

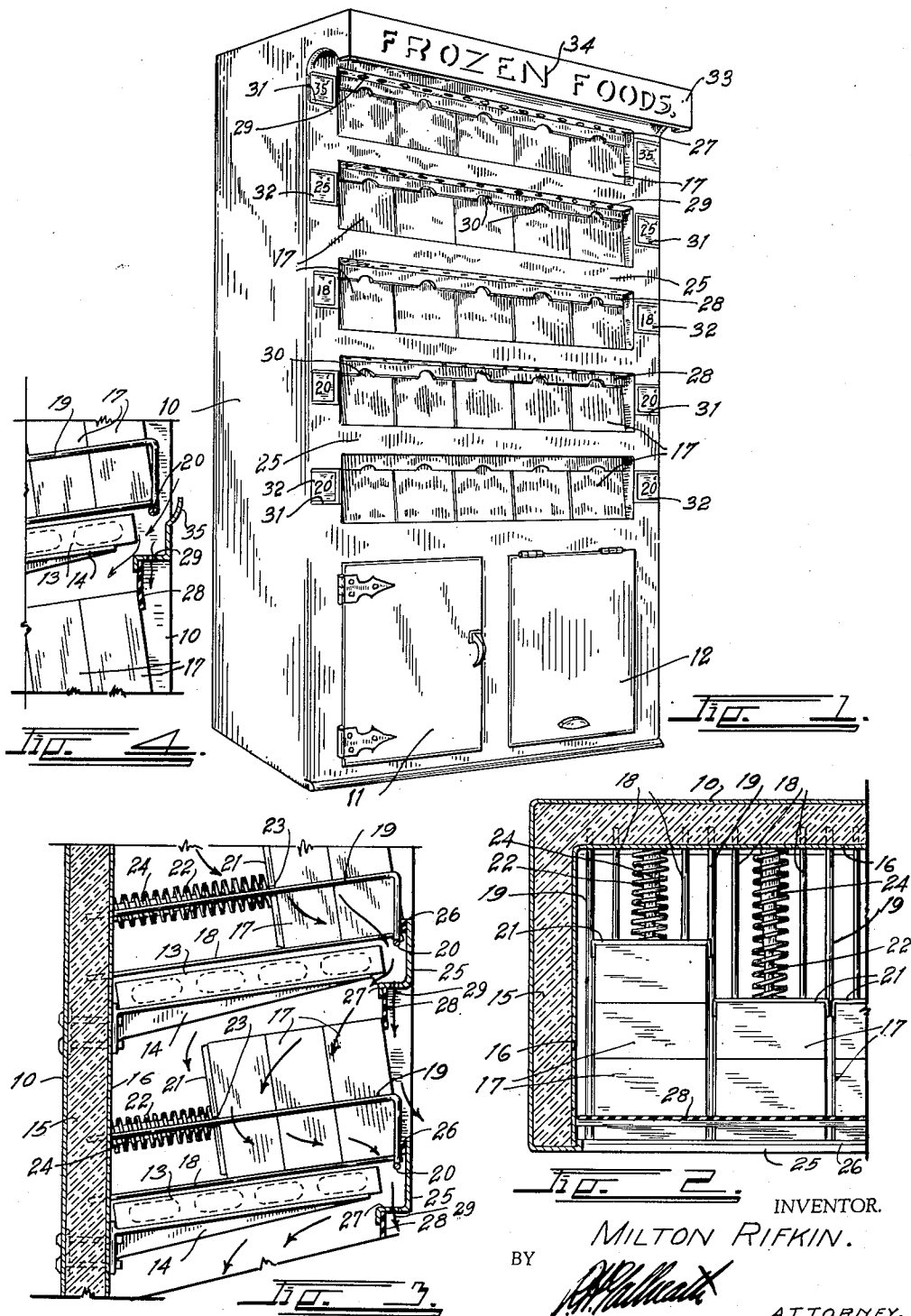
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REFRIGERATED DISPLAY SHELF

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REFRIGERATED DISPLAY SHELF

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13 Claims. (Cl. 62—89.5)

This invention relates to a display case for frozen foods and has for its principal object the provision of a case in which the packages will be displayed on shelves directly before the customer and from which the customer can conveniently remove any package without the necessity of opening refrigerator doors and the like and yet which will maintain all of the packages in their frozen condition.

