

Feb. 28, 1950

E. F. BRILL ET AL

2,499,088

REFRIGERATED DISPLAY CASE

Filed March 29, 1947

3 Sheets-Sheet 1

Fig. 1

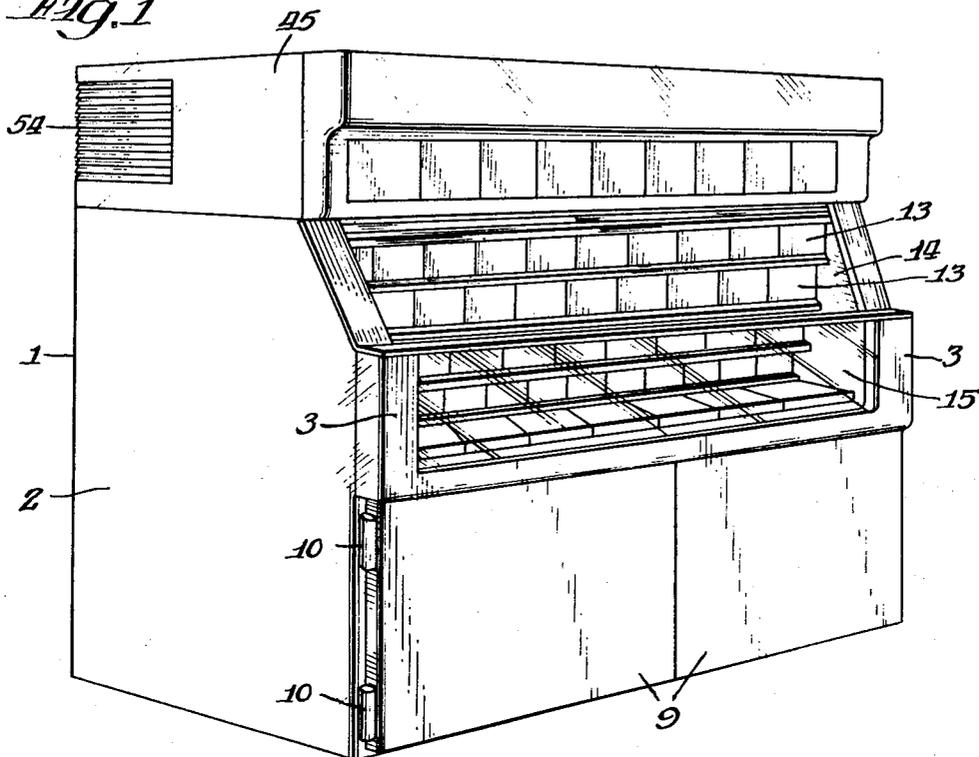
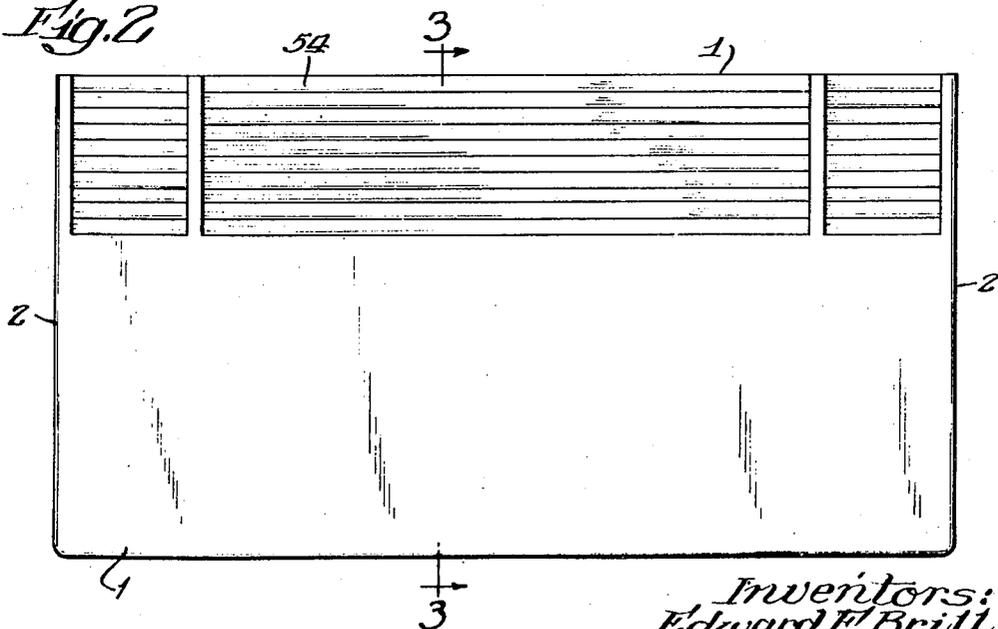


