Oct. 1, 1929. E. ZELENKA ET AL 1,729,638

REFRIGERATED SHOW CASE

Filed April 7, 1926 3 Sheets-Sheet 1

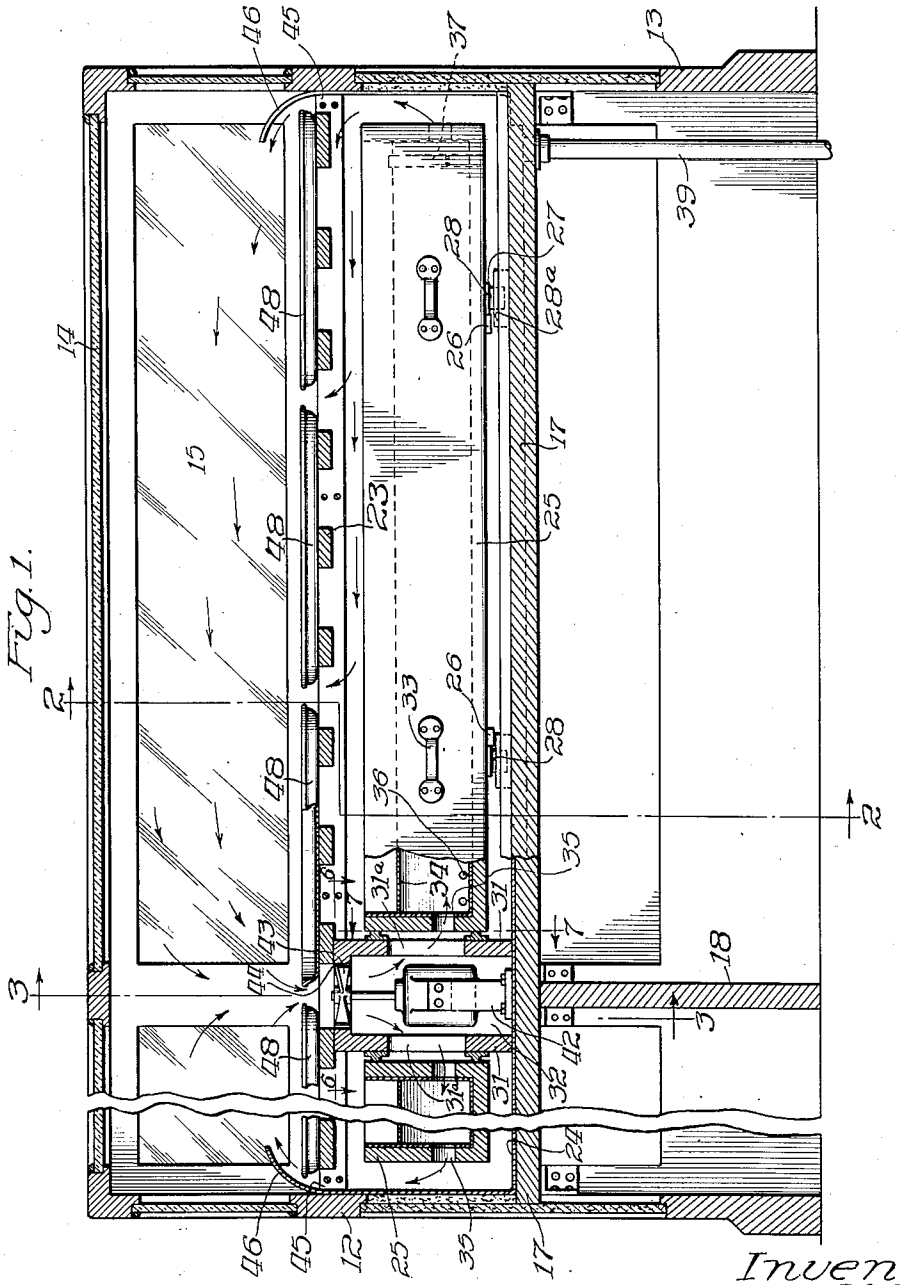


Fig. 1.

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Fig. 2.

