

July 5, 1932.

F. C. HANNAFORD

1,865,688

PACKAGE CONTAINER

Filed March 30, 1931

4 Sheets-Sheet 1

Fig. 1.

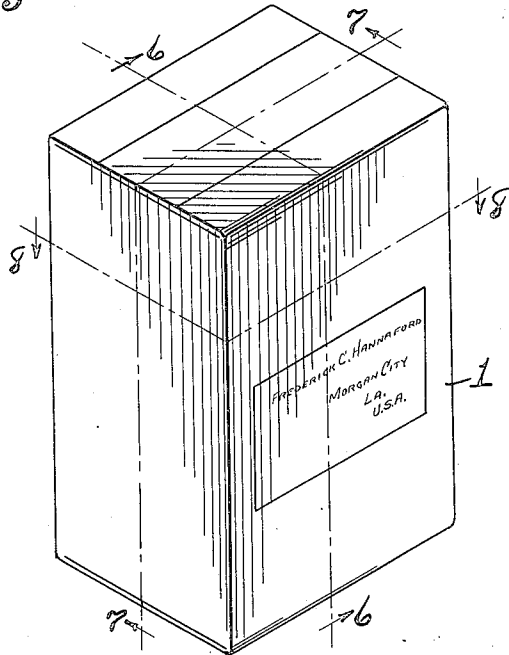


Fig. 2.

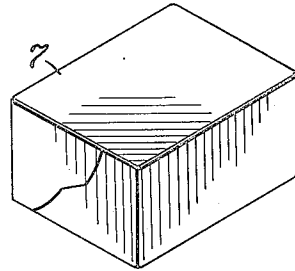


Fig. 4.

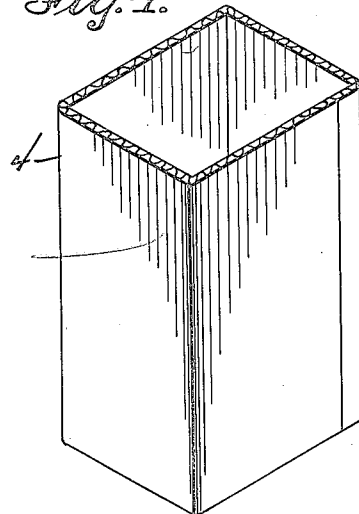


Fig. 3.

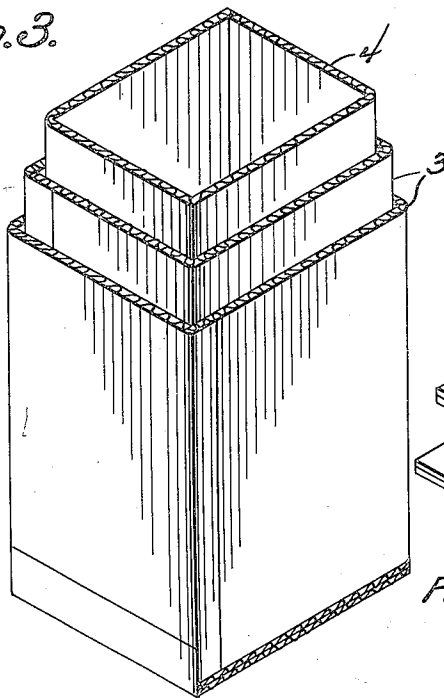
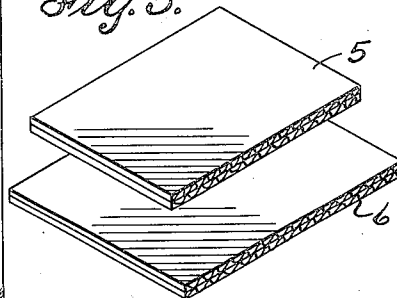


Fig. 5.



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Fig. 6.

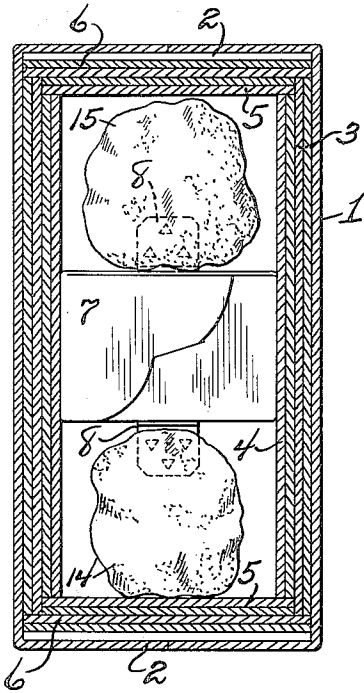


Fig. 7.

