

June 15, 1948.

W. A. RINGLER

2,443,431

CONTAINER STRUCTURES FOR LIQUID, SEMI-LIQUID, AND FREELY
FLOWABLE PRODUCTS, ESPECIALLY FOOD PRODUCTS TO BE FROZEN

Filed June 23, 1943

7 Sheets-Sheet 1

Fig. 1.

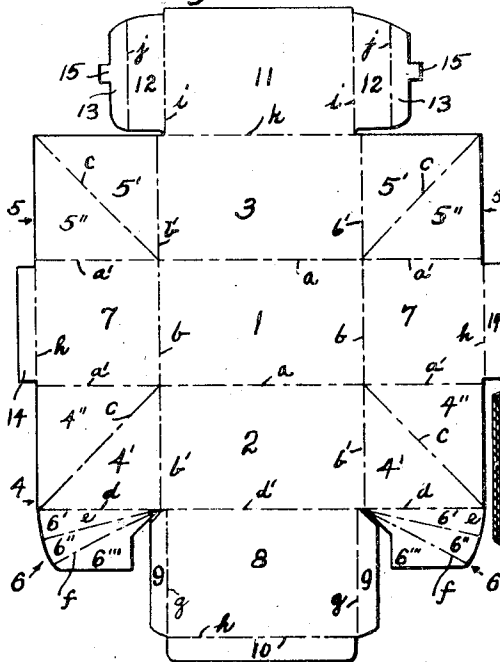


Fig. 3.

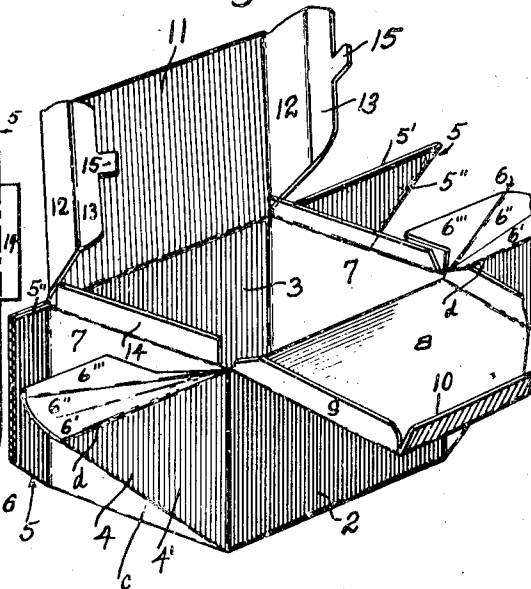
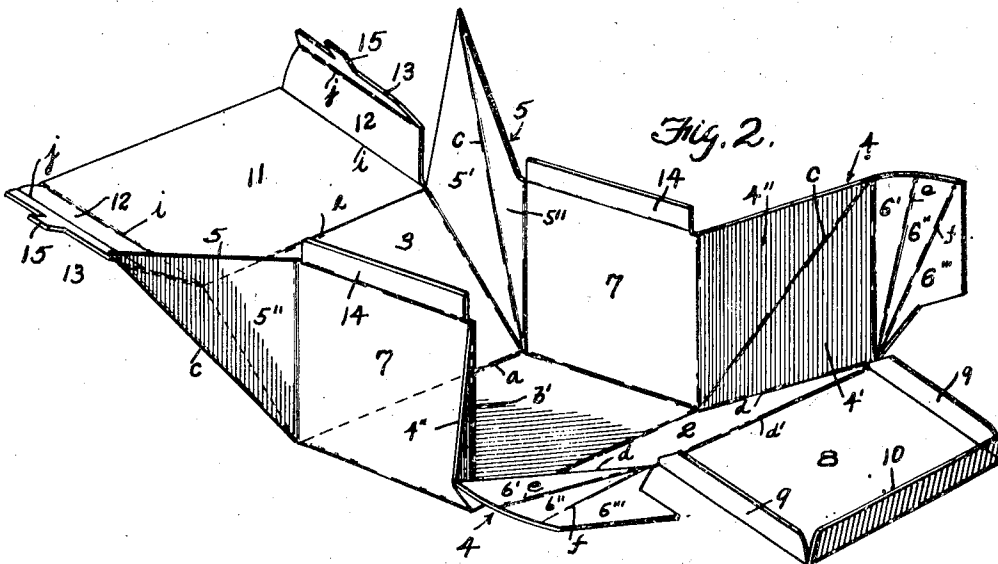


Fig. 2.



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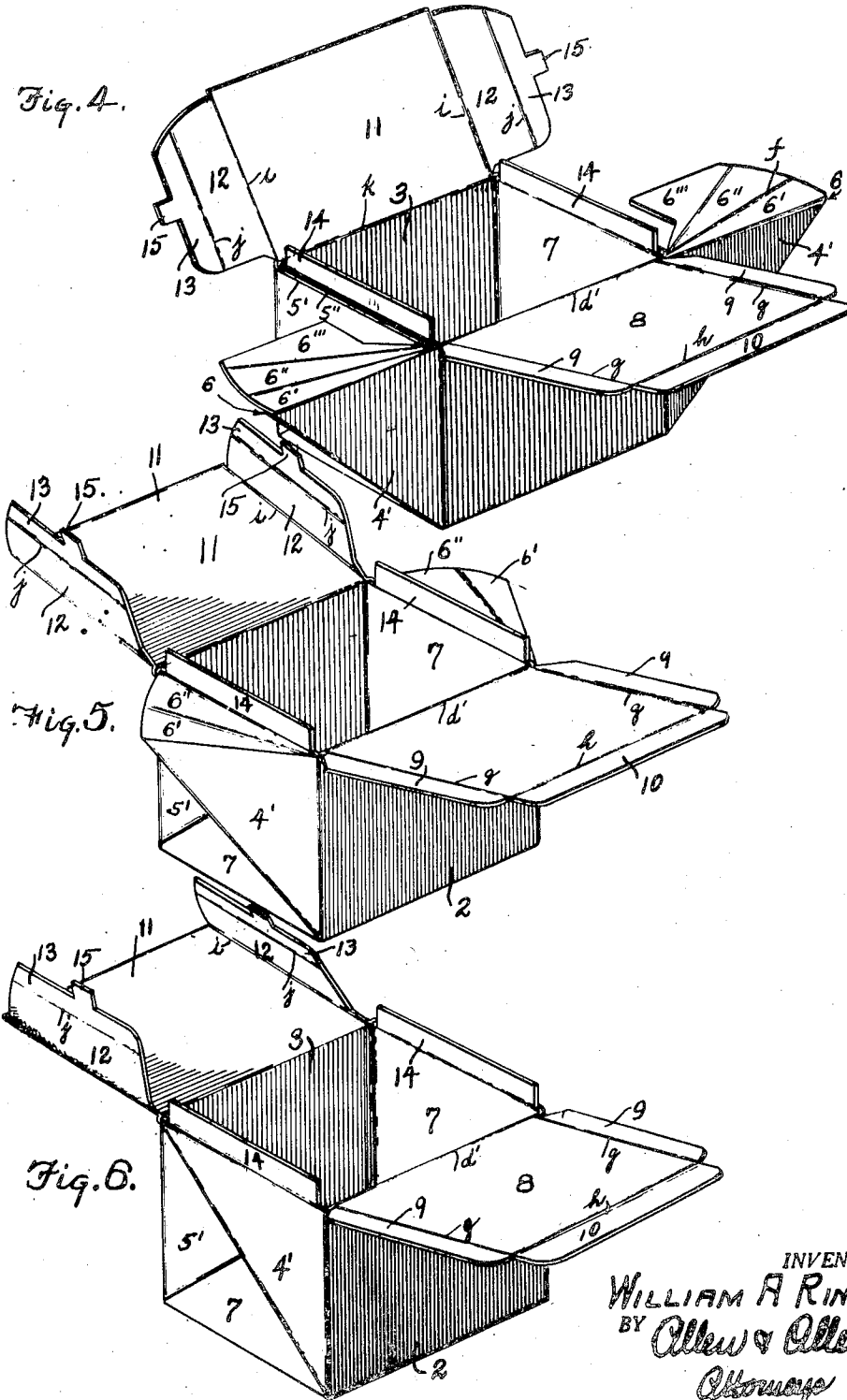
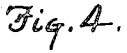


