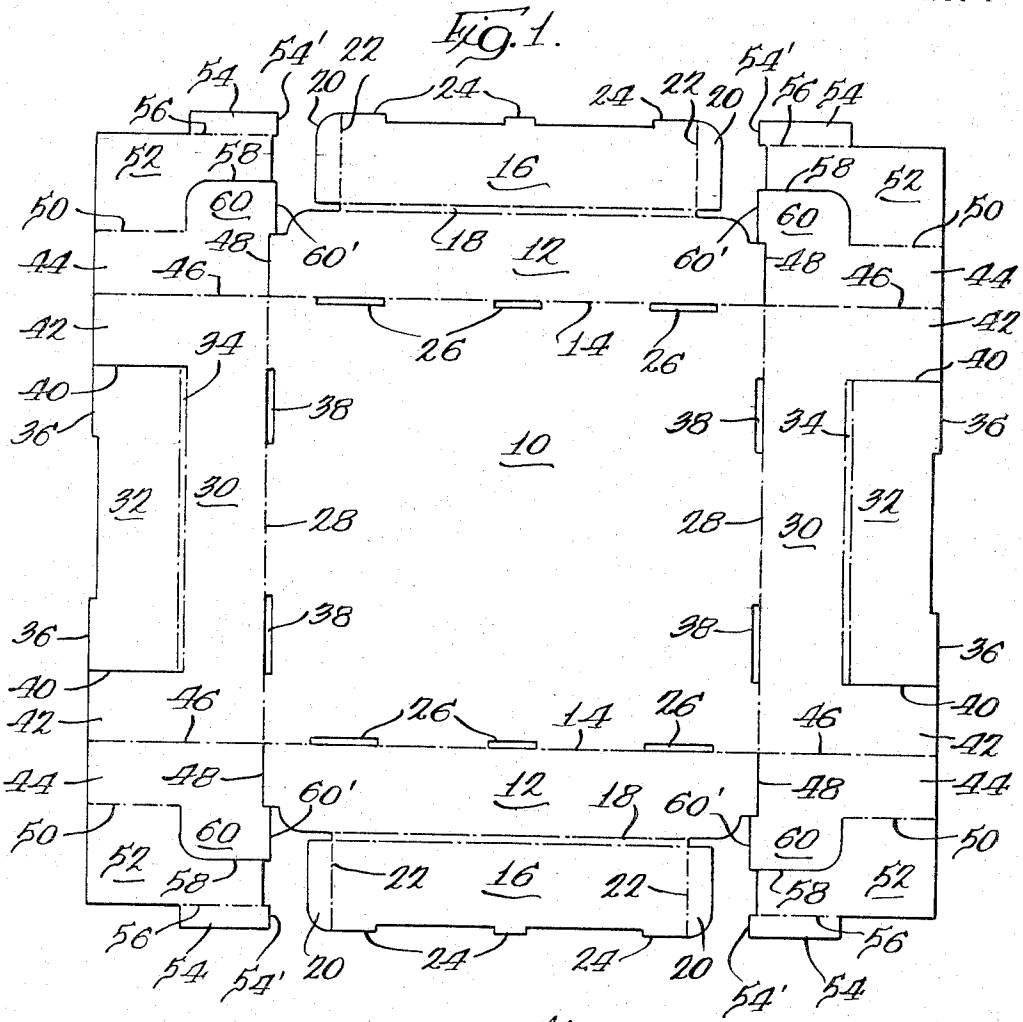
April 2, 1968 R. K. ROBINSON 3,375,967

CONTAINER FOR FROZEN FOODS AND THE LIKE

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Fig. 1.



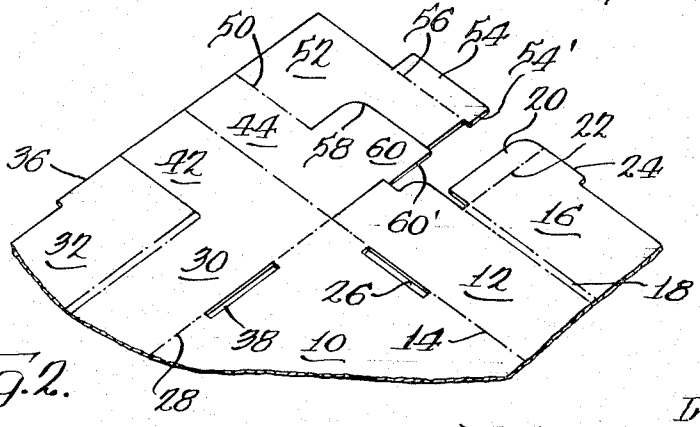


Fig. 2.

