Jan. 9, 1962 J. D. DESMOND 3,016,181

TUCK TOP CARTON WITH LOCK

Filed Feb. 8, 1961

Fig. 1

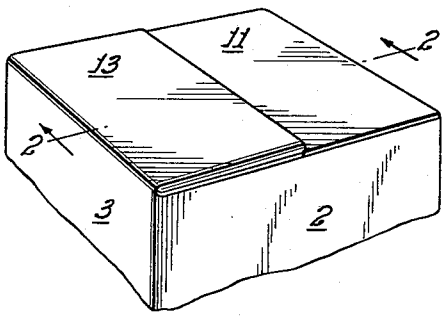


Fig. 5

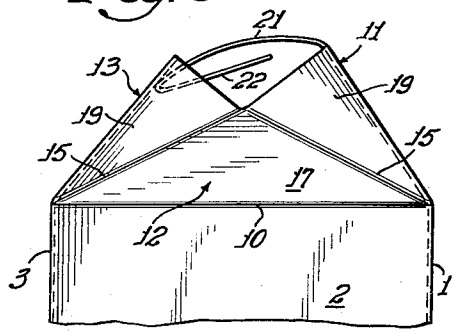


Fig. 4

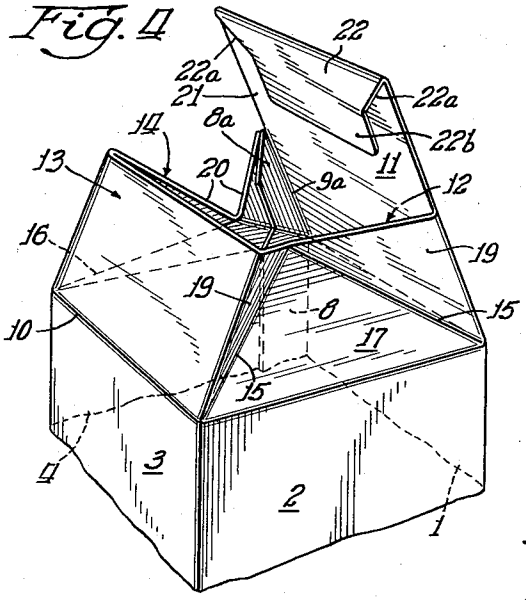


Fig. 2

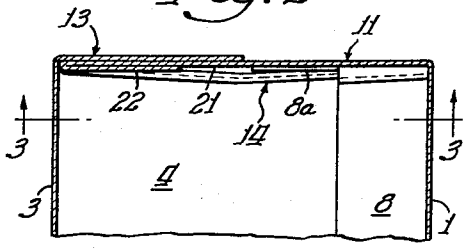


Fig. 3

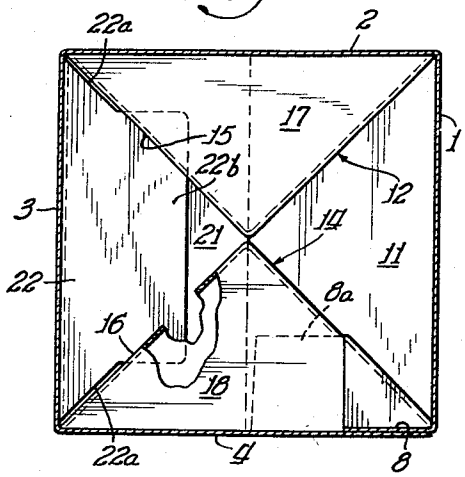
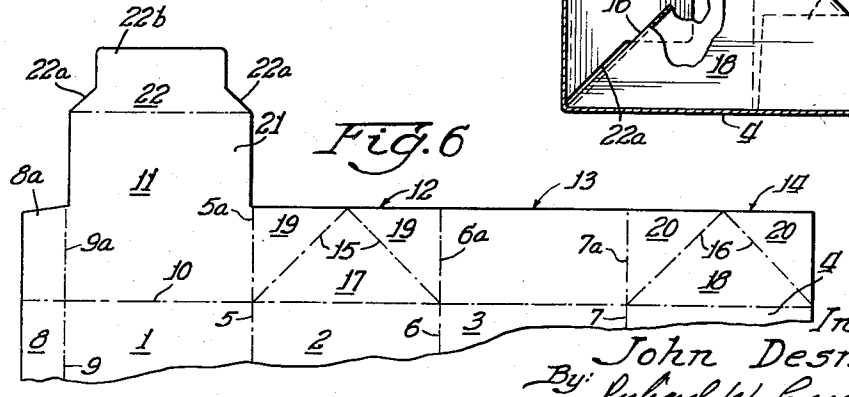


Fig. 6



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TUCK TOP CARTON WITH LOCK

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2 Claims. (Cl. 229—39)

The present invention relates to collapsible, tubular cartons and more particularly to cartons of this type provided with foldable end closure members including a tuck flap adapted to lock the closure securely when in closed position.

The principal objects of the present invention are to provide an efficient and relatively low cost, collapsible paperboard carton having foldable end closure members, preferably of the bellows type, combined with an extended flap on one of the members which can be tucked in and securely locked within the folds of the opposite closure member.

Additional and more specific objects and advantages of the structure of the carton will become apparent as the description proceeds.