Fig. 5.

Fig. 6.

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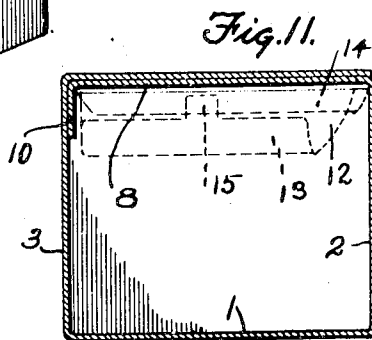
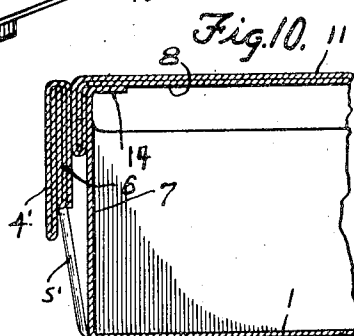
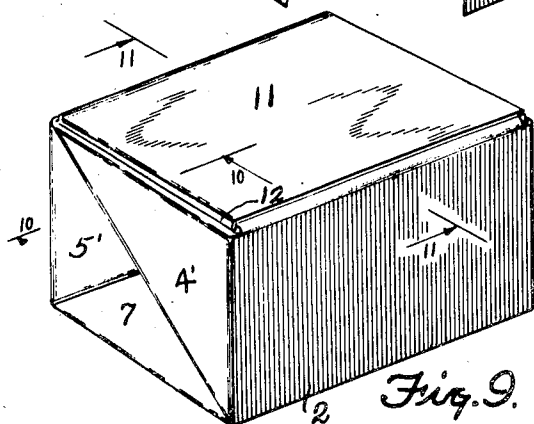
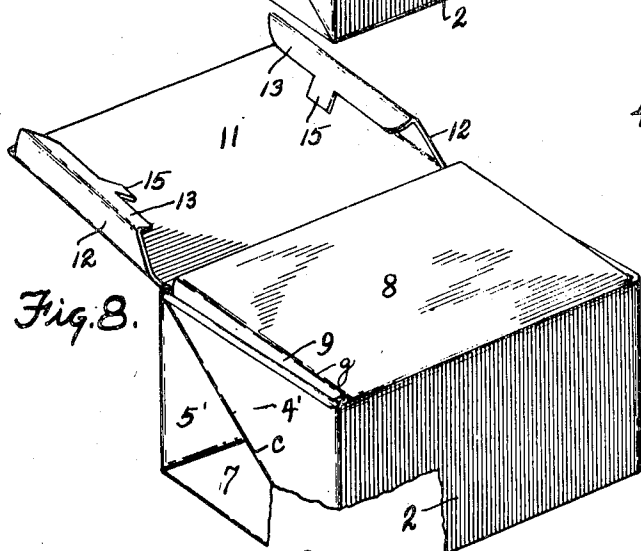
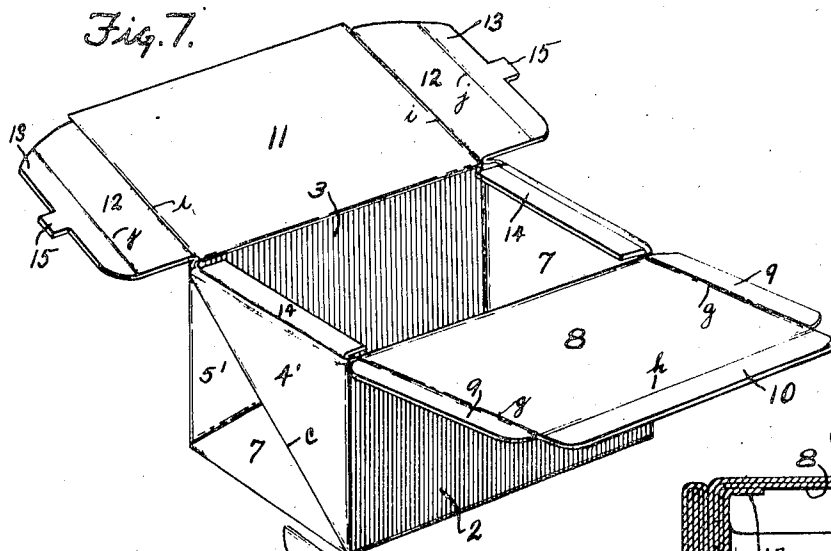
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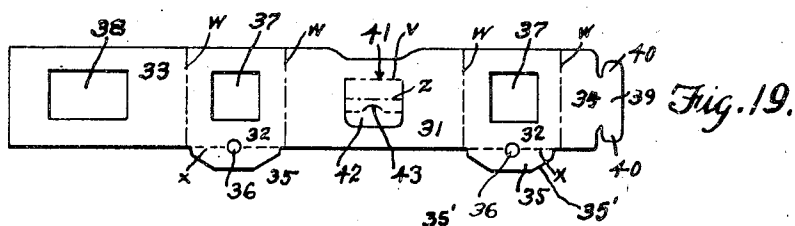


Fig. 19.