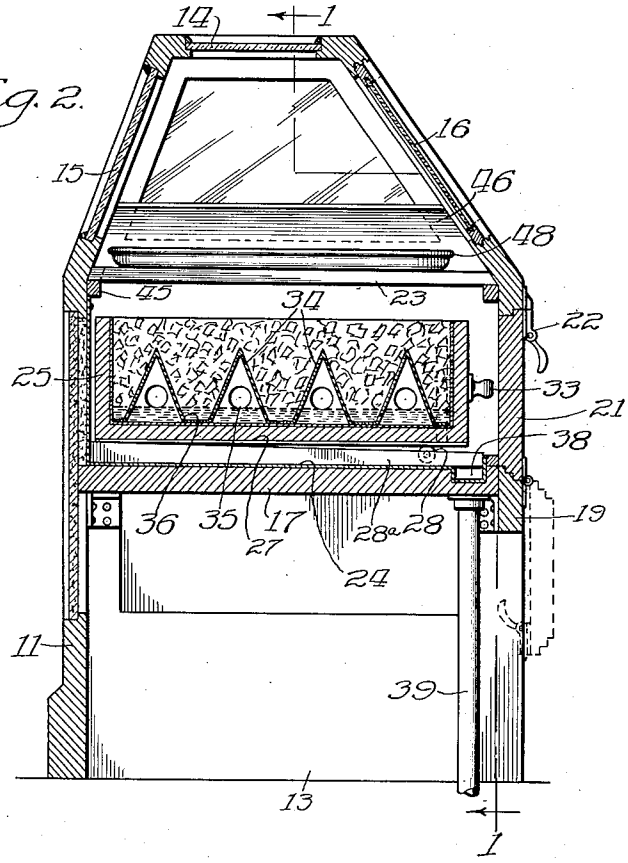


Fig. 3.

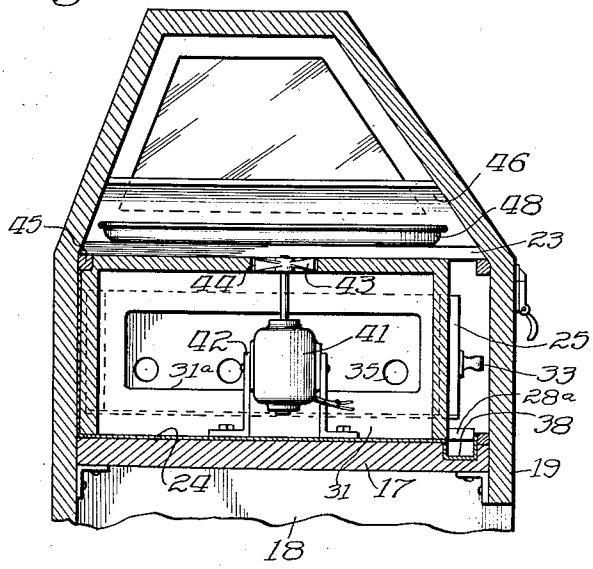
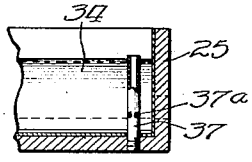


Fig. 4.



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Fig. 5

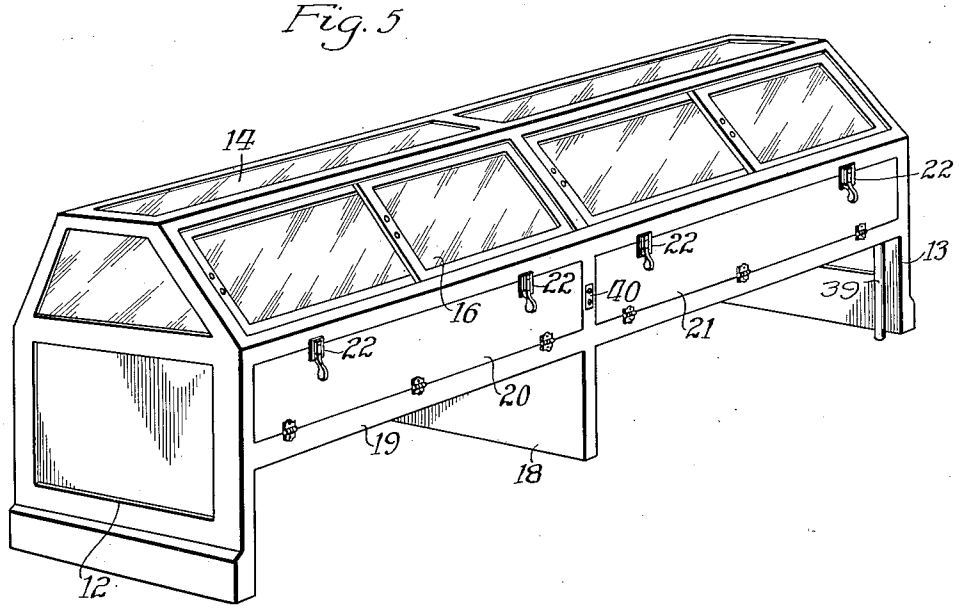


Fig. 6.

