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R. H. STARR ET AL

2,257,247

VEGETABLE DISPLAY CASE

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Fig. 1.

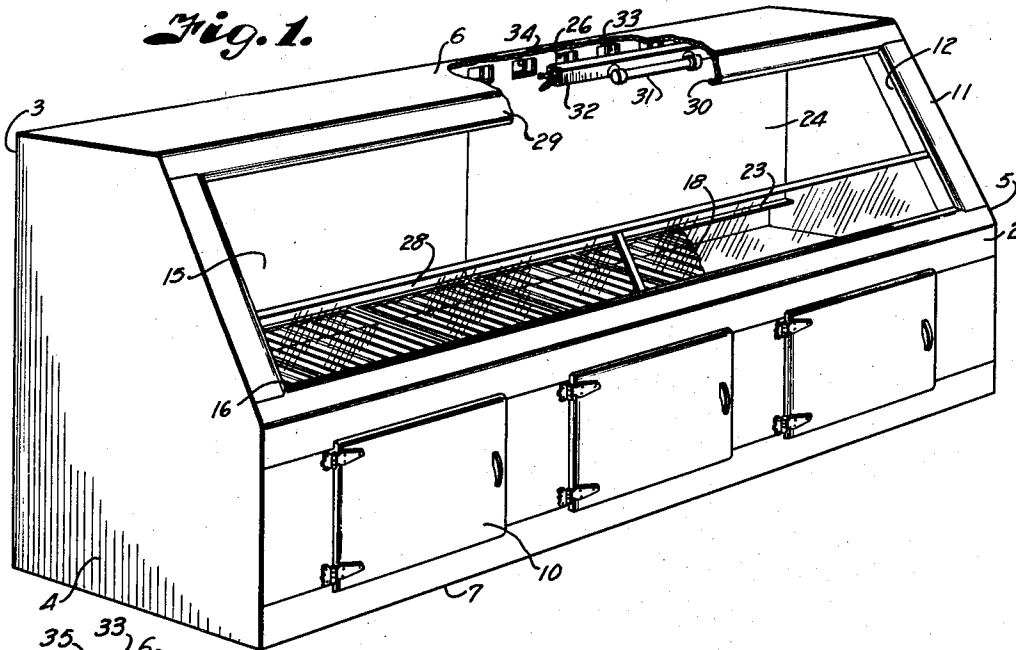


Fig. 2.

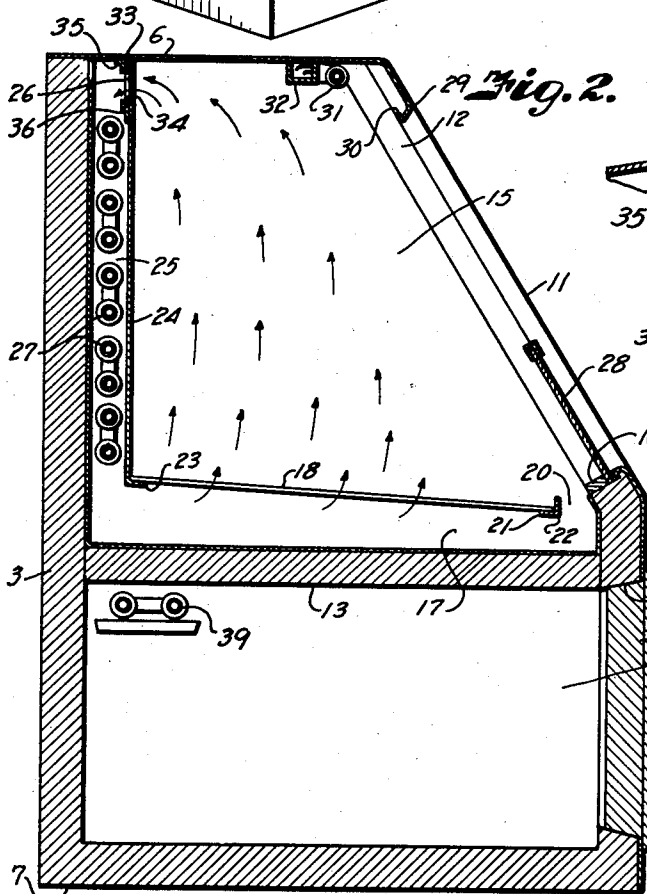
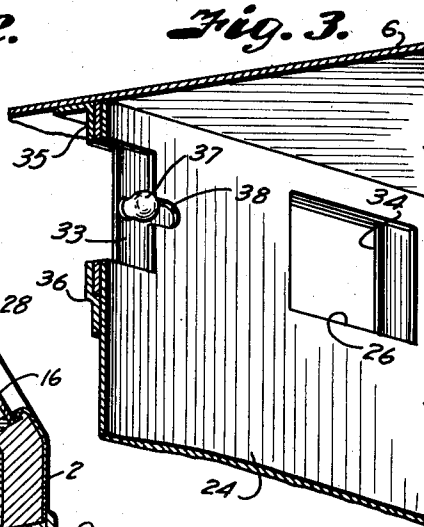


