Dec. 14, 1937. B. J. VANDOREN 2,102,171

REFRIGERATING APPARATUS

Filed Feb. 24, 1936 2 Sheets-Sheet 1

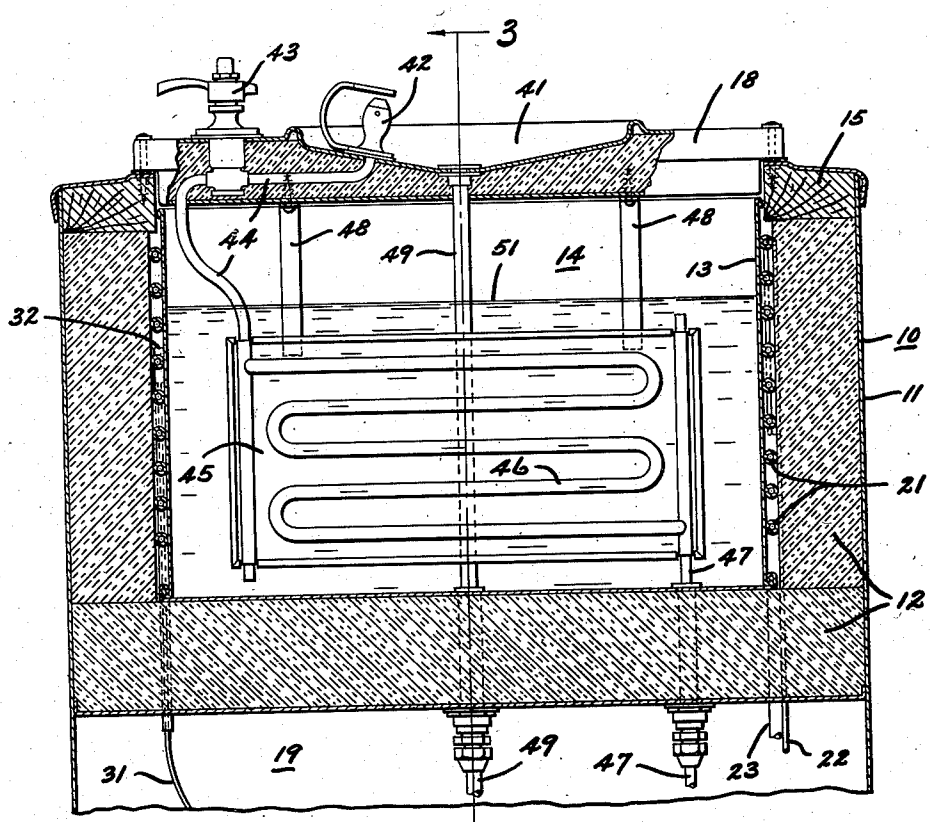


Fig. 2

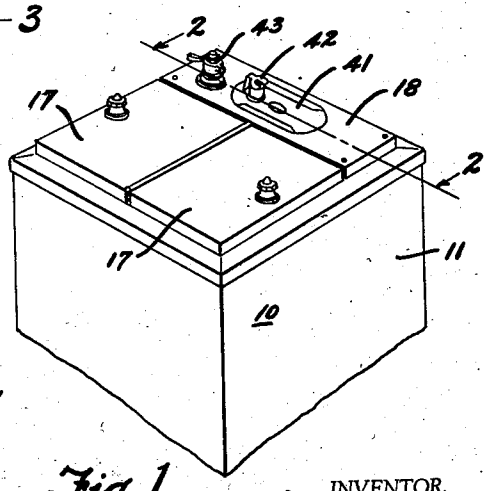


Fig. 1

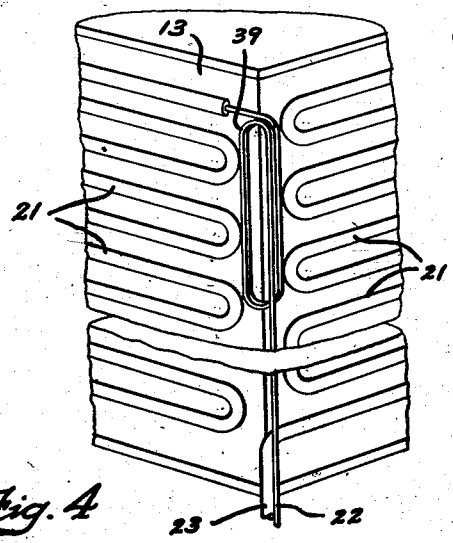


Fig. 4

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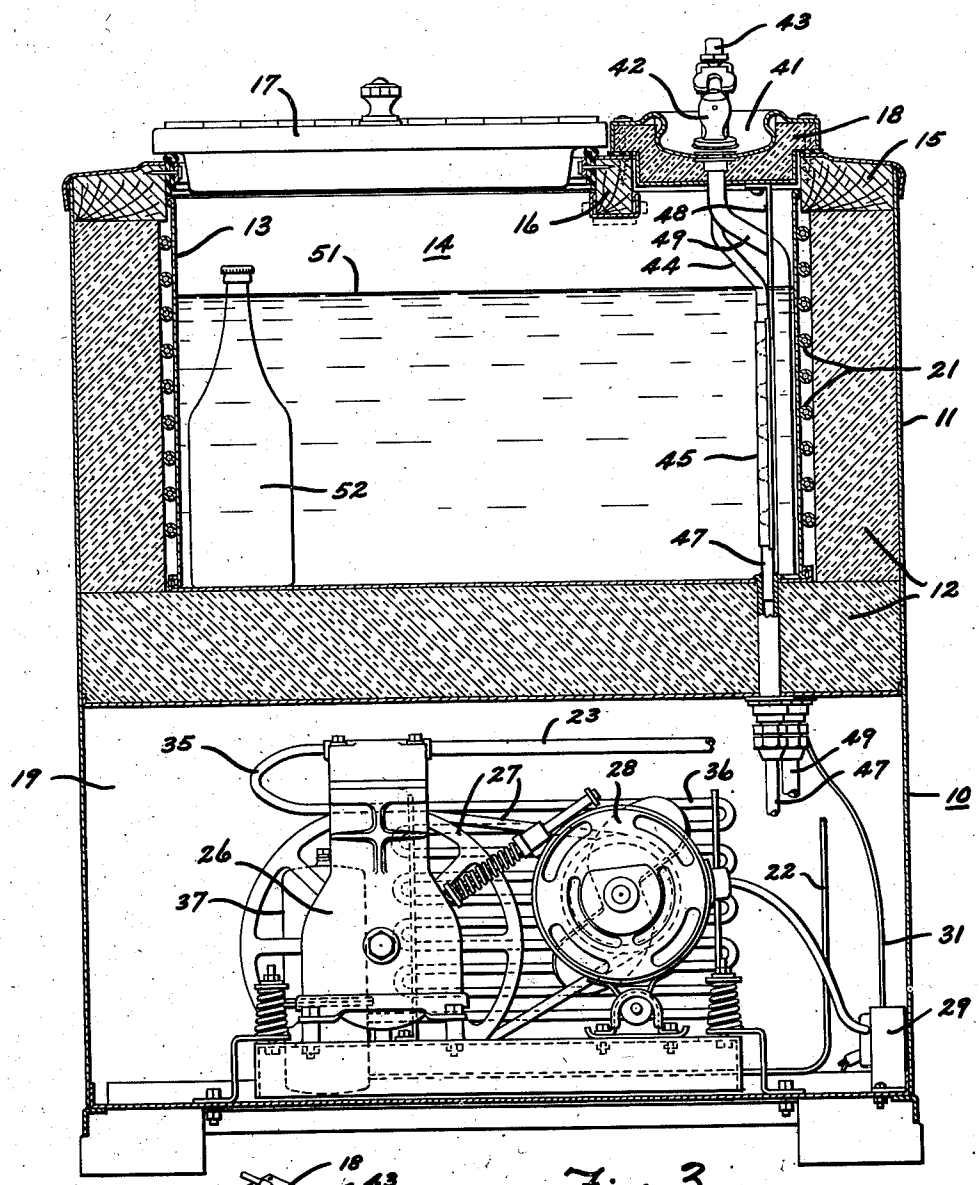


Fig. 3

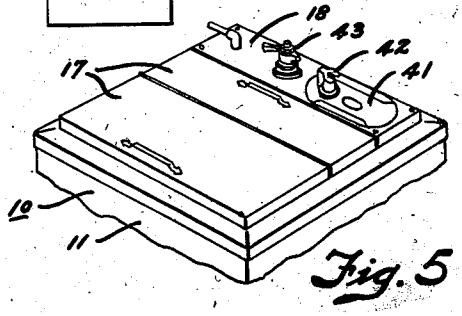


Fig. 5

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UNITED STATES PATENT OFFICE

2,102,171

REFRIGERATING APPARATUS

Bernard J. Vandoren, Dayton, Ohio, assignor to General Motors Corporation, Dayton, Ohio, a corporation of Delaware

Application February 24, 1936, Serial No. 65,323

1 Claim. (Cl. 62—141)

This invention relates to refrigeration and particularly to refrigerated beverage storing and dispensing apparatus.