Fig. 2



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3 Sheets-Sheet 2

Fig. 2

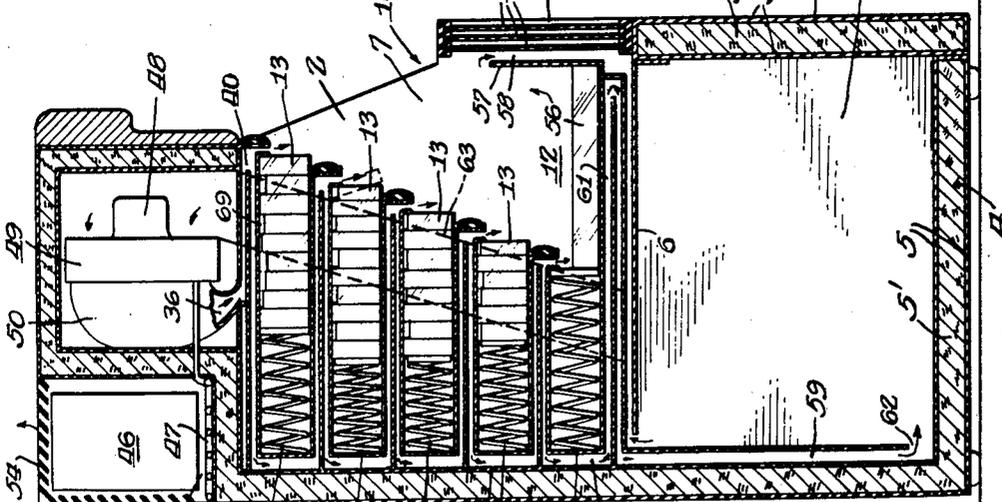
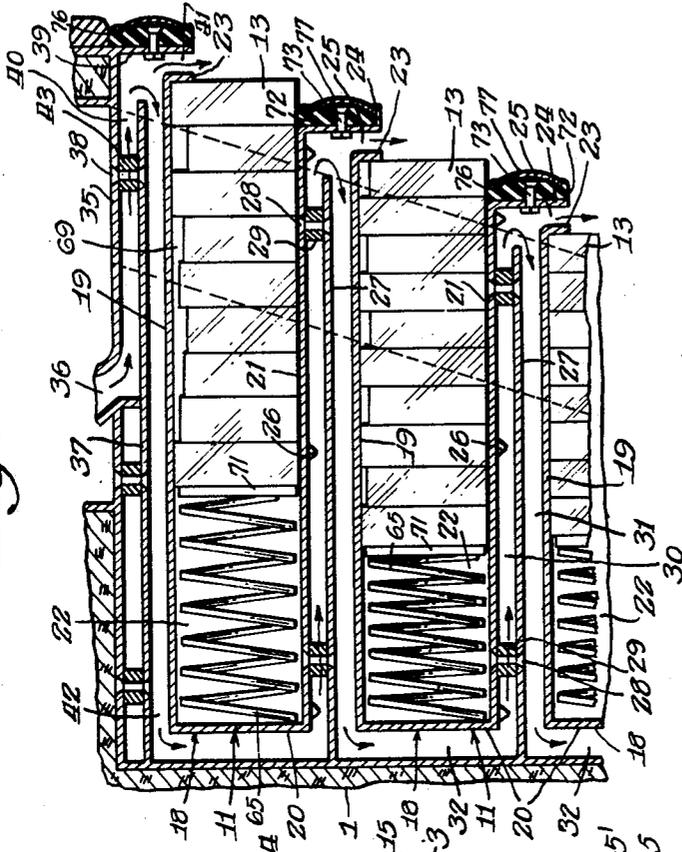