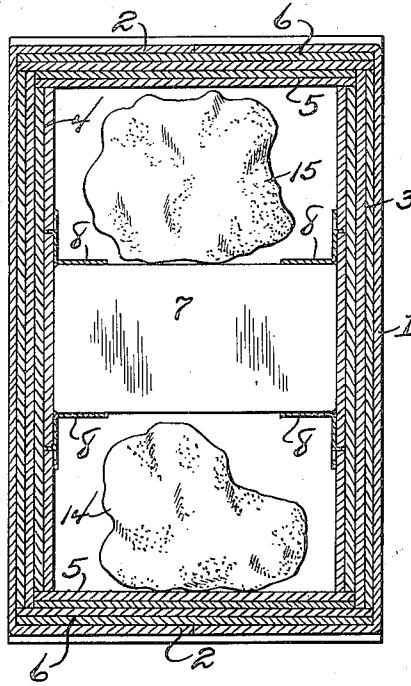


Fig. 8.

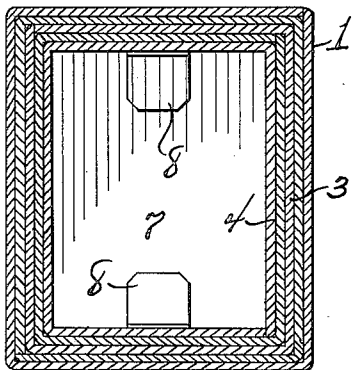


Fig. 9.

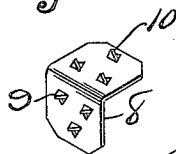


Fig. 10.

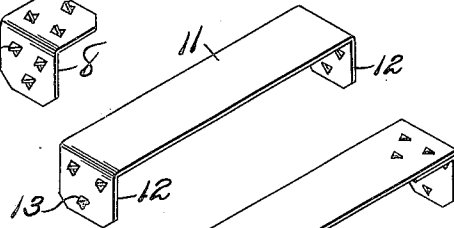
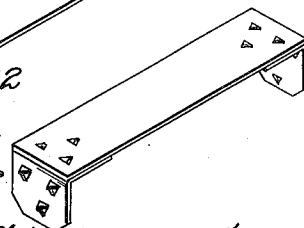


Fig. 11.



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Fig. 12.

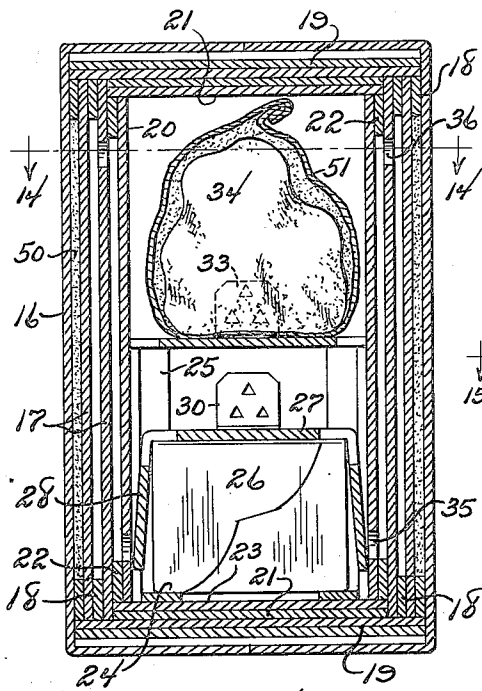


Fig. 13.

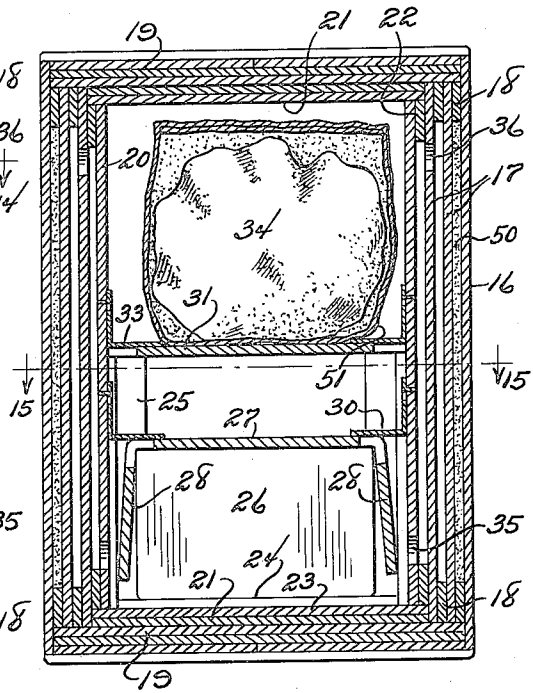


Fig. 14.