An object of the present invention is to provide an improved refrigerating apparatus of the beverage storing, cooling and dispensing type.

Another object of the present invention is to provide an improved refrigerating apparatus of the type having a wet bottle cooling storage compartment and a water cooling and dispensing device combined therein.

A further and more specific object of the invention is to provide a unitary refrigerating apparatus having a refrigerated wet compartment therein for the reception of bottled beverages to be cooled and dispensed and having a water cooling portion of a water dispensing device mounted within the refrigerated compartment whereby a closed refrigerant circulating system associated with or mounted in the apparatus serves the double purpose of cooling the bottled beverages stored in the structure and cools water circulated through the structure for drinking purposes.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a perspective view of an apparatus constructed in accordance with the present invention;

Fig. 2 is an enlarged vertical sectional view through the apparatus shown in Fig. 1 and taken on the line 2—2 thereof;

Fig. 3 is an enlarged vertical sectional view through the apparatus and taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary perspective view of a portion of the apparatus showing a refrigerating coil wrapped around or extended over the compartment forming wall member of the apparatus; and

Fig. 5 is a fragmentary perspective view of a modified form of apparatus having a top arrangement differing slightly from that of the apparatus shown in Fig. 1.

Referring to the drawings, for illustrating the present invention, I have shown in Fig. 1 thereof a refrigerating apparatus including a cabinet generally represented by the reference character 10. The cabinet 10 comprises an outer metal shell or panel 11 enclosing walls of insulating material 12 which surround an open-top metal tank member 13 forming a compartment 14 within the cabinet 10 (see Figs. 2 and 3). A wooden frame 15 extends around the top of the upright cabinet walls and serves to support certain members forming the top wall of the cabinet. The frame 15 includes a cross-piece 16 (see Fig. 3) which forms or provides two openings in the top wall of the cabinet 10. Movable members or doors 17 close one of the openings in the cabinet top wall and serves to provide access to the interior of the storage compartment 14. Another member 18 is stationarily mounted upon the cabinet 10 by screws or other suitable mounting means for permitting detachment thereof from the cabinet and this member 18 closes the other opening in the top of the cabinet. The cabinet outer shell or panel 11 extends beyond the lower horizontal insulated wall 12 of compartment 14 and forms a machine compartment 19 located below the insulated compartment for housing the refrigerant liquefying and circulating unit of a closed refrigerating system.

The closed refrigerating system associated with or mounted in cabinet 10 includes a refrigerant evaporating coil 21 which has convolutions thereof wrapped around or extended over the outer surfaces of the upright walls of the compartment liner member 13 and is secured in intimate thermal contact therewith in any suitable or desirable manner. The refrigerant evaporating coil 21 has conduit connections 22 and 23 (see Fig. 4) with the refrigerant liquefying and circulating unit mounted in the machine compartment 19. The refrigerant liquefying and circulating unit of the refrigerating system includes a compressor 26 operated, through belt and pulley connections 27, by an electric motor 28. Operations of motor 28 may be controlled by a switch 29 actuated in response to expansion and/or contraction of a volatile fluid sealed within a conduit 31 connected to a thermostat bulb 32 mounted in heat exchange relation with the refrigerating coil 21 (see Figs. 2 and 3) in the conventional and well-known manner. When motor 28 operates to drive compressor 26 the compressor withdraws evaporated or gaseous refrigerant, through conduit 23, from the refrigerating coil 21 compresses this refrigerant and forwards same under pressure, through conduit 35, to a condenser 36 where the compressed refrigerant is cooled and liquefied in the well-known manner. Refrigerant condensed or liquefied in the condenser 36 flows into a receiver tank 37 where it is stored prior to being conducted through the pipe 22 back to the evaporating coil 21. The conduit or pipe 22 is preferably of small diameter and has a plurality of loops 39 formed

therein (see Fig. 4) to thus permit same to serve as a restrictor or expansion element for dividing the refrigerating system into high and low pressure portions and for restricting the flow of liquid refrigerant to the evaporator 21.