Other objects of the invention are to provide automatic sealing means which will seal the case immediately after each package is removed therefrom and to so construct the case that a layer of cold air will be maintained over the exposed packages in the case and a pocket of cold air will be maintained about the packages on each shelf of the case.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and through out the description.

In the drawing:

Fig. 1 is a perspective view of the improved frozen food display case;

Fig. 2 is an enlarged, fragmentary, horizontal section through the shelf portion thereof;

Fig. 3 is a similarly enlarged, fragmentary vertical section through the shelf portion thereof; and

Fig. 4 is a fragmentary detail view illustrating an alternate form of shelf front.

The improved case is designed to conform to a section of wall shelving in order that it may, if desired, be set into the wall shelving of a store without requiring additional floor space.

The entire apparatus is enclosed within an outer housing 10 either of wood or metal, preferably the latter. The inside of the back and end walls of the housing 10 is covered with suitable heat insulating material 15 which in turn is covered by an inner wall surface 16 of metal or other material. The lower portion of the housing 10 contains a storage compartment to which access is had through a suitable hinged door 11 and a refrigerating machine compartment closed by means of a door 12. Above these two compartments is the display and dispensing portion of the device.

The display portion employs a plurality of re-

frigerated shelves 13. These shelves may comprise flat coils of refrigerating pipes covered by a metal shelf. They preferably consist, however, of a flat metal container through which brine or other refrigerating medium is circulated. The refrigerated shelves 13 are inclined downwardly to the back of the case on an angle of eight to ten degrees and are supported on suitable supporting brackets 14.

The merchandise, indicated by the packages 17, is supported immediately above the shelves 13 upon a plurality of parallel slide rods 18 which are inclined to correspond to the incline of the shelves, there being two of the rods 18 beneath each pile of packages. The piles of packages 17 are separated along the shelves by means of separating rods 19. The rods 18 and 19 extend to the back of the case where they are secured in any desired manner such as by passing them through suitable receiving openings in the inner wall 16. The forward extremities of the rods may be supported in any desired manner such as upon a horizontal cross rod 20.

The packages 17 are continually urged forwardly and upwardly on their slide rods 18 by means of pusher plates 21 actuated from compression springs 22. Each pusher plate is provided with notches 23 in its opposite vertical edges which ride on the separating rods 19 to guide the plates and hold them in place. Each compression spring surrounds a telescoping spring guide post 24 which prevents the springs from looping or kinking.

A shelf front 25 extends across the case in front of each of the refrigerated shelves 13, in spaced relation thereto. Each of these shelf fronts extends slightly above the slide rods 18 of that shelf and is provided with a rubber gasket member 26 on its inner upper edge against which the front package of each pile is forced by the action of the springs 22. The lower edge of each shelf front 25 is turned inwardly to form a horizontal flange 27, from the inner edge of which a flexible curtain 28 of rubber or other suitable material depends against the forward faces of the foremost packages on the next lower shelf. The curtains 28 are provided with finger notches 30 over each pile of packages in the shelf row. The flanges 27 of the shelf fronts contain circulation perforations 29. The flanges are spaced below the refrigerated shelves 13 to allow air circulation space therebetween.

It can be readily seen that the cold shelves 13 will chill the air in the interior of the housing 10. This chilled air will descend and be directed

rearwardly by the rearward incline of the shelves. Since the air cannot pass between the shelves and the rear wall, a pocket is formed over each shelf in which the air will be trapped and held around the piles of packages on that shelf. The excess cold air will over-flow the forward edges of the shelves 13 behind the shelf fronts 25 and from thence will be directed rearwardly by the flanges 27 onto the packages on the shelf below. A portion of the over-flowing air will exit through the perforations 29 in the flanges and flow downwardly over the front faces of the foremost packages on the shelves to maintain the latter chilled.