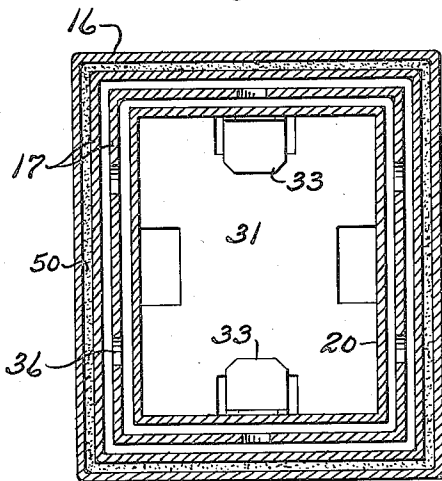
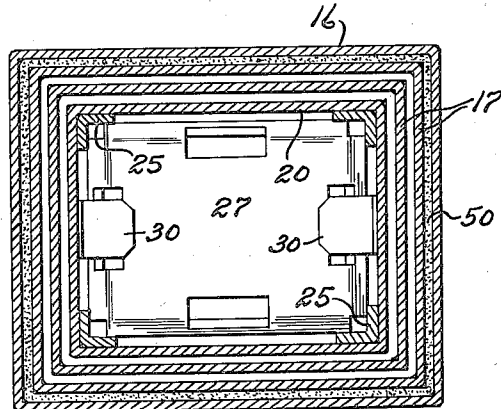


Fig. 15.



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Fig. 16.

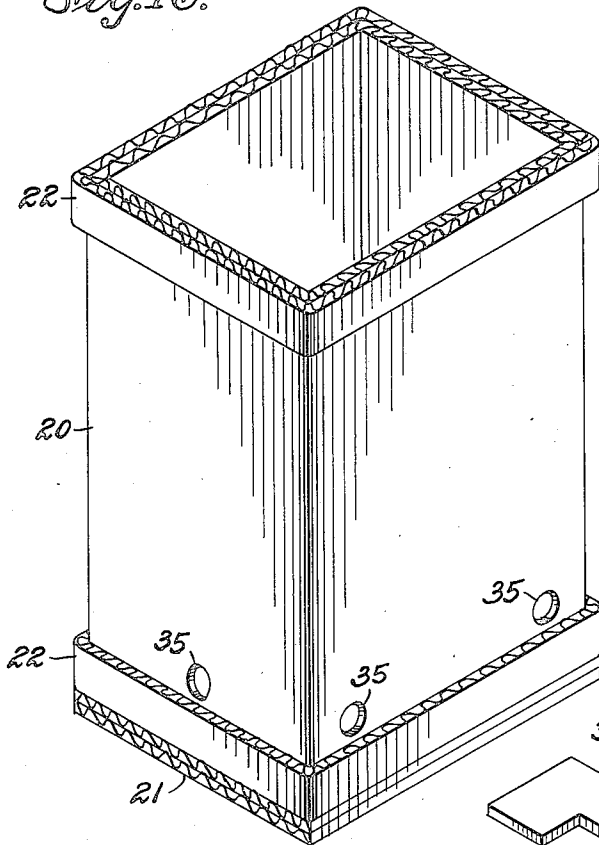


Fig. 17.

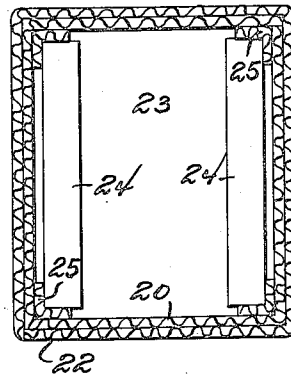


Fig. 19.

