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CONTAINERS

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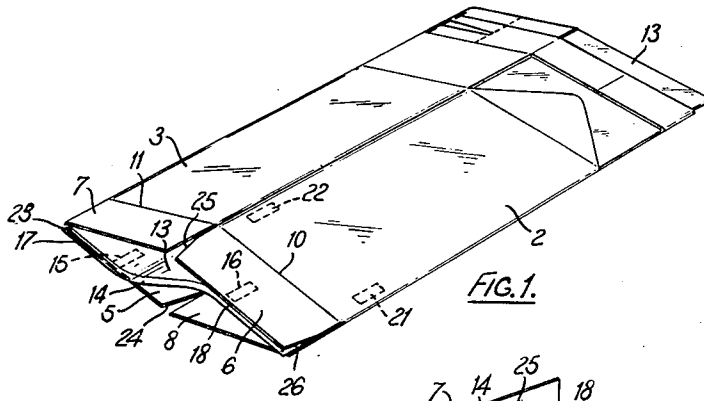


FIG. 1.

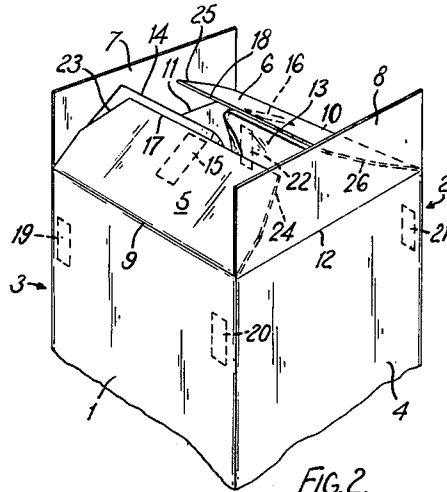


FIG. 2.

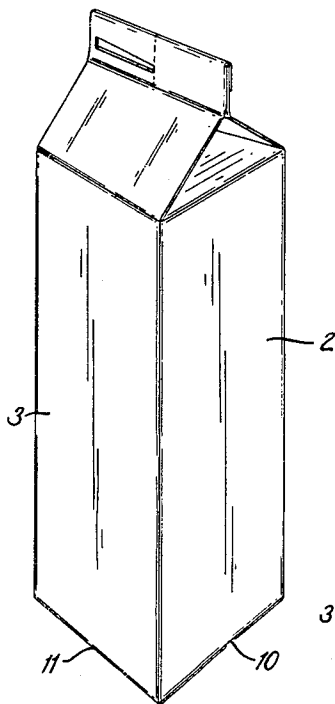


FIG. 4.

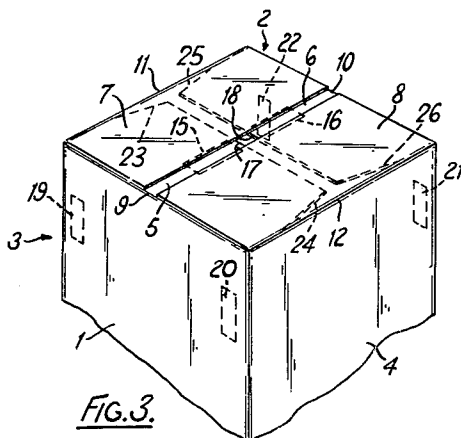


FIG. 3.

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2 Claims. (Cl. 229—14)

This invention relates to containers and in particular to a collapsed carton made of cardboard or similar material and having a four-sided body of which first and second, and third and fourth, sides are opposite sides in the set-up condition of the carton and the first and third and the second and fourth sides overlies each other in the collapsed condition of the carton, and first, second, third, and fourth bottom-closing flaps are hingedly connected respectively to the first, second, third and fourth sides at one of the body.

Cartons of the kind above-mentioned are usually set-up filled, and closed by automatic machinery and with cartons of the kind known prior to the present invention it has been necessary to provide two separate sequentially operable sets of folding devices in order first to fold inwards the first and second bottom-closing flaps and then to fold inwards the third and fourth bottom-closing flaps to overlie the infolded first and second flaps and to secure the third and fourth flaps thereto.

It is a main object of the present invention so to construct a carton which includes a simple bag having a straight edged closed bottom that the setting-up operation by which the body is shaped to the four-sided rectangular condition thereof causes the first and second flaps to be infolded to a position at which the infolding thereof can be completed by the infolding of the third and fourth flaps thereby avoiding the necessity of providing a set of folding devices specifically to effect infolding of the first and second flaps and so reducing the cost of the machinery and easing the bottom-closing operations.

According to the invention there is provided a collapsed carton made of cardboard or similar material and having a four-sided body of which first and second, and third and fourth, sides are opposite sides in the set-up condition of the carton and the first and third and the second and fourth sides overlies each other in the collapsed condition of the carton, and first, second, third, and fourth bottom-closing flaps are hingedly connected respectively to the first, second, third and fourth sides at one end of the body, wherein a flattened bag made of heat-sealable liquid-impervius material has a straight edged closed bottom and lines the interior of the carton body with the closed end thereof located between said overlying bottom-closing flaps and locally adhered to each of the first and second flaps at mid-positions adjacent the outer edges of the flaps and to each of said first and second sides at each of two positions disposed on opposite sides of median lines at right angles to the hinges connecting said lines with the first and second flaps, said mid-positions of adhesion being spaced from the hinge connections of the first and second bottom-closing flaps, and wherein the corners of the first and second flaps are relieved whereby during the setting up of the carton to the four-sided rectangular condition thereof the mid-portion of the bottom of the bag is drawn into the carton body and the first and second flaps are drawn by the bag towards each other between the third and fourth flaps to positions at which final folding of the first and second flaps can be effected by infolding of the third and fourth flaps.