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Fig. 3.

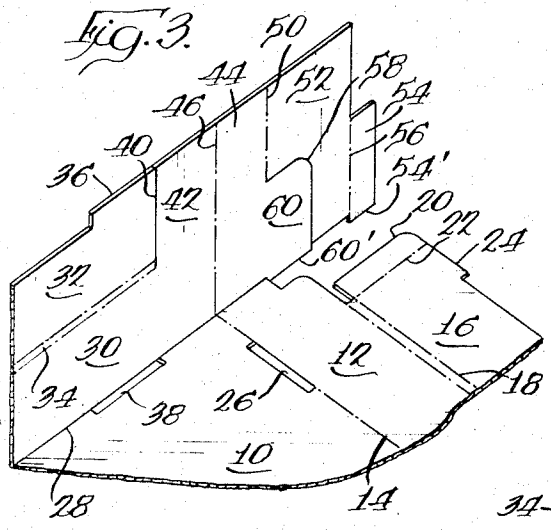
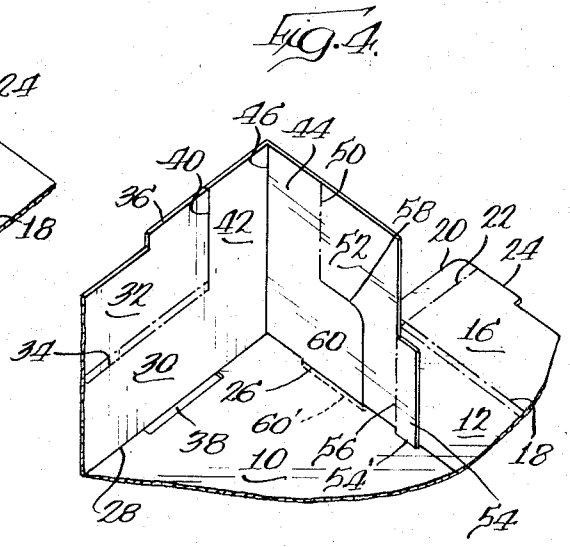


Fig. 4.



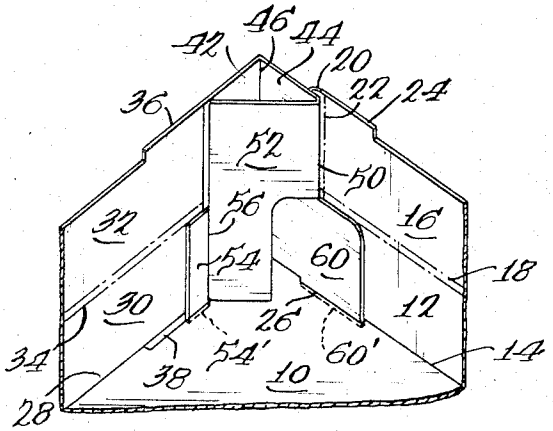


Fig. 5.

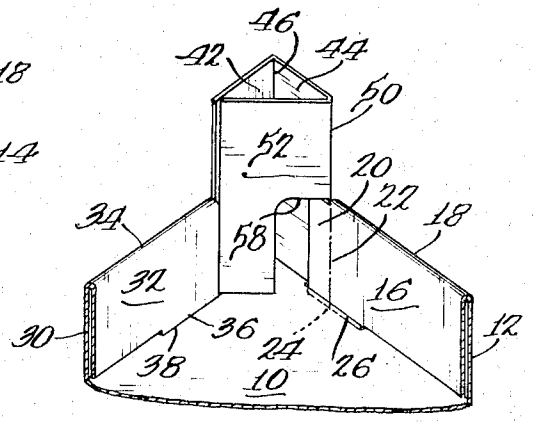


Fig. 6.

