April 2, 1957 M. J. LANG 2,787,407

REFRIGERATION PACKAGE

Filed Nov. 25, 1953

Fig. 1

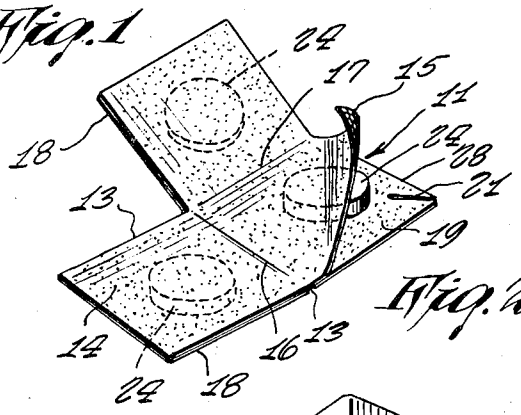


Fig. 2

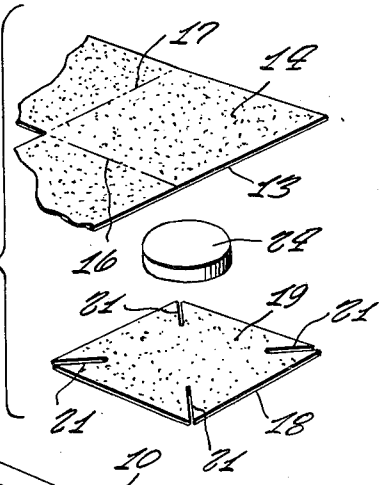


Fig. 3

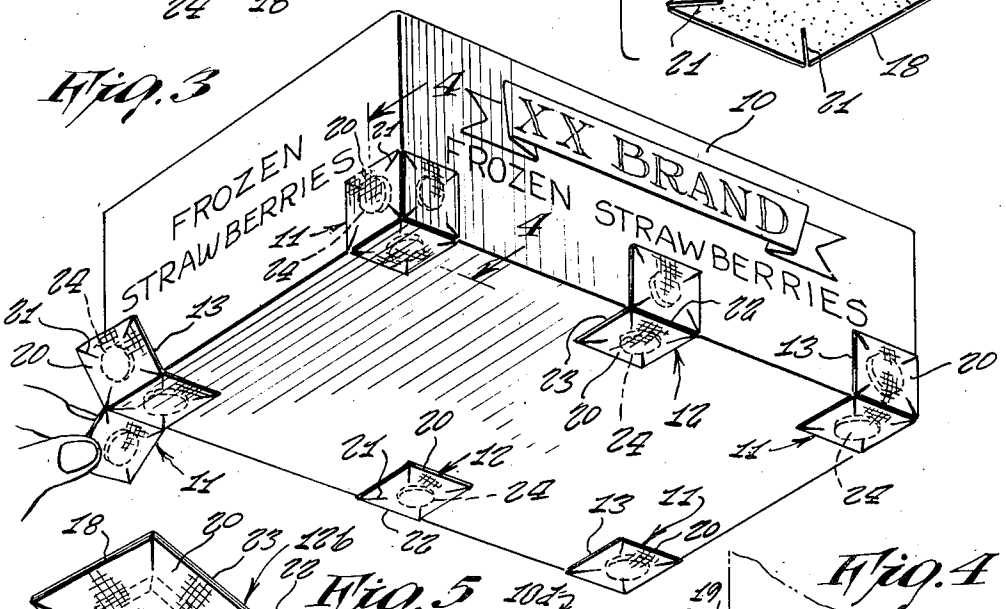


Fig. 4

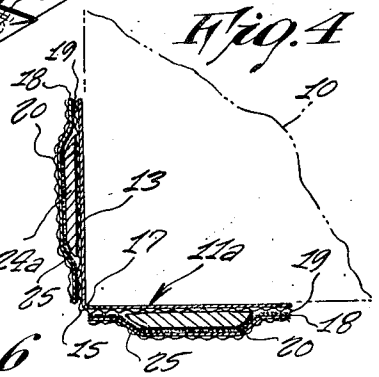


Fig. 5

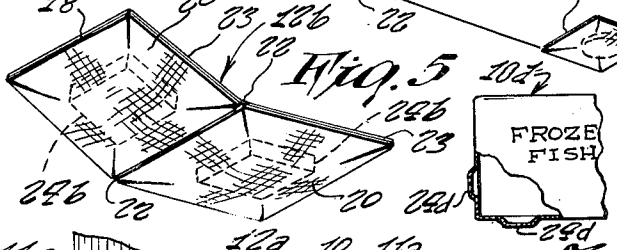


Fig. 7

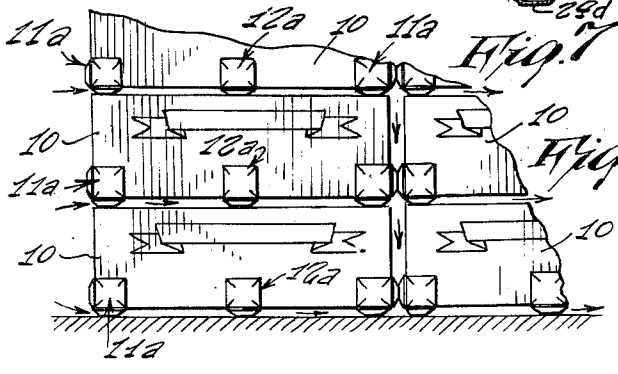


Fig. 6

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REFRIGERATION PACKAGE

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Application November 25, 1953, Serial No. 394,263

2 Claims. (Cl. 229—6)

This invention relates to spacing means for insuring proper circulation of refrigerated air about and between piled up packages of frozen foods.

Frozen foods are packaged in flat rectangular boxes and then piled on top of and alongside one another during storage and shipment in refrigerated compartments. Refrigerated air is circulated through these compartments at a constant temperature, this temperature representing an optimum for preservation of the frozen foods while at the same time avoiding the lower temperatures at which the individual packages freeze together into a solid mass. However, due to the poor air circulation between these packages when the latter are piled alongside and on top of each other, local temperature variations occur, causing condensation of moisture when the variation is above the optimum temperature with resulting spoilage of the food and causing the individual packages to freeze together into an objectionable solid mass when the variation is below the optimum temperature.

It is accordingly a main object of the present invention to provide means for insuring the adequate circulation of refrigerated air between piled up packages of frozen foods during shipment in refrigerated compartments and storage whereby to avoid local temperature variations.

A further object of the invention resides in the provision of L-shaped strips adapted to be folded together and secured to the corners of the packages, these strips having spacer elements which insure proper air spaces laterally and vertically between the adjacent faces of the piled up packages.

A further object of the present invention resides in the provision of intermediate strips adapted to be secured to adjacent faces of the packages intermediate the opposite ends thereof whereby to support the central portion of the packages, these strips having spacer elements which insure proper air spaces vertically and laterally between the adjacent faces of the piled up packages.

A still further object of the present invention resides in the provision of strips of the above type which are sturdy and durable, reliable and efficient in use and inexpensive to manufacture and assemble on the packages.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a perspective view of one of the L-shaped strips embodying the features of the present invention and showing the central portion thereof partially turned back to illustrate the interior construction;

