

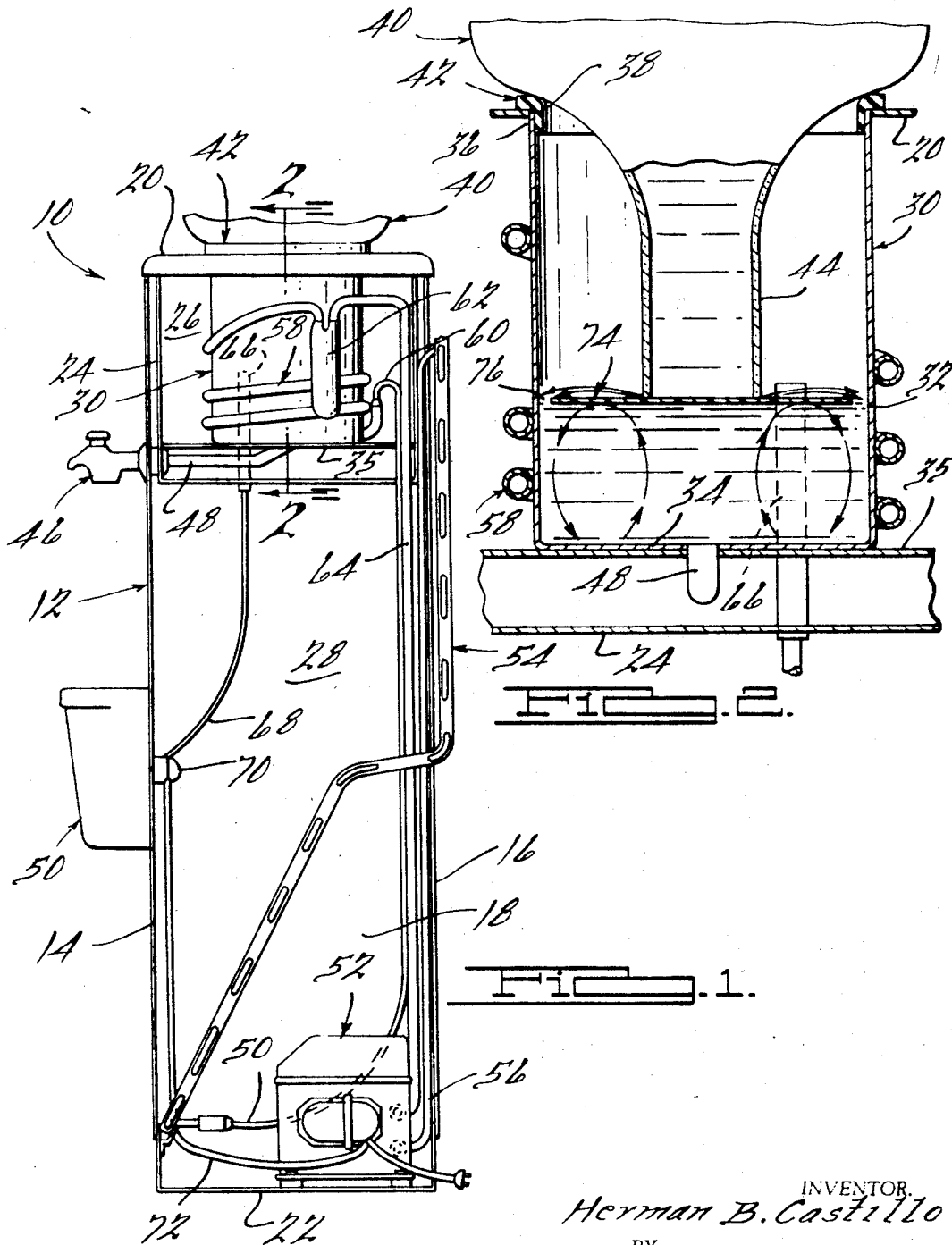
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WATER COOLER

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## WATER COOLER

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10 Claims

### ABSTRACT OF THE DISCLOSURE

A fluid dispensing unit comprising a generally upright cabinet having means therein defining a fluid reservoir; an inverted fluid bottle supported on the cabinet and having a fluid discharge neck portion projecting downwardly into the reservoir; a heat exchanging assembly disposed within the cabinet and including heat transfer means adjacent the reservoir for changing the temperature of fluid contained therein; and a generally flat, smooth baffle member disposed within the reservoir and adapted to float on the surface of the fluid contained therein, the baffle member thereby always being directly below the bottle so as to effectively deflect fluid flowing out of the neck portion thereof outwardly toward the heat transfer means, regardless of the fluid level within the reservoir.

