Jan. 25, 1949. J. C. REAR 2,460,030

OPEN TOP REFRIGERATED DISPLAY CASE

Filed Oct. 7, 1946 3 Sheets-Sheet 1

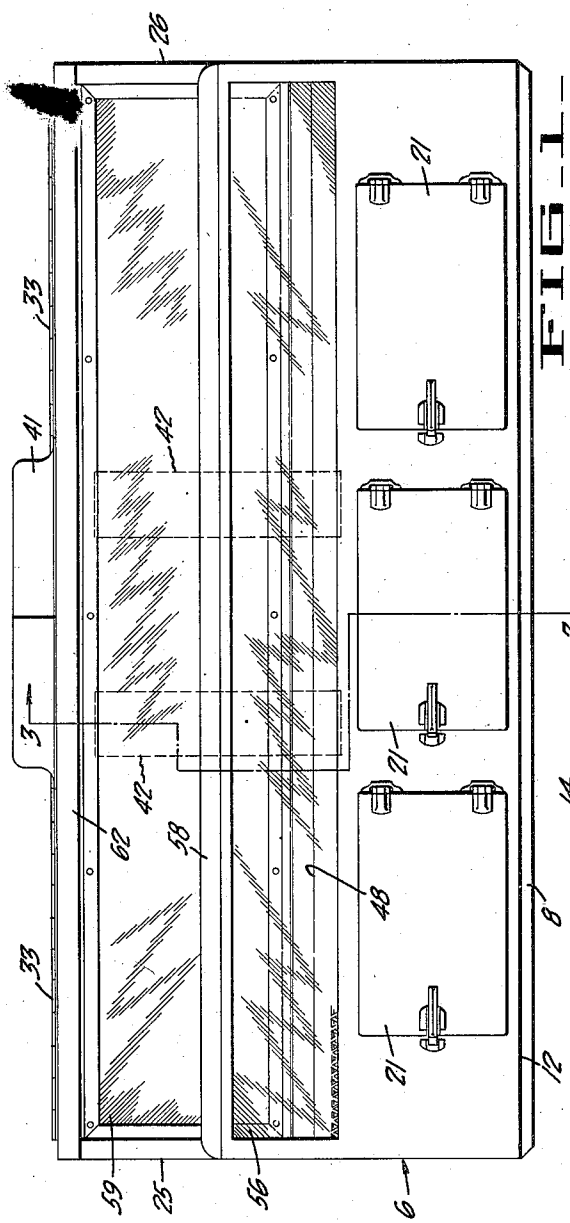


FIG. 1

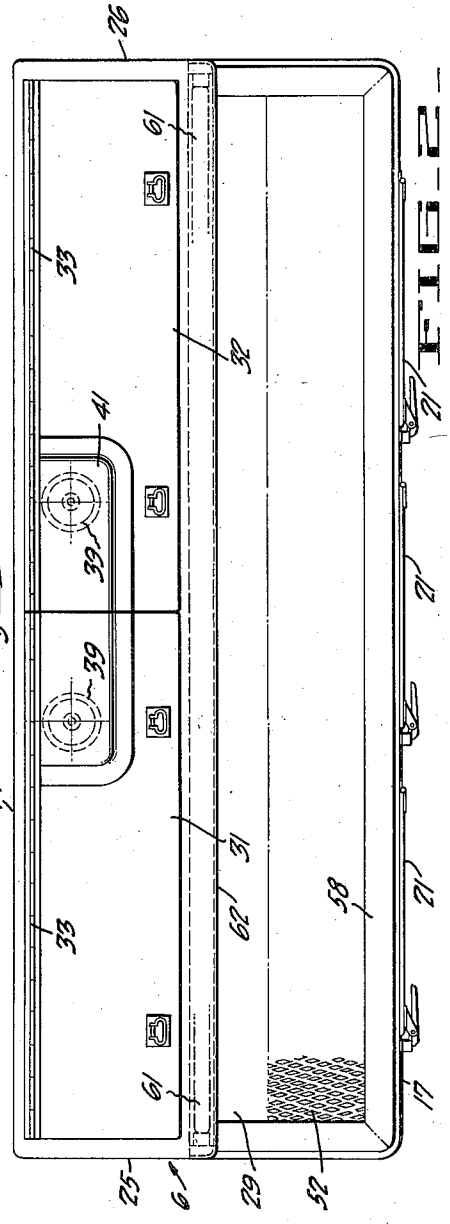


FIG. 2

INVENTOR.
James C. Rear
BY Marcus Lothrop

