

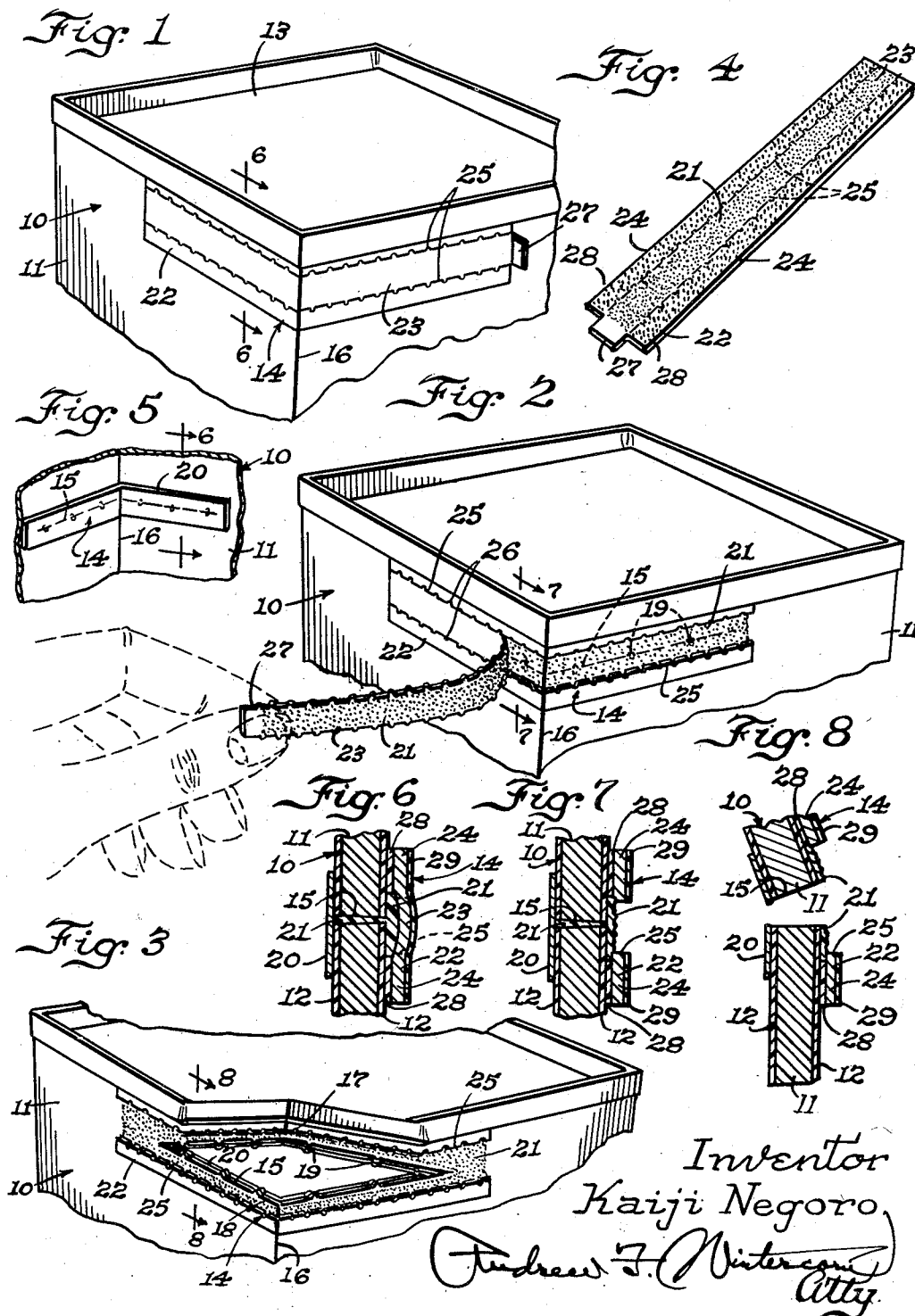
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PAPERBOARD CARTON POURING SPOUT CONSTRUCTION

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PAPERBOARD CARTON POURING SPOUT CONSTRUCTION

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9 Claims. (Cl. 229—51)

This invention relates to a new and improved built-in pouring spout construction for paperboard cartons of a kind suitable for the bottling of milk and other liquids, cartons of that kind being disclosed in my copending application, Serial No. 269,458, filed February 1, 1952.

