CONSTANT LEVEL TANK FOR VENDING MACHINES

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2 Sheets-Sheet 1
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2 Sheets—Sheet 2
This invention relates to vending machines for bottled goods of the character wherein the said bottles are maintained in a liquid bath to cool the contents thereof, and wherein said bath is agitated or circulated, and the primary aim of the invention is the provision of apparatus for maintaining the cooling bath at a constant level regardless of the number of bottles in the vending machine.

One of the important objects of this invention is to provide a vending machine for bottled goods having unique structure for cooling and circulating a liquid, and two separate containers for the liquid, one of which accommodates the bottles to be vended and has outlet openings in the sides thereof to maintain the liquid at a constant level while circulation occurs.

A still further aim of this invention is the provision of a vending machine for bottled goods that has a bottle holding tank disposed in an elevated position within a compartment of the vending machine case, and equipped with outlet openings near the top thereof, the size and disposition of the bottle tank and water compartment of the vending machine and the amount of liquid therein being such as to maintain a level in the water compartment that is always below the outlet ports of the bottle tank regardless of the number of bottles contained therein.

Further aims of the invention will appear during the course of the following specification, referring to the accompanying drawings wherein:

Fig. 1 is a top plan view of a bottle vending machine made in accordance with the present invention.

Fig. 2 is a vertical central sectional view through the vending machine, taken on line II—II of Fig. 1.

Fig. 3 is a fragmentary vertical sectional view taken on line III—III of Fig. 2, looking in the direction of the arrows; and

Fig. 4 is a fragmentary detailed sectional view taken on line IV—IV of Fig. 2.

One of the problems that has heretofore confronted operators of bottle vending equipment is the maintenance of a constant level of cooling liquid around the said bottles as the number thereof is altered due to removal of the bottles one at a time from the vending machine by the public. The constant level tank forming one of the elements of the combination contemplated by this invention, may be installed in conventional bottle cooling cabinets or may be built as a part thereof when the cabinet is manufactured.

The preferred manner of embodying the invention in a bottle vending machine is clearly illustrated in the drawings, wherein the numeral 10 designates an insulated case having a water compartment 12 therein, along the bottom whereof is formed a trough 14. This trough extends below the level of the floor 16 of compartment 12 and terminates at its one end in an opening 18, while the other end thereof communicates with a pump housing 20 set off from compartment 12 by a partition 22. The upper portion of this housing 20 is in connection with an imperforate bottle tank 24 through the medium of a conduit 26.

Housing 20 contains a centrifugal pump 28 driven by motor 30.

Refrigerating coils 32 of conventional form and character are disposed within housing 20 to contact the circulating water for the purpose of lowering the temperature thereof as it passes through housing 29 toward bottle tank 24.

Bottle tank 24 is supported above floor 16 of compartment 12 by brackets or the like 34, and the interior of tank 24 is sub-divided by partitions 36 to prevent a plurality of stalls 38 to accommodate bottles 40. In practice, the top of compartment 12 of case 10 is usually closed by vending equipment in the nature of that disclosed in U. S. Letters Patent No. 2,250,816, issued July 29, 1941, which allows the purchasing public to remove bottles 40 one at a time from tank 24.

A number of outlet ports 42 formed in the normally vertical side walls of tank 24 allows the water or other cooling liquid to flow from within tank 24 when the level is as illustrated in Fig. 2, or on the same horizontal plane as the lower portions of ports 42. This water level will remain constant regardless of the number of bottles 40 that are carried by tank 24.

The amount of liquid employed for cooling the bottles should be sufficient to cause its level to be as illustrated by line 44 in Fig. 2, when tank 24 is filled to capacity with bottles 40. When all of the bottles have been removed from tank 24, more of the liquid will be contained in said tank and less in compartment 12, and the level of the liquid under such condition will be along dotted line 46 of Fig. 2. The volume of water being circulated by pump 28 should be less than an amount to attain a level above outlet ports 42 of tank 24 when the bottle tank has a capacity load of bottles therein. Thus, very little if any of the lower portion of tank 24 will be submerged in the water when the equipment is in normal operation—for example, after a few bottles 40 have been removed from tank 24, the level of the water will drop from line 44 to a point below the bottom of tank 24, and thereafter, the tank will contain a sufficient amount of the cooling liquid or water to maintain the level of the water in compartment 12 below the bottom of tank 24.

Opening 18 leading to trough 14 is at the end of compartment 12 remote from conduit 26 and as far away from a point below tank 24 as is practicable in order that positive circulation may occur and to the end that re-cycling of cold water
3 thruugin pump 28 may not be established to leave warmer water in portions of compartment 12. Outlet ports 42 should be equally distributed around the skirtings of tank 24 in order that escaping liquid from the tank may be broken into small streams that fall into the water in compartment 12 over an appreciable amount of its surface—thus, agitation and even distribution will be set up to maintain a fairly constant temperature throughout the volume of liquid. It is notable that in the operation of the vending machine, motor 30 will drive pump 28 to force water through trough 14, housing 28, and conduit 26, and by so doing, will bring the water into contact with cooling coils 32.

It is conceivable that vending machines for bottled goods having apparatus for maintaining the constant water level about a variable number of bottles, may be made to present physical characteristics different from those illustrated and described without departing from the spirit of the invention or scope of the appended claims. Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a vending machine of the kind described, an insulated case having a water compartment therein; an imperforate bottle holding tank disposed within the compartment; cooling means for the water; and a pump having connection with the water compartment and the said tank for forcing water from the compartment to the tank, said tank being provided with outlet ports for passage of water therefrom after said water reaches a predetermined level, the volume of water being circulated by the pump being less than the full, combined outlet capacity of the outlet ports of the tank to maintain the water level below the respective, uppermost edges of the said outlet ports.

2. In a vending machine of the kind described, an insulated case having a water compartment therein; an imperforate bottle holding tank disposed within the compartment; cooling means for the water; and a pump having connection with the water compartment and the said tank for forcing water from the compartment to the tank, said tank being provided with outlet ports for passage of water therefrom after said water reaches a predetermined level, the volume of water being circulated by the pump being less than the full, combined outlet capacity of the outlet ports of the tank to maintain the water level below the respective, uppermost edges of the said outlet ports.

3. In a vending machine of the kind described, an insulated case having a water compartment therein; an imperforate bottle holding tank disposed within the compartment; cooling means for the water; and a pump having connection with the water compartment and the said tank for forcing water from the compartment to the tank, said tank being provided with outlet ports for passage of water therefrom after said water reaches a predetermined level, the volume of water being circulated by the pump being less than the full, combined outlet capacity of the outlet ports of the tank to maintain the water level below the respective, uppermost edges of the said outlet ports.

4. In a vending machine of the kind described, an insulated case having a water compartment therein; an imperforate bottle holding tank disposed within the compartment; cooling means for the water; and a pump having connection with the water compartment and the said tank for forcing water from the compartment to the tank, said tank having outlet ports formed therein to maintain the water in the tank at a predetermined level, said outlet ports being positioned in spaced apart relation throughout the length of the side walls of the tank to form a circumscering group of escape openings for the water whereby to break the water flowing from the tank into relatively small segregated streams, said connection between the water pump and the compartment being formed to remove water from the compartment at a point spaced from the said streams.

JEROME E. HAGSTROM.

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The following references are of record in the file of this patent:

<table>
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