Fig. 2 is an exploded perspective view of the central section of the strip shown in Fig. 1;

Fig. 3 is a perspective view of a package of frozen food having the invention incorporated thereon and showing one of the L-shaped strips in the process of being applied to one corner;

Fig. 4 is a vertical sectional view taken along the line 4—4 of Fig. 3 and showing a modified form of spacer element;

Fig. 5 is a perspective view of a still further modified form of the present invention;

Fig. 6 is a fragmentary front elevational view of a plurality of packages of frozen food as they are piled on top and alongside of each other in the refrigerated compartment and showing one form of the invention in operative use thereon and

Fig. 7 is a fragmentary front elevational view shown partly in section of a still further modified form of the present invention.

Referring now more in detail to the drawing, wherein like reference numerals identify corresponding parts throughout the several views, 10 represents a package of frozen food of conventional design such as of flat rectangular configuration of the type adapted to be piled on top of and alongside of similar packages during storage and shipment in refrigerated compartments.

In the practice of my invention and referring more particularly to Figs. 1 through 3, means are provided for insuring the proper spacing between the packages of frozen food during storage and shipment in refrigerated compartments, said means including the corner strips 11 and the intermediate strips 12.

Each of the corner strips 11 is made up of a substantially L-shaped strip 13 of paper or the like along one face of which is provided an adhesive or mucilage 14 and on the other face of which is provided an impregnated fabric covering 15 for imparting durability to the strips. Each of the strips 13 is provided with fold lines 16 and 17 (Fig. 1) disposed at substantially right angles to each other and by means of which the strip may be folded about one corner of the package 10 and secured thereto by means of the adhesive 14 (Fig. 3). Spacer means are provided on the outer fabric coated faces of each of the strips 11 and consist of square strips 18 of paper or the like coated on one face with adhesive or mucilage 19 and provided on the other face with a fabric coating 20 for imparting durability to the strip. A disc 24 of any suitable non-compressible material is disposed intermediate each of the squares 18 and the strip 11 (Fig. 2). Thus, three squares 18 are provided for the three sections formed by folding the strip 11 along the fold lines 16 and 17. Each of the squares 18 is provided with an inwardly extending diagonal slot 21 at each corner which facilitates the securement of the square 18 to the appropriate section of strip 11 by means of adhesive 19 with the spacer element or disc 24 therebetween.

