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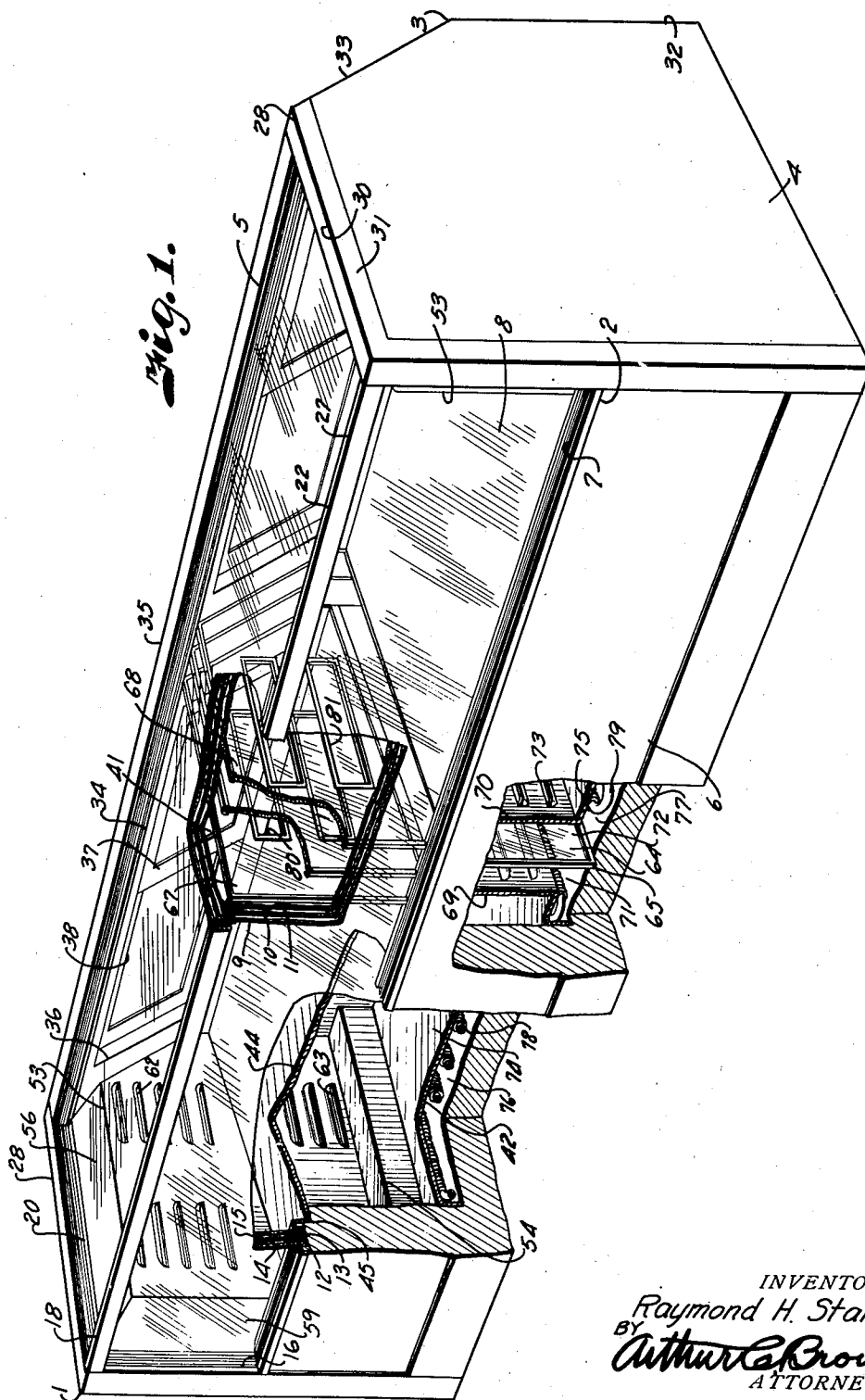
R. H. STARR