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CONTAINER FOR FROZEN FOODS AND THE LIKE

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Filed Nov. 16, 1966, Ser. No. 594,892
9 Claims. (Cl. 229—34)

ABSTRACT OF THE DISCLOSURE

The present invention relates to an improved container especially adapted for blast-freezing of poultry and other frozen foods.

Related patent

The container of the present invention is related to and constitutes an improvement of the container disclosed in U.S. Patent 2,986,320, issued May 30, 1961, and assigned to the assignee of the present invention.

Brief summary of the invention

The container of the present invention comprises essentially a tray into which freshly prepared poultry or other product is placed, after which the tray may be stacked with like trays one upon the other in a freezing room. The sides and ends of the tray are open so as to facilitate blast-freezing of the product when the trays are stacked one upon the other, each such tray being provided with four relatively rigid corner posts which permit such stacking. The tray is formed from a unitary sheet of corrugated paperboard cut and scored and adapted to be erected to from a wholly self-interlocked container body without the requirement for securing means such as adhesives, taping, metal stitching or stapling, and without the necessity for jigs of any kind for setting up, the arrangement being characterized by self-locking members which form a rigid and collapse-proof tray when properly set up. In addition, the tray has generally smooth outermost surfaces so that a telescopic complementary cover may be easily engaged thereover without catching on projections to thereby facilitate packaging and form a secure assembly.

Object of the invention

The principal object of the present invention is to provide a container of the foregoing type having an improved corner post construction including improved means adjacent the corner posts for interlocking the side and end walls of the container in a more rigid manner while providing a structure which is set up from a flat blank more easily and in less time than containers heretofore known.

The drawings

FIGURE 1 is a developed top plan view of a tray blank for the improved tray or container of the present invention;

FIGURE 2 is a fragmentary top plan view of the upper left-hand corner of the tray blank of FIGURE 1; and

FIGURES 3 to 6 are views similar to FIGURE 2 showing in step-by-step sequence the erection of a corner portion of the tray blank so as to form a relatively rigid upright corner post with adjacent interlocked side and end walls.

Description of the invention

In order to acquaint those skilled in the art with the manner of making and using my improved container, I have illustrated in the accompanying drawings and will now describe a preferred embodiment presently contemplated by me as the best mode of carrying out my invention.

Referring now to the drawings, FIGURE 1 shows a tray blank which is made of corrugated paperboard and comprises a rectangular center or bottom panel **10**, a pair of opposed outer end walls **12**, **12** hinged thereto on fold lines **14**, **14** each of the outer end walls carrying an inner end wall panel **16** hinged thereto on the dual fold line **18**, the dual fold line being provided so that the panel **16** may be folded inwardly against the inside of the panel **12** thereby forming an end wall of double thickness when the latter is erected. It will be noted that the inner end wall panel **16** while of equal height with the panel **12** is of lesser length than the latter, and has a flap **20** at each end thereof hinged along a fold line **22**. The panels **16** further comprise at their outermost longitudinal edges one or more tongues **24** adapted for reception in corresponding slots **26** formed in the center or bottom panel **10** adjacent its fold line **14** and adapted for reception of the tongues **24** when the panels **16** are folded inwardly against the panels **12**.

Hinged to the opposed sides of panel **10** on the score lines **28** are the outer side wall panels **30**, **30** each of which carries an inner side wall panel **32** hinged thereto on the dual fold line **34**, whereby the panel **32** may be folded inwardly against the panel **30** and its tongues **36** engaged in the apertures or slots **38** in a manner similar to that described with respect to the inner end wall panels **16**. The panel **32** is of substantially equal height with the panel **30** but is of lesser length than the latter, being separated at its end portions by lines of severance **40**, thereby leaving end portions **42** of each of the panels **30** of a greater height than that of the remaining portion of the panel **30** when the inner side wall panel **32** is folded thereover in set-up condition.