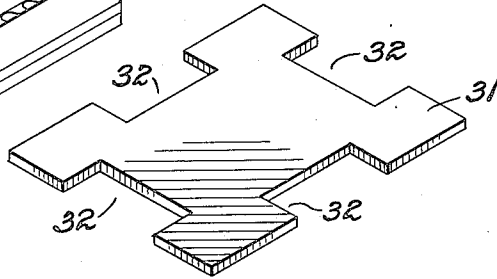


Fig. 18.

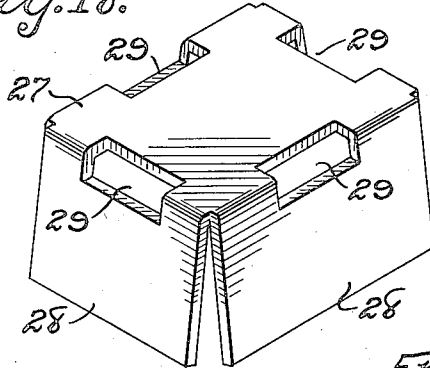
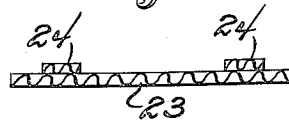


Fig. 20.



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UNITED STATES PATENT OFFICE

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PACKAGE CONTAINER

Application filed March 30, 1931. Serial No. 526,519.

My present invention has reference to a novel corrugated container for perishable foodstuffs in which such foodstuffs are refrigerated with solid carbon dioxide.

5 An object is to produce a corrugated cardboard container having folds comprising the top and bottom thereof and which are sealed to render the same airtight, the said container before sealing having positioned therein corrugated members in the nature of liners of a size and shape to be snugly received in the container and to be likewise received one in the other, the said liners being provided with removable top and bottom corrugated plates and the top and bottom plates of the outer liner being sealed thereon while the inner liner is provided with removable adjustable means for supporting shelves thereon or for contacting directly with the sealed and paraffin treated paste-board box that has pressed therein perishable merchandise, such for instance as crab meat, shrimp, oysters, fish, frozen fruits, vegetables and berries, the spaces in the inner liner at the opposite sides of the box providing the bottoms for the refrigerant solid carbon dioxide whose cold gases or fumes create a circulation which surrounds the merchandise box or package and which creates an atmospheric temperature of 35° F. below zero around the merchandise, the number of liners employed depending upon the length of time the merchandise is to remain in the container.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawings which form part of the application, with the understanding, however, that the improvement is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

In the drawings:

50 Figure 1 is a perspective view of the improvement in sealed condition.

Figure 2 is a perspective view of the merchandise containing box or package.

Figure 3 is a perspective view of three of the inner liners partly arranged one in the other.

Figure 4 is a similar view of the innermost inner liner.

Figure 5 is a similar view of the top and bottom plates for the liners.

Figure 6 is a sectional view on the line 6—6 of Figure 1.

Figure 7 is a sectional view approximately on the line 7—7 of Figure 1.

Figure 8 is a horizontal sectional view approximately on the line 8—8 of Figure 1.

Figure 9 is a perspective view of one form of shelf or bracket that may be employed.

Figures 10 and 11 illustrate other forms of shelves or brackets.

Figure 12 is an approximately central vertical sectional view illustrating a slightly different construction of the invention.

Figure 13 is a sectional view taken at right angles to the showing of Figure 12.

Figure 14 is a sectional view approximately on the line 14—14 of Figure 12.

Figure 15 is a sectional view approximately on the line 15—15 of Figure 13.

Figure 16 is a perspective view of one of the liners employed in the construction disclosed by Figures 12 to 15.

Figure 17 is a top plan view of the inner liner employed in the said showing.

Figure 18 is a perspective view of one of the shelves employed.

Figure 19 is a similar view of another shelf.

Figure 20 is an edge view of a top or bottom corrugated plate which may be also employed.

The outer corrugated box or container is indicated by the numeral 1. The container is of the type in which inner and outer paper sheets are employed and the said sheets are held spaced from each other by corrugated sheets. The top and bottom of the container 1 are provided with flaps 2 respectively, these flaps being folded inwardly toward each other and arranged over the inner flaps. This is also of an ordinary construction, but when the top and bottom are closed the meeting

edges thereof are sealed with melted paraffin and are further closed by adhesive tapes. This is also true with respect to the joint at the sides or end of the container.