Fig. 3

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3 Sheets-Sheet 3

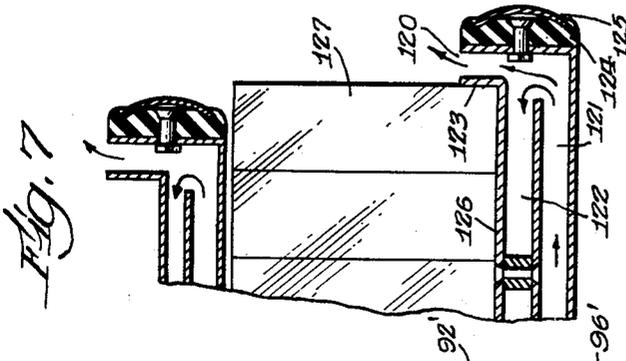


Fig. 6

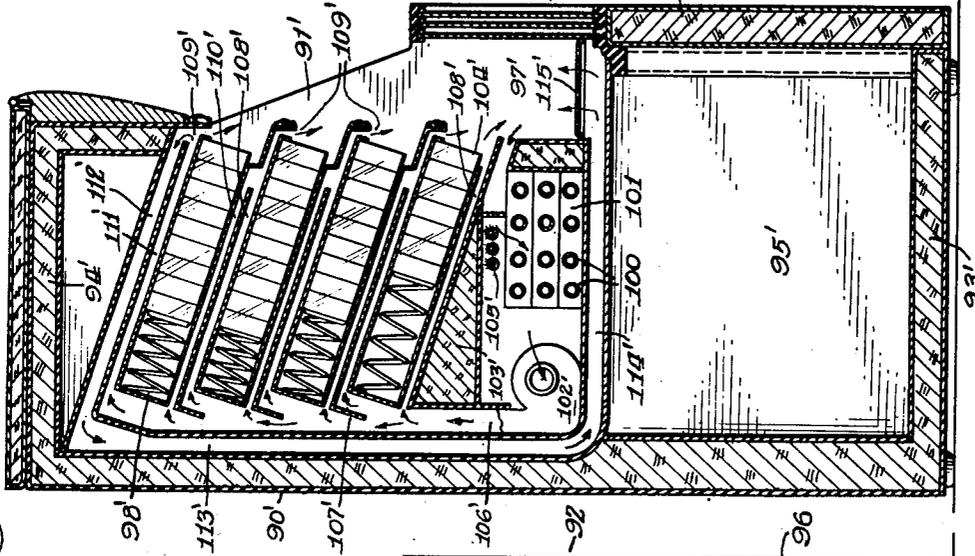
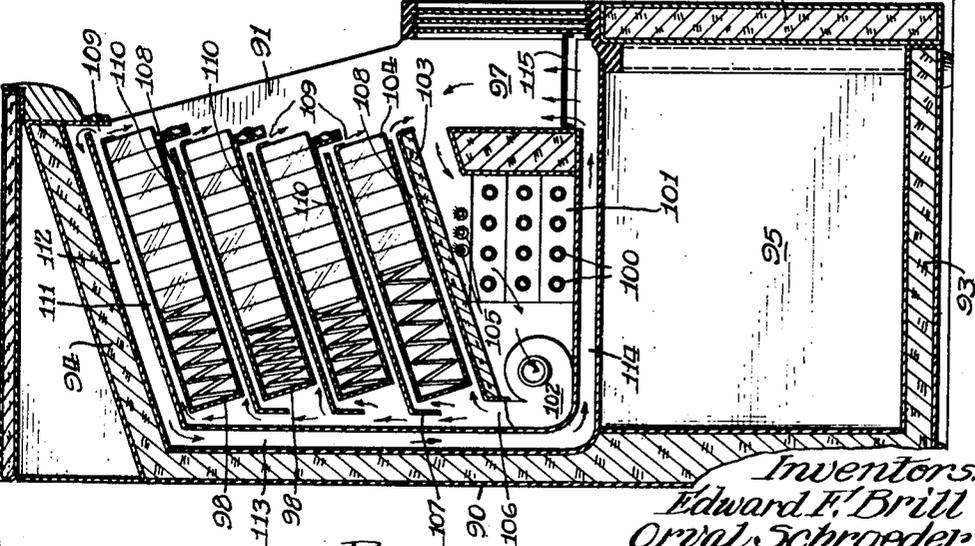


Fig. 5



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UNITED STATES PATENT OFFICE

2,499,088

REFRIGERATED DISPLAY CASE

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Application March 29, 1947, Serial No. 738,180

9 Claims. (Cl. 62-89.5)

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This invention relates, in general, to refrigerated display cases, and has particular relation to improvements in refrigerated display cases which are adapted to contain and display articles of merchandise, such as frozen foods and the like, and to keep the merchandise in a cool and refrigerated condition and at the same time permit free and convenient access to the same by the customer.

While the particular display cases which we shall describe hereinafter in connection with the drawings are, in general, of the type in which the refrigerated compartment for the articles of merchandise may, when in service, be open at one side, for example at the front, it is to be understood that the invention is not limited in all of its aspects to this particular type of case, but may be embodied in other cases as suitable or desired.

In prior refrigerated display cases for self-service of frozen foods and the like, difficulties have been encountered in keeping the articles of merchandise in a cool and refrigerated condition and, at the same time, in position for effective and satisfactory display and for ready and free access by the customer for removal from the case. Difficulty has also been encountered in sealing the case against the entry of warm air into the case and in preventing the collection of moisture and frosting, particularly on the exposed surfaces of the packages or articles of merchandise within the case and on the adjacent parts of the case. Moreover, prior cases of this sort have not had provision for supporting, for example, on shelves regular or other shaped articles that may be so supported and displayed, in combination with one or more wells for irregular or other shaped articles not adapted to be so supported and displayed and in such manner that the customer may have a complete view or survey of all of the articles—those on the shelves and those in the wells—from the front of the case.