The panel portion **42** provides a first corner panel or component of a triangular corner post when the panel **30** is erected vertically as shown in FIGURE 6, and the first corner panel **42** has a second corner panel **44** extending laterally therefrom and hinged thereto on the fold line **46**, thereby forming a second panel of the corner post. A line of severance at **48** separates the edge of the second corner panel **44** from the adjacent edge of the outer end wall **12**. The second corner panel **44** in turn is partially hinged on the fold line **50** to a panel **52** comprising a third corner panel for the corner post, the third corner panel **52** being adapted to extend obliquely across the corner of the carton and between the first and second corner panels as shown in FIGURES 5 and 6. Each third corner panel **52** has a locking tab **54** hinged thereto along a fold line **56**, the height of the tab **54** being about one-half the height of the corner panel **52** and approximately equal to the height of the outer side wall panel **30**.

It will be noted that a line of severance **58** extends laterally from the lower end of the fold line **50** and then extends downwardly so as to provide an interlocking panel projection **60** which is integral and coplanar with the second corner panel **44** and projects laterally from the lower portion of the latter. It should further be noted that the lower edge of the interlocking panel projection **60** extends beyond the fold line **28** so as to provide a tongue **60'** receivable into the end slot **26** when the carton is erected (see FIGURES 4 and 5), and in a similar manner the lower edge of the locking tab **54** extends beyond the fold line **28** to provide a tongue **54'** receivable into one end of the side slot **38** (see FIGURE 5), as will be described more fully hereinbelow.

The manner of erecting the foregoing carton will now be described with reference to FIGURES 3–6. An outer side wall panel **30** is erected by folding the same about the fold line **28**, thus disposing the panel **30** and other panels hingedly secured thereto in a vertical plane as shown in FIGURE 3. The second corner panel **44** is folded about the fold line **46** so as to dispose the panel **44**, the

interlocking projection 60 thereon, and the third corner panel 52 and tab 54, in a vertical plane perpendicular to the plane of the side wall panel 30, as shown in FIGURE 4, the tongue 60' being received in the end slot 26. The third corner panel 52 is then folded about the fold line 50 so as to extend obliquely between the first and second corner panels 42 and 44 and form an inner oblique corner panel. The locking tab 54 is reversely bent about the fold line 56 so as to be disposed in parallel relation to the outer side wall panel 30, and the tongue 54' is received in the end of the side slot 33, as best shown in FIGURE 5. It will be noted that the interlocking panel projection 60 being integral with the second corner panel 44 remains coplanar with the latter and disposed immediately inwardly of the outer end panel 12 when the latter is erected in a vertical position as shown in FIGURE 5.

It will be understood that the second outer side wall panel 30 is set up in a vertical position in the same manner as shown in FIGURE 3, and that the four corner posts each comprised of three corner panels 42, 44 and 52 are all set up in the same manner as described above in conjunction with FIGURES 3–5. Thereafter, the only assembly procedures remaining are to fold in the two inner side wall panels 32 and the two inner end wall panels 16. Thus, the inner side wall panel 32 is folded inwardly about the dual fold line 34 causing the tongues 36 to project into the side slots 38 with the panel 32 disposed immediately inwardly of the panel 30 in parallel relation thereto. The side slots 38 are of sufficient thickness to receive the double thickness of the tongue 54' and the tongue 36, and it will be seen that each end of the inner side wall panel 32 overlies one of the locking tabs 54 so as to lock the corner panel 52 in its oblique position as shown in FIGURES 5 and 6.

In a similar manner, each of the two inner end wall panels 16 is folded inwardly about the dual fold line 18 causing the tongues 24 to project into the end slots 26 with the panel 16 disposed immediately inwardly of the panel 12 in parallel relation thereto. The slots 26 are of sufficient thickness to receive the double thickness of the tongue 60' and the tongue 24, and it will be seen that each end of the inner end wall 16 overlies one of the interlocking panel projections 60 so as to firmly interlock together through the corner posts the side walls and end walls of the container. Thus, each interlocking panel projection 60 is in effect a part of the corner post by being integral with the second corner panel 44, and when the inner end wall panel 16 is folded over the projection 60 so as to dispose the latter intermediate the inner and outer end walls 16 and 12, the end walls become interlocked with the corner posts. The side walls 30, 32 are in effect a part of the corner posts due to the fact that each outer side wall 30 is integral with the first corner panel 42. When the inner end wall panel 16 is folded inwardly to the position of FIGURE 6, the flap 20 will extend under the edge 58 on the third corner panel 52 so as to further secure the assembly.