Should a customer desire a package, he inserts his finger through the notch 30 over the package and tilts it forwardly to remove it from the shelf. The space left by the removed package is immediately closed by the action of the spring 22 in pushing the pile of packages forward so that a new package will be forced against the gasket 26 and the curtain 28 to again seal the front of the case. The pusher plates 21 are sufficiently large so that after all packages have been removed from any pile this plate will seal itself against the gasket 26 and the rubber curtain 28 to maintain the case sealed.

In alignment with each shelf is a price tag slide 31 into which a suitable price tag 32 may be inserted to indicate to the customer the price of the packages on that shelf.

The case is preferably provided with a forwardly extending hood 33, which may contain illumination to illuminate an advertising sign 34, but which contains a refrigerating coil to assist the perforations 29 in maintaining a curtain of cold air over the foremost packages in the case.

The details of the refrigeration plant and the connections between the shelves and the plant are not illustrated as these are the usual plant equipment and within the skill of those skilled in the art of refrigeration.

The cold air from the lowermost shelf compartment may descend into the storage compartment if desired. From the storage compartment an air riser of any suitable design or position may return the warmer air from the storage compartment to the top of the case for another descent.

In Fig. 4 an alternate form of shelf front in which the top is rolled outwardly to form a cold air receiving hopper 35 to receive the cold air flowing downwardly over the fronts of the packages and to return the latter to the case to conserve its coldness thus assisting in maintaining the cold curtain on the fronts of the foremost packages. The warmer room air cannot, of course, descend into the hopper 35 due to its lesser specific gravity than the colder descending air.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A refrigerating display case comprising: a vertical series of horizontally extending refrigerating shelves; means for supporting packages on each shelf; sealing means at the front of each shelf in the path of the foremost packages along the shelf; and means for forcing the packages forwardly on the shelf supporting member to the

foremost packages against said sealing means.

2. A refrigerating display case comprising: a vertical series of horizontally extending refrigerating shelves; means for supporting packages on each shelf; a shelf front member in front of each shelf and projecting above the shelf to contact the foremost packages along the shelf, said refrigerating shelves being inclined downwardly and rearwardly to the back of said case to form cold air pockets over each shelf; and a circulation passage between each shelf and its shelf front member to allow cold air to overflow and descend from shelf to shelf.

3. A refrigerating display case comprising: a vertical series of horizontally extending refrigerating shelves; means for supporting packages on each shelf; a shelf front member in front of each shelf and projecting above the shelf to contact the foremost packages along the shelf; a curtain depending from each shelf front member into contact with the packages on the next shelf below; and means forcing said packages against the shelf front member and said curtain to seal said case.

4. A shelf case for frozen foods comprising: an insulated outer housing; a closed storage compartment in said housing; a refrigeration machinery compartment in said housing; a shelf section in said housing open to the front thereof; a plurality of refrigerated shelves in said shelf section; a plurality of slide rods extending forwardly from the back of the case across said shelves for supporting packages thereover; and a shelf front member extending across the shelf section in front of each shelf and extending above and below the shelf, said shelf front members being spaced forwardly of the shelves to allow cold air to descend between the front members and the shelves.

5. A shelf case for frozen foods comprising: an insulated outer housing; a closed storage compartment in said housing; a refrigeration machinery compartment in said housing; a shelf section in said housing open to the front thereof; a plurality of refrigerated shelves in said shelf section; a plurality of slide rods extending forwardly from the back of the case across said shelves for supporting packages thereover; a shelf front member extending across the shelf section in front of each shelf and extending above and below the shelf, said shelf front members being spaced forwardly of the shelves to allow cold air to descend between the front members and the shelves; and means for urging the packages forwardly on the slide rods against the shelf front members.