5 Before the top and bottom are closed and sealed on the container I insert therein corrugated members which I will term liners and which provide the insulating elements for the container. Any desired number of liners
10 may be employed, the same, however, being preferably arranged in pairs of the same length, but the inner pairs are of less length than the outer pairs of liners. The liners are of the same corrugated cardboard as is the
15 container 1 and for distinction the outer pair of liners are indicated by the numeral 3 and the inner liners by the numeral 4. The liners being in the nature of rectangular members are designed to be received one in the other,
20 and as the liners are formed of strips of corrugated paper, the meeting ends thereof, when the liners are folded to proper position are broken, that is, the said ends are arranged away from each other and the meeting edges
25 of the outside liner are sealed by melted paraffin and also preferably with an adhesive tape. The remaining liners may have their meeting edges likewise sealed. The inner pair of liners 4 have their top and bottom
30 portions closed by a pair of corrugated plates 5, respectively, these plates being wholly received within the outer liners and the ends of the outer liners are covered by similar but larger plates 6 which are in contacting en-
35 gagement with the inner surface of the container 1 and the outer plate 6 rests upon the top and bottom of the said container 1 when the container is closed and sealed.

Perishable merchandise, such as crab meat,
40 shrimp, oysters, fish, vegetables, fruits, berries, etc., that have been quick frozen and packed in a box or package 7 whose top has a flap and its sides provided with projections
45 in the nature of tabs to be received in slots in the sides of the box or package proper, and the box or package is paraffin treated and the merchandise is received in oil or like paper which lines the box or package 7. The joint
50 or connection between the top and sides of the package is also sealed by melted paraffin and the package is of a size to be received in the inner liner 4. Before the package is ar-
55 ranged in the liner, there is arranged in the said liner supports which may be in the nature of rightangular metal brackets 8, such as disclosed by Figure 9 of the drawings. Both of the flanges of the supporting shelf or
60 bracket 8 are formed with outwardly directed prongs 9 and 10, the side prongs entering the inner liner and the other prongs partly entering the package. The horizontal flanges of the brackets may support thereon plates against which the packages 7 rests or in lieu
65 of the angle supports, plates 11 having flanged ends 12 may be employed. The

flanges 12 are provided with prongs 13 to enter the inner liner. Also before the pack-
age is arranged in the inner liner there is dis-
posed in the said liner a refrigerant solid car-
bon dioxide 14. After the package is sup-
ported upon the members 8 or 11, other and
similar elements are secured in the inner liner
and contact with the opposite face of the
package, thus holding the package suspend-
ed and effectively held from movement in the
70 container. Thereafter another block of car-
bon dioxide 15 is arranged in a space between
the package 7 and the top of the liners and
the container. Both of the ends of the liners
and containers may be left open for the inser-
75 tion of the supports and the packages as well
as the refrigerants and the ends may there-
after be closed and sealed or the liners in one
end of the container may be left open for the
suspension of the package 7 and the insertion
80 of the refrigerants and this end thereafter
closed and sealed.

As previously stated, any desired number
of pairs of liners may be employed, the said
liners varying in lengths and are, therefore,
90 what may be termed stepped. Were the
liners of the same length and not stepped
there would be only one seal at the end of the
liners, while by stepping the same separate
closure plates, such as 5 and 6, are employed
95 on each pair of liners. The stepping of the
liners greatly increases the lasting and effi-
ciency of the carbon dioxide in transit and the
addition of each set of liners increases the
lasting of the carbon dioxide in accordance
100 with the increase of the number of sets of
liners, whereby the required number of hours
required in the transit of the container, or the
time required for protecting the contents of
the container by freezing when the same is in
105 storage, may be almost positively regulated
by the increase or decrease of the number of
liners in the box. For example a box going
a distance requiring 48 hours would have two
liners; 60 hours, four liners, 80 hours, six
110 liners, etc. Each set of liners may be sealed
and taped separately, thereby obtaining as
many seals inside of the container as there are
sets of liners, and thus adding to the lasting
of the carbon dioxide which is placed in each
115 end of the box, as stated.

As the carbon dioxide is placed in each end
of the container with the merchandise box in
the center it does not necessarily require that
the compartments at the opposite ends of the
120 package or box be entirely filled with carbon
dioxide, as the package is suspended in a man-
ner that no damage can occur thereto regard-
less of the rough use to which the container
may be subjected. The carbon dioxide being
125 1.55 times heavier than air, displaces the
nitrogen and oxygen in the air and in this
displacement the carbon dioxide gas natu-
rally goes downwardly. This creates a cir-
culation of the extreme cold fumes or gases
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thrown off by the carbon dioxide which surrounds the merchandise package and when the container and liners are properly sealed creates an atmospheric temperature of 85° F. below zero, around the merchandise, and thereby effectively preserves the same when either in storage or shipment.