The container of the present invention provides a more rigid construction than is afforded by comparable cartons heretofore known. Both the tongues 54' and the tongues 36 project into the side slots 38 with the panel 32 in overlying relation to the locking tab 54, and both the tongues 60' and the tongues 24 project into the end slots 26 with the panel 16 in overlying relation to the interlocking panel projection 60, all of which provides a more rigid construction that heretofore possible. The side walls 30, 32 and end walls 12, 16 are more firm because of the tightly fitting corner posts. Each corner post is rigidly supported against deflection both laterally and longitudinally, deflection in one direction being prevented because the posts are in effect integral with the outer side wall panels 30, and deflection in the other direction being prevented due to the manner in which the interlocking panel projection 60 is locked down by the overlying inner end wall panel 16. In addition, the container is far easier to assemble or set up than containers heretofore known and such assembly can be carried out in a minimum amount of time. None of the panels need be lifted or forced over one another in order to achieve the interlocking effect, since after the side and end panels are erected and the corner panels folded as shown in FIGURE 5, it is only necessary to fold in the inner side wall and end wall panels 32 and 16 causing their tongues 36 and 24 to project into the slots provided therefor.

It will now be understood that a container or tray of the type described herein is adapted to be stacked with like trays one above the other in a freezing room, in which case the sides and ends of the tray will be substantially open to provide proper ventilation and more efficient blast-freezing of the contents. When the poultry or other product disposed in the trays has been frozen, a telescopic complementary cover comprising a top, end walls and side walls may be completely and easily disposed in a close fit over the tray to enclose its posts and sides before shipping. A suitable cover member is described in the previously-mentioned U.S. Patent 2,986,320.

While I have described my invention in certain preferred forms, I do not intend to be limited to such forms, except insofar as the appended claims are so limited, since modifications coming within the scope of my invention will readily occur to those skilled in the art, particularly with my disclosure before them.

I claim:

1. A carton section composed of a unitary sheet of foldable paperboard cut, scored and erected to a wholly self-interlocked container section comprising, a bottom panel, a pair of opposed outer side wall panels extending upwardly from opposite sides of said bottom panel, a pair of opposed outer end wall panels extending upwardly from opposite ends of said bottom panel, each of said side wall panels having corner post means at each end thereof, said corner post means being of greater height than said end wall and side wall panels and including a first corner panel integral and coplanar with said side wall panel, a second corner panel folded approximately at right angles to said first corner panel so as to be disposed immediately inwardly of and parallel to the adjacent outer end wall panel, a third corner panel folded from the end of said second corner panel so as to extend obliquely between said first and second corner panels, an interlocking panel projection integral and coplanar with said second corner panel, said interlocking panel projection being of a height approximately equal to the height of said outer end wall panels, a pair of opposed inner side wall panels foldably carried by the upper ends of the outer side wall panels and folded down inwardly of said outer side wall panels so as to be substantially immediately inwardly of and parallel to the latter, and a pair of opposed inner end wall panels foldably carried by the upper ends of the outer end wall panels and folded down inwardly of said outer end wall panels so as to be substantially immediately inwardly of and parallel to the latter, each of said inner end wall panels being folded inwardly over an opposed pair of said interlocking panel projections so that each of said projections is locked between said inner and outer end wall panels thereby firmly interlocking said end wall panels and side wall panels through said corner posts.

2. The invention of claim 1 where each of said interlocking panel projection is formed with a first tongue at its lower end which tongue projects downwardly into a corresponding end slot formed at an end edge of said bottom panel immediately adjacent one of said outer end wall panels.

3. The invention of claim 2 where each of said inner end wall panels is formed with a second tongue at its lower end which tongue projects downwardly into the same end slots as said first tongue of said interlocking panel projection, said second tongue being inwardly of and in overlying face-to-face relation with said first tongue so as to

assist in maintaining the latter in locked position in said end slot.

4. The invention of claim 1 where a locking tab is formed on the side edge of said third corner panel, said locking tab having a height approximately equal to the height of said outer side wall panels, and each of said inner side wall panels being folded downwardly over an opposed pair of said locking tabs so that each of said locking tabs is locked in position between said inner and outer side wall panels.