### Background of the invention

It has heretofore been the practice in the construction of fluid dispensers of the type used for dispensing cold water supplied from a generally inverted water container or bottle, to provide some type of baffle or deflector means between the lower discharge end of the bottle and the outlet port of a water reservoir within which the lower end of the bottle is located. The normal function of such baffle means has been to deflect the water egressing from the bottle toward a suitable heat exchanger or evaporator of an associated refrigeration system, and to permit such water to properly blend with the refrigerated water within the reservoir preparatory to being dispensed.

Heretofore, such baffle means have been suspended within the associated water reservoirs by a plurality of mounting legs or other positioning members affixed to the lower sides of the baffles and adapted to be supported upon the lower ends of the water reservoirs; however, it has been found that the positioning legs or similar functioning members have limited effective diffusing of water within the reservoirs by obstructing the blending of the freshly added water with the refrigerated water contained therein. Moreover, such positioning members have been objectionable from the standpoint of that they interfered with the efficient cleaning of the baffle members, as well as adding to the costs in the manufacture thereof.

In accordance with the principles of the present invention, a new and improved water deflecting baffle construction is provided which, although accomplishing essentially the same functions as the hereinabove described type baffles, is characterized by several new and improved features. In particular, the new baffle construction of the present invention is in the form of a generally flat smooth member fabricated of a material having a specific gravity less than the specific gravity of water (i.e. less than 1.00). For example, in a preferred construction of the present invention, the baffle member is fabricated of a polymeric material such as polyethylene. By virtue of this construction, the baffle is adapted to be suspended upon or float on the upper surface of the water contained within the water reservoir and move toward and away from the discharge portion of the bottle in accordance with the level of the water within

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the reservoir. This arrangement has been found to consistently provide maximum water deflection since the baffle is always located between the discharge portion of the bottle and the body of water in the reservoir, whereby water egressing from the bottle will always be deflected directly outwardly toward the periphery of the reservoir to a position adjacent the heat absorbing evaporator of the associated refrigeration system. Additionally, the absence of any positioning legs or other members on the baffle permit impedance free diffusion of the freshly added water with the cold water in the reservoir, as well as providing for sanitary cleaning and convenient packaging, storing, and shipping.

### Summary of the invention

This invention relates generally to water coolers, and more particularly, to a new and improved baffle means for deflecting room temperature water emanating from a suitable source thereof toward the heat transfer portion of an associated refrigeration system.

It is accordingly a general object of the present invention to provide a new and improved fluid deflecting baffle construction for use in water coolers and similar fluid dispensing units.

It is a more particular object of the present invention to provide a new and improved baffle construction of the above character which is adapted to move toward and away from the discharge portion of the water source in accordance with the water level within the water storage and cooling reservoir of the associated cooler unit.

It is yet a more particular object of the present invention to provide a new and improved baffle construction of the above character which is adapted to float on the surface of the water contained within the water reservoir.

It is another object of the present invention to provide a new and improved baffle of the above character which is of a relatively smooth flat configuration and is thus devoid of any supporting or positioning members which detract from the cleanability thereof and limit effective diffusion of the water within the reservoir.

It is a further object of the present invention to provide a new and improved baffle of the above character which, by its very nature, lends itself to convenient packaging, shipping and storage.

It is yet a further object of the present invention to provide a new and improved baffle construction which is of an extremely simple design and is therefore economical to commercially manufacture and easy to install.

Other objects and advantages of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawing.

### Brief description of the drawing

FIGURE 1 is a longitudinal cross-sectional view, partially broken away, of a water cooler unit in accordance with a preferred embodiment of the present invention, and

FIGURE 2 is an enlarged fragmentary cross-sectional view taken substantially along the line 2—2 of FIGURE 1.

### Description of a preferred embodiment

For purposes of description, the terms "inwardly," "outwardly," and derivatives thereof will have reference to the geometric center of the water cooler unit of the present invention and the various component parts thereof. Likewise, the terms "forwardly" and "rearwardly" will have reference to the front and rear sides, respectively, of the water cooler unit shown in FIGURE 1, with the forward side of said unit being at the left side of this figure.

Referring now to the drawing, a water cooler unit 10, in accordance with a preferred embodiment of the present invention, is shown as comprising an upright, generally rectangular cabinet 12 adapted to be floor supported and including front and rear sections 14, 16, a pair of side sections generally designated 18, and top and bottom sections 20 and 22, respectively. A generally rectangular shaped box or enclosure 24, which is preferably provided with some type of insulating material, is located in the upper end of the cabinet 12 and functions to divide the interior thereof into an upper heat insulated compartment 26 and a lower compartment 28. Disposed within the compartment 26 is a water reservoir and refrigerating container 30 that comprises a generally cylindrical side wall 32 and a flat, horizontally extending bottom wall 34 which bears directly against the upper side of a horizontal platform 35 spaced upwardly from the lower side of the enclosure 24. The reservoir has an open upper end 36 which terminates adjacent an annular opening 38 formed in the cabinet top section 20.

