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FOLDING BOXES OR CARTONS

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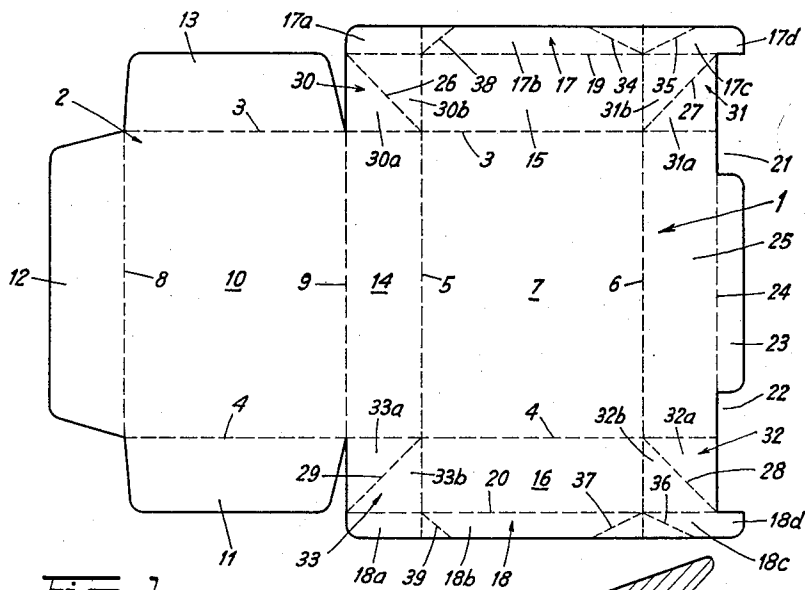


FIG. 1

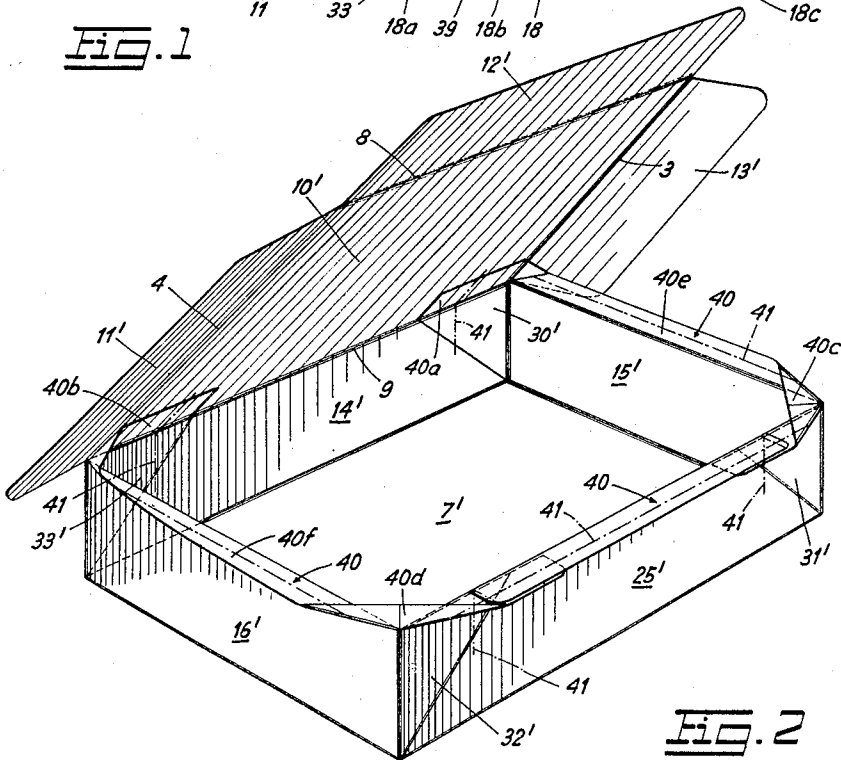


FIG. 2

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FOLDING BOXES OR CARTONS

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This invention concerns boxes or cartons of the kind comprising a crimped blank adapted to be folded to present a bottom, a rear side, a front side, two ends, and a lid hinged on the rear side.

Folding boxes of this kind already proposed had the disadvantage that they are unsuitable for the reception of deep-frozen goods which thaw at room temperature, because they are insufficiently liquid-tight; up to now it has not been possible to attain a sufficient tightness against the penetration of liquid at the top edges.

An object of the present invention is to so construct a box or carton of the aforesaid kind that thawing deep-frozen products can be preserved therein without the contents thereof escaping or leaking during thawing, particularly at the upper corners.

