor and casing member 43—44 is supported, the two parts being secured together by screws (not shown) in a well known manner. In this case the entire receptor and casing structure is shown as made of vitreous enameled iron.

Within the casing structure is disposed the cooling unit 46 which is similar to the cooling unit 11 of the first described fountain and need not be further described. The cooling unit has its water discharge pipe 47 extending upward through the bottom wall of the receptor with a nozzle 48 secured on its upper end, the said nozzle being fitted with a suitable guard 48^a. A water supply pipe 49 is connected to the water inlet of the cooling unit. A liquid refrigerant inlet pipe 50 and a gaseous refrigerant discharge pipe 51 are connected with the refrigerant inlet and outlet, respectively, of the cooling unit. The receptor has a drain fitting 52 which connects with a drain pipe 53, the latter being fitted with a suitable trap 53^a. The water and drain pipes and the refrigerant tubes are enclosed within the casing and bracket structures and pass through a suitable aperture in the wall as indicated in Fig. 7. The water supply pipe 49 is fitted with a manual control valve 54 one end and the operating handle of which are disposed on the outer side of the bracket member 45, as shown in Figs. 8 and 9. The cooling unit of this fountain should be insulated in the manner shown and described in connection with the first form of fountain, but the insulation has been omitted in the drawings to permit a clearer illustration of the mechanical parts.

The operation of the fountain shown in Figs. 7, 8 and 9 is exactly the same as that of the fountain shown in Fig. 1 with the possible exception that the former fountain has no equalizing tank or chamber so that the length of the operating cycle of the system might be shorter for the wall fountain than for the pedestal fountain unless the former were connected in a system containing one or more equalizing tanks such as the tank 39 of the pedestal fountain.

Figs. 10 and 11 illustrate a structural modification which is applicable to the pedestal fountain shown in Fig. 1 and also to the wall fountain shown in Fig. 7. The construction illustrated in Figs. 10 and 11 differs from that of the floor and wall fountains above described only as to the construction of the receptor. That is to say, in this last construction, while the receptor element 55 is formed of vitreous china, said element comprises only the basin or receptor proper and the side wall member 56 of the casing structure is formed with sloping sides 56^a upon which the flange of the receptor rests with an interposed joint 56^b of cement. In this construction the casing member 56 is preferably made of vitreous enameled iron.

In both the last described construction and that shown in Figs. 7, 8 and 9 the construction and mounting of the cooling unit and the receptor make possible the easy assembly and the easy inspection and servicing of the cooling apparatus, just as in the case of the pedestal type apparatus first described.

In Figs. 12 and 13 an embodiment of certain of my improvements is shown in the form of the niche type of drinking fountain. Here the special casing structure consists of a single vitreous china section 57 which serves, in conjunction with the wall structure 58 in which the casing section 57 is recessed, to enclose the cooling unit of the fountain. The upper part of the section 57 forms the usual recessed hood 57^a while the lower inwardly sloping bottom 57^b of said section, in conjunction with the back wall and the upstanding ledge 57^c across the front thereof forms the receptor or basin of the fountain. A depending apron 57^d across the front of the section 57 forms a front wall of the casing structure enclosing the cooling unit 59. The chamber provided for the cooling unit is disposed off center with respect to the casing section 57, the wall in which the fountain is mounted being carried under the other side of the receptor as shown by the dotted line 58^a, Fig. 13, which indicates one of the upright walls of the cooling unit chamber thus afforded by the wall in which the fountain is set.

The cooling unit 59 of this fountain is the same as the cooling units of the previously described fountains and has a water discharge pipe 60 which extends upward through the receptor 57^b and is fitted with a nozzle 60^a. 61 is the water inlet pipe of the cooling unit, said pipe being fitted with a control valve 62 that is actuated by the handle 62^a on the outer face of the apron section 57^d of the casing. 63 is the drain pipe of the fountain and 64 and 65 are the liquid refrigerant inlet and gaseous refrigerant outlet pipes, respectively, of the cooling unit. The pipes 61, 63, 64 and 65 extend downward through a suitable duct in the wall structure, the water supply and drain pipes connecting, respectively, with a suitable source of supply and the building drain while the refrigerant tubes are connected with a motor driven compressor and condenser of a system such as has already been described.

The cooling unit 59 is surrounded with suitable heat insulating material 66, the wall back of the fountain being formed with an aperture 58^b having a removable cover 67 to permit the ready introduction of the insulation packing.

The operation of the last described fountain is similar to the pedestal and bracket types of fountains which have already been described.

It will be observed that the cooling unit employed in my improved fountains is so exceedingly compact in proportion to its cooling capacity that it is possible to enclose it in a casing structure that exceeds by little, if any, the normal bounds of the receptor structure ordinarily employed in pedestal and wall fountains of the character in question. The cooling unit furthermore is rugged and reliable in operation, simple in construction and capable of being produced at a much lower cost than any prior cooling units of similar capacity known to me. The arrangement of the automatic cut-off valve within the shell of the cooling unit makes it difficult, in fact practically impossible, to freeze up the water coils by tampering with the motor control switch of the system.