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REFRIGERATOR DISPLAY CASE

Filed July 13, 1939

3 Sheets-Sheet 1



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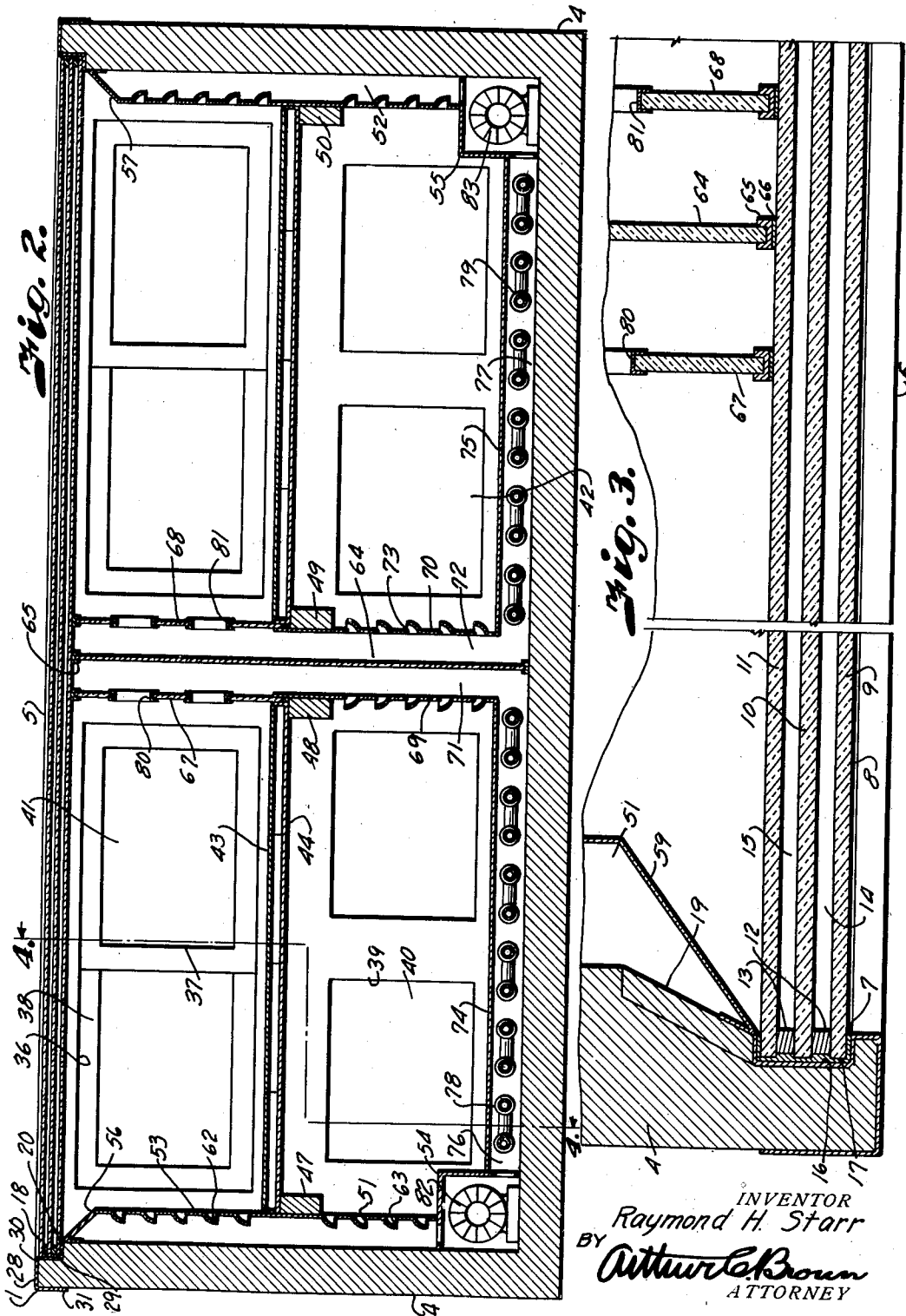