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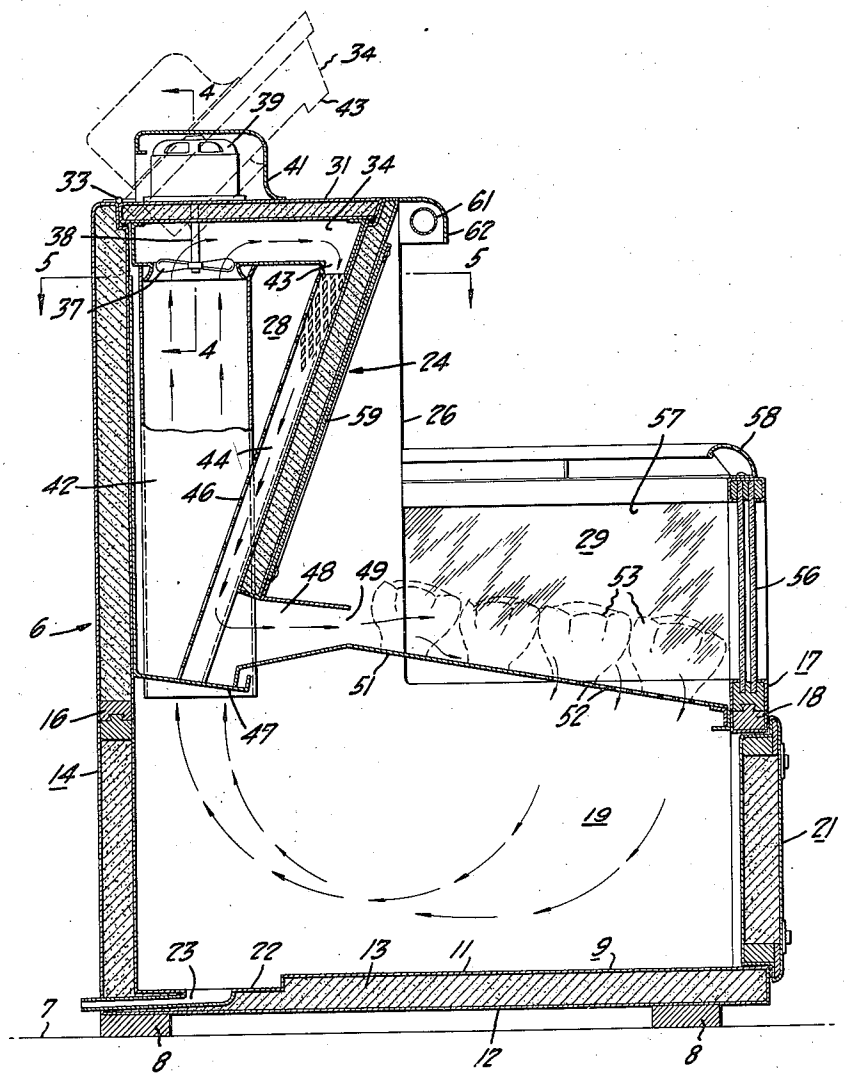


FIG. 3

INVENTOR.
James C. Rear
BY Marcus Lothrop

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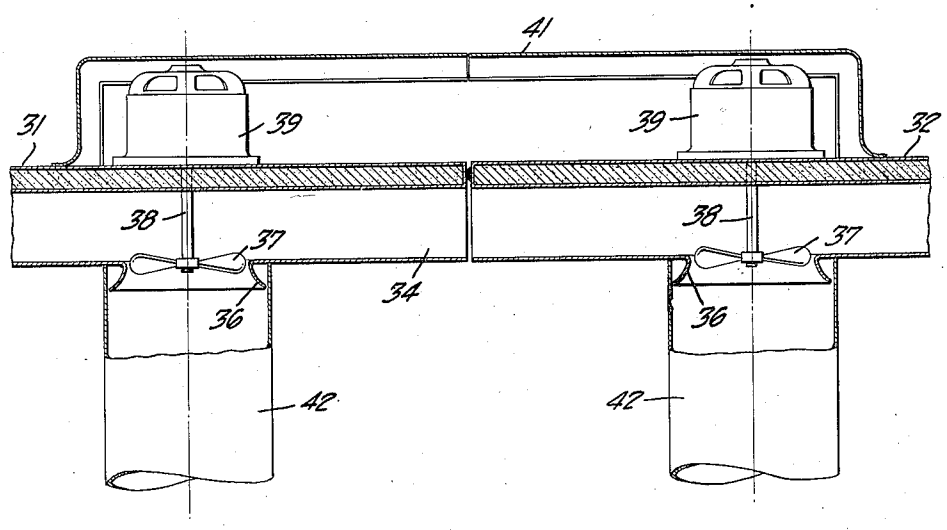