In the drawings:

FIG. 1 is a fragmentary perspective view showing an end portion of the carton in closed condition;

FIG. 2 is a fragmentary cross-sectional view taken on line 2—2 of FIG. 1, showing the locking flap in its locked position;

FIG. 3 is a sectional view taken on line 3—3 of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a perspective view of the closure with the parts moved partially toward closed condition;

FIG. 5 is an elevational view showing the locking flap on one closure member in the process of being inserted within the folded parts of the opposite closure member; and

FIG. 6 is a plan view of part of a preferred form of carton blank including the closure structure.

The structure herein shown includes, for simplicity, only one end portion of a carton. It will be understood that the carton may be of any convenient length and the closure at the end not shown may be formed in any desired manner or may be identical with the closure herein illustrated.

As illustrated in FIG. 6, a blank of foldable paperboard is suitably cut and scored to provide four side walls, 1, 2, 3 and 4, preferably of equal width and hinged together along score lines 5, 6 and 7. An attaching flap 8, hinged along score line 9 to wall 1, is secured to wall 4 by adhesive.

In order to aid in the description of the carton, carton walls 1 and 3 will be referred to as side walls of the carton, and walls 2 and 4 will be referred to as end walls. Likewise the extended portions 11 and 13 will be referred to as side wall extended portions, and extended portions 17 and 18 will be referred to as end wall extended portions.

Each of the side walls has an extended portion, indicated at 11, 12, 13 and 14, hinged to each other along score lines 5*a*, 6*a* and 7*a* which are extensions of the respective score lines 5, 6 and 7. An extension 8*a* of the attaching flap 8 is hinged along score line 9*a* which is an extension of score line 9. This extension 8*a* is adhesively secured to the free edge of extended portion 14 on wall 4. The extended portions 11, 12, 13 and 14 and extension 8*a* are hinged to their attached walls and flap 8 along fold line 10.

Two opposite extended portions 12 and 14 are formed with bellows fold lines, indicated at 15, 15 and 16, 16, dividing these portions into central sections 17 and 18,

respectively, and triangular side sections 19, 19 and 20, 20 respectively. As shown in FIG. 4, by swinging the central sections 17 and 18 inward, the lateral triangular sections will be drawn down toward the central sections and the portions 11 and 13 will likewise be drawn down to overlie the lateral triangular sections.

The portion 11 has an extended flap section 21 of a length sufficient to extend to a line adjacent the fold line 10 when the portion 11 and its flap 21 are moved into flatwise position at the end of the carton. The section 21 carries at its end a locking flap 22 having its lateral edges cut along angular lines 22*a*, 22*a*. Beyond the angularly cut edges is a further extended flap section 22*b* the lateral edges of which extend approximately parallel to the lateral edges of the flap section 21.

For the purpose of locking the closure parts in closed position, the flap 22 is folded over as shown in FIGS. 4 and 5 and, as the central sections 17 and 18 are swung inward and the portions 11 and 13 swung inward thereover, the folded edge between the flap 22 and section 21 is inserted below the free edge of portion 13 and above the triangular sections 19 and 20 hinged to the edges of portion 13. The movement is continued until the closure parts assume a flat position as indicated in FIG. 2. In this position the angularly cut edges of the locking flap will be disposed along the folded edges 15 and 16 beneath the portion 13. Force applied to the flap 21 tending to withdraw it will be effectively resisted by reason of the angularly cut edges coming into contact with the folded edges 15 and 16.

As shown in FIG. 3 the lateral edges of the section 22*b* of the locking flap will extend beneath the folded edges 15 and 16, thus tending to keep the angular edges 22*a* in position along these folded edges.

From the foregoing it is clear that the present invention provides a simple form of bellows fold closure with a locking flap that is easy to manipulate and, when folded below the insert flap section 21, it may readily be tucked within the opening formed between extended portion 13 and the two attached triangular sections 19 and 20. After the flap section 21 is completely inserted the locking edges 22*a*, 22*a* will snap into place along the folded edges 15 and 16 and resist withdrawal of the flap 21.

While the present description sets forth a preferred embodiment of the invention, various changes may be made in the construction without departing from the spirit of the invention, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A collapsible, tubular carton formed of foldable paperboard, comprising: two pairs of hingedly interconnected side and end walls expandable into rectangular form; said walls having extended portions hingedly attached thereto along aligned fold lines at one end of the carton, such portions being also hingedly attached to each other along lines forming extensions of the respective hinge lines between the carton walls; the end wall extended portions each having bellows fold lines formed therein converging outwardly from the junctures of the carton wall hinge lines and the hinge lines between the walls and related extended portions, the central parts of the end wall extended portions between the bellows fold lines of each of said end wall extended portions being foldable inwardly, causing the triangular side parts to fold against the central part and causing the side wall extended portions to fold into overlying relation with their attached triangular parts; one of the side wall extended portions having hingedly attached to its free edge an extended flap section the length of which when added to

said one side wall extended portion is substantially equal to the width of an end wall; a locking flap hingedly attached to the free edge of said extended flap section and foldable beneath said extended flap section, each of the lateral edges of said locking flap being cut away on an angle complementary to the angle between the diagonal bellows fold line and the hinge line between the related end wall extended portion and its related carton end wall so that such edges will engage against the respective folded edges formed by the bellows fold hinges of the infolded bellows portions disposed below the other side wall extended portions when the carton is in closed position.

2. A collapsible carton as defined in claim 1, in which the locking flap has a portion extending beyond the angular edges, each of the lateral edges of such portion extending between the bellows hinge and the adjacent overlying portions to retain the locking flap in place against the overlying portion when the flap is in its locking position.

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