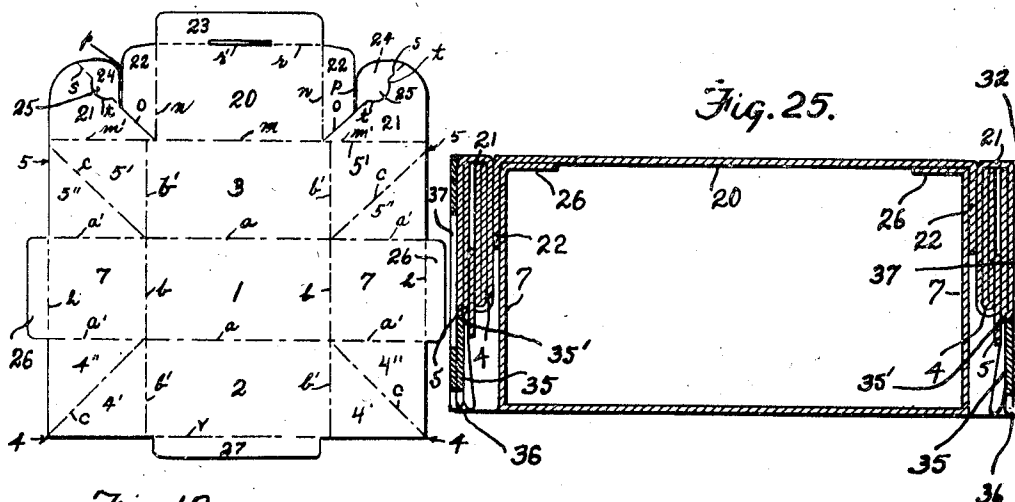


Fig. 25.

Fig. 12.

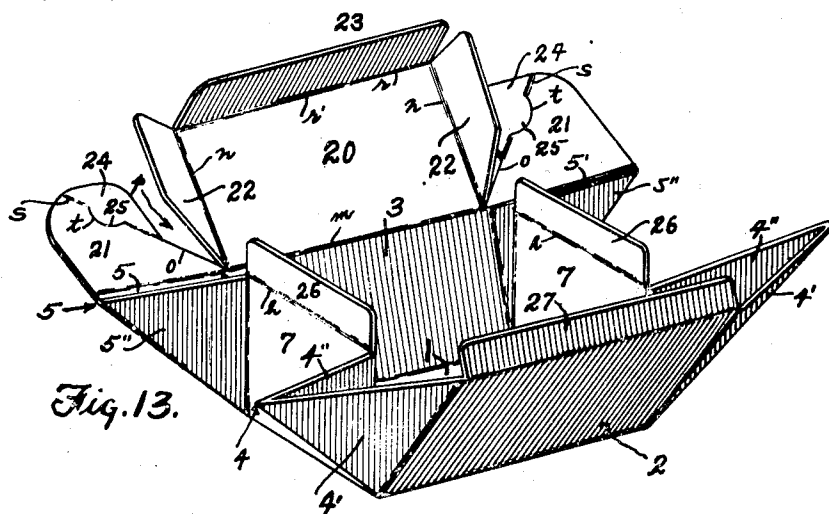


Fig. 13.