The principal objects of my invention are to provide in the side of one upper corner portion of a rectangular paperboard carton of the kind mentioned:

(1) A horizontal slit in the wall extending far enough in both directions from the corner to provide a good pouring spout in the corner portion below the slit when the corner portion above the slit is bent upwardly, opening the slit wide enough to enable easy pouring;

(2) Inner and outer cover strips or patches covering up and sealing the slit from both sides well enough to eliminate any likelihood of leakage or of the slit being opened up accidentally in the usual or even rough handling of the filled cartons, these seals being, however, of a frangible type and adapted to be easily broken when thumb pressure is applied upwardly on the two sides of the top corner portion of the carton over the slit in bending the said corner portion upwardly to open the slit, and

(3) Reinforcements to make the slitted corner portion strong enough to be safe and yet be easily openable; thus,

(a) The slit is not a continuous cut but instead has short connecting webs left at intervals which insure keeping the adjoining edges of the slit aligned and close together until the slit is forcibly opened, this "tacked" slit helping a great deal from the standpoint of facilitating the construction of a reliable seal, in which mechanical rigidity and structural strength in the walls at the slit are also important factors, and mechanically strengthening the slitted walls appreciably by the spaced tack portions so as to reduce likelihood of accidental fracture, and

(b) An outer mechanical reinforcement is provided as a tear strip in connection with the outer cover strip adapted to assume a large portion of any strains imposed upon the slitted corner portion up to the time the carton is to be opened for pouring, said tear strip being designed accordingly to withstand relatively heavy strains in the plane thereof and yet permit easily tearing the same off.

Another feature of the present construction is the application of the seal strips under heat and pressure to the inner and outer sides of the carton. One of the strips carries a coating of wax or similar material, which, in the application of heat flows into the slit, sealing it against leakage and coating the cut edges of the paper to improve the pouring characteristics of the spout and prevent "wicking," namely, absorption of milk or other liquid by the paper after pouring, the liquid having no tendency to adhere to the coated surfaces.

The invention is illustrated in the accompanying drawings, in which—

Fig. 1 is a fragmentary perspective view of the upper portion of a paper carton embodying the built-in pouring spout construction of my invention;

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Fig. 2 is a similar view, illustrating how the tear strip is adapted to be torn off;

Fig. 3 is another perspective view showing the carton opened, ready for pouring;

Fig. 4 is a perspective view of a tear strip looking at the inner side;

Fig. 5 is a perspective view of the inner side of the pouring spout portion, and

Figs. 6, 7 and 8 are enlarged sections on the correspondingly numbered lines of Figs. 1, 2 and 3, respectively.

The same reference numerals are applied to corresponding parts throughout these views.

Referring to the drawings, the reference numeral 10 designates generally a filled and sealed carton or container of the kind disclosed in my copending application, the same having a square, downwardly tapered, body 11 made of paperboard material like that commonly used for waxed paper cartons for milk and dairy products, but having in lieu of the wax coating a thermoplastic coating indicated at 12 in the enlarged sectional details, Figs. 6, 7 and 8, of Vinylite or the like. The square lower end of the carton is not shown but has a flanged paperboard bottom applied thereto and sealed under heat and pressure, the coating 12 on the outer side cooperating with a similar coating on the inner side of the bottom blank to provide sealed joints. In like manner, the square top or cap 13 of similar paperboard material is applied to the open top of the container after the container has been filled with the milk or other liquid, and here again, the coatings 12 on the inside and outside are utilized in effecting a good seal at all of the joints, the inner side of the cap 13 having a similar thermoplastic coating to serve as an adhesive and sealing medium under heat and pressure applied in the capping operation. This special mention is made of the thermoplastic coating 12 because of the extent to which it plays a part in the pouring spout construction of the present invention indicated generally by the reference numeral 14. The thermoplastic coating 12, in addition to making it unnecessary to provide glue in the various joints required in waxed containers, offers many other advantages. To mention only a few, a carton thus coated is nicer to handle, being less slippery and hence less likely to be dropped, and the coating will not rub off like wax on the hands or clothing and leave smears on shelves and counters. It is also odorless and tasteless, and gives the carton a nice uniform sheen.