6. A shelf case for frozen foods comprising: an insulated outer housing; a closed storage compartment in said housing; a refrigeration machinery compartment in said housing; a shelf section in said housing open to the front thereof; a plurality of refrigerated shelves in said shelf section; a plurality of slide rods extending forwardly from the back of the case across said shelves for supporting packages thereover; a shelf front member extending across the shelf section in front of each shelf and extending above and below the shelf, said shelf front members being spaced forwardly of the shelves to allow cold air to descend between the front members and the shelves; means for urging the packages forwardly on the slide rods against the shelf front members; and means extending downwardly from each shelf member to contact the fore-

most packages to seal the front of said shelf section.

7. A shelf case for frozen foods comprising: an insulated outer housing; a closed storage compartment in said housing; a refrigeration machinery compartment in said housing; a shelf section in said housing open to the front thereof; a plurality of refrigerated shelves in said shelf section; a plurality of slide rods extending forwardly from the back of the case across said shelves for supporting packages thereover; and a shelf front member extending across the shelf section in front of each shelf and extending above and below the shelf, said shelf front members being spaced forwardly of the shelves to allow cold air to descend between the front members and the shelves, said shelves being inclined downwardly to the back of said housing to form a cold air pocket over each shelf for trapping the coldest air thereover.

8. A shelf case for frozen foods comprising: an insulated outer housing; a closed storage compartment in said housing; a refrigeration machinery compartment in said housing; a shelf section in said housing open to the front thereof; a plurality of refrigerated shelves in said shelf section; a plurality of slide rods extending forwardly from the back of the case across said shelves for supporting packages thereover; a shelf front member extending across the shelf section in front of each shelf and extending above and below the shelf, said shelf front members being spaced forwardly of the shelves to allow cold air to descend between the front members and the shelves; means for urging the packages forwardly on the slide rods against the shelf front member; and means extending downwardly from each shelf member to contact the foremost packages to seal the front of said shelf section, said shelves being inclined downwardly to the back of said housing to form a cold air pocket over each shelf for trapping the coldest air thereover.

9. A refrigerator display case comprising: a vertical series of horizontally extending refrigerating shelves; and a shelf front spaced forwardly of each of said shelves, said shelf front extending forwardly of the foremost packages thence rearwardly into said case below the shelf to direct the cold air rearwardly, there being openings to allow cold air to exit through said shelf member onto the front face of the foremost packages therebelow.

10. A refrigerator display case comprising: a vertical series of horizontally extending refrigerating shelves; and a shelf front spaced forwardly of each of said shelves, said shelf front extending forwardly of the foremost packages thence rearwardly into said case below the shelf to direct the cold air rearwardly, there being openings to allow cold air to exit through said shelf member onto the front face of the foremost packages therebelow and there being a passage by the upper edge of each shelf to receive the cold air descending from the front faces of the packages thereabove.

11. In a refrigerating display case, a plurality of superimposed shelves; shelf front members positioned forwardly of said shelves and extending thereabove; a sealing member depending from each shelf over the front member of the shelf below; and means for forcing packages forwardly on said shelves into contact with said front members and said sealing members to seal said case.

12. In a refrigerating display case, a plurality of superimposed shelves; shelf front members positioned forwardly of said shelves and extending thereabove; a sealing member depending from each shelf over the front member of the shelf below; and means for forcing packages forwardly on said shelves into contact with said front members and said sealing members to seal said case, there being cold air passages between the shelves and their front member to allow cold air to descend from shelf to shelf.

13. In a refrigerating display case, a plurality of superimposed shelves; shelf front members positioned forwardly of said shelves and extending thereabove; a sealing member depending from each shelf over the front member of the shelf below; and means for forcing packages forwardly on said shelves into contact with said front members and said sealing members to seal said case, said shelves being inclined to incline the forward face of the foremost package backwardly, said sealing members being positioned rearwardly of the shelf fronts to conform to the rearward incline of the packages, there being openings between each shelf front and the sealing member therebelow to allow cold air to descend onto the said forward faces of the foremost packages.

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