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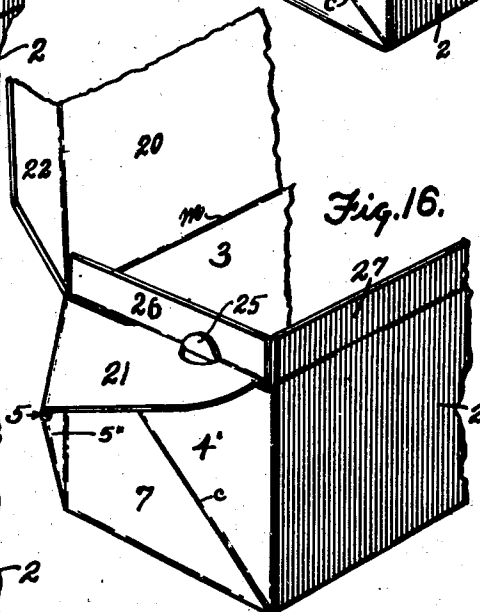
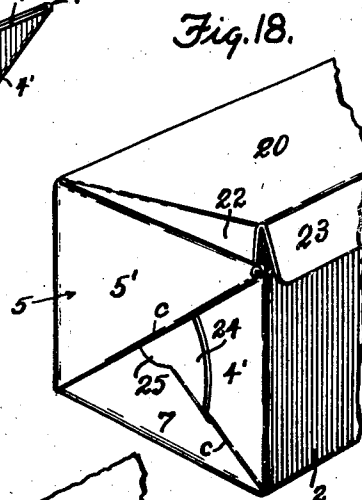
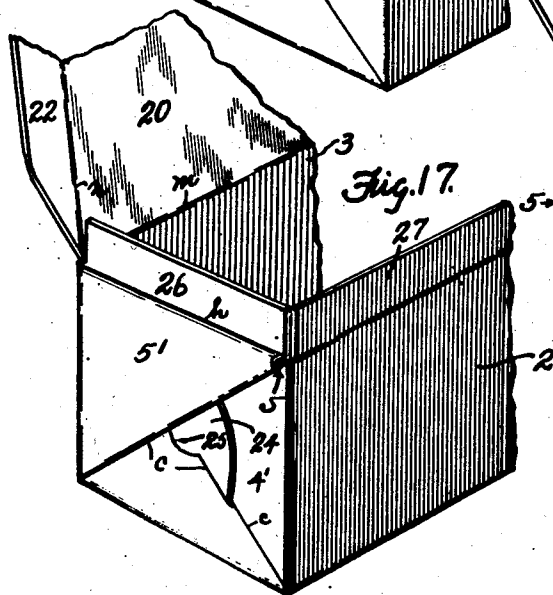
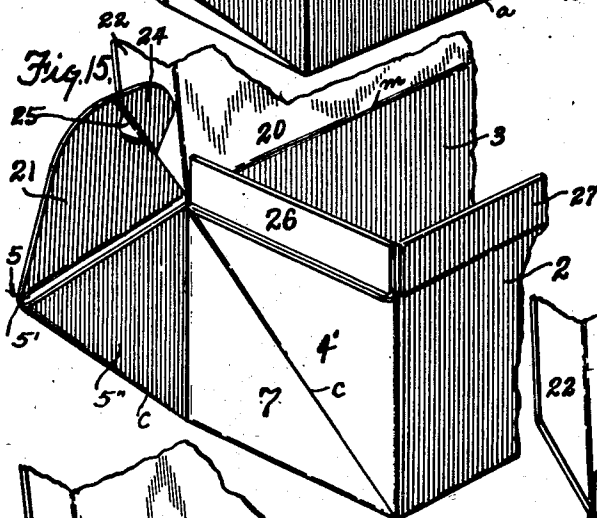
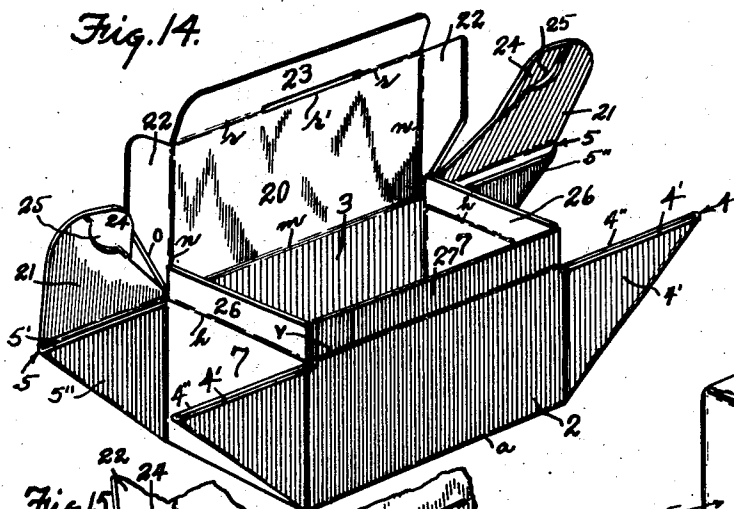
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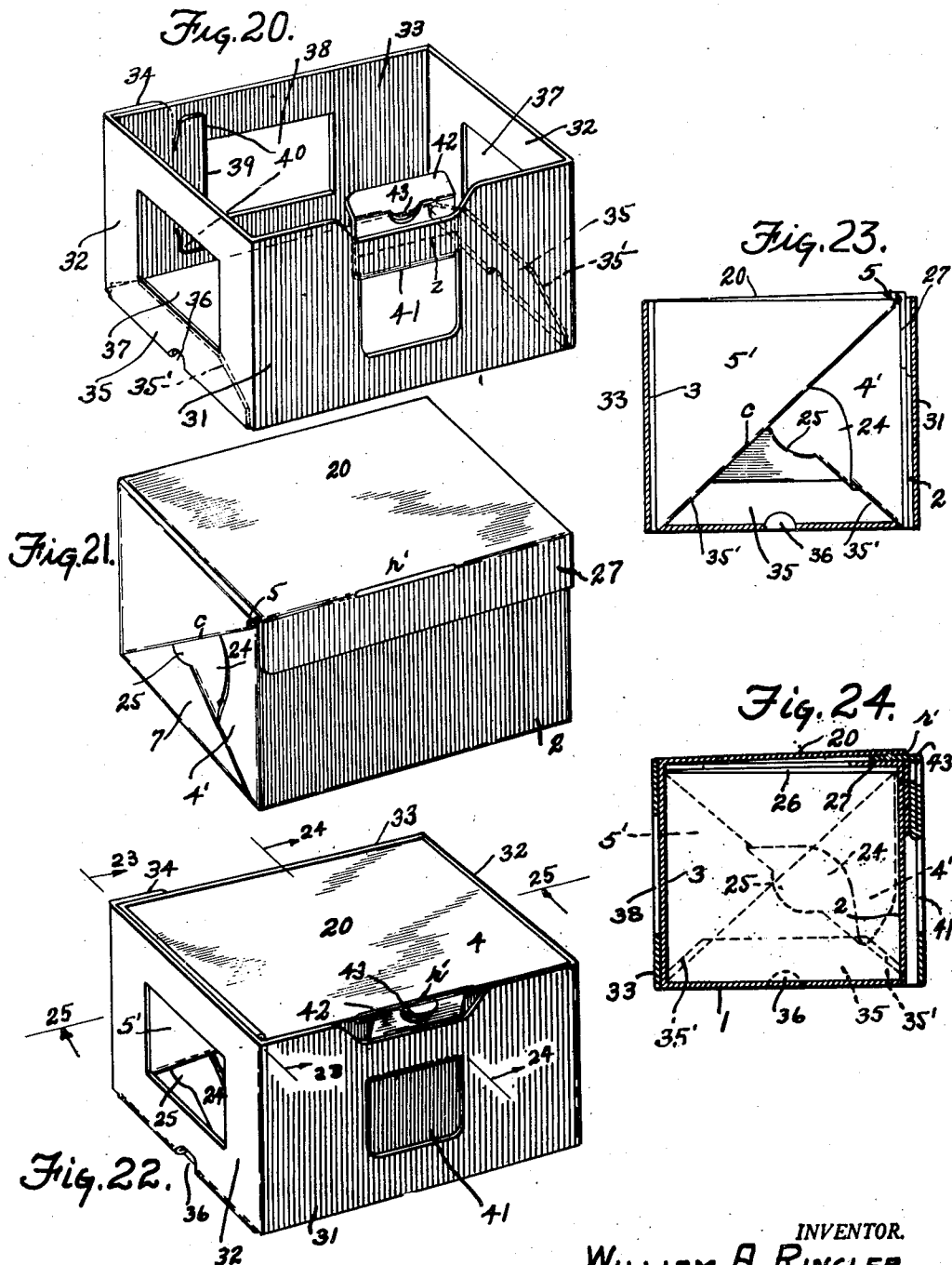
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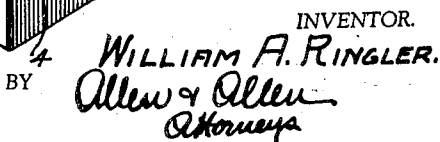
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UNITED STATES PATENT OFFICE

2,443,431

CONTAINER STRUCTURES FOR LIQUID, SEMILIQUID, AND FREELY FLOWABLE PRODUCTS, ESPECIALLY FOOD PRODUCTS TO BE FROZEN

William A. Ringler, Wayne, Pa., assignor to The Gardner-Richardson Company, Middletown, Ohio, a corporation of Ohio

Application June 23, 1943, Serial No. 491,874

1 Claim. (Cl. 229—31)

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There has been a constant demand for containers formed from paperboard, fiberboard and like material which are adapted to contain powdered, granular, liquid, or semi-liquid materials which have heretofore been packaged in metal containers. Metal containers, in addition to being more expensive to manufacture than paperboard containers, are also substantially more expensive to ship and store due to the extra space which metal containers occupy as a result of their rigid set-up condition, as compared with paperboard containers which, if properly constructed, may be shipped and stored in collapsed or knock-down condition. The demand for paperboard containers has been further highly accentuated by the present shortage of container-forming metals and tinplate and the need at the present time for containers made from non-critical materials such as paperboard and fiberboard and which will satisfy the packaging requirements for materials which are granular, powdered, liquid or semi-liquid.

