Dec. 24, 1940. E. C. TANNER 2,226,395

REFRIGERATING APPARATUS

Filed Sept. 28, 1938 2 Sheets-Sheet 1

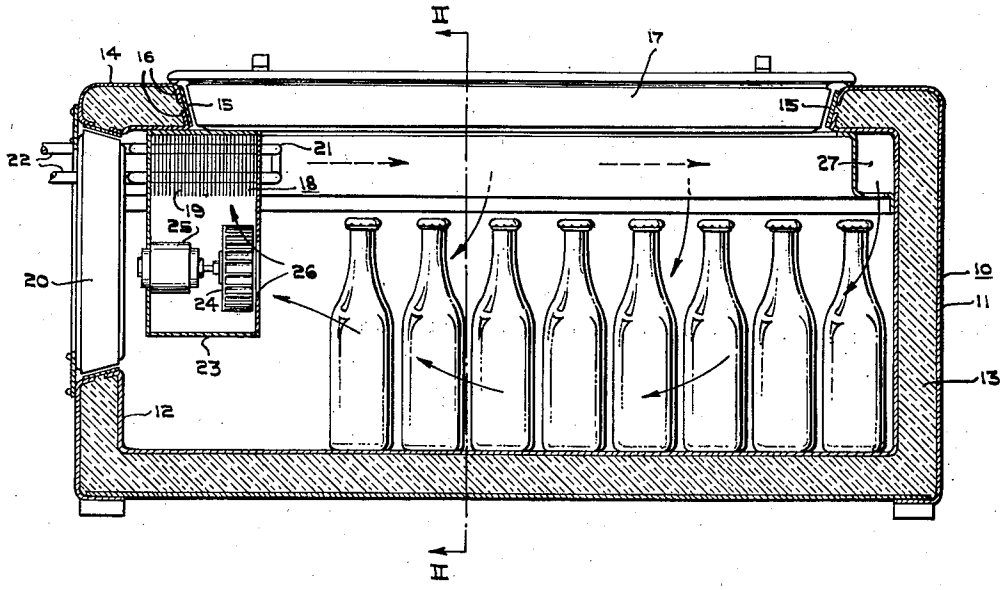


FIG. 1.

WITNESSES:
H. R. Heintzen.
E. H. Lutz.

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REFRIGERATING APPARATUS

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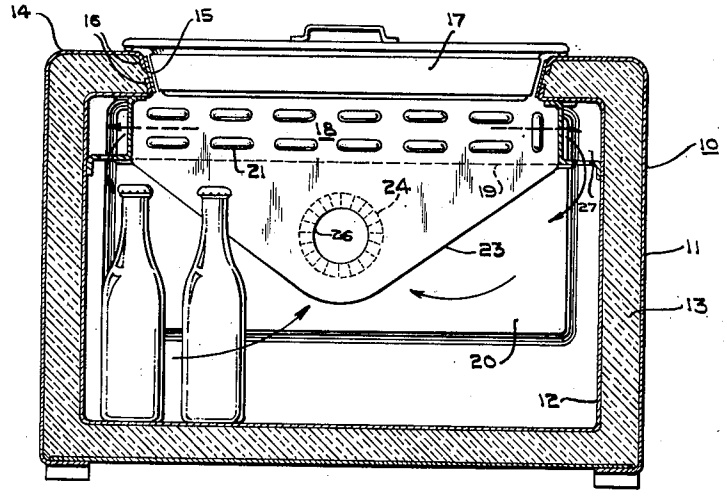


FIG. 2.

