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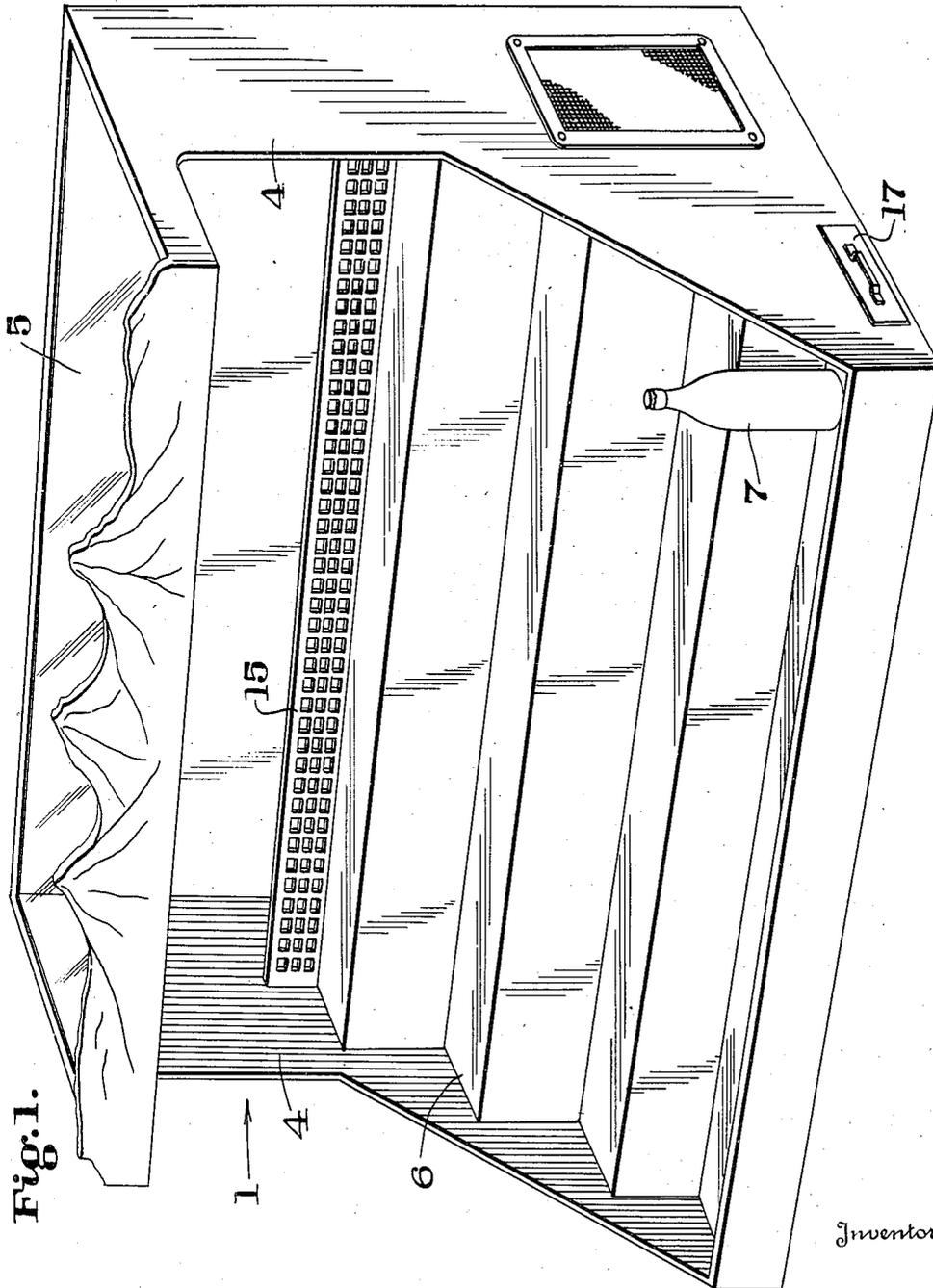
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REFRIGERATED DISPLAY CASE

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REFRIGERATED DISPLAY CASE

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5 Claims. (Cl. 62—89.5)

This invention relates to an improved refrigerated display case, and has for its principal object the provision of improved means for supporting articles of merchandise in display positions while maintaining the same readily accessible and in a chilled or cooled state.

In its more specific aspects, this invention is concerned with the provision of an improved refrigerated display case adapted for receiving bottled beverages, particularly distilled or fermented beverages. In establishments where such beverages are sold at retail, by the glass, or in limited measured amounts, the bottles containing the same are usually placed on a shelf or counter where they quickly attain room temperatures. During periods of warm weather, many patrons object to the fact that such beverages are not cooled or chilled, and consequently the demand therefor diminishes. To place bottled beverages of this character in ice or refrigerated compartments of conventional design, the display thereof to patrons' view is lost, a factor which also results in decreased sales and, in addition, when so stored, the bottles are inaccessible and considerable time is lost in removal and replacement of the bottles with respect to such ordinary cold storage facilities.

Accordingly, it is another object of the present invention to provide a refrigerated bottle display case, wherein the bottles are supported on shelves of step-like design and wherein the front of the case is open, so that each bottle may be readily viewed from the front of the case and rendered conveniently accessible, provision being made for passing a refrigerant through the shelf-like supports for the bottles, so that each bottle and its contents will be cooled by conduction and direct contact with the refrigerated supports therefor.

A further object resides in a refrigerated display case of the character above set forth wherein provision is made for effecting a thermal circulation of air through the case and over and around the bottles, or other articles, positioned therein.

Still, a further object resides in a display case for the purposes set forth embodying a composite storage and display unit essentially simple in design and which may be readily installed in a beverage dispensing establishment.