FIG_4_

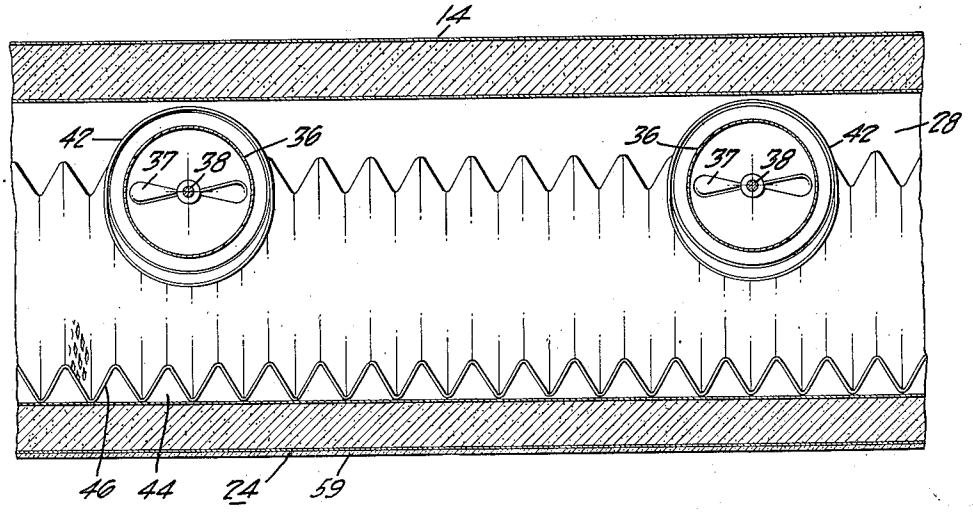


FIG_5_

INVENTOR.
James C. Rear
BY Marcus Lothrop

Patented Jan. 25, 1949 2,460,030

UNITED STATES PATENT OFFICE

2,460,030

OPEN-TOP REFRIGERATED DISPLAY CASE

James C. Rear, Berkeley, Calif., assignor to The Union Ice Company, San Francisco, Calif., a corporation of California

Application October 7, 1946, Serial No. 701,795

5 Claims. (Cl. 62—89.5)

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My invention relates to means for displaying perishable produce under temperature and atmospheric conditions conducive to lasting qualities and protracted keeping in attractive form and at the same time in a fashion to permit its ready inspection and purchase.

In the retail display of produce, particularly vegetables and some fruits, it is a sales advantage to have the fruits or produce on display in ready sight of and immediately available to the prospective customer and in an attractive and well-kept condition. Furthermore, it is advantageous to have the produce openly exposed for removal and sale.

It is therefore an object of my invention to provide a cabinet or case within which the produce can be disposed for display and for sale and which is open to the surroundings so that a customer can immediately serve himself or be served therefrom.

Another object of the invention is to provide a display case of the open type wherein the atmosphere within which the produce is stored is maintained at an appropriate temperature and humidity to foster the keeping qualities and continued attractiveness and freshness of the materials displayed.

Another object of the invention is to provide means for insuring the continued satisfactory circulation of atmosphere in the vicinity of the produce despite the fact that the quantity of the produce may vary from time to time.

Another object of the invention is to provide means not only for displaying certain merchandise under appropriate conditions, but likewise for storing under favorable atmospheric conditions merchandise not immediately on display.

Other objects of the invention together with the foregoing are attained in the embodiment of the invention selected for illustration in the accompanying drawings in which:

Figure 1 is a front elevation of a refrigerated display case constructed in accordance with my invention.

Figure 2 is a plan of the refrigerated display case as shown in Figure 1.

Figure 3 is a cross section the planes of which are indicated by the lines 3—3 of Figure 1.

Figure 4 is a fragmentary view in cross section the plane of which is indicated by the line 4—4 of Figure 3.