In Figures 12 and the remaining figures the container is insulated by a continuous circulation of the cold fumes from the carbon dioxide and the construction slightly differs from that above described. The container 16, however, is similar to the container 1.

In these views two outer liners 17, respectively, are employed. The outer liners have their edges, or their outer face and at their ends provided with ribs or projections 18, respectively, the same being formed of narrow strips of corrugated cardboard and the ends of the outer liners are closed by a pair of cardboard plates 19, respectively, the said plates resting one on the other and on the closed and sealed ends of the container 16. The strips 18 space the inner liners from each other and likewise from the container. Also in this instance only a single inner liner 20 may be employed. The liner 20 has its ends sealed by two corrugated cardboard plates 21 and the said inner liner on its outer face and at its ends is provided with continuous strips 22 of corrugated cardboard and these strips contact with the inner face of the inner element of the outer liner, thus spacing the inner liner from the said outer liner. One of the inner bottom plates of the inner liner has resting thereon a corrugated plate 23, the same having its outer face, adjacent its ends, provided with corrugated strips 24, respectively. The inner liner, from one of its ends, has its corners provided with angle strips 25 that extend approximately one-half of the length of the said inner liner.

There is inserted in the inner liner, before the sealing of the liners and container, the merchandise containing box or package 26 and in the showing of the drawings there is arranged over this box or package a shelf 27, the same having downwardly extending flanges at its ends and edges which are indicated by the numeral 28. The corners of the shelf 27 are notched, as at 29, and the flanges 28 are divided from each other at the corners of the shelf. The flanges 28 extend at outward angles from the top or body of the shelf 27 and are in contact with the inner surface of the inner liner and are also in frictional contact with the box or package 26. A holding element, such as angle brackets 30, of a construction similar to that previously described are secured in the inner liner and contact with the outer face of the shelf 27.

The strips 24 of the plate 23 hold the package 26 from direct contact with the closure plate 21 for the inner liner.

Resting on the outer ends of the angle

flanges 25 there is another shelf 31. This shelf, as well as the shelf 27, is of corrugated cardboard, but the said shelf 31 is in the nature of a plate and has its ends and edges centrally notched, as at 32. The shelf 31 is held on the angle plates 25 by angle holding means 33, similar to the elements 30 and 8 and the shelf 31 provides a support for a solid carbon dioxide 34. If desired, the carbon dioxide may be arranged between the shelves 27 and 31 and the space outward of the shelf may be employed for the reception of a second merchandise containing box or package 26. Also if desired the flanged shelf 30 may be inverted from the position disclosed by the drawings and may provide a receptacle for either the package or for the carbon dioxide.

The inner liners being constructed of sheets of corrugated cardboard have their confronting edges sealed in a manner as previously described and the ends of the said inner liners are sealed thereon in a manner also as previously described.

The inner liner 20 is provided, adjacent one of its ends and on its sides with openings 35. The inner of the outer liners adjacent its end opposite the openings 35 of the inner liner has its sides provided with openings 36. The extremely cold fumes or gases from the carbon dioxide will be directed through the notches in the bridge plate or shelf 31, through the notches 29 of the shelf 27, through the openings 35 in the inner liner and flow upwardly and pass through the openings 36 so that the cold fumes or gases will thus maintain the interior of the container in an extremely cool condition with a less supply of refrigerating agent than would be ordinarily required.

The entire outside of the container is paraffined after it is completely packed, sealed and labeled, and this paraffine absolutely prevents the absorption of moisture from the outside of the container from air or atmospheric conditions and no moisture gathers in the package when sealed and packed. This is a very important feature of the invention as to the best of my knowledge there are no other containers that will not absorb moisture from the outside when packed with carbon dioxide.

In the construction disclosed by Figures 12 to 15 in the drawings I insert between the container 16 and the outer liner 17 a filler of non-fibrous material, indicated by the numeral 50. The filler may be also arranged in the space between the top and bottom of the container and the upper and lower plates 19. The filler is of some suitable insulating material which may be in powdered form and which insulates the outside liner and container from dampness and from moisture as well as from heat. The filler is in the nature of an absorbent powder and as the same does

not contain fibres the filler will not transmit moisture.