The stationarily mounted top wall portion of compartment 14 and cabinet 10 is provided with a depressed portion 41 which forms a bowl for receiving water discharged from a bubbler 42 mounted in the bowl. The discharge of water through bubbler 42 is controlled by a faucet or valve 43 also mounted upon the stationary top wall portion 18 of the cabinet 10. The faucet or valve 43 is interposed in a conduit 44 which extends from a closed water conducting and cooling portion 45 of the water dispensing device of the apparatus. This water cooling portion of the device may be of any suitable or conventional form and is preferably constructed of superimposed and secured together sheet metal members having a closed sinuous passage 46 formed between the sheet metal members. The water cooler portion 45 is therefore in the form of a flat plate-like structure. A conduit 47 connected to one end of the passage 46 of the water cooler 45 extends through the bottom insulated wall 12 of compartment 14 and is adapted to be connected with a source of drinking water supply exteriorly of the cabinet. The sheet metal water cooler portion 45 of the water dispensing device may be supported within compartment 14 adjacent an upright wall thereof by being secured to suitable brackets 48 suspended from the underside of the detachable stationary top wall portion 18 of the structure. A conduit 49 extends from the bowl 41 down through compartment 14 and serves to convey water flowing into bowl 41 from the outlet bubbler 42 away from the cabinet 10.

A body of liquid 51 is disposed within compartment 14 formed by the tank member 13. This body of liquid covers and surrounds the sheet metal water cooler portion 45 and serves to transfer heat therefrom to the refrigerant evaporating coil 21 of the refrigerating system to thus cool water or other beverage circulated through the cooler 45. Cooling of the liquid 51 by the evaporator 21 provides a body of cold liquid into which bottled beverages and the like such as bottles 52 may be placed for storage. The submerging of bottles 52 into the body of cold liquid 51 insures rapid cooling of their contents by the conduction of heat therefrom to the refrigerating coil 21.

In Fig. 5 of the drawings I have disclosed a modified arrangement of the elements forming the top of cabinet 10. It will be noted that in this showing of the structure the movable closure members or doors 17 are positioned or arranged to open from a different side of the cabinet 10.

From the foregoing it will be apparent that I have provided an improved refrigerating apparatus of the combined water cooling and dispensing and bottled beverage cooling and storing type. My improved apparatus is constructed to be efficient in operation and provides a practical apparatus for use in stores, gasoline filling stations, etc., where it is desired to serve customers with cool drinking water and where such customers quite frequently desire to purchase bottled beverages. The water cooling and dispensing device incorporated in the improved apparatus is of such construction or form that it in no way interferes with the accessibility and removal or replacement of bottled beverages cooled and stored in the apparatus. The combined or unitary water cooling and dispensing and bottled beverage cooling and storing apparatus is small or compact and can be manufactured at low cost.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claim which follows.

What is claimed is as follows:

A unitary refrigerating apparatus comprising in combination, a cabinet having a plurality of walls forming an insulated compartment for the reception of articles to be stored and cooled and a machine compartment below the insulated compartment, a closed refrigerating system associated with said apparatus including an evaporator disposed in heat exchange relation with the interior of said insulated compartment and a refrigerant liquefying and circulating unit mounted in the machine compartment of said cabinet, the top wall of said insulated compartment including a detachable portion stationarily secured to said cabinet and a movable portion, said movable portion of said compartment top wall forming a door providing access to the interior of the insulated compartment, a beverage dispensing device associated with said apparatus, said device including a relatively flat closed fluid conducting portion disposed within said insulated compartment along a side wall thereof and attached to the stationarily mounted detachable portion of the compartment top wall, a conduit connecting said portion of said device with a source of fluid supply exteriorly of said insulated compartment, a faucet mounted exteriorly of the insulated compartment on the stationarily mounted detachable portion of the top wall thereof and having a conduit connection with said portion of said device within the compartment, and said insulated compartment having a body of liquid therein for transferring heat from said portion of said beverage dispensing device and from articles stored within the compartment to said evaporator of the refrigerating system.

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