

G. C. AMEND.
 COMBINED COOLER DISPLAY CASE AND REFRIGERATOR.
 APPLICATION FILED JULY 25, 1921.

1,397,392.

Patented Nov. 15, 1921.
 2 SHEETS—SHEET 1.

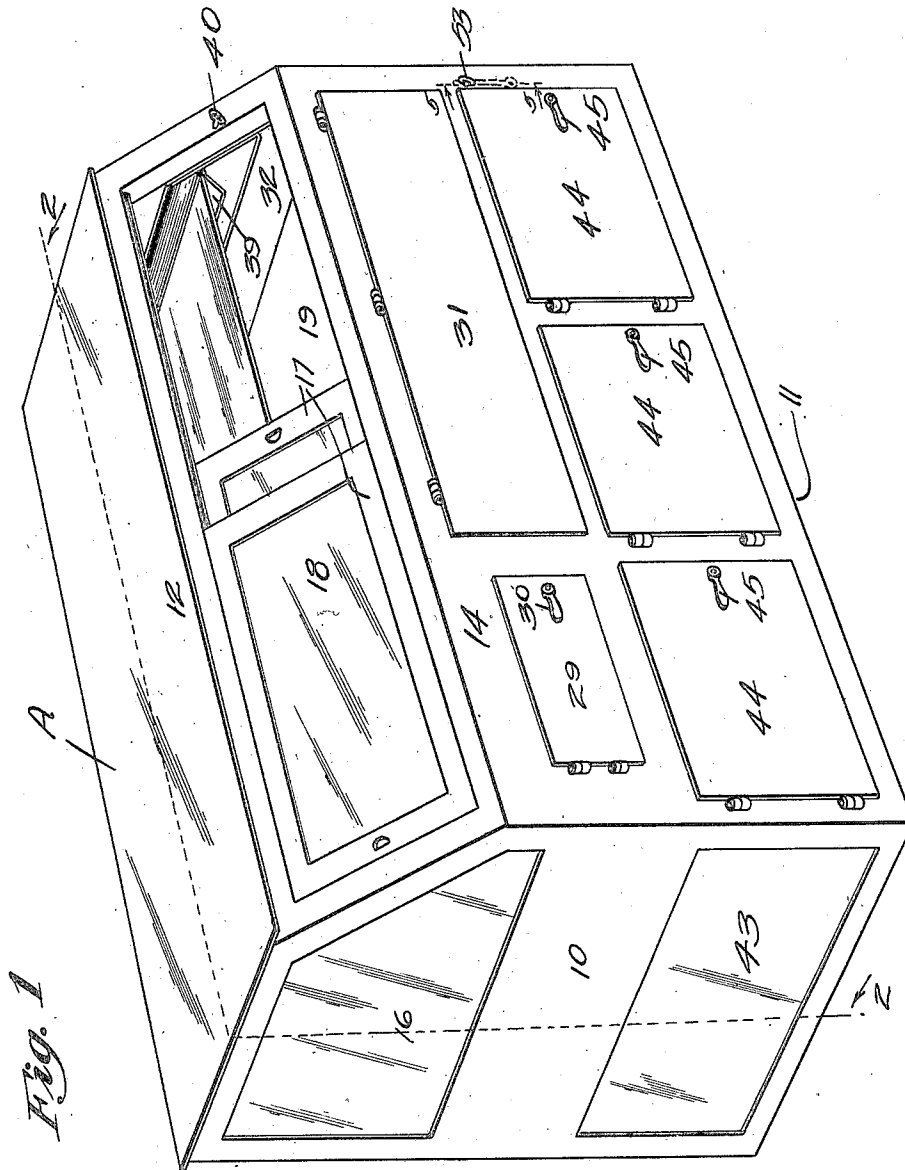


Fig. 1

Witness
 Lynn Latta

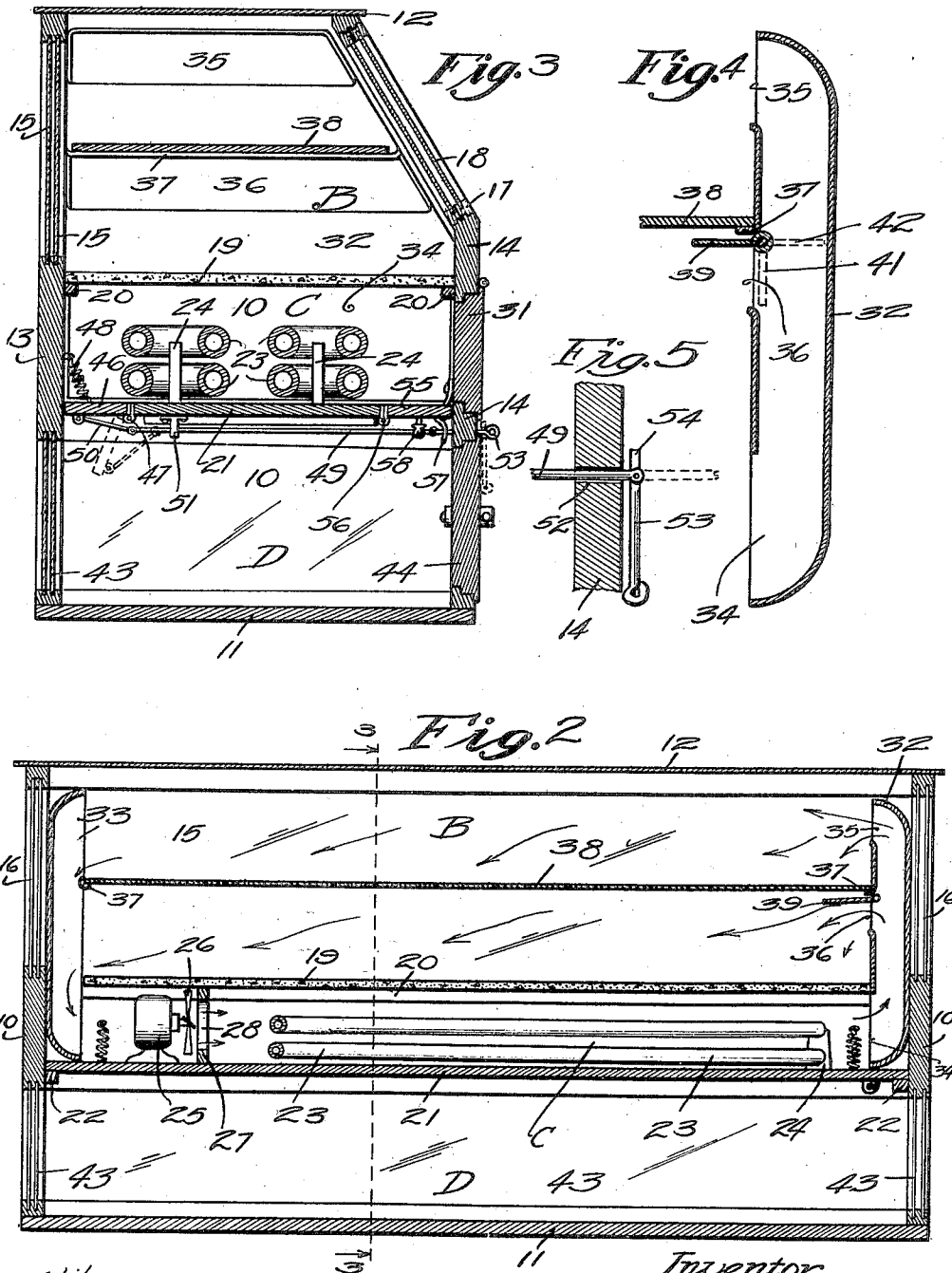
Inventor
 George C. Amend
 By Bair & Freeman
 Attorneys

G. C. AMEND.
 COMBINED COOLER DISPLAY CASE AND REFRIGERATOR.
 APPLICATION FILED JULY 25, 1921.

1,397,392.

Patented Nov. 15, 1921.

2 SHEETS—SHEET 2.



Witness
 Lynn Latta

Inventor
 George C. Amend
 By Bairt & Gorman—Attorneys

UNITED STATES PATENT OFFICE.

GEORGE C. AMEND, OF DES MOINES, IOWA.

COMBINED COOLER DISPLAY-CASE AND REFRIGERATOR.

1,397,392.

Specification of Letters Patent.

Patented Nov. 15, 1921.

Application filed July 25, 1921. Serial No. 487,333.

To all whom it may concern:

Be it known that I, GEORGE C. AMEND, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Combined Cooler Display-Case and Refrigerator, of which the following is a specification.

The object of my invention is to provide a combined cooler display case and refrigerator especially adapted for use in meat markets, the parts being of a simple durable and comparatively inexpensive construction.