During manufacture the squares 18 will, of course, be secured to the strips 11 with the spacer elements 24 therebetween, it being only necessary to fold the strips 11 along the fold lines 16 and 17 and to moisten the adhesive 14 to scure the strips to the corners of the packages 10, as shown in Fig. 3. It will be noted (Figs. 3 and 6) that the strips 11 are secured only to the bottom corners of the package so that the top of the package directly therebelow presents a flat supporting surface for the strips 11 and their spacer elements 24 of the next package directly above.

Each of the intermediate strips 12 is identical in construction with the strips 11 except for the overall configuration and the presence of only central fold line 22. Thus the strips 12 comprise a rectangular strip 23 of paper or other suitable material having a central fold line 22 and provided on its inner face with adhesive, not shown, and on its outer face with the fibre or cloth 15. Two squares 18 identical, in construction with those discussed in connection with the strips 11, are similarly secured to the outer faces of each of the strips 23 with the spacer elements 24 therebetween. It will again be noted

that the intermediate strips **12** are secured to the adjacent faces of the packages **10** only along the bottom portions of the latter. With this arrangement, it will be noted that the lowermost package **10** in each of the piles (Fig. 6) is provided along its bottom portion with strips **11** and intermediate strips **12** to permit circulation of air through the bottommost layer. Thus, bottom, lateral and vertical spacing is provided between all of the packages, vertically disposed spacer elements **24** abutting the adjacent spacer elements.

Thus, provision is made for maintaining a predetermined air space between adjacent packages to eliminate local temperature variations and thereby spoilage.

Referring now particularly to Fig. 4, there is shown a modified form of the invention, referred to collectively as **11*a***, wherein the discs or spacer elements **24** of the previous form are replaced by discs or spacer elements **24*a*** having bevelled peripheral edges **25**. This effects a gradual transition from the spacer portion of the strip to the portion thereof lying substantially flush with the outer surface of the package. In other respects, the form of the invention, shown in Fig. 4, is the same as that shown in Figs. 1 through 3, and like reference numerals identify like parts throughout the several views.

Referring now particularly to Fig. 5, there is shown a still further modified form of the present invention, referred to colectively as **12*b*** and differing from the intermediate strips **12** of the previous form in the replacement of the disc **24** by a square spacer element **24*b***. In other respects the form of the invention shown in Fig. 5 is the same as that shown in Figs. 1 through 3 and like reference numerals identify like parts throughout the several views.

Referring now particularly to Fig. 7 there is shown a still further modified form of the present invention wherein a package **10*d*** is integrally formed with pressed out spacer portions **24*d***, the position of the pressed out portions **24*d*** being similar in shape and location to the spacer elements **24*a*** of the form of the invention shown in Fig. 4.

It should now be apparent that there has been provided means for insuring the adequate circulation of refrigerated air between piled up packages of frozen foods during storage and shipment in refrigerated compartments whereby to avoid local temperature variations, this means comprising strips adapted to be glued to the corners and intermediate portions of the packages and formed with elevated areas which insure proper air spaces between the packages.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed as new is:

1. A substantially non-conducting L-shaped strip adapted to be secured about three adjacent faces of the corner of a frozen food package comprising an inner substantially L-shaped strip having flat inner faces and having a pair of fold lines disposed at substantially right angles to each other dividing said inner strip into three similar sections, adhesive means on and for securing the outer faces of said sections to the adjacent faces of the corner of the package, an outer section superimposed upon each of the sections of said L-shaped strip, each of said outer sections at each corner thereof having an inwardly extending diagonal slot, adhesive means on the inner side of the outer sections securing each of said outer sections to the inner faces of said L-shaped strip, and a non-compressible disc-shaped spacer element intermediate each of said outer sections and said L-shaped strip whereby to insure circulation of refrigerated air between adjacent packages when piled on top of and laterally of each other, each of said disc-shaped spacer elements having bevelled peripheral edges.

2. A substantially non-conducting L-shaped strip adapted to be secured about three adjacent faces of the corner of a frozen food package comprising an inner substantially L-shaped strip having flat inner faces and having a pair of fold lines disposed at substantially right angles to each other dividing said inner strip into three similar sections, adhesive means on and for securing the outer faces of said sections to the adjacent faces of the corner of the package, an outer section superimposed upon each of the sections of said L-shaped strip, each of said outer sections at each corner thereof having an inwardly extending diagonal slot, adhesive means on the inner side of the outer sections securing each of said outer sections to the inner faces of said L-shaped strip, and a non-compressible spacer element intermediate each of said outer sections and said L-shaped strip whereby to insure circulation of refrigerated air between adjacent packages when piled on top of and laterally of each other, each of said spacer elements being substantially square shaped.

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