The body 11 of the formed carton has a horizontally extending slit 15 that is preferably cut from the inner side of the carton extending the same distance in both directions from the score line that defines the corner 16. It is possible, however, that the slit 15 may be made in the flat blank before the body 11 is formed on the mandrel and its overlapping ends are sealed under heat and pressure. This slit 15 is near the top of the carton and preferably a predetermined distance above the ultimate filling level, so that when the corner portion above the slit is bent upwardly by thumb pressure, as indicated at 17 in Fig. 3, while the carton is standing on a table, working top, or other support, there will be no danger of any spillage, and there will be sufficient leeway to make it easier to pour out the contents using the corner portion 18 of the carton below the slit 15 as a spout. The slit 15 is preferably not one continuous cut but, as indicated at 19 in Figs. 2 and 3, has short connecting webs or uncut portions left at regularly spaced intervals which serve to keep the adjoining edges of the slit aligned and close together until the slit is fully opened by bending the upper corner portion of the carton upwardly as described. This "tacking" of the slit helps a great deal from the standpoint of facilitating the construction of a reliable seal

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at the slit, because mechanical rigidity and structural strength in the walls at the slit are important factors in the provision of such a seal, but an equally important reason, if not a more important one, for so tying together the opposite sides of the slit at intervals is to mechanically strengthen the slitted corner appreciably so as to reduce likelihood of accidental opening up of the slit if the carton happens to be dropped or is subjected to unusually rough handling. There is applied to the inner side of the walls at the corner a strip 20 of Vinylite material, this strip being heat-sealed to the coating 12 on the inside in the same way that the joints at the top and bottom of the carton are sealed under heat and pressure. In lieu of heat sealing a separate strip 20, substantially the same effect could be obtained by spraying or brushing coating material (Vinylite, for example) over the slit on the inner side of the carton. There is no danger of leakage past this strip 20 or an equivalent film. The slit is sealed further from the other side, as it is pretty thoroughly filled, as indicated at 21 in Figs. 6 and 7, by wax or a similar thermoplastic material, when the outer seal strip 22 is applied under heat and pressure. This strip is made of thinner paperboard material than that used in the body 11 and has a central longitudinally extending portion 23 connected with the side portions 24 by lines 25 of closely spaced slits leaving short uncut connecting webs 26 similar to the webs 19 provided in the slit 15, whereby to enable ripping off the middle portion 23 of the strip 22, as in the manner shown in Fig. 2, preliminary to the opening up of the slit 15 as illustrated in Fig. 3. A projecting tab 27 on one end of the middle portion 23 normally lies flat against the side of the carton but can be bent outwardly, as indicated in Fig. 1, to be used as a finger grip in tearing off the middle portion 23. While the strip 22, despite the slits 25, lends appreciable structural strength to the slitted corner portion of the carton, this strip being so much thicker and stronger than the inner strip 20, it is nevertheless an easy matter to rip off its middle portion 23 because the narrow connecting webs 26 tear individually quite easily. Now, the side portions 24 of the strip 22 have a coating 28 of Vinylite on the inner side so that when the strip is applied to the carton under heat and pressure these coated portions 28 are firmly bonded to the coating 12 on the outside of the body 11 of the carton, and therein lies the reason for this strip 22 adding so much strength to the slitted corner portion of the carton. The middle portion 23 of the strip has on its inner side a relatively thick coating 21 of wax or similar thermoplastic material, and hence, in the application of the outer strip 22 under heat and pressure, wax flows into and substantially completely fills the slit 15, as indicated in Fig. 6, whereby to thoroughly seal the slit and at the same time coat both sides of the slit to improve the pouring characteristics of the spout 18 and prevent "wicking," namely, absorption of milk or other liquid by the paper after pouring, the liquid having no tendency to adhere to the coated surfaces and accordingly having no opportunity to be absorbed. The middle portion 23 of the strip bulges outwardly somewhat as a result of the excess of the waxy material 21, as indicated in Fig. 6. When the middle portion 23 of the strip 22 is ripped off some of the wax stays on the inner side of the portion 23 but much of it remains on the outer side of the carton covering the slit 15, as indicated in Figs. 2 and 7. The carton in this condition would not be apt to open at the slit 15 accidentally if it were dropped or knocked over, because there is still sufficient structural strength left with the strip 20 and film 21 holding the slit closed, that it requires forcible bending upwardly of the top corner portion by thumb pressure to break the seals at 20 and 21 to open up the slit 15 for pouring out of the contents. The wax coating 21 ends at the tab 27, for obvious reasons. The entire outer side of the strip 22 is also coated with a waterproof material, preferably Vinylite, as indicated at 29.