The source of water for the unit 10 is provided by means of a replaceable bottle 40 which is mounted in a generally inverted orientation upon the upper end of the cabinet 12. A gasket and support member 42, formed of a resilient material such as rubber or the like, is provided around the periphery of the opening 38 and serves as a support for the bottle 40, as best illustrated in FIGURE 2. The bottle 40 has a reduced diameter neck or dispensing portion 44 which, when the bottle 40 is disposed in its supported position upon the cabinet 12, projects downwardly through the opening 38 and terminates at its lower end approximately midway between the upper and lower ends of the reservoir 30.

A water dispensing faucet 46 is provided on the front side section 14 of the cabinet 12 and is communicable with the lower end of the reservoir 30 through a discharge conduit 48, whereby proper actuation of the faucet 46 will result in the dispensing of cold water from the reservoir 30. Disposed below the faucet 46 is a waste basin or drain receptacle 50 which may be connected to a suitable drain for the unit 10 by means of a suitable drain conduit or the like (not shown).

A conventional refrigeration system is arranged within the cabinet 12 and comprises a compressor unit 52 having a built-in drive motor (not shown), a condenser coil 54 connected at its upper end to the compressor unit 52 by a suitable refrigerant line 56, and an evaporator coil 58. As best illustrated in FIGURE 1, the compressor 52 is located outwardly of the insulated compartment 26, and the condenser coil 54 is located exteriorly of the rear section 16 of the cabinet 12, whereby to provide for sufficient heat dissipation during operation of the refrigeration system. The evaporator coil 58 is wound in a generally helical configuration around the outer periphery of the lower end of the reservoir side wall 32 and is adapted to be supplied with refrigerant from the condenser coil 54 through a restrictor conduit 60, the refrigerant being returned to the compressor 52 through a refrigerant accumulator 62 and suitable conduit 64. As will be readily apparent to anyone skilled in the art, upon energization of the refrigeration system, water which is contained within the reservoir 30 will be cooled a predetermined amount preparatory to being dispensed through the faucet 46, a suitable temperature responsive bulb element 66 being mounted adjacent the evaporator coil 58 and being connected through a conduit 68 to a conventional bellows-operated switch unit or the like 70 mounted on the front section 14 of the cabinet 12. The switch unit 70 is connected by means of a suitable electrical conductor 72 with the drive motor of the compressor 52 and operates in response to the temperature of the evaporator coil 58, and thus the temperature of the water within the reservoir 30, to selectively energize the compressor 52 to maintain a predetermined water temperature within the reservoir 30.

In accordance with the principles of the present invention, the water cooler unit 10 is provided with new and improved baffle means adapted to effectively deflect the water entering the reservoir 30 from the bottle 40 toward the evaporator coil 58 disposed around the outer periphery of the reservoir side wall 32, whereby this water may be cooled a predetermined amount preparatory to being dispensed from the unit 10. More particularly and as best illustrated in FIGURE 2, such baffle means is shown as comprising a smooth, generally flat or planar baffle member, generally designated 74, which is preferably of the same conformation i.e., circular, as the interior of the reservoir 30, yet is slightly smaller in size so as to provide for an annular passage 76 between the outer edge thereof and the inner periphery of the side wall 32. In accordance with the present invention, the baffle 74 is fabricated of a non-porous material having a specific gravity less than the fluid dispensed by the unit 10, that is, less than the specific gravity of water, whereby the member 74 will be suspended upon or float on the upper surface of the water contained within the reservoir 30. In a preferred construction, the baffle member 74 is fabricated of a synthetic polymeric material, preferably polyethylene, or some other corrosion resistant material that will not adversely affect the sanitation or palatability of the cooling water dispensed by the unit 10.

With the above described construction, the baffle member 74 will automatically move upwardly and downwardly within the reservoir 30 in accordance with the water level therewithin and thus the member 74 will always be positioned directly below the neck portion 44 of the bottle 40, regardless of the amount of water within the reservoir 30. Accordingly, the water egressing from the bottle 40 will always directly impinge upon the upper side of the baffle member 74 and thereby be deflected outwardly toward the evaporator coil 58 before this water passes downwardly through the annular passage 76 and blends with the cold water already contained in the lower end of the reservoir 30. It will be noted that the baffle member 74 is always disposed between the neck portion 44 of the bottle 40 and the inlet end of the discharge conduit 48 so that all of the water entering the reservoir 30 will be deflected outwardly toward the evaporator coil 58 before passing into the conduit 48.