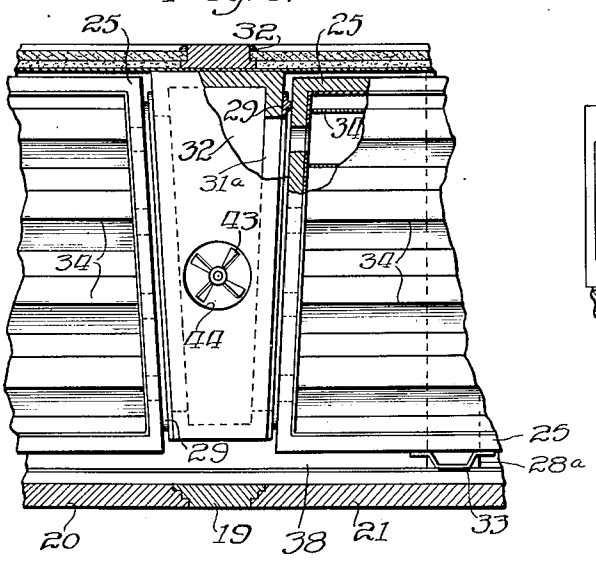
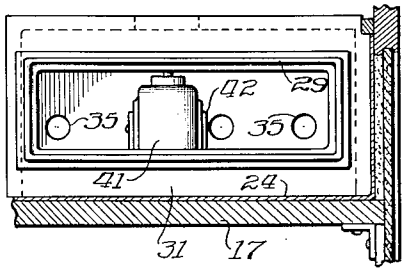


Fig. 7.



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UNITED STATES PATENT OFFICE

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REFRIGERATED SHOW CASE

Application filed April 7, 1926. Serial No. 100,276.

Our invention relates to refrigerated show cases of the type generally used in meat markets, delicatessen stores and similar wholesale and retail stores.

It is an object of our invention to provide an improved refrigerated show case in which the circulation of the cooling air is automatically maintained.

A further object is to provide an improved means for icing the show case.

A further object is to provide an improved refrigerated show case in which the chilled air coming directly from the ice container strikes the food to be cooled.

Other objects will appear from the following description, reference being had to the accompanying drawings in which:

Figure 1 is a vertical longitudinal section of the show case.

Figure 2 is a vertical transverse section taken on the line 2—2 of Figure 1.

Figure 3 is a similar section taken on the line 3—3 of Figure 1.

Figure 4 is a detailed section of a portion of one of the ice drawers.

Figure 5 is a perspective view of the complete refrigerated show case.

Figure 6 is a detailed horizontal sectional view taken on the line 6—6 of Fig. 1.

Figure 7 is a vertical detailed sectional view taken on the line 7—7 of Figure 1.

The show case counter comprises a marble paneled front wall 11 and similar end walls 12 and 13. The top and the sloped front side of the show case are provided with glass windows 14 and 15 while the sloped rear side of the upper portion of the case is closed by means of two pairs of glazed sliding doors 16 which are suitably guided in the frame of the case and permit ready access to the upper compartment in which the food is kept. While we have shown the glass in these parts of single thickness, it may be desirable to make them of double thickness so as to better insulate the food compartment from the atmosphere.

The bottom wall 17 is secured to the end walls 12 and 13 in any suitable manner and is centrally supported by a partition 18. The vertical rear wall 19 which extends downwardly from the sliding doors for a short distance is provided with doors 20 and 21 which are hinged at the lower edges and are rabbeted in the manner customary in the construction of refrigerator doors, and are provided with suitable spring latches 22.

The show case is divided into two chambers by horizontal slats 23. The upper chamber of the case is used as a food compartment while the lower chamber is the ice chest which is centrally divided into two compartments. These compartments are lined with suitable sheet metal linings 24.