A folding box or carton in accordance with the invention is characterized in that the edge part at least partially projects beyond the rear side of the box, and the top fold or flap is folded outwards in the region of the front side, the ends and the rear side, but is folded inwards at the corners.

The method of the invention for making the box or carton is characterized in that the one part of the blank comprising the bottom panel, the side and end panels, and in the corners between the preceding panels, further corner flaps, is, on the three sides not bordering on the other part of the blank (forming the hinged lid) surrounded by panels forming the top flap with the exception of two recesses shifted inwardly off-set by the breadth of the top flap and extending over the region of the panels of the front side and the adjoining connecting tabs.

The accompanying drawing shows an exemplary form or embodiment of the invention.

FIG. 1 is a top or plan view of a cutout blank for the manufacture of the box or carton of the invention.

FIG. 2 a perspective view of the box or carton in the closed or closing position.

The flat blank, coated with a thermoplastic substance, is divided by a crease line 9 into two parts 1 and 2, the part 1 in the erected position of the box forming the body or container, and the part 2 forming the lid or cover thereof. Both parts 1 and 2 have scored folds or creases delimiting panels that form parts of the box. Thus, the parallel folds 3 and 4 of the part 1 and the folds 5 and 6 perpendicular thereto delimit the bottom panel 7. The folds 3 and 4 are continued into the part 2 and there delimit, together with folds 8 and 9, the lid or cover panel 10. The part 2 has on all sides with the exception of that (crease 9) along which it joins the part 1, closing-flap panels 11, 12 and 13 which are delimited by the outline of the said part and by the folds or creases 3, 4 and 8. The rear side panel 14 is in turn bounded by the folds 3, 4, 5 and 9, whereas the end panels 15 and 16 are formed by the fold 3 and the fold 4 respectively, which are respectively offset by the width of closing-flap panels 17, 18 of the part 1. The closing-flap panels 17 and 18 formed by the upper and lower edges respectively of the part 1 and further delimited by folds 19 and 20 respectively, are subdivided by the fold 9 and the left-hand edge of the part 1, as well as by the folds 5 and 6 and the continuation of the right-hand edge of the part 1, into sections 17a, 17b, 17c and 17d and 18a, 18b, 18c and 18d respectively, the sections 17d and 18d forming tabs projecting beyond the right-hand edge of the blank or pattern. Along the edge of the part 1 furthest from the

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part 2, no continuous top flap panel is provided, since cutouts or recesses 21 and 22 divide the top flap panel 23 from the top flap panels 17 and 18. This top flap panel 23 is inwardly delimited by a fold or crease 24 which itself, together with the folds 3, 4 and 6, forms the boundary of the front-side panel 25. In the corners between the rear panel 14, the end panels 15 and 16, and the front panel 25, the outer edge of the part 1, the folds 19, 3, 4, 20 and the folds 5 and 6 delimit corner flaps 30 to 33, further subdivided into triangular halves 30a, 30b, 31a, 31b, 32a, 32b and 33a, 33b respectively. Finally, starting from the intersection of the folds 19 and 20, externally delimiting the end panels 15 and 16, with the fold 6 internally delimiting the front panel 25, outwardly-diverging folds 34 to 37 extend through the top flap panels 17 and 18; while from the intersection of the aforesaid folds 19 and 20 with the fold 5 delimiting the rear-side panel 14 internally, slanting folds 38 and 39 respectively, outwardly converging towards the folds 34 and 37 respectively, are made across the partial, top flap panels 17 and 18.

Starting with the described blank, the folding box is erected in the manner that the entire blank is first bent upwards along the folds 5 and 6 so that the front panel 25 with the corner-tab panels 31 and 32 and the sections 17c, 17d, 18c and 18d of the top flap panels 17 and 18 on the one hand, as well as the rear panel 14 with the corner-tab panels 30 and 33 respectively, and the sections 17a and 18a of the top flap panels together with the whole part 2 on the other hand, stand perpendicularly to the bottom panel 7, the end panels 15 and 16 as well as the sections 17b and 18b of the top flap panels 17 and 18, adjoining the aforesaid end panels.