One of the main objects of the present invention is to provide an improved form of self-service refrigerated display case in which the problems previously presented are overcome.

Another object of the invention is to provide a case of the character described having provision for supporting in the refrigerated display compartment and, for example, on one or more

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shelves regular or other shaped articles that may be so supported and displayed in combination with one or more wells for irregular or other shaped articles not adapted to be so supported and displayed and in such manner that the customer may have a complete view or survey of all of the articles—those on the shelf or shelves and those in the well or wells—for example, from the front of the case.

Another object of the invention is to provide in a case of the character described an improved manner of blanketing the open accessible side of the refrigerated merchandise holding compartment with cold air which prevents the collection of moisture and frosting, particularly on the exposed surfaces of the merchandise and which excludes heat from the outside and maintains the merchandise in the proper cold condition.

Another object of the invention is to provide in a case of the character described for the circulation of cold air through the merchandise supporting shelves to maintain the merchandise in its proper cold condition.

Another object of the invention is to provide in a case of the character described one or more storage compartments beneath the refrigerated merchandise holding compartment and means for cooling the storage compartment or compartments, more specifically by the circulation of at least a portion of the cold air which flows through the shelves of the case.

Another object of the invention is to provide for blanketing the open accessible side of the refrigerated merchandise holding compartment by discharging from the front ends of the shelves and downwardly across the front of the merchandise supported on the shelves at least portions of the stream or streams of cold air circulated through the shelves.

Another object of the invention is to provide a refrigerated display case of the character described in which the shelves are arranged, for example, with their front ends extending forwardly increasing distances from the bottom to the top of the refrigerated merchandise holding compartment or the like, or at an inclination or in staggered relation or the like to facilitate grasping the foremost articles or packages for removal of the same from the case.

Another object of the invention is to provide

a refrigerated self-service display case of the character described having various features of novelty and advantages and which is particularly characterized by its simplicity in construction, its economy in manufacture, and its effectiveness in use.

Further objects and advantages of the invention will appear from the following detailed description taken in connection with the accompanying drawings which illustrate the manner of constructing, operating and using illustrative embodiments of the present invention.

In the drawings:

Figure 1 is a perspective view of a refrigerated display case embodying the present invention, taken from the front;

Figure 2 is a rear elevational view of the case shown in Figure 1;

Figure 3 is a vertical transverse and more or less diagrammatic sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a fragmentary detail section showing one form of article or package stop and one way in which portions of the cold air circulated through the shelves may be discharged downwardly across the front of the merchandise;

Figure 5 is a vertical transverse and more or less diagrammatic sectional view showing another form of case embodying the present invention;

Figure 6 is a vertical transverse and more or less diagrammatic sectional view showing another form of case embodying the present invention;

Figure 7 is a fragmentary detail section showing another form of package stop and another way in which portions of the cold air circulated through the shelves may be discharged upwardly across the front of the merchandise.

Referring first to the embodiment of the invention shown in Figures 1, 2, and 3, this form of case comprises a vertical back wall 1, vertical end walls 2, a vertical front wall part 3, and a bottom wall 4. The walls 1, 2, and 4 are heat insulated, for example, by forming them of metallic shells 5 with suitable heat insulating material 5' filling the space therebetween or otherwise as desired.

The interior of the case is divided, for example, by a horizontal wall 6 into an upper refrigerated merchandise holding compartment 7 and a lower storage space. The storage space may comprise one storage compartment 8 or it may be divided into two or more storage compartments. The storage compartment 8 has doors 9 hinged at their outer ends at 10 to the front ends of the end walls 2. When closed the doors 9 constitute with the front wall part 3 a front wall of less height than the back wall 1. The doors 9 are preferably heat insulated, for example, as described in connection with the walls 1, 2, and 4, or otherwise as desired.

A plurality of vertically spaced shelves 11 extend forwardly from the back wall 1 to positions spaced rearwardly from the plane of the front wall an amount to provide at the bottom of the front of the refrigerated merchandise holding compartment 8 a well for articles or packages 13 of merchandise of irregular or other shape unsuitable for support on the shelves 11. The spacing of the front ends of the upper shelves 11 rearwardly of the plane of the front wall of the case permits free and convenient access to the merchandise 13 through the dispensing opening 14 at the front of the case.