Figure 5 is another fragmentary cross section the plane of which is indicated by the line 5—5 of Figure 3.

In its preferred form the refrigerated display

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case of my invention includes a cabinet having an open-top produce display compartment partially bounded by an inclined rear wall also serving as a boundary of a refrigerant compartment. Within the refrigerant compartment are means for supporting ice in spaced relation to the inclined wall to provide a channel through which air is blown by a fan to flow over a produce-displaying shelf of a perforate nature. After contacting the produce most of the blown air flows through the perforations into the interior of the cabinet. From there it flows through a conduit extending through the ice compartment and to the blower fan. For convenience, the blower fan and some of the air conducting members are mounted on a removable cover for the ice compartment so that the compartment can readily be recharged with ice or other refrigerant. Space is provided in the lower portion of the cabinet for storage of material awaiting display. Preferably, the display shelf is largely surrounded with an inturned combing or moulding to deflect cold air onto the produce and is backed on the inclined wall with a mirror to enhance the apparent extent of the produce display.

While the refrigerated display case of the invention is susceptible of embodiment in numerous different forms and can be varied in general configuration and display capacity in accordance with special requirements, it has been successfully incorporated in the form shown herein for retail store display purposes.

In the instance illustrated, I provide a cabinet 6 supported on the floor 7 on suitable blocks 8 or skids so that the structure is readily installed and removed. The cabinet includes a floor 9 preferably comprised of a plurality of layers 11 and 12 of sheathing material enclosing interposed thermal insulation 13 of any preferred sort. The floor 12 merges with a back wall 14 of similar construction preferably intermediate its height provided with a sealed joint 16 so that the lower part of the cabinet wall can be detached from the upper part thereof under special circumstances. In a similar fashion the floor 12 merges with a front wall 17 having a sealed joint 18 therein comparable to the joint 16. Access to the interior space 19 in the lower portion of the cabinet is afforded through a plurality of doors 21 of suitable construction disposed in the front wall, while the interior of the compartment or space 19 is readily cleaned or washed and the liquids drained away through a depression 22 leading to an offtake pipe 23 discharging rearwardly of the cabinet.

Included in the cabinet 6 is a partition wall 24 fabricated in a fashion similar to that of the bottom 12 and inclined between the side walls 25 and 26 of the cabinet in a rearward and downward direction as seen from the cabinet front. The inclined wall 24 terminates in the same top plane as the rear wall 14 and serves to divide the cabinet into a refrigerant compartment 28 and a produce or display compartment 29.

The top of the refrigerant compartment 28 is closed by two cover portions 31 and 32 constructed in a fashion similar to that of the base and walls and preferably similar so that a description of one applies to the other as well.

Each of the cover portions 31 and 32 is connected by hinges 33 to the rear wall 14 and is provided with an air duct 34 having a Venturi inlet 36. A blower fan 37 disposed in the inlet is fastened on a shaft 38 extending from an electric motor 39 mounted on the cover 31. An air ventilating and protecting hood 41 encompasses the motor 39 in part. When the motor is energized the fan 37 is effective to pull air through the Venturi opening 36 to which it is supplied by a conduit 42 of circular cylindrical form. The conduit telescopes with the Venturi inlet 36 when the cover is closed and extends through the ice compartment 28 and into the lower compartment 19 of the cabinet. Air from the lower compartment is drawn upwardly through the conduit 42 in heat exchanging relationship with the ice in the compartment 28 and is then forced by the fan to flow through the duct 34.

Air discharges from the duct through a nozzle 43 at the end thereof designed to fit, when the cover is closed, within a channel 44. This channel is partially defined by the inclined wall 24 and partially defined by a corrugated foraminous metallic screen 46 effective to support a refrigerant such as ice within the compartment 28 yet to space such ice from the wall 24 to leave the designated channel 44. Because of the nature of the foraminous corrugated material, the melting ice extends through the openings therein into the air stream flowing in the channel to remove heat from the air and to establish the humidity of the air at the proper value and by entrainment with the melted ice to remove dust particles and other contaminants from the circulating air. The screen 46 extends for the entire length of the dividing wall 24 and extends below it almost to intersect the rear wall 14. The screen stops just above a bottom drain plate 47 effective to intercept falling water from the melting ice and to divert it to the side of the cabinet for discharge through the outlet 23. Since the wall 24 stops short of the end of the channel defining screen 46, there is provided a communicating nozzle 48 establishing an accelerated air flow from the channel through the opening 49 of the nozzle into the produce display compartment 29. The nozzle material is continued to form a shelf 51 a portion of which is pierced to leave holes 52 to form a perforated supporting member for produce 53. The produce is arranged for display on the shelf and is situated just behind the front wall 17 and ahead of the dividing or inclined wall 24. As so arranged the produce 53 is subjected to a stream of cold conditioned air emerging from the nozzle 48 and flowing in a general direction across the shelf 51. This air is in part deflected by the produce and in part deflected by a multiple-glass wall 56 continuing and incorporated in the front wall 17 and also extending around to glass side portions 57 so that the produce 53 is readily viewed. An inturned ledge 58 assists in protecting the margins of the cabinet and in deflecting air, which otherwise would tend to flow over the edge of the forward wall 17, to recirculate over the produce within the compartment 29.