Two ice drawers 25 are adapted to receive the cracked ice which is used as the cooling medium and are mounted for ready withdrawal from the ice chest when the doors 20 and 21 are fully opened to the position shown in dotted lines in Figure 2. Each of the drawers 25 rests upon a pair of rollers 28 which are freely rotatable in the bearings 28^a secured to the bottom wall 17. The bottoms of the drawers are provided with suitable metallic rail plates 27 which engage the rollers 28, and also with guide strips 26 which are adapted to contact with the sides of the rollers and thus maintain the drawers in their proper positions in the ice chamber.

As best shown in Figure 6, the side walls of the drawers 25 which lie adjacent the center of the ice chamber are oblique to the fronts of the drawers. The partition walls 31 of a central fan or air pressure compartment 32 lie parallel to the side walls of the drawers and have rectangular shaped openings 31 formed therein. Strips 29 of felt, rubber, or other suitable material are tacked or glued to the sides of the walls 31 around the openings 31^a, and are adapted to form seals between the side walls of the drawers and the partition walls 31. It will be apparent that the seal will be securely made whenever the drawer is pushed to its rearmost position, and due to the peculiar shape of the drawer the danger of tearing or otherwise deforming the sealing strip when the drawer is being removed is entirely eliminated. The drawers 25 are provided with handles 33 so that they may be readily withdrawn.

The inside of each of the drawers is lined

with tin or other suitable sheet metal and is provided with a series of hollow triangular prisms 34, preferably formed from a single metallic sheet which extends the full length of the drawer and is soldered or spot welded to the sides and to the bottom of the drawer. A line of perforations 36 is formed in each side of each of the prisms 34 adjacent the base thereof to permit the water resulting from the melting of the ice to enter the interior of the prisms. The water may rise to the level as indicated in Figure 2 at which time it will either flow through parts 35 formed in the ends of the drawer or will drain from the drawer through perforations 37ª (Figure 4) formed in a drain pipe 37 which extends through the bottom of the drawer. As the ice in the drawer melts it is naturally forced into contact with the sides of the prisms, due to their converging arrangement, and thus the prisms are maintained at the temperature of the melting ice. A gutter 38 formed at the front edge of the bottom of the ice chest leads to a drain pipe 39 which is of sufficient size to carry away the water from the bottom of the drawers.

A switch 40 (Figure 5) mounted on the rear wall 19 at its center is used to control the supply of current to a motor 41 which is mounted on a pair of brackets 42 which are bolted to the bottom wall 17 in the central air pressure compartment 32. The chest of the motor carries a fan 43 which is rotatable in a vent 44 formed in the top wall of the compartment. The rotation of the fan, which may be of any preferred construction, is such that it will draw the air downward, thereby building up a uniform air pressure in the compartment 32 resulting in uniform lateral distribution of air through the openings 31, ports 35 in the sides of the ice drawers, and through the hollow prisms 34. The air in passing through the ice cooled prisms is chilled and is moistened by contact with the water which normally stands in these prisms, and is forced outwardly through the apertures 35 at the other side of the drawer and upwardly to the food compartment. A portion of the air will pass upwardly through a passage 45 and will be deflected by a baffle plate 46 so as to be directed across the food which may be placed in the trays 48 which rest upon the slats 23. Other currents of air will flow along the bottoms of the trays and thence upwardly around them as is indicated by the arrows. It will thus be seen that the coldest air comes into contact with the food to be cooled and then as it is warmed it will rise to the top of the food compartment and travel towards the center when it will be drawn downwardly by the fan 43 and again be forced through the air passages in the ice drawers. This method of circulating the air has been found to be very effective not only due to the fact that the coldest air comes into contact with the food first, but also possibly due to the fact that the air in the passages through the drawer is under a slight compression and thus is able to give off more heat per unit of volume than it otherwise would. The fact that the air being cooled passes over a surface of water also increases the effectiveness of the refrigerating system and maintains the air at the desired humidity.

While the form of the refrigerated show case herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed for it is susceptible of an embodiment in various forms, all coming within the scope of the claims which follow:

We claim:

1. A refrigerated show case comprising a food compartment, an ice chest, ice containing drawers in said chest, said drawers having horizontal air passages therethrough, a fan chamber having openings in its sides, a motor driven fan therein, and means for sealing the sides of said drawer against the side wall of said chamber so as to form a closed passage from said chamber to said passages in said drawer.