As disclosed by the drawings in Figures 12 and 13 the solid carbon dioxide is arranged in a bag 51, the mouth of the bag being rolled under or otherwise sealed so as to exude the gas from the solid carbon dioxide more slowly, thereby increasing the length of time of the evaporation.

It is believed that the foregoing description when taken in connection with the accompanying drawings will fully and clearly set forth my construction and the many advantages thereof to those skilled in the art to which the invention relates so that further detailed description will not be required.

Having described the invention, I claim:

1. A cardboard container for a package of perishable foodstuffs, comprising a box having sealing flaps at the ends thereof, interfitting liners in the box frictionally engaging each other and the box, closure plates for the liners, and the said liners varying in lengths from the outer to the inner liners so that the closure plates arranged on the ends of the respective liners will be disposed in contacting engagement with each other to permit of all the liners resting against each other, and the closure plates for the liners being sealed thereto and means attached to the inner liner for supporting a package of perishable foodstuff therein and for providing a compartment for a solid refrigerant.

2. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable closures, brackets adjustably fixed in the inner liners for supporting a package and for providing said liner with a space or compartment for a solid refrigerant.

3. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable sealed closures, angle brackets having prongs to adjustably engage with the inner liner and to likewise engage a package of perishable foodstuffs and for providing said liner with a space or compartment for a solid refrigerant.

4. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable sealed closures and means attached to the inner liner for supporting a package and for providing said liner with a space or compartment for a solid refrigerant, means spacing the liners from each other and all of said liners with the exception of the outer liner having alternately arranged openings there-through for the passage of the frigid fumes from the refrigerant.

5. A cardboard container for a package or

container for foodstuffs, comprising a box having flaps for closing and sealing the ends thereof, box-like liners therein arranged in stepped series, closure sealing plates for each series resting one on the other and the outer closure plates resting on the sealing flaps for the box, corrugated elements arranged at the ends of and spacing the liners, said liners being provided with alternately arranged series of openings to permit of a gas circulation therethrough, angle brackets removably and adjustably fixed in the inner liner to support a package of perishable foodstuff therebetween, brackets on the inner liner affording supports for a solid carbon dioxide refrigerant.

6. A cardboard container for a package or container for foodstuffs, comprising a box having flaps for closing and sealing the ends thereof, box-like liners therein arranged in stepped series, closure sealing plates for each series resting one on the other and the outer closure plates resting on the sealing flaps for the box, corrugated elements arranged at the ends of and spacing the liners, said liners being provided with alternately arranged series of openings to permit of a gas circulation therethrough, spaced upper and lower angle brackets removably and adjustably fixed on the inner liner to support a package of perishable foodstuffs therebetween, brackets in the inner liner affording supports for a solid carbon dioxide refrigerant, one of said brackets being in the nature of a plate that has its corners notched, the second bracket having flanged sides and ends which are depressible and said bracket, having its corners notched.

7. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable sealing closures, brackets adjustably fixed in the inner liners for supporting a package and for providing said liner with a space or compartment for a solid refrigerant, and said container after being completely packed, sealed and labeled having its entire exterior coated with paraffine.

8. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable sealing closures, brackets adjustably fixed on the inner liners for supporting a package and for providing said liner with a space or compartment for a solid refrigerant and said container after being sealed and labeled having on its entire exterior surface a moisture resisting substance.

9. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable closures and the closure for the outer

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liner being sealed thereto, brackets adjustably fixed in the inner liners for supporting a package and for providing said liner with a space or compartment for a solid refrigerant and said container after being sealed and labeled having on its entire exterior surface a moisture resisting substance, and an insulating filler of an absorbent but non-moisture transmitting property arranged between the box and the outer liner.

10 10. A cardboard container for a package of perishable foodstuffs, comprising an outer box having flaps for sealing the ends thereof, interfitting liners in the box having removable sealing closures, brackets adjustably fixed in the inner liners for supporting a package and for providing said liner with a space or compartment for a solid refrigerant and said container after being sealed and labeled having on its entire exterior surface a moisture resisting substance, and an insulating filler of an absorbent but non-moisture transmitting property arranged between the box and the outer liner and said solid refrigerant being enclosed in a sealed semi-porous container.

In testimony whereof I affix my signature.
FREDERICK C. HANNAFORD.

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