Thereupon, the end panels 15 and 16 with the connected top flap panels are bent up along the folds 3 and 4, the corner-flap panels 30 to 33 being simultaneously bent up along the folds 26 to 29, in such manner that the sections 17a and 18a of the top flap panels 17 and 18 adjoining the corner panels 30 and 33, lie against the inner side of the lid or cover panel 10, and thereby the half-panels 30a and 33a come flush against the rear panel 14, while the sections 17d and 18d and optionally also the adjacent parts of the sections 17c and 18c of the top flap panels bear against the outer side of the top flap panel 23, while the half-panels 31a and 32a come flush against the outside of the front-side panel 25. By this means, apart from the attachment of certain parts of the assembly to each other, the box or carton is completely erected, now consisting (FIG. 2) of a bottom 7', a front 25', a rear 14', ends 15' and 16' and a lid or cover 10' with closing tabs 11', 12' and 13'; while the top flap panels 17, 18 and 23 now form a continuous top flap 40, projecting over the front, the ends, and parts of the rear. The corner panels now form inwardly pointing, double connecting tabs 30', 31', 32' and 33', which, as will presently be described, are joined to the front 25' and rear 14', for stiffening the whole structure. Parts of the box can now either be welded together by the application of heat, or glued together, which in such case effected, on the one hand, between the connecting tabs 30' and 33' and the rear side 14', as well as with the sections 40a and 40b of the top flap 40; on the other hand, between the connecting tabs 31' and 32', and the front 25'; and, finally, between that part of the flap 40 corresponding to the closing-flap panel 23, and those parts of the top flap panels 17c and 17d and 18c and 18d respectively, which overlap the first-mentioned part.

It is alternatively possible to perform the folding as hereinafter described, and the glueing or cementing thereafter.

Starting with the erection of the separate parts of the box, the top flap is pressed inwards, at the corners farthest

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from the lid or cover, so as to form two, triangular parts 40c and 40d, the points of which, referring to the blank lie at the point of intersection of the fold 6 with the folds 19 and 20. The remaining part of the top flap, excepting the sections 40a and 40b, is now bent outwards to approximately 90 degrees, so that the top flap is bent over with reference to the edge of the box, as represented by the folds 19, 24 and 20, inwards at the corners, but elsewhere outwards, excluding the sections 40 and 40b.

The closure of the box is obtained by swinging the lid or cover 10' about the line of the fold 9, whereby also at the corners of the box adjoining the lid, the top flap is likewise folded inwards. The lid is now swung further, until its lower side, coated with a thermoplastic substance, comes in contact with the sections 40c and 40d; and the similarly thermoplastic-coated undersides of the closing tabs 11', 12' and 13' bear against the outwardly-bent sections 40e and 40f of the top flap 40; from which position only the closing tabs 11', 12' and 13' remain to be further bent along their delimiting parts of the folds 3 and 4 as well as along the fold 8 until they lie parallel to the end panels 15' and 16' and the front panel 25' respectively. This last, closing movement of course also causes the outwardly-projecting sections 40e and 40f of the top flap 40, to become bent over, in which position, by the application of heat, these now downwardly bent sections of the top flap are cemented to the closing tabs and the latter further caused to adhere to the outer sides of the end panels 15' and 16', and the front sides 25, respectively.

For the purpose of preventing the penetration of moisture also in places where a number of layers of material are superposed, the last operation is to impress or punch indentations 41 along the broken lines shown in the drawing, whereby a further obstacle is presented to any possible further penetration of moisture.

In the way herein described it is possible to produce a folding box or carton in which no folded parts meet at critical points, namely at the corners, but these last are exclusively formed of continuous layers of material.

I claim:

1. A folding box with a bottom, a rear side, a front

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side, and two opposite end sides, a lid joined to the rear side, and an edge part forming a top flap folded through about 90 degrees and projecting beyond the front side and the end sides and at least partially beyond the rear side, the top flap being bent outwardly except at the corners where it is bent inwardly.

2. A folding box in accordance with claim 1, wherein the top flap is triangularly-shaped in the corners at the ends of the front side and the free edge of the top flap at said corners is set obliquely to said front side.

3. A folding box in accordance with claim 1, wherein the lid is provided with closing tabs projecting over its three free sides and capable of being sealed to the top flap.

4. A folding box in accordance with claim 1 provided with connecting tabs on the end sides inwardly folded about an axis perpendicular to the bottom of the box and connectable with the respective rear and front sides.

5. A folding box in accordance with claim 3 wherein indentations are made along the top flap and the tabs.

6. A folding box with a bottom, a rear side, a lid joined to the rear side, and free side walls provided with a projecting edge portion folded approximately through 90 degrees forming a continuous top flap of a single thickness of material in the corners, at least one of the edge portions connected with a free side wall having cut outs extending to the respective corners.

7. A single piece of blank material creased to form when folded, a box with a bottom, a rear side, a lid joined to the rear side, and three free side walls each provided with a projecting edge portion of a single thickness of material at the corners, at least one of the edge portions connected with a free side wall having cutouts extending to the respective corners.

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