One of the objects of this invention is to improve upon certain fundamental features described and disclosed in my patent, No. 2,206,304, and provide a packaging and shipping medium which adequately and satisfactorily meets all the requirements for materials of granular, powdered, liquid or semi-liquid nature which are more or less free flowing.

In accordance with this aspect of the invention, the improved container is formed from a single blank of paperboard or fiberboard material substantially rectangular in form, which can be shipped and stored as a flat prepared blank and thereby effect substantial economies in shipping and storage costs. A paperboard or fiberboard is selected of the proper characteristics to adequately contain the material to be packed therein and in the case of liquid or semi-liquid products may be impregnated, coated or otherwise treated with liquid impervious compounds and waxes to make the board moisture or liquid-proof.

The selected paperboard or fiberboard, in the form of large sheets or rolls, is usually imprinted on one side thereof only, which side forms the exterior surface of the assembled container. The opposite or inner forming side of the board may, if desired, be suitably lined or treated to adequately protect the contents. The imprinted board may then be run through a cutting and scoring press which cuts out the marginal outline of the respective container forming blanks and forms in such blank the proper arrangement of

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score lines. The prepared blanks ejected from the cutting and scoring machine are then ready for shipment to the user.

The user, packer or merchandise manufacturer assembles each blank as needed into a complete container. The blank is so creased, shaped and formed that the same may be set up into container form by a few simple manipulations and requires no staples, glue, stitches, or like holding means for retaining the same in rigid assembled container form. The container as assembled presents a four-sided rectangular construction with the bottom wall and the front, rear and side walls integrally and unbrokenly connected by crease lines. The interior of the container presents smooth wall surfaces free from any irregularities. The container is further reinforced by bellows fold sections lapped over the exterior surface of the end walls and, if desired, one or more of the enclosing walls may be provided with inturned flanges to further reinforce and strengthen the construction.

My container structures are particularly adapted for use in the preparation, handling, shipment and storage of frozen foods, especially those which are initially liquid or those which, though solid in form, have a high liquid content. By way of non-limiting examples, the first type of container structure described herein is one developed by me especially for the handling of so-called "liquid eggs," while the last described type is one developed by me especially for the handling of frozen sliced apples or similar fruits.

An object of my invention has to do with the provision of adequate closures for containers of the types herein described, which closures are designed not only to protect the contents of the container but also to prevent loss of the container contents or fouling of the container itself by liquid substances therein during necessary handling operations. Thus an object of my invention is the provision of adequate splash guard structures in connection with containers of the type herein described, which splash guard structures are usually provided with supplementary closure measures as will hereinafter be set forth.

Yet another object of my invention is the provision of a container structure which facilitates handling without tilting during the periods when the contents of the container are in liquid, semi-liquid or other freely flowable form.

In the preparation of frozen food products the containers must be filled and handled prior to the freezing of the contents. During freezing they are generally stacked to considerable

heights, one on another, in a freezing room. Moreover, in most operations the containers themselves are relatively bulky, and therefore the contents are of relatively great weight. One of the objects of my invention is to provide a container structure in which adequate vertical strength is attained for stacking, even where the containers are stacked in interspaced or checker-board fashion as is usual in freezing rooms.

Yet another object of my invention is the attainment of adequate strength in double-walled structures without unduly insulating the contents of the container so that freezing can occur with the expected rapidity. In the light of these latter objects, other objects of my invention have to do with the provision of reinforcing structures, whether bands or complete containers, which coact with the liquid holding container in novel ways as hereinafter set forth.

These and other objects of my invention which will be pointed out in the ensuing specification, or will be apparent to one skilled in the art upon reading it, I accomplish by that certain construction and arrangement of parts of which I shall now describe exemplary embodiments. Reference is made to the accompanying drawings wherein:

Figure 1 is a plan view of a prepared blank suitably cut and scored and ready for assembling into the improved container;

Figure 2 is a perspective view of the blank as it appears during an initial stage of its assembly into container form, with its end walls in raised position;

Figure 3 is a perspective view of the blank at a further stage of assembly into container form, with its side wall panels in raised position;

Figure 4 is a perspective view of the partially assembled container showing the bellows fold sections in the process of being folded over the exterior surface of the end wall panels;

Figure 5 shows the partially assembled container showing the locking flaps being tucked into position to retain the box part of the container in assembled form;

Figure 6 is a perspective view of the container showing the box part thereof fully assembled;

Figure 7 is a perspective view of the container showing the splash flanges associated with the end wall panels turned inwardly;

Figure 8 is a perspective view of the container showing the primary cover panel in the process of being folded into closed position;

Figure 9 is a perspective view of the container as it appears when fully assembled with the secondary cover panel folded and locked in closed position;

Figure 10 is a fragmentary cross-sectional view of the fully assembled container as it appears when viewed along line 10—10 of Figure 9 and illustrates particularly the folded arrangement of the blank material;

Figure 11 is a vertical cross-sectional view of the assembled container as it appears when viewed along line 11—11 of Figure 9, this view particularly illustrating the manner in which the secondary cover panel is locked to the primary cover panel;

Figure 12 is a plan view of a prepared blank from which a container of somewhat modified form may be assembled;

Figure 13 is a perspective view of the blank shown in Figure 12 as it appears at an initial stage of assembly into container;

Figure 14 shows the modified blank having its

front, rear and end wall panels in raised container forming position;

Figure 15 is a fragmentary perspective view of one end of the partially assembled container showing the bellows fold sections in the process of being folded to overlie the exterior surface of the adjacent end wall panel;

Figure 16 is a fragmentary perspective view of one end of the container showing the locking flap in the process of being inserted into position;

Figure 17 is a fragmentary perspective view of one end of the container as it appears when the box part is fully assembled;

Figure 18 is a fragmentary perspective view of the container showing the cover panel being folded into closed position;

Figure 19 is a prepared blank from which a reinforcing collar may be assembled to telescope over and be locked to the assembled container;

Figure 20 is a perspective view of the fully assembled reinforcing collar;

Figure 21 is a perspective view of the fully assembled container ready to receive the reinforcing collar shown in Figure 20;