A window extends upwardly from the bottom of the well 12 to approximately the top of the front wall part 3. This window preferably comprises a plurality of spaced transparent sheets 15 so as to provide insulation against heat conduction therethrough and through which the articles of merchandise in the well 12 and the articles of merchandise on the lower shelves 11 are attractively displayed in such manner that the customer may have a complete view or survey of all of the articles from the front of the case. The articles of merchandise on the shelves 11 above the front wall part 3 are, of course, visible through the dispensing opening 14. The opening 14 may be covered at night, or when the case is otherwise not in service, by a suitable cover (not shown) which may be removed or opened during the day or otherwise when the case is in use.

As shown more or less diagrammatically and in detail in Figure 4, each row of articles or packages 13 is enclosed within a box-like container or vessel 18. Each vessel 18 is formed, for example, of sheet metal, and has a top wall 19, rear wall 20, bottom wall 21 and end or side walls 22. The front end of the top wall 19 of each vessel 18 is turned down at 23 to form an article or package stop for the foremost article or package 13 within the containing vessel. The bottom wall 21 of each vessel 18 is turned down at 24, the downturned portions 24 being spaced outwardly from the downturned portions 23 to provide at the forward end of the top of each row of packages 13 an outlet duct 25 for discharging cold air downwardly across the front end of the foremost of the adjacent row of packages, as will hereinafter appear.

The vessels 18 are preferably sealed, except for the opening at the front through which the packages are inserted into the vessels 18 and withdrawn by the customer as desired. With the vessels sealed as described, the flow of cold air from all of the ducts 25 remains constant, or substantially constant, regardless of the amount of air in the respective vessels 18 and regardless of unequal numbers of articles or packages 13 in the respective vessels. In other words, regardless of the number of articles or packages in the respective compartments or the amount of air displaced by the articles or packages in the respective compartments, the flow of cold air from the ducts 25 and downwardly over the fronts of the foremost articles or packages 13 will remain substantially constant. Otherwise only a few packages in one row and a greater number of packages in another row would produce unequal distribution of cold air over the fronts of the foremost articles or packages in the respective rows.

The package containing vessels 18 may be supported in overlying spaced relation, for example, by lugs 26 (Figure 4) struck inwardly from the inner shells of the opposite side or end walls 2, preferably without piercing the same. The spaces between the bottom wall 21 of each vessel 18 and the top wall 19 of the immediately underlying vessel 18 is preferably divided by a plate or partition 27. The partitions 27 may be secured, for example, by rivets 28, spot welding or the like, to the bottom walls 21 of the vessels 18. Spacers 29 are provided between the walls 21 and the partitions 27. This provides a trussed construction.

The partitions 27 divide the space between the bottom walls 21 and the top walls 19 into upper and lower ducts or passages 30 and 31 and are

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shown as extending at their rear ends to the inner surface of the rear wall 1 of the case. The forward ends of the partitions 27 are spaced from the downturned front ends 24 of the walls 21, thus placing the front ends of the ducts or passages 30 not only in communication with the discharge ducts 25, but also in communication with the front ends of the ducts or passages 31. The rear walls 20 of the containing vessels 18 are spaced from the inner surface of the rear wall 1 of the case to form ducts or passages 32, each of which places the rear end of the adjacent duct 31 in communication with the rear end of the adjacent duct 30.

The top wall 19 of the uppermost containing vessel 18 has spaced above the same a wall 35 similar, in general, to the bottom walls 23 but provided with an opening 36 for the admission of cold air, as will presently appear. The space between the wall 35 and the adjacent top wall 19 is divided by a plate or partition 37 similar to the partitions 27. The partition 37 is secured, for example, by rivets 38, spot welding or the like, to the overlying wall 35. Spacers 43 are provided between the walls 35 and 19. This provides a trussed construction. The partition 37 is shown as extending at the rear end to the inner surface of the rear wall of the case. The forward end of the partition 37 is spaced from the downturned end 39 of the wall 35, thus placing the front end of the duct 40 not only in communication with the discharge duct 41 but also in communication with the front end of the duct 42, the rear end of which communicates with the duct 32.

Overlying the wall 35 is a compartment 45, the walls of which house part of the refrigerating apparatus. This apparatus per se may be of any suitable or preferred type well known in the art. Suffice it, therefore, to state that it comprises a compressor unit 46, evaporating pan 47, fan motor 48 and blast cooler 49 which, in operation, delivers cold air of a temperature adapted to maintain the articles or packages of merchandise in the desired cold or refrigerated condition through a duct 50 and the opening 36 into the upper duct 40.

In operation, the cold stream of air entering the upper duct 40 through the opening 36 circulates as shown by the arrows in Figure 3. Upon entering the duct 40 the cold air flows forwardly where a part of it is discharged through the duct 41 and passes downwardly across the front side of the foremost of the articles or packages 13 in the upper row. The remainder of the cold air passes rearwardly through the duct 42 and then downwardly through the duct 32 into the upper duct 30.