2. A refrigerated show case comprising a food compartment, an ice chest, ice containing drawers in said chest, a plurality of conduits forming air passages through said drawers, means for forcing air through said passages, the food compartment having a conduit communicating with the drawer conduit, and means operative upon the closing of said drawers to seal said drawer conduits against said food compartment conduit.

3. A refrigerated show case comprising a food compartment, an ice chest beneath said compartment, a pair of removable ice drawers in said chest, said drawers having a plurality of air passages, a fan chamber positioned between said drawers, the sides of said chamber having openings therein, and sealing means surrounding said openings, said means being operative only when said drawers are fully closed.

4. A refrigerated show case comprising a food compartment, an ice chest therebeneath, means forming inlet and outlet passages communicating between the compartment and chest, a hollow triangular prism having downwardly diverging sides extending through the chest and communicating at its ends with the respective passages, and forming an air conduit through the ice in the chest, said prism having rows of perforations in its sides near its base, and means for forcing an air current from the food compartment through said prism.

5. A refrigerated show case comprising a food compartment, an ice chest below said compartment, a plurality of slats separating

said compartment from said chest, said chest having air passages therethrough, a chamber adjacent said ice chest, a motor driven fan positioned adjacent the opening in said chamber and adapted to draw air from said compartment and force it through said passages in said chest.

6. A refrigerated show case comprising a food compartment, an ice chest below said compartment, a plurality of slats separating said compartment from said chest and adapted to form supports for food trays, an ice drawer slidable in said chest and adapted to be withdrawn therefrom, said drawer having a plurality of air passages therethrough, a fan chamber having an opening adapted to register with said passages in said drawer when said drawer is closed, sealing means surrounding said opening and arranged to contact with said drawer when closed, and a fan to circulate air from said food compartment through said passages in said drawer and back to said food compartment.

7. A refrigerated display case comprising in combination therewith a horizontally disposed shelf extending longitudinally thereof and forming a food compartment thereabove and air chilling compartments therebelow, passage means through said shelf at its longitudinal midpoint for the downward passage of air from the food compartment, a central air pressure compartment beneath said passage means, means for forcing air into said pressure compartment, distributing plates in the sides of said pressure compartment extending across the inner ends of the chilling compartments, a plurality of equally spaced openings through said plates for uniformly distributing air from said pressure compartment to said chilling compartments on opposite sides thereof, and passage means at each end of the case for the upward flow of air from the chilling compartments to the food compartment whereby the circuit of chilled air through the food compartment is confined to half the length thereof.

8. A refrigerated display case comprising in combination therewith a horizontally disposed shelf extending longitudinally thereof and dividing said case into a food compartment superposed with relation to air chilling compartments, said chilling compartments being of equal length, an air pressure compartment between said chilling compartments and beneath said shelf at the longitudinal midpoint thereof, air passage means through said shelf from the food compartment to said pressure compartment, air impelling means in said passage for withdrawing air from the food compartment and forcing it downwardly into the pressure compartment, distributing plates in the sides of said pressure compartment extending across the inner ends of the chilling compartments, a plurality of equally spaced openings through said plates for uniformly distributing the air from said pressure compartment to said chilling compartments on opposite sides thereof, and passage means at each end of the case for the upward flow of air from the chilling compartments to the food compartment whereby the circuit of chilled air through the food compartment is confined to half the length thereof.

9. A refrigerated show case comprising in combination therewith a horizontally disposed shelf extending longitudinally thereof and forming a food compartment thereabove and air chilling compartments therebelow, passage means through said shelf at its longitudinal midpoint for the downward passage of air from the food compartment, a central air pressure compartment beneath said passage means, fan means at said passage for forcing air into said pressure compartment, apertured air distributing plates in the sides of said pressure compartment extending across the inner ends of the chilling compartments, and passage means at each end of the case for the upward flow of air from the chilling compartments to the food compartment, whereby the circuit of chilled air through the food compartment is confined to half the length theerof.

In witness whereof, we hereunto subscribe our names this 31st day of March, 1926.

ERNEST ZELENKA.
ANTHONY THEIS.