Further to enhance the display characteristics of the cabinet and also to act somewhat as an added radiant-heat insulator for the refrigerant compartment 28, a mirror 59 is disposed on the wall 24. As an additional display attraction, the upper margin of the inclined wall 24 is provided with a plurality of lights 61 suitably shielded by a hood 62 continuing the top surface of the cover 31 and deflecting the light appropriately upon the display.

Air which passes across the shelf 51 through the produce 53 and available for recirculation is pulled downwardly through the holes 52 into the compartment 19 since the pressure therein is something less than atmospheric whereas the pressure of the air ejected through the nozzle opening 49 is preferably slightly above atmospheric. Thus the air warmed by the heat of the produce is pulled through the compartment 19 and returned through the conduit 32 to the circulating fan for recycling and cooling. Produce for immediate sale is well displayed in an open-topped compartment for ready removal pending which it is maintained at an appropriate temperature and humidity. Additional produce not yet ready for display or produce to be stored without display, can be retained in its shipping carton or crate and located within the relatively cool compartment 19 by introduction through the doors 21. In the event there is no need for such storage, the lower portion of the cabinet, because of the joints 16 and 18, can readily be replaced with a somewhat shallower lower compartment omitting access doors 21, and serving simply as a return passageway for air flowing through the holes 52 and returning to the conduit 42 for recirculation.

I claim:

1. A refrigerated display case comprising a cabinet having an open-top display portion, an inclined wall forming the back of said display portion, means on said wall for supporting ice spaced from said wall to define a channel, a perforate produce shelf in said display portion, means for establishing communication between said channel and the upper side of said shelf, means defining a duct extending from the lower side of said shelf to said channel, and means for circulating air through said duct and then through said channel.

2. A refrigerated display case comprising a cabinet having an open-top display portion, an inclined wall forming the back of said display portion and a boundary of an ice compartment, means on said wall for supporting ice spaced from said wall to define a channel, a perforate produce shelf in said display portion, means for directing air flowing down said channel to flow across said shelf, means defining a duct extending from below said shelf through said ice compartment to said channel, and means for circulating air through said duct and then through said channel.

3. A refrigerated display case comprising a cabinet having an open-top display portion, an inclined wall forming the back of said display portion and a boundary of an ice compartment, means in said compartment for supporting ice spaced from said wall to define a channel, a perforate produce shelf in said display portion,

means establishing communication between the lower end of said channel and the upper side of said shelf, a conduit extending through said ice compartment, means for establishing communication between the lower side of said shelf and said conduit, and means for establishing communication between said conduit and the upper end of said channel.

4. A refrigerated display case comprising a cabinet having an open-top display portion, an inclined wall forming the back of said display portion and a boundary of an ice compartment, means in said compartment for supporting ice spaced from said wall to define a channel, a perforate produce shelf in said display portion, means establishing communication between the lower end of said channel and the upper side of said shelf, a conduit extending through said ice compartment, means for establishing communication between the lower side of said shelf and said conduit, a cover for said ice compartment, and means on said cover for forcing air from said conduit into the upper end of said channel.

5. A refrigerated display case comprising a

cabinet having an open-top display portion, an inclined wall forming the back of said display portion and a boundary of an ice compartment, means for supporting ice in said compartment and spaced from said wall to define a channel, a produce shelf in said display portion, means for forcing air through said channel and across said shelf, a conduit extending through said ice compartment, and means for conducting said air from said shelf through said conduit to said forcing means.

JAMES C. REAR.

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