Still another object is to provide in such a device three compartments, an upper, an intermediate and a lower compartment; each of the compartments being provided with doors whereby access may be had therein; the upper compartment being designed to serve as a display compartment, the intermediate compartment being designed to receive the refrigerating apparatus, while the lower compartment may be utilized as an ordinary ice-box or refrigerator for the storing of surplus meats or the like.

Still another object is to provide the case with a refrigerating apparatus so positioned therein that a portion of the case may be utilized as an ordinary refrigerator, it being well known that the cold air travels downward.

Still a further object is to provide a blower element such as a fan, for the circulating of the cold air from the intermediate compartment through the upper compartment.

Still another object is to provide pipes arranged to communicate between the upper and intermediate compartments at the ends thereof, one of the pipes being provided with a three-way control device for distributing the cold air as is desired.

Still another object is to provide one of the pipes which communicates between the upper and the intermediate compartments with discharge openings arranged so that the cold air discharged from the pipe may be forced or may pass out over the contents in the upper compartment and be equally distributed.

In this connection it may be mentioned that the providing of a discharge opening so that it is spaced above the shelf or support upon which the meat or other commodities rest and the discharging of cold air therefrom will make it possible to have some of the air circulate above the meat and com-

modities before it descends, which is the normal tendency of cold air. The provision of the discharging opening as just mentioned makes it possible to distribute equally the cold air throughout the entire upper compartment.

Still another object is to provide openings between the intermediate and lower compartments which may be opened or closed as is desired, so that when the blower element has been discontinued the openings between the lower and intermediate compartments may be opened and the cold air from the refrigerating apparatus will descend into the lower compartment, thus making it possible to utilize the refrigerating apparatus even though the upper compartment is not desired as a cooling and display case.

Still another object is to provide a control rod for the closure members between the intermediate and lower compartments, the closure member being so arranged that it is normally held in closed position.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of my improved cooler display case and refrigerator, one of the doors in the upper compartment being open.

Fig. 2 is a central, sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a central, vertical, sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view through one of the pipes showing the control valve for regulating the cold air; and

Fig. 5 is a detail, sectional view through the control rod for the closure member arranged between the intermediate and lower compartment of the case, taken on the line 5—5 of Fig. 1.

In the accompanying drawings I have used the reference character A to indicate a case generally, which case is provided with ends 10, a bottom 11, a top 12, and the front side 13 and the rear side 14.

The top 12 is preferably made of glass so that meats or the like within the case may be displayed.

The case A is divided into three compart-

ments B, C and D. The three compartments will be hereinafter more fully set forth.

The compartment B which I call the upper compartment is preferably for the displaying of the meats or the like; I therefore provide transparent members 15 in the front side 13 of the case. The ends of the compartment B are also provided with transparent members 16.

In order to gain access into the compartment B of the case A I provide sliding doors 17; the doors 17 are also provided with transparent members 18.

From the construction of the parts just described it will be seen that the compartment B is practically glass inclosed and that it serves as a display compartment.

Separating the upper compartment B from the compartment C, which may properly be termed the intermediate compartment, is a bottom or plate 19. The bottom or plate 19 is preferably made of marble and rests upon a pair of cleats 20 which are fixed to the front side 13 and the rear side 14. The ends of the marble plate or bottom 19 terminate short of the length of the case, as clearly shown in Fig. 2 of the drawings; the purpose of which will be hereinafter more fully set forth.

A plate 21 separates the intermediate compartment from the compartment D, which may properly be termed the lower compartment. The plate 21 is supported on a pair of cleats 22 which are fixed to the inner surfaces of the ends 10 of the case.

The intermediate compartment C is provided with a refrigerating apparatus 23 which rests on the supports 24 which are fixed to the plate 21. The plate 21 is narrower than the width of the case A.

Supported on the plate 21 substantially near one end thereof is a motor 25 having a blower element or fan 26 fixed thereto.

A partition member 27 is received between the bottom 19 of the compartment B and the plate 21 of the compartment C. The partition member 27 is provided with an opening 28 which is substantially in alinement with the blower element 26 so that when the motor operates the blower element the air therefrom will be caused to pass through the opening 28 and over the refrigerating apparatus 23.

In order to gain access into the interior of the compartment B for the controlling of the motor 25 I provide a door 29 which is hingedly fixed to the rear side 14. The door 29 is provided with an ordinary handle control member 30.

In order to gain access into the refrigerating apparatus I provide a long door 31, as clearly shown in Fig. 1 of the drawings.

In order to provide for a circulation of cold air to pass from the intermediate com-

partment into the upper compartment I provide a hollow pipe member 32 arranged at one end of the case and arranged so that it communicates with the intermediate and upper compartments.