Upon entering the duct 30 the cold air passes forwardly through this duct and a part of it is discharged through the upper discharge duct 25 downwardly across the front side of the foremost of the articles or packages 13 in the next to the top row of articles or passages. The remainder of the cold air passes rearwardly through the duct 31 and then downwardly through the duct 32 into the next lower duct 30. From this duct 30 the flow of cold air continues similarly about the third and fourth rows of articles from the top, with a part of the cold air being discharged through the ducts 25 and passing downwardly across the front sides of the foremost articles or passages in these rows in the manner above described. The walls of the

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compartment 45 have louvers 54 through which air circulates through the compartment 45.

The stream of air discharged downwardly through the ducts 41 and 25 blankets the open accessible side of the refrigerated merchandise holding compartment with cold air. This effectively prevents the collection of moisture and frosting, particularly on the exposed foremost surfaces of the merchandise and the adjacent portions of the case. Heat and moisture from the outside are thus excluded, and the merchandise is maintained in its proper cold and refrigerated condition.

The downwardly directed streams of cold air discharged from the ducts 41 and 25 are also directed downwardly into the well 12 to maintain the articles or packages of merchandise 13 in the well or wells 12 in the desired refrigerated or cold condition. The cold air which enters the well 12 then passes upwardly and into a duct 57 in the front part 3. Upon entering the duct 57 the cold air passes downwardly into a horizontal duct 58 and rearwardly through this duct 58 to the upper end of a vertical duct 59 adjacent the inner side of the rear wall 1 of the case. The cold air from the bottom duct 31 of the lowermost row of articles 13 also passes through its rear duct 60, and, after flowing forwardly through a duct 61, enters the duct 58 and flows rearwardly to the duct 59. The lower end of the duct 59 opens at 62 into a storage compartment 8. Rising through the compartment 8 the cold air continues to rise through side ducts one of which is shown in dotted lines at 63 in Figure 3, and is returned through these ducts 63 to the blast cooler 49 where it is cooled or refrigerated and recirculated as described.

The storage compartment 8 is cooled by the circulation of cold air through the overlying duct 58; also by the cold air circulating downwardly along the back of the same through the duct 59, and by the circulation through the compartment 8 to the ducts 63. The circulation of cold air through the ducts 61 and 58 also assists in cooling or refrigerating the articles 56 in the well 12.

The packages 13 in the respective rows are yieldingly forced forwardly against the stops 23 by coiled springs 65, in general, in the manner disclosed in the copending application of Edward F. Brill, Serial No. 662,396, filed April 15, 1946. The springs 65 are shown interposed and acting between the inner side of the rear wall 1 and the rear sides of the rearwardmost packages in the respective rows. The rearwardmost packages 13 may be dummy packages fastened to the springs or to spring followers to prevent their removal from the case.

As shown in Figure 3, the shelves 11 or walls 19 and 21 are preferably arranged with their downturned front ends extending forwardly increasing distances from the bottom row to the top row. The lower sides or bottoms of the foremost packages in their respective rows extend forwardly from the walls 21. This permits the customer to conveniently grasp the forwardmost package 13 in any desired row and to remove the same from the case, for example, by tilting the package as shown in dotted lines at 68 in Figure 3.

In Figure 3 the packages 13 in the respective rows are shown of different heights with varying amounts of clearance at 69 between the tops of the packages and the walls 19. The respective package containing vessels 18 thus take packages 13 of different sizes and configuration. All that is necessary is that the height of the articles or

packages 13 be such that the foremost package 13 will always contact the downturned forward end of the wall 19 to stop the package at the front of the case and to seal the front of each row of packages against entry of warm air or moisture.

The downturned forward ends 23, 24, and 39 of the walls 19, 21 and 35 extend continuously in a horizontal direction across the front of the shelved portion of the refrigerated merchandise holding compartment for the articles or packages 13. Outer facing pieces 72 are secured by screws 73 to the downturned forward ends 24 and 39 of the walls 21 and 35. These pieces or strips 72 extend horizontally and continuously across and cover the forward sides of the depending flanges 24 and 39. The pieces 72 are preferably formed of rubber, wood, plastic or other non-frosting material. The heads at the outer ends of the screws 73 are also preferably formed of or covered with rubber, wood, plastic or other non-frosting material.

The outer surface of the piece 72 has grooves 76 set at an angle so that price markers 77 may be flexed to arcuate form and secured in place in front of the respective rows of articles by springing the ends of the markers 77 into the grooves 76.

The articles or packages 13 in the well 12 may be yieldingly forced outwardly against the inner side of the front wall part by one or more coiled springs 65 acting, for example, against a suitable follower 71.