Fig. 3.



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VEGETABLE DISPLAY CASE

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3 Claims. (Cl. 62—89.5)

This invention relates to display cases, particularly those of the refrigerated type for retaining fruits, vegetables and similar perishable commodities in crispy fresh condition.

Cases of this character have been provided with glass paneled doors through which the merchandise is attractively displayed, but it has been found that such display cases do not promote maximum sales, particularly in self-serve stores because of inconvenience to the customer in opening and closing the doors. For this reason it has been desirable to provide a refrigerated display case wherein perishable commodities are readily accessible to the customer and such cases have been built with open tops, but they have not proved satisfactory because of inability in efficiently recirculating cooled air over the commodities.

In overcoming these difficulties we have provided a display case wherein the displayed commodities are at all times readily accessible to the customer, and have provided a construction wherein the cooled air is adapted for continuous recirculation from the cooling coils over the displayed products without material loss in efficiency.

A further object of the invention is to regulate the amount of circulated air for maintaining the displayed articles at selected temperatures.

It is also an object of the invention to provide for automatically maintaining the products in properly moistened condition by the induction of sufficient exterior air to supply the required moisture when contacted with the chilled air.

In accomplishing these and other objects of the invention, as hereinafter pointed out, we have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a refrigerated display case provided with an open front through which fruits, vegetables and similar perishable commodities are maintained in desired condition and readily accessible to a customer.

Fig. 2 is a vertical cross-section through the display case.

Fig. 3 is a fragmentary view particularly illustrating the damper for controlling circulation of air through the cooling chamber.

Referring more in detail to the drawing:

1 designates a display case including front and rear walls 2—3, end walls 4—5, a top 6, and a bottom 7. The lower portion 8 of the front wall is substantially vertical and is provided with a series of spaced openings 9 closed by doors 10. 55

The upper portion 11 of the front wall is inclined retractively in the direction of the rear wall and has an opening 12, here shown as extending the length of the case.

The interior of the case is divided horizontally at a point above the openings 9 with a partition 13, to form a lower storage compartment 14 accessible through the openings 9 and an upper display compartment 15 accessible through the opening 12. The partition 13 is downset below the lower edge 16 of the opening 12 to provide a substantially horizontal passageway 17 under a slightly inclined shelf-like rack 18, located slightly below the edge 16 of the opening and in spaced relation with the front wall to provide an inlet 20 to the passageway 17.

The shelf 18 may consist of a plurality of grid-like sections arranged in juxtaposition across the length of the case and having their front edges supported on the horizontal flange 21 of an angle-shaped rail 22, while the rear edges thereof are supported on the inturned flange 23 of a partition 24. The partition 24 is spaced from the rear wall 3 to provide a vertical air passageway or cooling chamber 25. The upper portion of the partition 24 has a series of inlet openings 26 directly under the top 6 and the lower edge of the partition is spaced above the partition 13 to connect the passageway 17 with the vertical passageway.

Supported within the vertical passageway 25 is a refrigerating element consisting of a plurality of coils 27, through which a refrigerating medium is circulated to cool the air in the vertical passageway and effect movement thereof downwardly under the shelf 18 through the passageway 20, across the opening 12 and under the top 6 for return contact with the coils. Part of the air moving through the passageway 17 passes upwardly through the rack 18 and between the commodities carried thereon to maintain the articles in cool, fresh condition.