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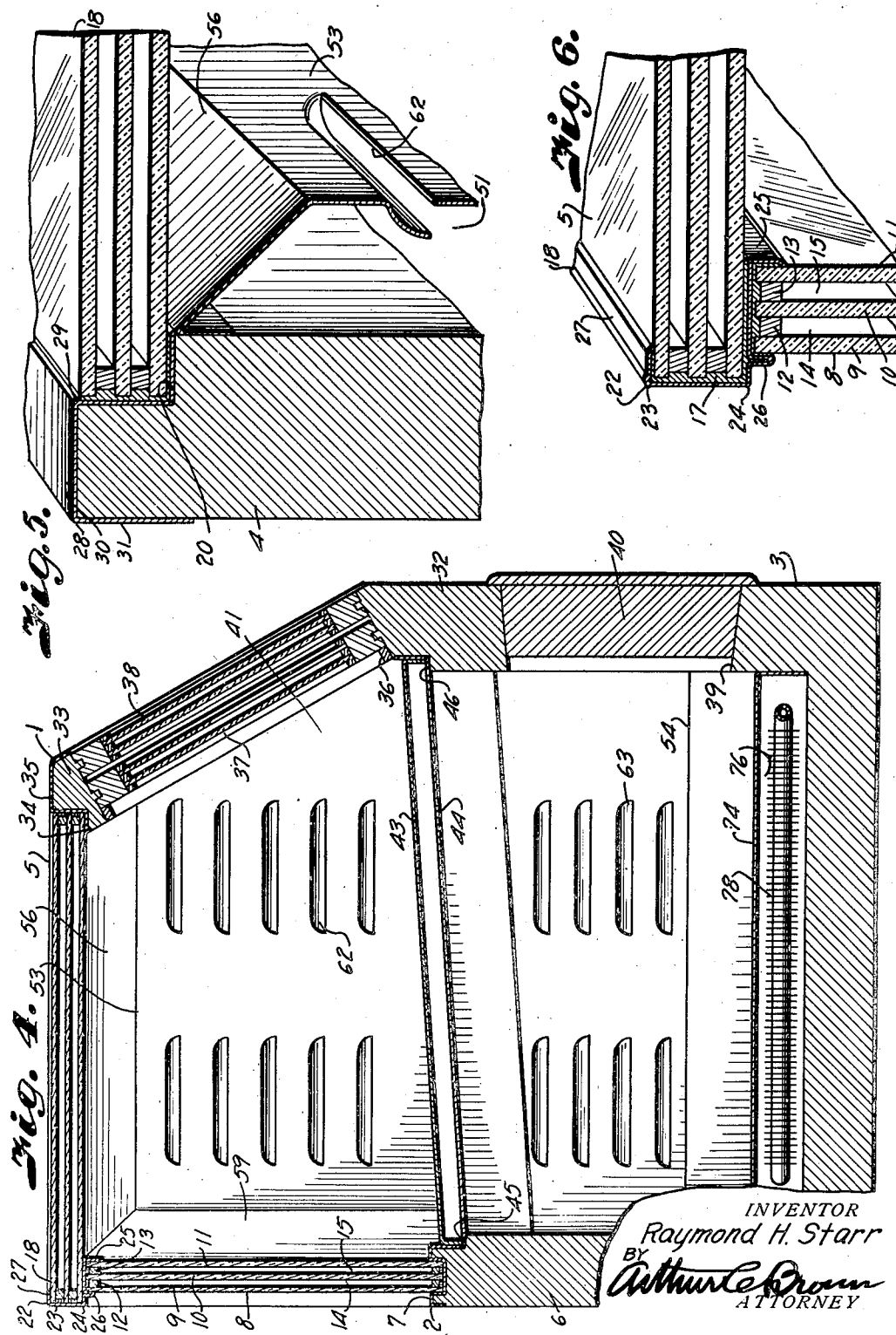
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## UNITED STATES PATENT OFFICE