The form of case shown in Figure 5 comprises a vertical back wall 90, vertical end walls 91, a vertical front wall part 92, and a bottom wall 93; also a top wall 94. The walls 90, 91, 93 and 94 are heat insulated, as in the preceding embodiment of the invention. The storage compartment 95, doors 96, window means in the front wall part 92, and well 97 may be substantially as shown and described in connection with the preceding embodiment of the invention.

The merchandise containing vessels 98 are preferably sealed as before, but in this case instead of being positioned horizontally they are inclined upwardly from the rear, being supported, for example, by lugs as in the preceding embodiment of the invention.

The refrigerating apparatus is mounted at the bottom of the refrigerated merchandise holding compartment and may comprise coils 100 with fins 101 for conducting heat from the merchandise holding compartment; also a centrifugal blower or fan 102 of any desired type. An inclined insulating wall 103 overlies the refrigerating apparatus, and the top wall is inclined as shown. The inclination of the vessels 98 causes the forward ends of the articles or packages which are withdrawn from the open front ends of the vessels, as before, to project as shown at 104, so that they may be conveniently grasped for removal from the case. A water spray automatically timed to defrost the coils 100 at time intervals may be provided at 105, or other defrosting means may be employed.

The cold or refrigerated air discharged from the fan or blower 102 passes upwardly through the duct 106 as shown by the arrows and is directed by the depending flanges 107 into ducts 108. At the forward ends of the ducts 108, portions of the cold or refrigerated air are discharged through discharge outlets 109 downwardly over the front sides of the articles or packages, as previously described. The remainder of the cold air is returned rearwardly through ducts 110

where it intermingles with the cold air delivered upwardly from the fan or blower 102.

At the top the cold air flows forwardly through a duct 111, and at the front a portion of it is discharged through the adjacent discharge outlet 109 downwardly over the front side of the foremost article or package in the upper row. The remainder of this cold air is returned through a duct 112 to a vertical duct 113 through which it passes downwardly to the rear end of a horizontal cold or refrigerated air duct 114 underlying the refrigerated merchandise holding compartment and the well 97. Beneath the well 97 the cold air escapes from the duct 114 through a grill or screen 115 and passes upwardly through the well 97 from where it flows over the refrigerating apparatus to the inlet of the fan or blower 102 and is recirculated as described.

The storage space 95, which may be divided into two sections each closed by a door 96, is cooled by the relatively cold air circulating through the duct 114.

The embodiment of the invention shown in Figure 6 is substantially the same as the embodiment of the invention shown in Figure 5 except that the article or package containing vessels 98' are delined downwardly from the back. Other parts of this embodiment of the invention similar to parts of the preceding embodiment of the invention are designated by primed reference characters corresponding with those previously used.

Any form of the invention, and particularly the form shown in Figure 6, may employ merchandise holding vessels having apertures at one end for the entry of cold or refrigerated air into these vessels and openings at the other end for discharge of the air from the vessels. In this way the refrigerated or cold air may be permitted to trickle in and over the packages or articles within the sealed vessels.

In the embodiment of the invention shown fragmentarily in Figure 7, the streams of cold air for covering the front sides of the packages or articles on the shelves or within the vessels or package containers and blanketing the open accessible side of the refrigerated merchandise holding compartment, instead of being discharged downwardly, is discharged in upwardly directed streams from upwardly directed discharge outlets 120. The circulation of the cold air through the ducts 121 is shown by the arrows, and the return rearwardly of the remainder of the cold air through the ducts 122 is also shown by arrows. The package stops 123 in this form of the invention are at the bottom, and the pieces or strips 124, with their price markers 125, are substantially as previously described.

In the form of the invention shown fragmentarily in Figure 7, the only place of entry of air into the sealed vessels or package containers 126 for the articles or packages 127 is at the tops of the open front ends of the vessels 126 in the event the tops of the articles or packages 127 do not seal against the tops of the vessels. Such leakage or entry of air is thus limited.

The rows of packages on the shelves of the cases shown in the drawings may be separated by suitable partitions (not shown) within the sealed article holding containers. Moreover, we contemplate shelf structures of the type herein described that may, if desired, be adjustable to adjust the spacing between the shelves, for example, as disclosed and claimed in the copending applications of Edward F. Brill, Serial Nos. 75 662,395 and 662,396, filed April 15, 1946.

We contemplate, within the scope of the present invention, use of ducts, such as ducts one of which is shown at 63 in Figure 3, for circulating refrigerated air—for example, from a transversely arranged refrigerating unit beneath the shelves—and passing the refrigerated air from these side ducts inwardly between the shelves or rows of packages, and then rearwardly to a rear duct and down to the refrigerating unit. Of course in this case the side duct arrangement could be combined with an overlying refrigerating unit as well.

We also contemplate the use of internally refrigerated cold plates as or adjacent to the shelves, in combination with the means for circulating refrigerated air along such plates in the manner herein described.