For a further understanding of the invention, reference is to be had to the following description and the accompanying drawings, wherein:

Fig. 1 is a perspective view of the refrigerated merchandise display case comprising the present invention;

Fig. 2 is a vertical transverse sectional view taken through the case;

Fig. 3 is a detail vertical sectional view on the plane indicated by the line III—III of Fig. 2.

Fig. 4 is a detail sectional view taken through a modified form of shelf.

Referring more particularly to the drawings, the improved display case comprises a housing 1 having a bottom 2, a back 3, end walls 4—4 and a top 5, the front of the case or housing being substantially open. Stationarily supported within the confines of the housing is a refrigerated step-like merchandise-receiving shelf structure 6, upon which beverage bottles 7 or the like are adapted to be received and arranged in vertical display positions, the said bottles being readily accessible and selectively reached through the open front of the housing.

The shelf structure comprises inner and outer metallic sheets, bent or otherwise fashioned to provide the stepped formation disclosed in Fig. 2, the said sheets being spaced to produce a restricted passage 8 therebetween for the passage of a refrigerant, which is adapted to circulate through the shelf structure from the top to the bottom thereof, cooling the shelf structure and causing the latter to absorb heat from the bottles, or other merchandise, positioned thereon. The bottles and their contents are thus cooled by direct contact with the shelf structure and the refrigerant circulating therethrough, this action taking place while the bottles are retained in easily accessible display positions and the cooling or refrigerated element being sufficient so that the beverages will be rendered pleasingly palatable, particularly when such beverages are consumed during periods of warmer weather, or otherwise.

In the particular construction of the case, the space or compartment 9 disposed to the rear of a shelf structure 6, may be used to receive electrically operated refrigerating apparatus of conventional construction, such as the well-known motor driven compressor and expansion apparatus with its attendant controls. Likewise, if desired, as shown in Fig. 4, a refrigerant coil 10 may be interposed between the inner and outer metallic sheets forming the shelf structure 6, and it is obvious to those skilled in the art that various other arrangements may be utilized for passing or circulating a refrigerant through the stepped shelf structure to produce the desired contact cooling of the merchandise arranged thereon.

To render the apparatus more thermally effi-

cient, the rear of the shelf structure is closed by an inclined insulating panel 11, which extends the full width of the case, and is spaced from a similar and correspondingly disposed inclined panel 12, so that an air circulating space 13 is formed between said panels. Cooled air dropping by gravity into the bottom of the case, passes around the lower step of the shelf structure and through a horizontal passage 14 which communicates with the lower end of the space 13. Air so trapped passes upwardly through the space 13, and thence into the top of the case, returning over the shelf structure, and the merchandise supported thereon to the bottom of the case. At its top, the shelf structure is provided with an upright perforated panel 15 through which a portion at least of the air circulated through the space 13 passes and is allowed to sweep over the bottles supported on the upper step of the shelf structure. Any condensation which may collect on the shelf structure will flow by gravity into the passage 14, and thence through a drain opening 16 into a collecting pan 17, which is slidably removable through one of the end walls 4 of the housing.

The top 5 of the housing may be of glass, and above said top wall, there may be arranged an incandescent or fluorescent lamp 18 backed by a reflector 19, for illuminating the interior of the display case and its contents.

In view of the foregoing, it will be seen that the present invention provides a refrigerated display case particularly adapted for the display and cooling of bottled beverages. The case comprises a unitary structure which may be readily installed in its operative position on a shelf, counter or the like, of an establishment where bottled beverages are dispensed in less than full bottle quantities, such as in the retail sale of bottled whiskies, cordials, wines or the like. The construction of the shelf structure permits of the convenient display of such bottles, provides for the desired cooling or chilling of the contents thereof and, moreover, enables each bottle to be readily and selectively accessible through the open front of the case.

It is obvious that the rate of circulation of air through the passage 13 and downwardly over the front of the shelves may be increased through the application of a power driven fan to the display case at any suitable position. This arrangement will increase the efficiency of the apparatus by assisting the circulation secured by natural convection.

What is claimed is:

1. A display case comprising a housing, a refrigerated shelf structure of stepped form stationarily mounted within said housing, and means arranged at the back of said shelf structure and within the housing for circulating air from adjacent the bottom of the shelf structure to the top thereof.

2. A refrigerated display case comprising an open front housing, a stepped article-supporting shelf structure positioned in said housing, means for cooling the walls of said shelf structure, and means in said housing for thermally circulating cooled air from the bottom of said housing upwardly and rearwardly of said shelf structure and over the top thereof, whereby to cause gravitational descent of such circulated air downwardly across the front of the shelf structure, providing a circulating bank of cooled air around articles positioned on said shelf structure.

3. A refrigerated display case comprising an open front housing, a stepped article-supporting and display shelf structure positioned in said housing immediately to the rear of the open front thereof, the walls of said shelf structure being formed from heat conducting materials, means for refrigerating said shelf structure to artificially cool its walls, a cold air receiver at the bottom of said shelf structure, and means disposed within said housing and at the rear of said shelf structure providing for thermal circulation of air from said receiver to the top of said shelf structure.

4. A refrigerated display case comprising an open front housing, a stepped article-supporting shelf structure positioned in said housing, means for cooling the walls of said shelf structure, a wall of heat insulating material mounted within said housing to the rear of said shelf structure, and means provided in conjunction with said insulating wall for conducting cooled air from the bottom of said shelf structure to the top of the latter.

5. A refrigerated display case comprising an open front housing, a stepped article-supporting shelf structure positioned in said housing, means for cooling the walls of said shelf structure, a panel of heat insulating material disposed at the rear of said shelf structure, and a passage formed in connection with said panel for conducting air from the bottom of said housing and shelf structure to the top of the latter for repeated flow over the front of the shelf structure and articles supported thereby.

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