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C. F. MUNSHOWER

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REFRIGERATOR COOLER FOR BOTTLED BEVERAGES

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2 Sheets-Sheet 1

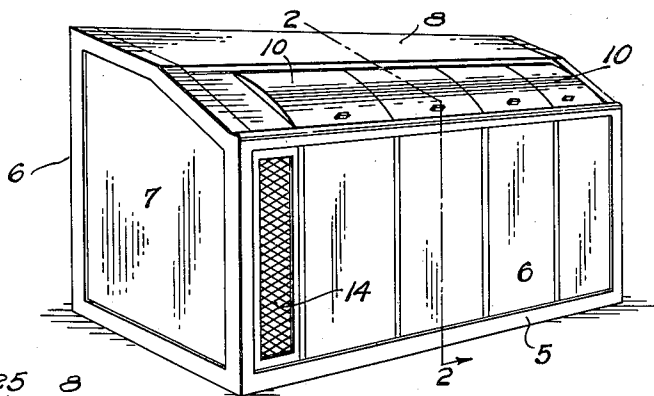


FIG. 1.

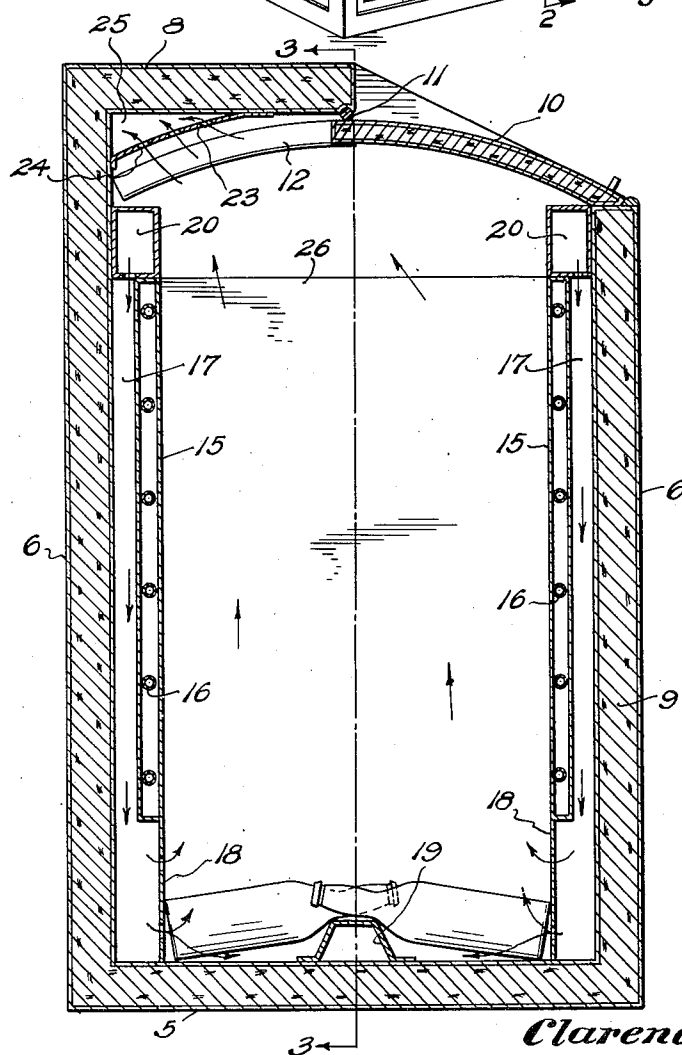


FIG. 2.