The embodiments of the invention shown in the drawings are for illustrative purposes only, and it is to be expressly understood that said drawings and the accompanying specification are not to be construed as a definition of the limits or scope of the invention, reference being had to the appended claims for that purpose.

We claim:

1. In a device of the class described, in combination, a case provided with a refrigerated merchandise holding compartment having a bottom, a back, a top, and a substantially vertical front of less height than the back, providing a dispensing opening at the front, a well for articles of merchandise at the bottom of said compartment and beneath the top of said front, said well opening upwardly adjacent said front for access down into the well through said dispensing opening, and a plurality of overlying spaced shelves the front ends of which extend forwardly increasing distances from the bottom to the top so that the front ends of overlying shelves overhang the front ends of underlying shelves to permit access to said well along the front ends of said shelves, said shelves being adapted to support articles of merchandise in rearwardly extending overlying rows above the level of the bottom of said well.

2. In a device of the class described, in combination, a case provided with a refrigerated merchandise holding compartment having a bottom, a back, a top, and a substantially vertical front of less height than the back providing a dispensing opening at the front, a well for articles of merchandise at the bottom of said compartment and beneath the top of said front, said well opening upwardly adjacent said front for access down into said well through said dispensing opening, a plurality of overlying spaced shelves the front ends of which extend forwardly increasing distances from the bottom to the top so that the front ends of overlying shelves overhang the front ends of underlying shelves to permit access to said well along the front ends of said shelves, said shelves being adapted to support articles of merchandise in rearwardly extending overlying rows above the level of the bottom of said well, said front having a window above the bottom of said well formed of spaced transparent sheets so as to provide insulation against heat conduction therethrough and through which articles of merchandise in said well and on the lower shelves are visible from the front of the case, and a storage compartment beneath the bottom of said refrigerated merchandise holding compartment, the front of the case beneath said window comprising door means for access to said storage compartment.

3. In a device of the class described, in com-

ination, a case provided with a refrigerated merchandise holding compartment having a bottom, a back, a top, and a substantially vertical front of less height than the back, providing a dispensing opening at the front, a well for articles of merchandise at the bottom of said compartment and beneath the top of said front, said well opening upwardly adjacent said front for access down into the well through said dispensing opening, a plurality of overlying spaced shelves the front ends of which extend forwardly increasing distances from the bottom to the top so that the front ends of overlying shelves overhang the front ends of underlying shelves to permit access to said well along the front ends of said shelves, said shelves being adapted to support articles of merchandise in rearwardly extending overlying rows above the level of the bottom of said well, means yieldingly forcing the articles of merchandise forwardly along said shelves and stops carried by and depending from the front ends of said shelves for cooperation with the upper ends of the front sides of the articles of merchandise to limit forward movement of the latter on said shelves.

4. A refrigerated display case according to claim 1 wherein there is means positioned between said shelves to define a communicating upper and lower duct between said shelves for conveying refrigerated air between said shelves, and means for delivering refrigerated air to said ducts.

5. A refrigerated display case according to claim 1 wherein there is means defining an upper and lower duct between the shelves for conveying a stream of refrigerated air between said shelves, said ducts communicating at the front ends of said shelves and having an outlet thereat for discharging portions of said stream of refrigerated air downwardly across the front sides of the forwardmost articles on said shelves and toward said well, and means for delivering refrigerated air to said ducts.

6. In a device of the class described, in combination, a case provided with a refrigerated merchandise holding compartment, spaced apart overlying shelves for supporting articles of merchandise in said compartment, a well for articles of merchandise located at the bottom of said compartment and extending forwardly of the front of said shelves to permit access to the well downwardly along the front of said shelves, means positioned between said shelves for defining an upper and lower duct for conveying refrigerated air forwardly along the bottom of one shelf and thence rearwardly along the top of a lower adjacent shelf, and means for supplying refrigerated air to said ducts.

7. A refrigerated case according to claim 6 wherein the upper and lower ducts are in communication at the front of the shelves and provided thereat with an outlet for discharging a portion of said stream of refrigerated air across the front side of the forwardmost article on said shelves.

8. In a device of the class described in combination, a case provided with a refrigerated merchandise holding compartment including a back wall, a plurality of spaced apart overlying shelves for supporting articles of merchandise in said compartment, said shelves having a back wall forming a vertical duct with the compartment back wall, means intercepting said vertical duct and defining an upper and lower duct between said shelves communicating at the front

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ends only of the shelves, and means for supplying refrigerated air to said ducts.

9. A refrigerated case according to claim 8, wherein the upper and lower duct has an outlet at the front end of the shelves for discharging a portion of said refrigerated stream of air across the front side of the forwardmost articles on said shelves.

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ORVAL SCHROEDER.

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