5. The invention of claim 4 where each of said locking tabs is formed with a first tongue at its lower end which tongue projects downwardly into a corresponding side slot formed at a side edge of said bottom panel immediately adjacent one of said outer side wall panels, and where each of said inner side wall panels is formed with a second tongue at its lower end which tongue projects downwardly into the same side slot as said first tongue, said second tongue being inwardly of and in overlying face-to-face relation with said first tongue so as to assist in maintaining the latter in locked position in said side slot.

6. The invention of claim 1 where said second and third corner panels are separated by a fold line which extends from the top edge of said panels downwardly for a portion of the height of said panels, and a line of severance which extends laterally from the lower end of said fold line for a distance equal to the desired width of said interlocking panel projection and then extends downwardly to the bottom edge of said second and third corner panels, said line of severance thereby defining said interlocking panel projection.

7. The invention of claim 6 where a flap is provided at each end of each of said inner end wall panels, each said flap being disposed so as to extend under the upper edge of an opening formed in said third corner panel, said opening being formed when said interlocking panel projection is separated from said third corner panel.

8. A carton section composed of a unitary sheet of foldable paperboard cut, scored and erected to a wholly self-interlocked container section comprising, a bottom panel, a pair of opposed outer side wall panels extending upwardly from opposite sides of said bottom panel, a pair of opposed outer end wall panels extending upwardly from opposite ends of said bottom panel, each of said side wall panels having corner post means at each end thereof, said corner post means being of a greater height than said end wall and side wall panels and including a first corner panel integral and coplanar with said side wall panel, a second corner panel folded approximately at right angles to said first corner panel so as to be disposed immediately inwardly of and parallel to the adjacent outer end wall panel, a third corner panel folded from the end of said second corner panel so as to extend obliquely between said first and second corner panels, an interlocking panel projection integral and coplanar with said second corner panel, said interlocking panel projection being of a height approximately equal to the height of said outer end wall panels, said second and third corner panels being separated by a fold line which extends from the top edge of said panels

downwardly for a portion of the height of said panels, and a line of severance which extends laterally from the lower end of said fold line for a distance equal to the desired width of said interlocking panel projection and then extends downward to the bottom edge of said second and, third corner panels, said line of severance thereby defining said interlocking panel projection, a pair of opposed inner side wall panels foldably carried by the upper ends of the outer side wall panels and folded down inwardly of said outer side wall panels so as to be substantially immediately inwardly of and parallel to the latter, a locking tab formed on the side edge of said third corner panel, said locking tab having a height approximately equal to the height of said outer side wall panels, and each of said inner side wall panels being folded downwardly over an opposed pair of said locking tabs so that each of said locking tabs is locked in position between said inner and outer side wall panels, and a pair of opposed inner end wall panels foldably carried by the upper ends of the outer end wall panels and folded down inwardly of said outer end wall panels so as to be substantially immediately inwardly of and parallel to the latter, each of said inner end wall panels being folded inwardly over an opposed pair of said interlocking panel projections so that each of said projections is locked between said inner and outer end wall panels thereby firmly interlocking said end wall panels and side wall panels through said corner posts.

9. The invention of claim 8 where each of said interlocking panel projections is formed at its lower end with a first tongue which projects downwardly into a corresponding end slot formed at an end edge of said bottom panel immediately adjacent one of said outer end wall panels, each of said inner end wall panels is formed at its lower end with a second tongue which projects downwardly into the same end slot as said first tongue of said interlocking panel projection, said second tongue being inwardly of and in overlying face-to-face relation with said first tongue so as to assist in maintaining the latter in locked position in said end slot, each of said locking tabs is formed at its lower end with a third tongue which projects downwardly into a corresponding side slot formed at a side edge of said bottom panel immediately adjacent one of said outer side wall panels, and each of said inner side wall panels is formed at its lower end with a fourth tongue which projects downwardly into the same slot as said third tongue, said fourth tongue being inwardly of and in overlying face-to-face relation with said third tongue so as to assist in maintaining the latter in locked position in said side slot.

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