A pipe member 33 is arranged at the opposite end of the case from the pipe member 32.

The pipe member 32 is provided with an opening 34 which is of substantially the same size as the space between the bottom member 19 of the compartment B and the plate 21 of the compartment C, as clearly shown in Fig. 2 of the drawings. Cold air passing over the refrigerating apparatus 23 passes into the pipe 32 and then through the opening 34 in the direction indicated by the arrows.

The pipe member 32 has one of its sides inclined so as to conform as nearly as possible to the inclined sides of the compartment B, as shown in Figs. 1 and 3 of the drawings.

The pipe 32 is provided with a pair of discharge openings 35 and 36.

The pipes 32 and 33 are each provided with a short inwardly extending flange 37 upon which is supported a shelf 38; the shelf 38 may be made of either screen, glass or metal.

The bottom 19 of the compartment B and the shelf 38 are designed to support the meat which is on display and for sale.

The cold air which passes in the direction indicated by the arrows is discharged through the openings 35 and 36 and out over the shelf 38 and over the bottom 19.

The discharge openings 35 and 36 are arranged so that they are spaced above the shelf 38 and above the bottom 19 so that the circulation of air will pass out toward the center of the case before any great amount of it will descend.

It will be understood, however, that some of the cold air just as it passes from the discharge openings 35 and 36 will descend, while a great portion of it will not descend until it has passed a great distance from the openings.

This arrangement makes it possible to equally distribute the cold air at points close to the discharge openings or a considerable distance therefrom. The equal distributing of the cold air is quite a problem in refrigerating and show cases.

After the cold air has passed over the meat and other commodities in the show case it passes into the pipe 33 and back to the blower element.

From the construction of the parts just described it will be seen that the circulation of air is continuous and complete.

At the discharge opening 36 I have provided a valve member 39 which may be moved to three positions, as shown by the solid and dotted lines in Fig. 4 of the drawings.

The valve member 39 is controlled by a rod 49. With the portion 54 between the rod 40 which extends to a point exterior of the case A. will practically be as one continuous rod.

When the valve member 39 is in the position shown in solid lines in Fig. 4 of the drawings, cold air will be distributed through both of the openings 35 and 36. By moving the valve 39 to the position shown by the dotted lines 41, cold air will pass out only through the opening 35.

When the valve member 39 is moved to the position shown by dotted lines 42, the cold air will pass through the opening 36.

In this connection it may be mentioned that the mechanical blower element is only operated during the day when the meat is in the display portion of the case, and at night is turned off, hence none of the cold air is passed up into the compartment B.

In order to utilize the refrigerating apparatus which will remain cold for a long time without the necessity of the mechanical blower element, I have provided the compartment D, which communicates with the compartment C. Cold air from the refrigerating apparatus 23 will pass downwardly when the blower element is not used into the compartment D which serves as a storage compartment.

The compartment D may be provided if desired with transparent members 43. Doors 44 are provided at the rear side of the case for gaining access to the interior of the storage or lower compartment D. The doors 44 are provided with handle members 45.

A hinged closure member 46 is fixed to the forward edge of the plate 21 as heretofore mentioned the plate 21 is narrower than the width of the case A. The closure member 46 closes the portion between the front side 13 and the front edge of the plate 21.

The closure member 46 is secured to the plate 21 by means of the hinges 47. A pair of springs 48 are fixed to the closure member 46 near each of its ends. The springs 48 have one of their ends fixed to the front side 13. The closure members 46 are thus normally held in closed position.

In order to open the closure member 46 from the exterior of the casing I provide a rod 49 having a short rod 50 pivotally secured thereto. The forward end of the rod 50 is pivotally connected to the closure member 46.

A bearing member 51 fixed to the underside of the plate 21 has the rod 49 slidably received therein. The rod 49 extends through an opening 52 provided in the rear side 14.

The rod 49 has pivoted thereto near its rear end a short rod 53. The rod 49 has its rear end bifurcated so as to receive the portion 54 of the rod 53. The portion 54 is slightly contracted so that it may be received between the bifurcated portion of the

rod 49. With the portion 54 between the bifurcated portion of the rod 49, the parts will practically be as one continuous rod.

The purpose of providing the short rod 53 will now be stated.

When it is desired to open the closure member 46 against the action of the springs 48 the rod 53 is engaged and pulled rearwardly, this causes the closure member 46 to be moved to the position shown in dotted lines in Fig. 3 of the drawings.