Figure 22 is a perspective view of a complete package showing the reinforcing collar telescoped over and interlocked with the container;

Figure 23 is a vertical cross-sectional view through the assembled package as it appears when viewed along line 23—23 of Figure 22;

Figure 24 is another vertical cross-sectional view through the assembled container as it appears when viewed along line 24—24 of Figure 22;

Figure 25 is a vertical cross-sectional view taken longitudinally through the assembled package as it appears when viewed along 25—25 of Figure 22;

Figure 26 is a plan view of another modified form of my container for frozen foods or the like;

Figure 27 is a perspective view of the blank of Figure 26 is partially folded condition;

Figure 28 is a perspective view showing the container in a fully erected condition;

Figure 29 shows the container erected and closed;

Figure 30 is a plan view of a blank for an exemplary outside container or reinforcement structure;

Figure 31 is a view partly in perspective and partly in section showing the reinforcement structure in set-up condition;

Figure 32 is a perspective view showing the inner and outer container members in assembly;

Figure 33 is a similar perspective view showing the outer container in closed condition.

The blank as shown in Figure 1 comprises a bottom wall panel 1, a front wall panel 2 and rear wall panel 3, each hinged to the bottom wall panel 1 along parallel scores or fold lines *a*. An end wall panel 7 is hinged to each end of the bottom wall panel 1 along a score *b*. Each end of the front wall panel 2 and the adjacent side edge of an end wall panel 7 are integrally connected together by a bellows fold section 4, and each end of the rear wall panel 3 is integrally connected to the adjacent side edge of an end wall panel 7 by a bellows fold section 5. Each of the bellows fold sections 4 and 5 is traversed by a diagonally extending score or crease line *c* so as to divide the same into triangular portions 4' and 4'' or 5' and 5''. Triangular portion 4' is connected to the adjacent end of the front wall panel 2 by the score line *b'* which is substantially a straight line continuation of the score line *b*, and the associated triangular por-

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tion 4'' is connected to the end wall panel 7 by score or crease line *a'* which is a substantially straight-line continuation of score line *a*. Similarly the triangular portion 5' is connected to the adjacent end of rear wall panel 3 by score line *b'* which is a substantially straight-line continuation of score line *b* and triangular portion 5'' is connected to the adjacent end wall panel 7 by a score line *a'* which is substantially a straight-line continuation of score line *a*.

A locking flap 6 is hinged to the free side of each of the triangular portions 4' along the score line *d*. A primary cover panel 8 is hinged to the adjacent top edge of the front wall panel 2 along a score line *d'* which is substantially a straight-line continuation of the score line *d*. To facilitate tucking, each locking flap 6 may be provided with two or more radially extending score or crease lines *e* and *f* which radiate from the end of the adjacent score line *b'*. The score lines *e* and *f* divide each locking flap 6 into interconnected portions 6', 6'' and 6''', the portion 6''' being of reduced width to facilitate tucking, as will be hereinafter more particularly described.

The primary cover panel 8 is provided with an end tuck-in flange 9 hinged thereto along a score line *g* and a rear tuck-in flange 10 hinged thereto along a score line *h*. The container is also provided with a secondary cover panel 11 hinged to the top edge of the rear wall panel 3 along a score or crease line *k*.

A tuck-in, locking flange 12 is hinged to each end of the secondary cover panel 11 along a score line *i* and an abutment flange 13 is hinged to each of the locking flanges 12 along a crease line *j* extending substantially parallel to the crease line *i*. A tab element 15 extends from the side edge of the abutment flange 13 and is adapted to tuck under the tuck-in flange 9 of the primary cover panel 8, as hereinafter described. Each of the end wall panels 7 may also be provided with a splash flange 14 hinged thereto along a score line *h*.

The blank is assembled into container form in the manner more particularly illustrated in Figures 2 to 9 inclusive. In erecting the blank into container form, the end wall panels 7 are raised into position at right angles to the bottom wall panel 1, as shown in Figure 2, and then the front wall panel 2 and rear wall panel 3 are raised into upright position, as shown in Figure 3. This manipulation causes the triangular portions of the bellows fold sections 4 and 5 to fold together along the score lines *c* to form a folded double ply bellows fold section of generally triangular shape. The bellows fold section 5 is first swung into position to overlie the outside face of the adjacent end wall panel 7, as shown in Figure 4, and the double ply bellows fold section 4 is then swung to overlie the bellows fold section 5.

The box part of the container is firmly locked into assembled form by inserting the locking flaps 6 between the outside face of the adjacent end wall panel 7, and the inside face of triangular portion 5' of the adjacent folded bellows fold 5. It will be noted that the end portion 6'' is of reduced width to readily permit such insertion in the manner illustrated in Figure 5; and the radiating score lines *e* and *f* permit folding manipulation of the locking flap which facilitates its insertion. When the two locking flaps 6 have been thus inserted, the end wall panel 7, front wall panel 2, and the rear wall panel 3 are rigidly held in fixed container-forming posi-

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tion, as shown in Figure 6; and the box part thus formed will readily contain granular powdered, semi-solid or liquid materials since it is wholly without seams or fissures up to the level of the tops of the walls.

The splash flanges 14, hinged to the upper edge of each of the end wall panels 7, are next turned inwardly, as shown in Figure 7, after the selected contents have been deposited in the container.

The primary cover panel 8 is then swung into closed position with each of the end tuck-in flanges 9 inserted between the outside face of the adjacent end wall panel 7 and the inside face of the locking flap 6, as shown particularly in the sectional view in Figure 10. The rear tuck-in flange 10 on the splash cover is at the same time inserted adjacent the inside face of the rear wall panel 3 over the adjacent ends of the splash flanges 14. When the primary or splash cover panel 8 has thus been placed in closed position, it will appear substantially as shown in Figure 8.

The secondary cover panel 11 is then swung into closed position by first folding the locking flanges 12 substantially at right angles to the secondary cover panel 11, and folding the abutment flanges 13 so as to overlie the inside face of their adjacent locking flanges 12, as indicated in Figure 8. The small flaps 15 may first be folded over against the flanges 13. As thus arranged, the locking flanges 12 are inserted between the outside face of the adjacent tuck-in flanges 9, splash cover and the inside face of the adjacent locking flaps 6. When the locking flanges 12 have thus been fully inserted, the free edge 13' of each abutment flap will snap under the free edge of the adjacent tuck-in flange 9. As thus arranged, it will be noted that the abutment flaps 13 serve to lock the secondary cover panel 11 in closed position so that the container will not open during shipment and handling.