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## REFRIGERATOR DISPLAY CASE

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9 Claims. (Cl. 62—89.5)

This invention relates to display cases, particularly those of the refrigerator type, and has for its principal object to provide a case of this character that is constructed to give full visibility of merchandise displayed therein.

Other objects of the invention are to provide a refrigerated display case construction capable of full insulation and air duct circulation without interference with direct view of the merchandise contained therein; to provide a full vision compartmental case having transparent divisional walls to permit view through one compartment to another; to provide a divisional wall construction forming air ducts for the circulation of chilled air through the merchandise display compartments; and to provide a continuous transparent top panel extending across the divisional walls and having support on a transparent front panel.

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

Fig. 1 is a perspective view of a refrigerated display case constructed in accordance with the invention, parts thereof being broken away and in section to better illustrate the construction.

Fig. 2 is a vertical longitudinal section through the display case, particularly illustrating the separate display and storage compartments and the air circulation therethrough.

Fig. 3 is an enlarged fragmentary horizontal section through the front portion of the display case, particularly illustrating the transparent panel and divisional wall arrangement.

Fig. 4 is a vertical cross-section through the display case on the line 4—4 of Fig. 2.

Fig. 5 is an enlarged perspective view through the upper portion of one of the end walls, air circulating duct, and top transparent panel, to show the construction whereby maximum visibility is maintained within the display compartments.

Fig. 6 is a detail perspective section through the upper front portion of the case, illustrating support of the top transparent panel on the front transparent panel.

Referring more in detail to the drawings:

1 designates a display case constructed in accordance with the present invention, and which has a front wall 2, a rear wall 3, end walls 4, and a top 5. The front wall 2 includes a lower opaque portion 6, suitably insulated and ter-

minating short of the top 5 to form an opening 7 extending from one side wall to the other.

Inset within the opening 7 is a transparent panel 8 comprising a sealed unit formed of a plurality of plate glass sheets 9, 10 and 11, spaced at their perimeters by strips 12 and 13 bonded to the adjacent faces of the sheets to form hermetically sealed spaces 14 and 15, which are preferably dehydrated to prevent sweating that ordinarily tends to obscure merchandise contained in the display compartments, later described. The front panel 8 is of sufficient length and height to cover completely the opening 7, the ends and lower edge of the panel being mounted in rabbet grooves 16 formed in the corresponding perimetrical faces of the opening. In order to provide a tight seal between the edges of the panel and the adjacent portions of the rabbet grooves, the edges of the panel are set within a plastic sealing compound, as indicated at 17. The upper edge of the panel terminates short of the upper faces of the end walls whereby the front portion of a top transparent panel 18 is directly supported on the upper edge of the panel 8, as shown in Fig. 4.

The end walls 4 are constructed to provide ample insulating thickness, and for this reason the front portions are flared inwardly from the rabbet grooves as indicated at 19. A shouldered groove 20 continues along the upper inner edge of each end wall to seat the ends of the top panel 21.

The top panel 18 is constructed in the same manner as the front panel, and has its ends resting on the shouldered grooves 20, and its front edge supported on the front panel 8.

The panels are preferably connected by a trim 22, which also serves to retain the plastic sealing material for sealing the upper edge of the panel 8 and the forward edge of the panel 18. The trim is preferably of relatively thin sheet material and is continuous across the entire width of the case. The strip has angular portions 23 and 24 respectively engaging between the panels and for covering the projecting edge of the top panel. The inner edge of the portion 24 is flanged downwardly, as at 25, to cooperate with a rib 26 for engaging the respective inner and outer faces of the front panel, and, in effect, forming a continuation of the rabbet grooves previously described. The portion 23 terminates in an inwardly extending flange 27 to clamp over the front marginal edge of the top panel, as shown in Fig. 4, there being sufficient tension in

the metal to assure contact with the surfaces of the glass.

The upper edges of the end walls are covered by metal strips 28, having angle portions 29 conforming to the shouldered grooves 20, a portion 30 extending across the upper edges of the end walls, and a depending flange 31 which cooperates with the portion 23 of the front trim to form a continuous trim about the sides of the top.