The pivotal joint of the rods 49 and 53 will then be received beyond the exterior of the case. The rod 53 may then be swung on its pivot to position shown in Figs. 1 and 3 of the drawings.

The portion 54 when the parts are moved to the position shown in solid lines in Fig. 5 of the drawings will then rest against the rear side 14 and hold the closure member open against the action of the springs 48.

On the opposite edge of the plate 21 from the closure member 46 I provide a closure member 55 secured to the plate 21 by means of hinges 56. A spring clip member 57 is provided which normally holds the closure member 55 in closed position.

A knob 58 fixed to the closure member 55 may be engaged for pulling the closure member 55 downwardly for moving it to open position.

It will be seen that the closure member 55 may be operated by opening the doors 44.

From the construction of the parts just described it will be seen that when the mechanical blower element is not used both the closure members 46 and 55 may be opened and the cold air from the refrigerating apparatus 23 will then circulate into the lower compartment. The lower compartment may then be used for storing meats or other commodities just as an ordinary refrigerator may be used.

The advantages of my device are that during the day time if it is desired one of the closure members 46 or 55 may be opened. As soon as the mechanical blower element is operated some of the cold air will pass into the lower compartment D and it may thus be utilized for containing any excess amount of meats that has already been cut, while the upper compartment may be used for meats that are being sold.

When the mechanical blower element has been turned off the meats contained within the compartment B may be stored in the lower compartment D.

It will be seen that my case serves both as a display and as a refrigerator case.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any

modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

- 5 1. A refrigerator show case having a refrigerating apparatus therein and a blower element arranged at one end of the refrigerating apparatus, said case being formed with an upper, an intermediate and a lower compartment, doors for gaining access into each of said compartments, pipes forming passage ways provided between said upper and intermediate compartments at their ends, said pipes having a flange formed on their adjacent surfaces for forming a support, a shelf received within said upper compartment and resting upon said flanges, one of said pipes having a pair of discharge openings arranged at points above the shelf and bottom of the upper compartment whereby the cold air will be forced out over the shelf or bottom of the compartment a considerable length before it will descend to any great extent for the purposes specified.
- 25 2. A refrigerator show case having a refrigerating apparatus therein and a blower element arranged at one end of the refrigerating apparatus, said case being formed with an upper, an intermediate and a lower compartment, doors for gaining access into each of said compartments, pipes forming passage ways provided between said upper and intermediate compartments at their ends, said pipes having a flange formed at their adjacent surfaces for forming a support, a shelf received within said upper compartment and resting upon said flanges, one of said pipes having a pair of discharge openings arranged at points above the shelf and bottom of the upper compartment whereby the cold air will be forced out over the shelf or bottom of the compartment a considerable length before it will descend to any great extent and a three way valve member for closing either of said discharge openings against discharge of cold air or permitting cold air to be discharged through both.
- 50 3. A refrigerator show case having a refrigerating apparatus therein and a blower element arranged at one end of the refrigerating apparatus, said case being formed with an upper, an intermediate and a lower compartment, doors for gaining access into each of said compartments, pipes forming passage ways provided between said upper and intermediate compartments at their ends, said pipes having a flange formed on their adjacent surfaces for forming a support, a shelf received within said upper compartment and resting upon said flanges, one of said pipes having a pair of discharge openings arranged at points above the shelf and bottom of the upper compartment whereby the cold air will be forced out over the shelf or bottom of the compartment a considerable length before it will descend to any great extent, and a pair of passage ways having closure members arranged therefor formed between said intermediate and lower compartments and means for yieldingly holding said closure members in their closed position.
4. A refrigerator show case having a refrigerating apparatus therein and a blower element arranged at one end of the refrigerating apparatus, said case being formed with an upper, an intermediate and a lower compartment, doors for gaining access into each of said compartments, pipes forming passage ways provided between said upper and intermediate compartments at their ends, said pipes having a flange formed on their adjacent surfaces for forming a support, a shelf received within said upper compartment and resting upon said flanges, one of said pipes having a pair of discharge openings arranged at points above the shelf and bottom of the upper compartment whereby the cold air will be forced out over the shelf or bottom of the compartment a considerable length before it will descend to any great extent, and a passage way having a closure member therefor formed between said intermediate and lower compartments, springs for yieldingly holding said closure member closed and a control means arranged to be operated from a point exterior of the case.

Des Moines, Iowa, June 27th, 1921.

GEORGE C. AMEND.