This invention relates to gravity flow refrigerated storage and display cases. A primary object of this invention is to provide a display case for frozen food having an open top bin connected to a vertically extending storage compartment from which the frozen food is fed by gravity, the walls of the storage compartment also forming walls of passages for the circulation of cooling air so arranged in conjunction with other passages around the display case and a cooling coil that the cooling air is caused to circulate by action of gravity.

A further object is to provide a frozen food storage and display case which lends itself to loading from an elevated region, even an upper floor without hindering the customer.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawing in which:

FIGURE 1 is a typical transverse sectional view of the gravity flow refrigerated storage and display case.

FIGURE 2 is a fragmentary sectional view taken through 2-2 of FIGURE 1.

The gravity flow refrigerated storage and display case includes an outer housing having a rear wall and bottom wall, which extends forwardly from the rear wall. A lower front wall is joined to the bottom wall and extends upwardly to approximately table height.

Offset rearwardly from the lower front wall is an upper front wall parallel to the rear wall. The upper end of the lower front wall and the lower end of the upper front wall is slightly distanced and define therebetween an upwardly facing opening. The walls of the outer housing are insulated.

Mounted within the housing is a container having a front wall and bottom wall. The rear side of the display compartment is joined to an upwardly extending storage compartment or bin having a rear wall and a forward wall. The container formed by the display bin and storage compartment is essentially L-shaped in side aspect and is provided with the upwardly facing opening between the upper edge of the front wall and the lower edge of the forward wall.

The L-shaped container comprising the display and storage compartments is supported in spaced relation to the walls of the outer housing to define upper front and rearward passages between the storage compartment and the housing, a bottom passage between the bottom wall 9 of the display compartment and the bottom wall 3 of the outer housing, a front passage between the forward front wall 8 of the display compartment and the lower front wall 4 of the outer housing. The front passage terminates at its upper end in an outlet slot 17 positioned for directing horizontally across the opening.

The lower ends of the forward wall 12 and the upper front wall 5 are curved forwardly to form an inlet slot. An important feature of the storage and display case is the provision of a readily removable cover structure 19 at the top of the upright portion of the case defined by the walls 2 and 5. The cover structure includes an outer insulated cover having one or more handles and an inner cover 21 which closes the upper end of the storage compartment. The two covers are spaced from each other and connected by webs (FIG. 2) so that they may be removed as a unit. When the cover is in place, the space between the webs forms a connecting passage between passages 13 and 14.

Mounted in the upper portion of the rearward passage 14 is a refrigerating coil 23. Below the coil is a condensate duct 25 located along the rear wall of the passage 14. Baffles 26 provide passage for air from the refrigerating coil 23 into the lower portion of the passage 14. A sump 27 is provided in the bottom wall 3 of the housing and is fitted with a perforated cover 28.

The upper front wall 5 of the housing above the opening 6 may be provided with a series of shelves 29. Operation of the gravity flow refrigerated storage and display case is as follows:

When the refrigerating coil 23 is functioning, air in the upper portion of the passage 14 is chilled and increases in density so as to flow downward and under the display compartment 7, and then upwardly through the front passage 16 to discharge through the outlet slot 17. Downward movement of air in the passage 14 causes a corresponding movement of air in the upper front passage 13 and the flow of air into the inlet slot 18. A large proportion of the air discharging from the outlet slot 17 flows horizontally across the opening 6 and into the inlet slot 18.

The display bin or compartment 7 is filled with refrigerated merchandise such as canned goods and the storage compartment 10 is also filled with refrigerated goods.

The height of the housing may be such that its upper end projects into a floor above the one on which the housing is supported so that merchandise may be added to the storage bin as the bin becomes depleted. In order to provide access to the storage compartment 10, it is necessary to lift or pivot the cover structure 19 as shown in broken lines in FIG. 1. The size and dimensions of the storage compartment depend upon the quantity and dimensions of merchandise it is desirable to fit into the display compartment as the contents of the display compartment are depleted.

It should be noted that the flow of refrigerated air around the walls of the L-shaped container is entirely by gravity, that is, no fan or blower is required to maintain circulation. The colder and therefore denser air displaces warmer, but still refrigerated air upwardly into the display compartment and this air is further heated and reduced in density by the contents of the display compartment so that it readily flows upwardly through the upper front passage 13 to the refrigerating coil 23.

While a particular embodiment of this invention has been shown and described, it is not intended to limit the same to the details of the construction set forth, but, instead, the invention embraces such changes, modifications and equivalents of the various parts and their relationships as come within the purview of the appended claims.

I claim:

1. A gravity flow refrigerated storage and display case, comprising:

(a) walls defining a container substantially L-shaped in side aspect and including an upwardly open display compartment, and an upwardly extending storage compartment communicating at its lower end with the rear side of said display compartment;

(b) walls confronting said container walls to form an air circulating passage surrounding said container.
3,314,250

except the open upper side of said display compartment, said flow passage having an outlet slot at the forward upper margin of the open upper side of the display compartment and an inlet slot at the juncture of said storage and display compartments substantially in horizontal alignment with said outlet slot to direct the flow of air across the open upper side of display compartment;
(c) a refrigerating unit located in said passage at the rear side of said storage compartment adjacent the upper end thereof for chilling air and causing gravity flow of air through said passage and across the open upper side of said display compartment.

2. A gravity flow refrigerated storage and display case, according to claim 1, wherein:
(a) the wall forming the upper end of said storage compartment and the confronting wall are interconnected and removable as a unit for access to said storage compartment and said refrigerating unit.

3. A refrigerated storage and display case, comprising:
(a) a housing having insulated walls and including an upwardly open forward portion and an upstanding downwardly open rearward portion communicating therewith;
(b) a container including an upwardly open display bin in the forward portion of said housing and a downwardly open storage bin in the rearward portion of said housing communicating with said display bin;
(c) said housing and container defining therebetween an air circulation passage extending continuously from the upper rear margin of the open upper side of said display bin around said storage bin and said display bin to the forward upper side thereof;
(d) said housing and container also defining confronting slots at opposite margins of the open upper side of said display bin for passage of air across said open upper side;
(e) and a refrigerating unit interposed in said air circulating passage.

4. A refrigerated storage and display case according to claim 3 wherein:
(a) a first cover is removably mounted at the upper end of said storage bin;
(b) a second cover is removably mounted at the upper end of said housing;
(c) and webs connect said covers for movement in unison, said webs and the confronting sides of said covers forming a section of said air circulating passage.

5. A refrigerated storage and display case, comprising:
(a) a container substantially L-shaped in side aspect forming a lower, forwardly directed display bin open at its upper side, and a rearward upstanding storage bin having a lower end communicating with said display bin;
(b) a housing encasing said container except for the open upper side of said display bin and defining with said container an air circulating passage which is continuous except for said open upper side and has horizontally opposed outlet and inlet openings in the upper zone of said display bin;
(c) and refrigerating means in said passage at a location between the upper and lower ends of said storage bin for causing air flow through said passage and across the open upper side of said display bin.

6. A refrigerated storage and display case according to claim 5, wherein said inlet opening is slightly below the level of said outlet opening.

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