The rear wall 3 includes an opaque vertical base portion 32 extending parallel with the opaque portion of the front wall, and extending slightly thereabove where it connects with an inclined wall portion 33 having a shouldered groove 34 to seat the rear edge of the top panel. The upper edge of the portion 33 is covered by a metallic trim 35 conforming to the trim previously described, so that a metallic frame is formed around the top of the case, which trim may be chromium plated, or otherwise treated to enhance the appearance thereof.

Formed in the inclined portion of the rear wall are spaced door openings 36 that are closed by sets of doors 37 and 38 which, in the present instance, are adapted to slide on guide rails carried along the upper and lower edges of the respective door openings, as clearly shown in Fig. 4. The lower portion of the rear wall has spaced door openings 39 therein which are closed by doors 40.

The case is divided to form display and storage compartments 41 and 42 by floor sheets 43 and 44, having their front and rear edges seated in shouldered grooves 45 and 46 as shown in Fig. 4, and their ends on cross-members 47-48 and 49-50. The cross-members 47 and 50 are spaced from the inner faces of the end walls to accommodate air ducts 51 and 52 therebetween. The air ducts include shell-like housings 53 extending from fan housings 54 and 55, located in the lower, endmost corners of the case, to the top of the case, where they terminate in inwardly flaring flanges 56 and 57 that are secured to the inner faces of the end walls directly below the shouldered grooves therein, as clearly shown in Fig. 2. The front edges of the shells also have flaring flanges 59, as shown in Fig. 3, so as to reduce obstruction to view within the case. The rear vertical edges of the shells abut against the rear wall so that the shells form vertical air ducts 51 and 52, which communicate with the display and storage compartments through louvered openings 62 and 63 respectively.

The case is divided vertically by a transparent partition 64 having edges thereof sealed with respect to the inner surfaces of the case in channel-like gasket strips 65, a suitable cementing material being used under the strips as shown at 66. The partition 64 is located midway between the cross-members 48 and 49 and cooperates with upper transparent panels 67 and 68 and lower plates 69 and 70 to provide vertical air passageways 71 and 72.

The plates 69 and 70 have louvered openings 73 and are connected at their lower edges with horizontally arranged plates 74 and 75 that extend across the depth of the case, and from the fan compartments to the respective passageways 71 and 72. The plates 74 and 75 are spaced above the bottom of the case to provide horizontal passageways 76 and 77 therebetween, and in which are supported a series of cooling elements such as refrigerating coils 78 and 79. The upper transparent panels 67 and 68 have

framed openings 80 and 81 therethrough for the passage of cooled air into the respective display compartments. The transparent panels 67 and 68, like the central partition 64, have their edges sealingly engaged with the inner surfaces of the case.

Located in the respective fan housings are suitably driven impellers 82 and 83, so as to effect forced circulation of air from the display and storage compartments through the louvered openings 62 and 63, into the vertical passageways 71 and 72, and through the refrigerated passages 76 and 77 to the vertical passageways 71 and 72, wherethrough the chilled air is returned through the louvered openings 73, and then through the framed openings 80 and 81 into the respective compartments.

It is thus obvious that while the case is divided into separate display and storage compartments, the transparent top and front panels extend continuously across the partition elements, and since the partition elements are of transparent material in the display section of the case, they do not interfere with view of merchandise in one display compartment while the observer is standing in front of the other compartment. The flared arrangement of the side walls and flanges of the air directing ducts also increases the width of vision into the case, and at the same time reduces the usually heavy appearance of the exposed edges of the end walls.

Since the entire front and top of the case are formed of transparent panels, and the refrigerating elements are located below the storage compartment, the display compartments are not cluttered with refrigerating elements ordinarily tending to obstruct view of the goods on display. With this construction the case may be made of substantially counter height so that it is easier for a merchant to make transactions over the top thereof.