In operation of the water cooler unit 10, water at room temperature is communicated to the reservoir 30 from the neck portion 44 of the bottle 40. As this water egresses from the bottle 40, it is deflected outwardly toward the side wall 32 of the reservoir 30 and thereafter passes downwardly through the annular passage 76 provided between the outer edge of the baffle member 74 and the inner periphery of the wall 32. Assuming that the temperature of the water within the reservoir 30 is at or below some predetermined amount, the refrigerator compressor 52 will remain deenergized and the water emanating from the bottle will merely diffuse and blend with the cold water already within the reservoir 30. If, however, the temperature of the water in the reservoir 30 is greater than the aforesaid predetermined amount, the switch unit 70 will be actuated so as to effect energization of the compressor 52, whereby refrigerant will be pumped to and from the evaporator coil 58 and condenser 54 to effect cooling of the water in the reservoir 30.

At such time as cold water is dispensed from the unit 10 through the faucet 46, fresh water will be transferred from the bottle 40 into the reservoir 30, whereby water will be deflected outwardly by the baffle member 74 into heat transfer relation with the evaporator coil 58 and be effectively cooled thereby. Since the baffle member 74 floats on the upper surface of the water within the reservoir 30, regardless of the quantity of water therewithin, the water that is transferred from the bottle 40 will always flow directly onto the upper surface of the member 74 and be deflected into heat transfer relation with the evaporator coil 58 prior to being combined with the

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water already in the reservoir 30. Also, it will be seen from the fact that the baffle member 74 floats on the surface of the water within the reservoir 30 and therefore is entirely self-supporting, there is no need to provide any mounting legs or similar type positioning members on the member 74 for supporting the same within the reservoir 30. Therefore, the water which is cooled by the evaporator coil 58 is free to circulate and diffuse with the water already in the reservoir 30 under the influence of the thermal currents, as shown by the arrows in FIGURE 2, without any impedance by such positioning members. Accordingly, the baffle member 74 provides for extremely efficient diffusion of fresh water within the reservoir 30. Moreover, as a result of the extreme simplicity of construction and the smooth, flat configuration of the baffle member 74, said member may be easily and thoroughly cleaned, thereby providing for the sanitary dispensing of cold water from the unit 10. Also, the smooth, flat configuration of the baffle member 74 provides for convenient installation thereof, as well as simplicity in packaging, storing and shipping, thus enhancing the economies of manufacturing and marketing.

While it will be apparent that the preferred embodiment illustrated herein is well calculated to fulfill the objects above stated, it will be appreciated that the present invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

I claim:

1. In a fluid dispensing unit, means defining a fluid reservoir, fluid supply means having a discharge portion terminating in said reservoir, heat transfer means for changing the temperature of fluid within said reservoir, and baffle means disposed in said reservoir and movable toward and away from said discharge portion of said fluid supply means under the influence of the fluid level in said reservoir for deflecting fluid emanating from said supply means toward said heat transfer means.
2. A fluid dispensing unit as set forth in claim 1 wherein said baffle means is movable toward and away from said discharge portion of said fluid supply means in response to an increase or decrease, respectively, in the fluid level within said reservoir.
3. A fluid dispensing unit as set forth in claim 1 wherein said baffle means has specific gravity less than the specific gravity of the fluid contained within said reservoir.
4. A fluid dispensing unit as set forth in claim 1 wherein said baffle means is adapted to float on the upper surface of fluid contained within said reservoir.

5. A fluid dispensing unit as set forth in claim 1 wherein said baffle means is of a generally flat smooth configuration and is substantially coextensive of the interior of said reservoir.

6. A fluid dispensing unit as set forth in claim 1 wherein said baffle means is fabricated of a synthetic polymeric material having a specific gravity less than the specific gravity of the fluid contained within said reservoir.

7. A fluid dispensing unit as set forth in claim 1 wherein said baffle means is fabricated of polyethylene.

8. A fluid dispensing unit as set forth in claim 1 which includes a generally upright cabinet having means therein defining a fluid reservoir, and wherein said fluid supply means comprises an inverted bottle supported on said cabinet.

9. A fluid dispensing unit as set forth in claim 8 wherein fluid baffle means comprises a generally flat baffle member generally coextensive of the interior of said reservoir and adapted to float on the surface of fluid contained therein so as to deflect fluid flowing out of said bottle toward said heat transfer means.

10. In a fluid dispensing unit, a generally upright cabinet having means therein defining a fluid reservoir, an inverted fluid containing bottle supported on said cabinet and having a fluid discharge neck portion projecting downwardly into said reservoir, a heat exchanging assembly within said cabinet and comprising heat transfer means disposed adjacent said reservoir for changing the temperature of fluid contained therein, and a generally flat baffle member disposed within said reservoir and adapted to float on the surface of the fluid contained therein and thus being movable toward and away from said neck portion of said bottle in response to the fluid level in said reservoir, whereby to deflect fresh fluid flowing out of said neck portion of said bottle outwardly toward said heat transfer means preparatory to said fresh fluid being combined with the fluid already in said reservoir.

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