Inventor

Clarence F. Munshower

By W. S. McDowell

Attorney

May 23, 1950

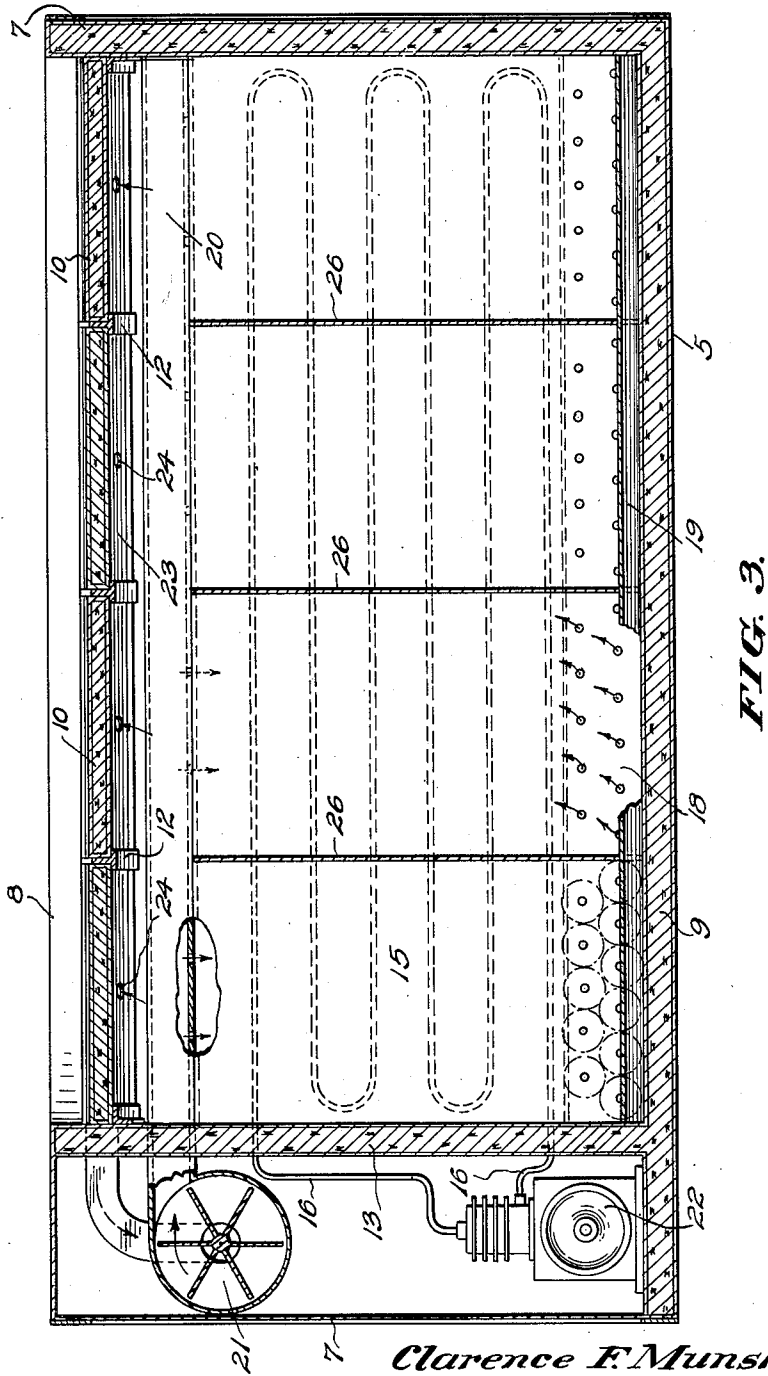
C. F. MUNSHOWER

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2 Sheets-Sheet 2



Inventor

Clarence F. Munshower

By *W. S. McHowell*

Attorney

UNITED STATES PATENT OFFICE

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REFRIGERATOR COOLER FOR BOTTLED BEVERAGES

Clarence F. Munshower, Columbus, Ohio, assignor to Coltemp Corporation, Columbus, Ohio, a corporation of Ohio

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3 Claims. (Cl. 62-102)

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The present invention relates to an improved refrigerated cooler of the type adapted for the storage of a relatively large number of beverage-containing bottles, wherein each bottle is maintained at relatively low temperatures and is cooled both by convection and conduction in a dry storage condition.

It is the general object of this invention to generally improve upon known, patented, and marketed apparatus of this general character through the provision of a cooler for bottled beverages which comprises an outer cabinet, having mounted therein a pair of mechanically refrigerated plates or panels which are arranged in vertical and longitudinally extending order within the cabinet to define a compartment for the reception of a multiplicity of beverage bottles positioned so as to directly contact the refrigerated plates, and a motor driven air circulating system disposed within the cabinet and associated with the refrigerated plates in a manner by which air is circulated in direct contact with the refrigerated plates and afterwards forced upwardly across or around the bottles disposed within the dry storage compartment in a manner to effectively and efficiently cool the latter by convection, the circulated air being afterwards reconveyed in its relatively cooled condition to the associated air circulating system for recirculation throughout the dry storage compartment of the cooler.

It is another object of this invention to provide a cooler for bottled beverages which efficiently utilizes the majority of the space contained within an associated outer cabinet in a manner whereby a relatively larger number of bottles may be stored for refrigeration, and wherein the associated refrigerating or cooling system occupies but a relatively small space within the cabinet as compared to previous coolers of this type.

It is still a further object of this invention to provide a cooler for bottled beverages, wherein bottles positioned therein are arranged in a manner providing easy access thereto through the upper or top portion of the associated cabinet.