What I claim and desire to secure by Letters Patent is:

1. A display case including a display compartment having a transparent front panel, a transparent panel transversely dividing said compartment into separate display sections and having an upper edge registering with a corresponding upper edge of the front panel, a transparent top panel supported in sealed contact with said upper edges of the front and dividing panels to provide substantially unobstructed visibility through said front and top panels into the display sections and from one display section to the other, said division panel being arranged to prevent air transfer from one section to the other, refrigerating ducts in the bottom of said display case, vertical ducts connecting the refrigerating ducts with the respective ends of the display sections, transparent panels spaced from said division panel to form continuations of the vertical ducts adjacent the division panel, and means for circulating air from the display sections to the refrigerating ducts for return to said display sections by way of said vertical ducts.

2. A display case including a display compartment having transparent front and top panels, transparent means dividing the display compartment into separate sections, means sealing said dividing means with respect to said panels to prevent air transfer from one section to the other, and transparent plates spaced from respective sides of said dividing means to form

ducts having outlet into the respective sections of the display compartment.

3. A display case including a display compartment having transparent front and top panels, transparent means dividing the display compartment into separate sections, means sealing said dividing means with respect to said panels to prevent air transfer from one section to the other, transparent plates spaced from said dividing means to form ducts having outlet into the respective sections of the display compartment, refrigerating ducts connected with the first named ducts, refrigerating elements in said refrigerating ducts, and means connected with said ducts for circulating air through said display sections and through said refrigerating ducts.

4. A display case including a display compartment, transparent means forming a duct extending upwardly into the display compartment in inwardly spaced relation with ends of the case whereby display spaces are provided between said ends and said duct, said transparent means having air outlet into the display compartment, a refrigerating duct connected with the first named duct, refrigerating elements in said refrigerating duct, and means connected with said ducts for circulating air from the refrigerating duct through said display compartment.

5. A display case including a display compartment having a transparent front panel, and a circulating duct extending upwardly into the display compartment at one end thereof and having a flaring side forming an acute angle with said transparent front panel.

6. A display case including a display compartment having transparent front and top panels, and a circulating duct extending upwardly into the display compartment at one end thereof and having flaring side and top portions forming acute angles with said transparent front and top panels.

7. In a display case, means dividing the case to form an upper display compartment and a lower storage compartment, transparent units in the front and top of the display compartment, each unit having a plurality of transparent panes hermetically sealed at edges thereof to form insulating spaces therebetween, said units being arranged with the top unit resting directly upon the front unit thereby to provide maximum visibility, a transparent partition dividing

said compartments with the edges of said partition sealed directly with the inner panes of said units, refrigerating ducts in the bottom of the storage compartment, and vertical ducts connecting said first named ducts with the display and storage sections, said ducts being arranged to avoid obstruction of view through said transparent partition.

8. In a display case, means dividing the case to provide an upper display compartment and a lower storage compartment, transparent units in the front and top of the display compartment, each unit having a plurality of transparent panes hermetically sealed at edges thereof to form insulating spaces therebetween, said units being arranged with the top unit resting directly upon the front unit thereby to provide maximum visibility, a transparent partition dividing said compartments with edges of said partition sealed directly with the inner panes of said units, air ducts in the bottom of the storage compartment, air ducts connecting said bottom ducts with the display compartment at the ends thereof, and air ducts on the respective sides of said transparent partition having connection with said bottom ducts and having upper portions extending across said transparent partition, said upper portions extending across the partition being formed of transparent material to provide unobstructed visibility from one end of the display compartment to the other.

9. A display case having a display compartment, transparent units forming the front and top of the display compartment, each unit having a plurality of transparent panes hermetically sealed at edges thereof to form insulating spaces therebetween, said units being arranged with the top unit resting directly on the front unit thereby to provide maximum visibility, a transparent partition extending transversely across the display compartment and having edges sealed directly to the inner panes of said units, means forming ducts in the display case extending longitudinally relatively to the display compartment, air ducts at the ends of said compartment connected with the longitudinal ducts, and air ducts connected with the longitudinal ducts and extending into the display compartment at the respective sides of the partition, the portion of said ducts extending across the transparent partition being formed of transparent material.

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