The intumed flanges 14 in cooperation with the splash cover 8 prevent splashing and loss of the contents over the top edge of the vertical walls; and when the primary cover panel 8 and secondary cover panel 11 have been locked into closed position, the contents of the container is fully protected. The folded bellows fold sections 4 and 5 also serve as struts or reinforcing elements, which greatly stiffen the end wall panel 7 and front and rear wall panels 2 and 3. Moreover the construction of the container is such that expansion of liquid contents upon freezing will not burst it, but is taken up in more or less resilient distortions of the bellows folds and in movement of the walls.

When access to the contents is desired, the locking flaps 6 may be first withdrawn or partially withdrawn, which, when accomplished, permits opening movement of the secondary cover panel 11, followed by opening movement of the primary cover panel 8. If the liquid contents have previously been frozen, the container can be spread open again, as shown in Figure 2, to substantially its original blank form, thus permitting unobstructed removal of the frozen contents.

There is shown in Figure 12 a one piece blank of paperboard material of somewhat modified construction from which the container shown in Figure 21 may be assembled. In its fundamental aspects the blank shown in Figure 12 is similar to the blank shown in Figure 1, and parts which are the same have been given the same index numerals.

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A cover panel 20 is hinged to the upper edge of the rear wall panel along a score line *m*, and a locking flap 21 is hingedly connected to each of the adjacent triangular portions 5' along a score line *m'*, which forms substantially a straight-line continuation of score line *m*. The cover panel 20 has a tuck-in flange 22 hinged to each end thereof along the score lines *n*, each tuck-in flange 22 being separated from the adjacent locking flap 21 by a diagonally extending cut line *o* and a cut line *p* extending substantially parallel to the adjacent score line *n*. A front flange section 23 is hinged to the cover panel 20 along score line *r* extending substantially parallel to the score line *m*, the score line *r* being punctured by a cut *r'*, for a purpose which will presently appear.

Each of the locking flaps 21 is provided with a fold-back segment 24 which hinges about a score line *s*, which may be made substantially as a linear continuation of the cut line *o*. A lip 25 is formed in each locking flap 21 by a curvilinear cut line *t*, and provides a useful element in manipulating certain parts of the locking flap, as will presently appear.

A splash flange 26 is hinged to the upper edge of each of the end wall panels 7 along a score line *h* and a splash flange 27 is hinged to the upper edge of the front wall panel 2 along score line *v*. The splash flanges 26 and 27 are designed to be turned inwardly when the box part of the container has been so assembled and prior to the folding of the cover panel 20 into closed position.

The blank as shown in Figure 12 is assembled in container form by first folding the end wall panels 7 into a position substantially at right angles to the bottom wall panel 1, and then raising the front wall panel 2 and the rear wall panel 3 into position substantially at right angles to the bottom wall panel 1, as suggested in Figure 13. This operation causes collapse of the bellows fold sections 4 and 5 into double ply triangular shaped sections, as illustrated more particularly in Figures 13 and 14. The double ply of triangular section 4 are each folded to overlie the adjacent outside face of the end wall panel 7, and the triangular sections 5 are then folded to overlie the adjacent triangular section 4, as illustrated more particularly in Figures 15 and 16.

Each locking flap 6 is tucked between the adjacent outside face of the end wall panel 7, and the inside face of the adjacent triangular portion 4'' of the folded bellows section 4. It will be noted that the fold back segment 24 of each locking flap 6 will extend below the creased edge *c* of the folded bellows fold section 4 and provides a convenient finger grip for drawing its associated locking flaps 6 into assembled position. Each fold back segment 24 may then be folded upwardly and a portion thereof tucked between the inside face of the triangular portion 5'' of folded bellows fold section 5, and the outside face of triangular portion 4' of the folded bellows fold section 4, as illustrated more particularly in Figures 17 and 18. The lip cut-out 25 will then lie flat against the outside face of the adjacent end wall panel 7, and thus assist in maintaining the fold back segment 24 with which it is associated in its proper upfolded position. When the fold back segments have thus been folded and located, accidental or undesired withdrawal of the locking flap 6 is prevented, and the box part of the container is firmly and rigidly held in fixed assembled position. The fold back segments 24 also provide a convenient means for threading and

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manipulating the locking flaps 21 into container assembled position.

When the box part of the container has been fully assembled as shown in Figure 17, the contents may be inserted therein. The end flanges 26 and the front flange 27 may then be turned inwardly so as to overlie the contents and prevent splash loss thereof. The tuck-in flanges 22 at the ends of the cover panel 20 are then folded substantially at right angles to the cover panel 20, and when the cover panel 20 is swung down into closed position each of the tuck-in flanges 22 is inserted between the outside face of the adjacent end wall panel 7 and the inside face of the adjacent locking flap 21. The front flange 23 is positioned to overlie the outside face of the front wall panel as shown in Figure 18 or it may be, if desired, tucked in to the container to lie adjacent the inside face of the front wall panel 2.

In the event the container is to carry contents of substantial weight, or is likely to be subjected to rough handling, or vertical stacking in high stacks, and especially to checker-board stacking, the container may be further reinforced by telescoping a collar or band, and the container of Figures 12 to 18 is especially designed to be so used. The band member may be conveniently formed of a single blank of paperboard or other suitable material, as shown in Figure 19. It has a front wall section 31, end wall sections 32 hinged to each end thereof along the score line *w*, and a rear wall section 33 hinged to a side edge of one of the end wall sections 32. A hook flap 34 is shown hinged along a score line *w* to the other end wall section 32. A tuck-in flap 35 extends from and is hinged to the lower end of each of the end wall sections 32 along a fold line *x*, a circular hole or cut-out 36 being preferably located in the mid-section of each score line *x* to permit more ready folding of the tuck-in flap 35. Holes 37, which may be square or of any other suitable shape, may be cut out of each end section 32, and a similar hole 38 may be cut out of the rear wall section 33, for a purpose hereinafter to be described. The locking flap 34 may be provided with a tab extension 39 having ears 40 so shaped to permit insertion of the extension 39 through a rectangular hole 38 in rear wall section 33 for connecting the blank strip into a continuous band in the form shown in Figure 20.

The front wall section 31 is preferably provided with a flap cut-out 41 defined by the vertical cuts and the connecting horizontal cut *y*, and which is hinged at its upper end along a score line *z*, so as to permit folding of the cut-out flap into the position shown in Figure 20. The upper edge of the flap 41 is provided with a hinged lip 42, which is designed to be inserted through the cut *r'* at the front edge of the cover panel 20. The hinged lip 42 may be provided with a cut-out tab 43 which forms a finger grip by means of which the lip 42 may be inserted through or withdrawn from the cut *r'*.