In one embodiment of the invention the positions at

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which the bag is adhered to the first and second sides are adjacent to score or crease lines connecting the first and second sides with the third and fourth sides.

In order that the invention may be clearly understood one embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a pictorial view of a collapsed carton according to the invention,

FIGURE 2 illustrates the bottom end of the carton following the setting up of the body thereof to the four-sided rectangular condition thereof,

FIGURE 3 illustrates the fully closed bottom end of the carton, and,

FIGURE 4 is a pictorial view of the carton in the set-up, filled, and closed condition thereof.

Referring to the drawings, the carton is made of cardboard or similar material and has four-sided body of which first and second sides 1, 2 and third and fourth sides 3, 4 are opposite sides in the set-up condition, FIGURES 2 and 3, of the carton, and the first and third sides 1, 3 and the second and fourth side 2, 4 overlies each other in the collapsed condition, FIGURE 1, of the carton, this being the condition of the carton for purposes of storage prior to filling and closing.

First, second, third and fourth bottom-closing flaps 5, 6, 7, 8 are hingedly connected, as by creases or scores 9, 10, 11, 12, respectively to the first, second, third, and fourth sides at one end of the body. Thus in collapsed condition flaps 5 and 6, connected to opposite sides 1 and 2, are in offset relation. Similarly flaps 7 and 8 are offset. The opposite end of the body is also provided with top closure flaps but these form no part of the present invention and are not described herein.

A flattened bag 13 made of heat-sealable liquid-impervius material, preferably an organic thermoplastic material such as polyethylene, lines the interior of the carton body and has the end 14 thereof closed by a heat seal formed at right-angles to the sides of the flat bag and located between the overlying bottom-closing flaps 5, 7 and 6, 8. The closed end portion 14 of the bag is adhered locally to each of the first and second flaps 5, 6 at mid positions 15, 16 adjacent to the outer edges 17, 18 of the flaps 5, 6 and said mid-positions of local adhesion are spaced from the hinge connections 9, 10 of the flaps 5, 6. The bag is also adhered to each of the first and second sides 1, 2 at each of two positions 19, 20; 21, 22 disposed on opposite sides of median lines at right angles to the hinges 9, 10 connecting the sides 1, 2 with the first and second flaps 5, 6.

The corners of the first and second flaps 5, 6 are relieved as at 23, 24; 25, 26 to permit movement of the flaps 5, 6 between the flaps 7, 8 during setting up of the carton.

In the preferred embodiment of the invention the bag is adhered to the sides 1, 2 at positions which are adjacent to score or crease lines connecting the first and second sides 1, 2 with the third and fourth sides 3, 4.

During setting up of the carton from the collapsed condition, FIGURE 1, to the set-up condition for filling, FIGURE 2, the bottom portion of the bag, being secured to the opposite sides 1, 2 is opened from the flattened condition thereof but because the bottom 14 is closed, usually by a heat-seal the bottom of the bag is drawn slightly into the body of the carton, and the constraint exerted by the bag between the areas 15 and 22, and between the areas 16 and 20 causes the flaps 5, 6 to be drawn towards each other between the flaps 7, 8, this movement being permitted by reason of the relieved corners of the flaps 5, 6. When the carton is set up as illustrated in FIGURE 2 the positions of the flaps 5, 6 are such that as the flaps 7, 8 are engaged by fold-

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ing devices, not shown, and are moved towards each other to the closed positions thereof shown in FIGURE 3 the flaps 5, 6 are engaged by the inwardly moving flaps 7, 8 and are moved by the flaps 7, 8 to the closed position, FIGURE 3.

It will be understood that as illustrated in FIGURES 2 and 3 the carton is inverted and that during setting-up filling, and closing operations the position of the carton will be as illustrated in FIGURE 4, that is the opposite of that shown in FIGURES 2 and 3.

I claim:

1. A collapsed carton unfoldable to tubular shape in open condition, comprising a body having four sides and collapsed along a diagonal so that adjacent sides overlies each other, said sides of the body being hingedly connected one with another and each having a corresponding bottom closing flap hingedly connected at one end, said flaps including first and fourth flaps lying adjacent one another in one plane and second and third flaps lying adjacent one another in an overlying plane with the second flap offset from said first flap, a flattened liner bag within said body having one closed end formed by a seal entirely across the bag end at right angles to the sides of the flattened bag located between the overlying bottom closing flaps, and means adhering the closed end of said bag only to said first and second flaps and to the pair of offset body sides connected to said first and second flaps, said adhering means being spaced from the inner edges of the said first and second flaps to permit twisting of the liner bag when the carton is unfolded,

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whereby during the unfolding and setting up of the carton to open condition the bottom of the bag is drawn into the carton body with a twisting motion and the said offset first and second flaps adhered to the bag are drawn by the bag towards each other into opposed relation and between the third and fourth flaps so that final folding of said third and fourth flaps can be effected by in folding.

2. A collapsed carton according to claim 1 wherein said means adhering the bag to the body comprise small area, local applications of an adherent material, at mid positions of said first and second offset flaps adjacent to the free edges thereof opposite to and spaced from their hinge connections, and to said pair of offset sides connected to said first and second flaps at each of two positions disposed on opposite sides of median lines at right angles to the hinge connections between said offset sides and the bottom closing flaps hinged thereto, said first and second flaps to which the bag is adhered being rectangular in shape with relieved corners in the regions of said free edges.

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