For a further and more complete understanding of the present invention and the additional objects and advantages derived thereby, reference is made to the following description and the accompanying drawings wherein:

Fig. 1 is a perspective view of a beverage-bottle cooler formed in accordance with the present invention;

Fig. 2 is a transverse vertical sectional view,

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on a relatively enlarged scale, taken along a plane indicated by the line 2-2 of Fig. 1;

Fig. 3 is a longitudinal vertical sectional view, taken along the line 3-3 of Fig. 2.

Referring now to the drawings, it will be seen that the present invention makes use of an outer cabinet structure comprising a bottom wall 5, upstanding side and end walls, 6 and 7 respectively, and a half-top wall 8 which extends perpendicularly from the rear side wall approximately one-half the width of the cabinet structure. All of the walls, with the exception of one end wall, are formed from spaced inner and outer members between which is disposed a layer of suitable thermally insulating material 9. The space between the outer edge of the upper half wall 8 and the upper edge of the front side wall 6 is occupied by a plurality of sliding closure lids or doors 10. The latter are formed in a substantially arcuate configuration, and are maintained for backward sliding movement between a plurality of rollers 11 carried upon the under side of the cabinet top, and a plurality of flanged arcuately formed tracks 12 which are rigidly secured at their respective ends to the back wall 6 and the under side of the half-top wall 8. The closure lids 10 are formed similarly to the walls of the cabinet, in that they are provided with an inner and outer shell in which is positioned a layer of thermally insulating material.

The cabinet is provided internally, in spaced relation to the uninsulated end wall 7, with a transversely extending and thermally insulated secondary wall 13, which serves to divide the cabinet into two compartments, one of which houses the motor-driven machinery associated with the present cooler, and to be hereinafter more fully described, while the opposite compartment provides a housing for the refrigerating units, and a storage space for the associated beverage bottles, the functions of which will also be more fully described as the description progresses. The front end wall 6 of the cabinet is provided with a grille panel 14 disposed at the side of the machinery-housing compartment, and functioning to provide for the passage of air within this compartment in order to cool the machinery housed therein.

Mounted within the longer storage compartment of the cabinet are a pair of longitudinally extending vertically arranged refrigerating panels or plates 15, in which are positioned a pair of continuous refrigerating coils or conduits 16. The refrigerating panels are supported in transversely spaced order between one of the end walls

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7 of the cabinet and the compartmenting wall 13 thereof. These panels are in turn disposed in spaced relation to the inner surfaces of the side walls of the cabinet, and define therewith a pair of vertically arranged air passages 17. The panels 15 are extended downwardly to the inner surface of the bottom wall 5 of the cabinet by means of perforated extension plates 18, and define with the bottom wall an elongated compartment for the reception of a plurality of beverage bottles. As shown particularly in Fig. 2 of the drawings, an inverted substantially U-shaped bracket 19 is secured to the bottom wall within the storage compartment midway between the extension plates 18, and extends longitudinally of the storage compartment. The bracket 19 serves as a support for the necks of bottles positioned in transverse order within the storage compartment, and serves to support the same in an angularly inclined position whereby the bottoms of the individual bottles are maintained in abutting engagement with the refrigerated panels. Further, with the bottles supported in an inclined position, the bottoms thereof are prevented from closing the perforate openings formed within the extension plates 18 of the refrigerated panels, whereby air is free to circulate between vertically arranged air passages and the space between the refrigerated panels.

Disposed along the upper edge of the refrigerated panels 15 and secured to the inner surfaces of the side wall 6, are a pair of forced-air ducts 20 which extend throughout the length of the compartment, and communicate with the upper end of the vertically arranged air passages 17 by means of openings formed in the bottom of the ducts. The ducts 20 extend through the insulated compartmenting wall 13, and communicate with the discharge end of an air displacement blower 21 which is disposed within the end compartment of the cabinet. Also disposed within the end compartment, and insulated from the main storage compartment, is a refrigerating compressor unit 22 which has communication with the individual ends of the refrigerating coils 16, and serves to circulate a suitable refrigerant through the coils, in the usual manner, to refrigerate or cool the panels 15. It will be understood, that both the air displacement blower 21 and the compressor unit 22 may be driven by an electric motor, not shown, also disposed within the machinery compartment of the cabinet.