When the collar member has been assembled, as shown in Figure 20, it may be telescoped over the assembled and packed container, shown in Figure 21. The upturned abutment flanges 35 thereof are provided with end edges 35' cut on the bias, and when the collar member has been fully telescoped over the container, the bias edges 35' will abut against the creased edge *c* of the adjacent bellows fold sections 4 and 5, as shown more particularly in Figures 23 and 25. When

thus arranged, upward withdrawal of the collar member from the container is prevented. The hinged lip 42 is then in position to be inserted through the cut r' at the front edge of the cover panel 20, as shown in Figure 22, and this operation is facilitated by a cut down 45 at the upper edge of the front wall section of the collar member, and by the further provision of a crease line z' extending transversely across the cut-out flap 41.

When the hinged lip 42 has been inserted through the cut r' , the container cover member 20 is secured against accidental opening, and the collar member is secured against accidental withdrawal in either direction. A cross-sectional relationship of the parts is shown in Figures 23, 24 and 25.

The collar member gives the package as fully assembled very great rigidity for handling and stacking purposes. It will be noted that the vertical corners of the collar member are not cut or punctured, and thus the vertical corner portions of the package, where stacking strains are greatest, are substantially reinforced. The cut-outs 37 in the end wall sections 32, the cut-out 38 in the rear wall sections 33, and the cut-out occurring in the front wall section 31, permit free circulation of air through the collar member so that the collar member does not appreciably retard freezing of the contents packed within the container, if such treatment is desired. It will be further noted that the openings 37 in the end wall section 32 provide convenient means through which the fingers may be inserted to engage the folded edges c of the bellows fold sections 4 and 5, permitting convenient handling of the package, without tendency toward tilting.

In Figure 26 I have shown yet another modification of my container wherein identical parts have been given the same index numerals. This type of container differs from those previously illustrated and described in that to the top edges of the front wall 2 and rear wall 3, I articulate cover or closure members 44 and 45, which, in this instance, are only slightly longer than half the width of the top of the set up container. The outer edges of the cover closure members are provided with teeth 46 or 47, cut back to the median line of the top of the carton and arranged in such fashion that the teeth 46 are offset from the teeth 47. The cover members 44 and 45 are respectively provided with side-wise articulated tuck flaps 48 and 49.

This box, as shown in Figures 27 and 28, is set up in the same way as the others. After erection of the walls the bellows folds 4 are folded over outside the side walls 7, and then the bellows folds 5 are folded over outside the bellows folds 4, with the tucking of the retaining flaps 6 between the bellows folds 4 and side walls 7. After the box has been filled with its contents, for example sliced apples to be frozen, liquid eggs or the like, the cover members 44 and 45 are closed with the insertion of the tuck flaps 48 and 49 between the tucking flaps 6 and the side walls 7. Since the teeth 46 and 47 are offset, of equal width and equally spaced by the width of one tooth, they will come into a tight interdigitating relationship, as clearly shown in Figure 29. Thus an efficient splash cover is provided.

The particular inner container, illustrated in Figures 26 to 29 inclusive, is designed to be placed within an outer container or reinforcing structure which, unlike the band of Figure 19, 75

is complete with top and bottom closure members. The blank for such an outer enclosing container is shown in Figure 30, and comprises a back wall portion 49, a side wall portion 50, a front wall portion 51 and a side wall portion 52, articulated together in the order named. The side wall 52 has a locking flap 53 articulated to it, and which is provided with an extension 54 having locking ears 55. Instead of causing this flap to engage in a large central cut-out in the wall 49 I may, if I prefer to leave that wall substantially solid, provide therein a narrow slit 56 to accept the projection 54 and tongues 55. For strength at the rear corner, it is preferable to articulate an extra flap 57 to the rear wall 49.

A suitable closure is provided for the container. The nature of this closure is not a necessary limitation upon my invention, and any type of closure flaps may be employed. However, for convenience, I prefer to provide notched flaps 58, 59, 60 and 61 at the ends respectively of the side walls 50 and 52. Rectangular flaps 62 and 63 are articulated to the ends of the front wall 51. To the ends of the rear wall 49, I articulate truncated flaps 64 and 65 which bear articulated locking ears, as shown at 66 and 67.

The blank of Figure 30 is erected by folding the several walls in positions normal to each other and by bending over the locking tongues 55 and inserting these tongues and the member 54 through the slot 56. The tongues 55 then spring outwardly again and prevent withdrawal of the extension 54. In forming either end closure, the rectangular flap 62 or 63 is first folded over. Then the side flap members 58 and 59 or 60 and 61, as the case may be, are folded over. Finally, when the ears 66 or 67 have been folded back, the flap 64 or 65 is bent slightly, and the ends of these flaps with the ears are inserted beneath flaps 62 or 63, and in the rectangular notches 68 or 69 shown therein. This gives a locked structure, shown from the inside in Figure 31 and from the outside in Figure 33. As in Figure 31, bottom closure is first made on the outer container after it is erected. The filled inner container is then placed within the outer container as indicated in Figure 32, and finally the top closure on the outer container is effected, as hereinabove described.

The end walls 50 and 52 of the outer container are shown as provided with large central openings 70 and 71 for purposes which have already been described. If desired, large openings may likewise be formed in the front and rear walls 51 and 49.

Preferably a fiberboard is selected which is suitably impregnated or coated or treated to hold the contents. Such fiberboard may comprise a strong, stiff, Kraft paperboard or fiberboard, which may be waxed on one or both surfaces thereof; and, if desired, the interior surface may be suitably treated or coated so that materials such as food materials may be placed in direct contact therewith. For heavy containers, heavy board may be employed; and I am currently manufacturing containers for, say, 30 pounds of contents from 40 point waxed board. The material of my container structures is not, however, a limitation on the invention herein claimed.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

A folding box formed from a single blank and

including side and end walls, bellows folds connecting said side and end walls and foldable inwardly to overlie the exterior face of said end walls, locking flaps at each end of said box extending from certain of said bellows folds, said flaps having portions capable of being inserted between the other of said bellows folds and said end walls to retain said box in set up condition, said end walls having splash flanges at their upper edges foldable inwardly, and said side walls each having closure flaps capable of covering the top of said box, one of said closure flaps having side tongues capable of being inserted between said bellows folds and said end walls and another tongue capable of being inserted inside the opposite wall, the other of said closure flaps having side tongues thereon capable of being inserted between said bellows folds and said end walls and having locking means for holding them in the said position, said locking means comprising reversely bent tongues articulated to the edges of said side tongues and capable of engaging beneath the edges of the side tongues of the first mentioned closure.

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