In order to retard loss of chilled air through the opening 12, the lower portion thereof is protected by a transparent glass panel 28, extending longitudinally and inclined parallel with the upper portion of the front wall. The top 6 has a depending portion 29 terminating in an inwardly extending flange 30, which serves as a deflector and also a housing for covering lighting elements 31 that are supported on a duct 32 extending longitudinally of the case, as clearly shown in Fig. 1.

Movement of the cool air induces movement of some exterior air through the opening 12 which

is chilled sufficiently to effect condensation of the contained moisture which collects on the goods to maintain them in properly moistened condition. The refrigerating effect of the coils is maintained only sufficient to provide the required cooling effect, and the air at substantially the dew point. The vegetables are therefore kept in crisply fresh condition to present a pleasing display which promotes sale thereof, especially since the articles are readily available to the customer through the opening 12.

In order to control air circulation within the display chamber, the openings 26 are provided with a damper plate 33 having openings 34 adapted to be registered with the openings 26 when the plate is shifted in guides 35 and 36 which engage the upper and lower edges thereof and support the plate against the rear face of the partition 24, as best shown in Fig. 3. Adjustment of the plate is facilitated by a knob or handle 37 which is received in a notch 38 of the partition 24 when the openings 34 are in full registry with the openings 26.

In using the display case, the vegetables or other commodities are placed on the rack 18 and the damper plate 33 is shifted to register the openings 34 therein with the openings 26 in the partition, whereby a thermo-siphonic circulation of air is set up due to the chilled air in the cooling chamber 25 moving downwardly under the rack 18 and in contact with the warmer commodities. The air, upon picking up heat from the commodities, continues its travel through the openings 26 and 34 back to the cooling chamber. The air continues to circulate, reducing the temperature of the commodities, the ultimate temperature of which may be readily maintained by controlling the amount of circulation through the cooling chamber. This is effected by moving the damper plate in valving relation with the openings 26 until the volume of circulated air is such as to maintain the desired temperature. Circulation of the air in the case effects infiltration of a certain amount of warm air through the open front of the display compartment, which exterior air, upon being contacted by the chilled circulated air, is brought below the dew point thereof and condensation of moisture occurs on the commodities retaining them in crisp condition.

The compartment 14 is completely insulated and is provided with a refrigerating coil 39 whereby the merchandise contained thereon may be kept at lower temperature. This compartment may, therefore, be used in storing milk, cheese, and other perishables which must be maintained at lower temperature.

From the foregoing it is apparent that we have provided a display case especially adapted for fruits, vegetables and similar perishable commod-

ities, and which is capable of efficient operation incidental to the controlled circulation of moisture-laden air in contact with the displayed products.

5 What we claim and desire to secure by Letters Patent is:

1. A device of the character described including a case having rear, side and top walls and a front wall portion provided with an unobstructed opening through which access is had to a display compartment formed by said walls, a foraminated support spaced from the bottom of the compartment, a partition spaced from the rear wall to form a refrigerating chamber having connection with said compartment above and below the foraminated support, a refrigerating element in said chamber, and a damper selectively closing said connection above the foraminated partition.

2. A device of the character described including a case having rear, side and top walls and a front wall portion provided with an unobstructed opening through which access is had to a display compartment formed by said walls, a support spaced from the bottom of the compartment, a partition spaced from the rear wall to form a refrigerating chamber having connection with said compartment above and below the support, a refrigerating element in said chamber, and a damper selectively closing said connection above the partition.

3. A display case of the character described including a closed top, bottom, back, and ends forming a display compartment having an open front, means in the compartment for supporting perishable commodities above said bottom, means for circulating chilled air through said compartment including means forming a refrigerating chamber at the back of the display compartment and having connection with said display compartment below the commodity supporting means and with the upper portion of the display compartment near said top for effecting circulation of air from the compartment through said top connection and downwardly in the refrigerating chamber for return to the display compartment under said commodity supporting means to effect an inward movement of exterior air through the front opening whereby said combined air flow is maintained at substantially the dew point for retaining the commodities in moist condition, and control means limiting flow of air through one of said connections for regulating volume of chilled air contacted with the commodities and the amount of exterior air induced into the display compartment.

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