Disposed within the upper corner of the storage compartment, at the juncture of the backside wall with the top wall, is a longitudinally disposed and co-extensive plate 23 formed with a plurality of longitudinally spaced openings 24, and defining with the inner surfaces of the side and top wall a return air duct 25, which extends through the insulated division wall 13 and communicates with the intake side of the air displacement fan 21. Upon rotation of the fan 21 in the direction indicated by the arrow in Fig. 3 of the drawings, air is forced outwardly through the longitudinally extending air ducts 20, and downwardly through the vertically arranged air passages 17 in direct contact with the refrigerated panels 15, whereby the air is cooled before passing outwardly through the perforated extension plates 18 and upwardly around bottles positioned within the storage compartment defined by the two panels. In this manner the flow of the cooled air serves to cool the bottles positioned within the compartment by convection, and as the cooled or circulated air rises within the

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storage compartment, the same enters the return air duct 25 disposed in the uppermost portion of the cabinet, from whence the circulated air is returned to the air displacement blower 21 for re-circulation through the cabinet and further cooling upon coming in contact with the refrigerated panels 15. In this manner, the air within the compartment is circulated in a substantially closed circuit condition. Due to the location of the return air duct 25 within the uppermost portion of the cabinet, a natural convective flow of relatively warm air is had to the return air duct, from whence it is conducted for re-circulation to the blower 21. Thus, the air within the cabinet is progressively cooled with each circulating cycle, whereby the temperature of the atmosphere within the storage compartment closely approximates the temperature of the outer surfaces of the refrigerating panels 15. Through the provision of the insulated partitioning wall 13, heat emanating from the mechanically driven machinery disposed within the end compartment is precluded from entering the storage compartment of the cabinet and elevating the temperature of the atmosphere therein.

For purposes of convenience, the storage compartment of the cabinet may be compartmented into separate cells or divisions, by the provision of a plurality of transversely disposed partition walls 26 positioned between the refrigerating panels 15, in order that bottles containing beverages of different types may be segregated for easy access and selection within these individual compartments. The division walls 26 may be advantageously disposed in vertical alignment with the edges of the sliding closure lids, in order that a desired type beverage may be selected from within the compartment corresponding to and in registration with each of the individual closure lids.

In view of the foregoing, it will be seen that the present invention provides an improved and mechanically efficient cooler for bottled beverages, wherein the individual beverage bottles are maintained in a state of dry storage, and are cooled both by conduction and convection, due to their direct contact with the refrigerated panels disposed longitudinally of the cabinet, and due to the fact that the bottles occupy positions within the cooled continuously circulating atmosphere within the cabinet, the latter being maintained at relatively low temperatures due to the efficient re-circulation of air through the cabinet and in contact with the refrigerated panels. The present invention further provides for the efficient utilization of storage space within a given cabinet, by locating the refrigerating panels in "out of the way" positions adjacent the inner walls of the cabinet, whereby the associated refrigerating apparatus does not interfere with the storage space for the bottles. Further, the present invention is characterized by its mechanical efficiency, its structural simplicity, and its consequent economy of manufacture.

While a preferred embodiment of the present invention has been disclosed in detail, it will be understood that various modifications as to details of construction and design may be accomplished without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A cooler for bottled beverages, comprising a cabinet formed with a horizontal bottom, vertical front, back and end walls and a top having an opening, movable closure panels for the opening

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in said top; a pair of vertically arranged and transversely spaced refrigerating panels mounted within and extending longitudinally of the cabinet, said panels being disposed in spaced relation to the front and back walls of the cabinet and forming therewith a pair of vertically arranged air passages, the relative transverse spacing of said refrigerating panels producing within said cabinet a storage compartment for the reception of a plurality of beverage-holding bottles, said panels being formed contiguous to their lower regions with openings providing communication between said air passages and said storage compartment, a longitudinally extending forced air duct disposed above each of said panels in said cabinet and arranged adjacent to said front and back walls above said air passages for air flow communication therewith, motor-driven air-displacement means communicating with said ducts for forcing air longitudinally therethrough and downwardly through said air passages and thence upwardly through said storage cabinet around bottles positioned therein, and a return air duct disposed below the top of said cabinet in the upper portion thereof and communicating with said air-displacement means at the air intake side thereof for the return of air to said means for recirculation through the cabinet.

2. A cooler for bottled beverages as specified in claim 1 and wherein the forced air ducts are

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seated on upper edges of said refrigerating panels and engage with the front and back walls of the cabinet in a manner separating the forced air-receiving upper portions of said passages from the bottle-receiving and storage compartment of the cooler, bottom walls of said ducts being provided with openings establishing air flow communication between the interior of said ducts and said passages.

3. A cooler for bottled beverages as defined in claim 1, and wherein the return air duct is disposed immediately below the top of said cabinet in spaced relation from one of said forced air ducts to provide for the reception of the closure panels between said ducts when said closure panels occupy positions providing access to the interior of said cabinet through the opening in the top of the cabinet.

CLARENCE F. MUNSHOWER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,275,323	Schweller et al. -----	Mar. 3, 1942
2,300,303	Morrison -----	Oct. 27, 1942
2,439,261	Munshower -----	Apr. 6, 1948