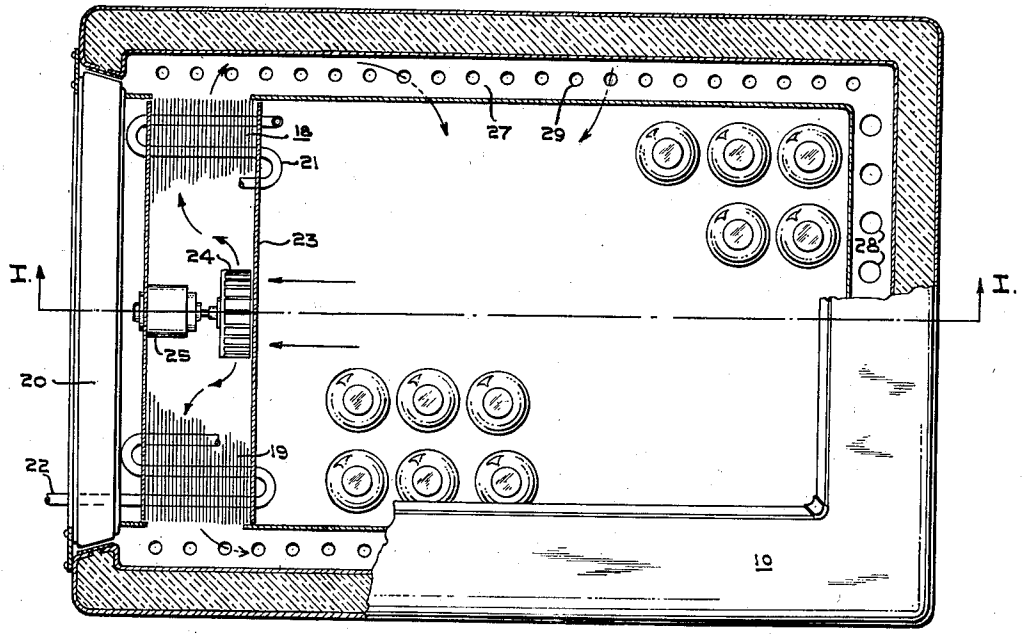


FIG 3.

WITNESSES:
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Patented Dec. 24, 1940

2,226,395

UNITED STATES PATENT OFFICE

2,226,395

REFRIGERATING APPARATUS

Elo C. Tanner, Springfield, Mass., assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., a corporation of Pennsylvania

Application September 28, 1938, Serial No. 232,079

5 Claims. (Cl. 62—102)

This invention relates to refrigeration apparatus and more especially to air-cooled type refrigerators for packaged beverages.

One object of the invention is to provide a cooler which rapidly chills packaged beverages.

Another object is to provide a cooler of the type described in which forced chilled air is circulated in a manner to minimize the loss of chilled air when the refrigerator door is opened.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings forming a part of this application, in which:

Fig. 1 is a vertical section of the refrigerator of this invention;

Fig. 2 is a vertical section taken on the line II—II of Fig. 1 when looking in the direction of the arrows; and,

Fig. 3 is a plan view of the refrigerator with the cover removed and parts broken away to show the air ducts, fan, and cooling unit in the refrigerator.

Referring now to the drawings for a detailed description of my invention, numeral 10 designates a rectangular insulated cabinet comprising an outer shell 11 and an inner liner 12. Insulating material 13 is packed between the outer shell 11 and the inner liner 12.

An opening is provided in the upper wall 14 of the insulated cabinet 10 and is surrounded by a breaker strip 15 of heat insulating material secured to the inturned edges 16 of the outer shell 11 and the inner liner 12. A closure member 17 of the same general construction as the walls of the cabinet 10 is provided for the opening. This insulated cabinet defines a storage chamber for the articles to be refrigerated.

A cooling unit 18 is located on the upper portion of one of the walls of the insulated cabinet 10. The cooling unit 18 comprises spaced-apart metal plates 19 through which a tube 21 is passed back and forth, which tube is adapted to be attached at its ends 22 to a refrigerant supplying unit, not shown in the drawings. It is clear that the evaporator and fan may be made a unitary structure attached by flexible tubing to the refrigerant supplying device and removable from the cabinet as a unit through the plug 20.

The cooling unit 18 is enclosed in a housing which depends below the center of the cooling unit 18 and carries a centrifugal suction fan 24 and a motor 25 for driving the same. The fan 24 draws in the air of the chamber through an opening 26 in the housing 23, the air then passes generally upward through the cooling unit 18, and is discharged into an air duct 27 communicating with the housing 23 and located on the upper interior portions of the three remaining walls of the rectangular refrigerator.