By enclosing my improved cooling unit directly beneath the receptor of the fountain I secure a fountain of pleasing appearance and relatively low cost. Furthermore the fountain has high thermal efficiency because of the location of the cooling unit in direct proximity to the nozzle of the fountain, so that there are no losses from cold water lines such as characterize circulating water systems. Indeed, my improved construction is such that all water drawn, including that first issuing from the nozzle when the control valve is opened, is adequately cooled. This nearly complete avoidance of heat losses is due to several features of the construction: First, the arrangement of the cooling unit immediately below the receptor makes possible the extremely short connection formed by pipe 7 between the cooling coil and the discharge nozzle. The shortness of pipe 7, its direct metallic connection with the cooling unit and its insulation result in keeping said pipe and even the nozzle 8 so cool that the temperature of the water in pipe 7 and even in the nozzle 8 is not permitted to get noticeably warm. This result is in part made possible, furthermore, by the fact that the manual water control valve which, as a practical matter, must be more or less fully exposed for actuation, is not mounted in the water discharge conduit 7 between the cooling unit and the nozzle, but rather in the inlet water pipe 34 leading to the cooling unit.

In the case of the floor type fountain the space within the supporting column of the fountain is used to very great advantage to enclose the equalizing tank of the refrigerating system. In this same fountain the manner in which the water supply pipe 34 has a portion thereof carried outside the casing structure simplifies and facilitates the installation of the manual control valve 37. Also the carrying of all other pipes through a common opening in the bottom wall of the casing structure formed by the parts 1, 2 and 3 is advantageous.

It will be apparent from the several embodiments of the invention that have been illustrated and described that my improvements lend themselves to various forms and types of fountain construction and it will be understood that the constructions illustrated can be varied widely without departing from the invention as defined in the appended claims.

What I claim is:

1. In a drinking fountain, the combination of a receptor having a nozzle adapted to project a stream of water and a drain opening for waste water; an evaporative water-cooling unit disposed beneath the receptor; supply and discharge pipes for liquid and gaseous refrigerant, respectively, connected to said cooling unit and adapted to be operatively connected with refrigerant liquefying means; inlet and outlet pipes for water to be cooled connected to said cooling unit, the water outlet pipe leading from the cooling unit to

the said nozzle of the receptor and the water inlet pipe being adapted to be connected with a source of water supply and the connections of all of the said pipes with the cooling unit being at the top thereof; a drain pipe to which the receptor drain opening is connected; a casing structure surrounding the cooling unit and the adjacent parts of the said pipes, the receptor constituting a removable top wall section of the casing structure and the connections between the drain opening of the receptor and the drain pipe and between the nozzle of the receptor and the water discharge pipe being separable, whereby the top of the cooling unit and all of its connections can be uncovered for inspection and servicing by removal of the receptor from the casing structure.

2. In a drinking fountain, the combination of a receptor having a nozzle adapted to project a stream of water and a drain opening for waste water; an evaporative water-cooling unit disposed beneath the receptor; supply and discharge pipes for liquid and gaseous refrigerant, respectively, connected to said cooling unit and adapted to be operatively connected with refrigerant liquefying means; inlet and outlet pipes for water to be cooled connected to said cooling unit, the water outlet pipe leading from the cooling unit to the said nozzle of the receptor and the water inlet pipe being adapted to be connected with a source of water supply and the connections of the refrigerant pipes with the cooling unit being at the top thereof; a drain pipe to which the receptor drain opening is connected; a casing structure surrounding the cooling unit and the adjacent parts of the said pipes, the receptor constituting a removable top wall section of the casing structure and the connections between the drain opening of the receptor and the drain pipe and between the nozzle of the receptor and the water discharge pipe being separable, whereby the top of the cooling unit and its refrigerant connections can be uncovered for inspection and servicing by removal of the receptor from the casing structure.

3. In a drinking fountain, the combination of a receptor having a nozzle adapted to project a stream of water and a drain opening for waste water; an evaporative water cooling unit disposed directly beneath the receptor; a bowl-like casing structure upon which the receptor rests and which serves in conjunction with the receptor to enclose the cooling unit, said casing structure having a central opening in its bottom wall; a supporting structure for the casing comprising a hollow floor pedestal with a top opening and a tubular column having its lower end supported on the pedestal in register with the top opening thereof and its upper end supporting the aforesaid casing and in register with the bottom opening thereof, whereby the casing, column and pedestal form a continuous chambered structure; supply and discharge pipes for liquid and gaseous refrigerant, respectively, extending upward through the pedestal, column and casing structure and operatively connected to the cooling unit, said pipes being adapted to be operatively connected with refrigerant liquefying means; inlet and outlet pipes for water to be cooled connected to said cooling unit, the water outlet pipe leading from the cooling unit to the said nozzle of the receptor and the water inlet pipe extending through the pedestal, column and casing to its connection with the cooling unit; and a drain pipe to which the receptor drain opening is connected and which extends downward through the said casing, column and pedestal, the said receptor having separable connections with the casing structure and the water discharge and drain pipes, whereby the cooling unit can be exposed for inspection by removing the receptor.

4. In a drinking fountain, the combination of a receptor having a nozzle adapted to project a stream of water and a drain opening for waste water; an evaporative water cooling unit disposed directly beneath the receptor; a casing and supporting structure comprising a portion surrounding the cooling unit and a chambered bracket-like portion extending laterally from the other portion and adapted to be attached to an upright wall; supply and discharge pipes for liquid and gaseous refrigerant, respectively, connected to said cooling unit and adapted to be operatively connected with refrigerant liquefying means, said supply and discharge pipes extending from the cooling unit laterally through the chambered bracket-like portion of the casing and supporting structure; inlet and outlet pipes for water to be cooled connected to the said cooling unit, the water outlet pipe leading from the cooling unit to the said nozzle of the receptor and the water inlet pipe extending from the cooling unit laterally through the chambered bracket-like portion of the casing structure; and a drain pipe to which the receptor drain opening is connected, the receptor having separable connections with the casing structure and with the water outlet pipe and the drain pipe, whereby the cooling unit can be exposed for inspection by removing the receptor.

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