The duct 27 is provided with apertures 28 and 29 in its bottom wall, which apertures communicate with the storage chamber. The apertures 28 in the duct on the wall of the insulated cabinet opposite to the cooling unit are larger than the remaining apertures 29 to provide a more uniform flow of air through the storage chamber.

The general flow of air through the refrigerated chamber is therefore through the opening 26 in the housing 23, through the air passages of the cooling unit 18, through the duct 27 and downwardly through the apertures 28 and 29 in the duct, and then generally lengthwise through the storage chamber where it rapidly cools the packaged beverages. While this is the preferred direction of flow of the air, the direction of flow may also be reversed if desired.

The refrigerator illustrated is intended mainly for the cooling of bottled or otherwise packaged beverages such as used by stores retailing such beverages, although my invention is not limited thereto. Refrigerators in such service are opened at frequent intervals for the removal of bottles for retail sales and the loss of refrigerated air ordinarily assumes large proportions. In this invention, however, the access opening is provided in the top wall of the refrigerator and the flow of refrigerated air is directly downward along the edges of the opening and into the storage chamber, so that the loss of refrigerated air is at a minimum when the door is opened.

It will be apparent from the above description that this invention comprises a compact refrigerator for packaged beverages and the like, which rapidly chills the beverages and in which the loss of refrigerated air on opening the refrigerator is reduced to a minimum.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In a dry cooler for cooling articles, the combination of an insulated cabinet defining a storage space for the articles to be cooled, said

cabinet having an access opening, a cover for said opening, and means for circulating chilled air through said storage space, said means having discharge openings substantially surrounding said access opening, which discharge openings direct the chilled air inwardly from said access opening through said storage space to minimize the loss of chilled air when said cover is removed.

2. In a dry cooler for cooling articles, the combination of an insulated cabinet defining a storage chamber for the articles to be cooled, said cabinet having an access opening in the top thereof, a cover for said opening, and means for circulating chilled air through said storage chamber, said means having discharge openings which direct the chilled air inwardly from at least one edge of the access opening at an angle with the plane of said opening to minimize the loss of chilled air when said cover is removed.

3. In a dry cooler for cooling articles, the combination of an insulated cabinet defining a storage space for the articles to be cooled, said cabinet having an opening in the top thereof, a cover for said opening, a cooling unit having air passages therein, an air duct on at least one side of said cabinet and adjacent said opening, said air duct having apertures communicating with said storage space, a casing surrounding said cooling unit and communicating with said air duct, said casing having an opening communicating with said storage space, and a motor-driven fan in the opening of said casing for circulating the air in said cabinet through the opening in the casing, through an air passage in the cooling unit, through the air duct, through the apertures of said air duct, and through the storage space in the cooler, said apertures being positioned to direct the air issuing therefrom away from said opening.

4. In a dry cooler for cooling articles, the combination of an insulated cabinet defining a storage chamber for the articles to be cooled, an opening in the top thereof, a cover for said opening, a cooling unit in said cabinet at one side thereof, said cooling unit having air passages therein, an air duct on at least one side of said cabinet and adjacent the top thereof, said air duct having apertures communicating with said storage chamber, a casing surrounding said cooling unit and communicating with said air duct, said casing having an opening in its lower portion and below the level of the apertures in said air duct, said opening in the casing communicating with said storage chamber, and a motor-driven fan in said opening in the casing for circulating the air in the cabinet through the opening in the casing, through the air passages of the cooling unit, through the air duct, through the apertures in the wall of said air duct, and through the storage chamber in the cabinet.

5. In a dry cooler for rapidly cooling articles, the combination of a rectangular insulated cabinet defining a storage chamber for the articles to be cooled, an opening in the top of said cabinet, a cover for said opening, a cooling unit in said cabinet at one side thereof, said cooling unit having air passages therein, an air duct on the other sides of the cabinet and adjacent the top thereof, said air duct having apertures in its lower wall communicating with said storage chamber, a casing surrounding said cooling unit and communicating with said air duct, said casing having an opening communicating with said storage chamber, and a motor-driven fan in the opening of said casing for circulating the air in the cabinet through the opening of the casing, through the air passages in the cooling unit, through the air duct, through the apertures in the wall of said air duct, and through the storage chamber in the cabinet.

ELO C. TANNER.