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The operation of the pouring spout construction is believed to be clear from the foregoing description.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. A liquid-tight, closed flat-topped upright paperboard carton the body of which is made of paperboard material coated inside and out with thermoplastic material, said carton having flat side walls defining corner portions and having in the side of one upper corner portion thereof a substantially continuous horizontal slit that extends both ways from the corner, the corner portion below said slit adapted to define a V-shaped pouring spout when the corner portion above said slit is bent upwardly folding the flat top along a line diagonally of the corner and thereby opening said slit, and adhesive strips coated with thermoplastic material adapted to bond with the coating on the carton under heat and pressure, said strips being applied under heat and pressure to the inner and outer sides of said carton covering said slit and sealing the same while at the same time preventing upward bending of said corner portion, the outer strip having longitudinally extending weakening lines above and below the slit defining therebetween a tear portion overlying the slit, removal of which preliminary to opening the slit uncovers the slit and weakens the structure facilitating the opening up of the slit, the inner strip adapted to tear lengthwise when the corner portion above said slit is forcibly bent upwardly to open the slit.

2. A paperboard carton as set forth in claim 1 including a layer of waxlike material between at least the tear portion of the outer strip and the inner strip filling and sealing the slit.

3. A paperboard carton as set forth in claim 1, wherein the slit is continuous except for spaced narrow uncut portions integrally connecting the corner portions above and below said slit, these uncut portions together appreciably strengthening the slitted corner portion of the carton but being individually weak and easily broken when the corner portion above said slit is bent upwardly in opening said slit.

4. A liquid-tight, closed flat topped upright paperboard carton the body of which is made of paperboard material coated on the outside with thermoplastic material, said carton having flat side walls defining corner portions and having in the side of one upper corner portion thereof a substantially continuous horizontal slit that extends both ways from the corner, the corner portion below said slit adapted to define a V-shaped pouring spout when the corner portion above said slit is bent upwardly folding the flat top along a line diagonally of the corner and thereby opening said slit, and an adhesive strip coated with thermoplastic material adapted to bond with the coating on the carton under heat and pressure, said strip being applied under heat and pressure to the outer side of said carton covering said slit and sealing the same while at the same time preventing upward bending of said upper corner portion, said strip having longitudinally extending weakening lines above and below the slit defining therebetween a tear portion overlying the slit removal of which preliminary to opening the slit uncovers the slit and weakens the structure so that the corner portion above said slit may be bent upwardly more easily in the opening up of the slit.

5. A paperboard carton as set forth in claim 4 including a layer of wax between the slitted corner portion of the carton and at least the tear portion of said strip filling and sealing the slit.

6. A paperboard carton as set forth in claim 4, wherein the slit is continuous except for spaced narrow uncut portions integrally connecting the corner portions above and below said slit, these uncut portions together appreciably strengthening the slitted corner portion of the carton but

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being individually weak and easily broken when the corner portion above said slit is bent upwardly in opening said slit.

7. A liquid-tight, closed flat topped upright paperboard carton having flat side walls defining corner portions and having in the side of one upper corner portion thereof a substantially continuous horizontal slit that extends both ways from the corner, the corner portion below said slit adapted to define a V-shaped pouring spout when the corner portion above said slit is bent upwardly folding the flat top along a line diagonally of the corner and thereby opening said slit, and adhesive strips applied to the inner and outer sides of said carton covering said slit and sealing the same while at the same time preventing upward bending of said corner portion, the outer strip having longitudinally extending weakening lines above and below the slit defining therebetween a tear portion overlying the slit removal of which preliminary to opening the slit uncovers the slit and weakens the structure so that the corner portion above said slit may be bent upwardly more easily in the opening up of the slit.

8. A liquid-tight, closed flat topped upright paperboard carton having flat side walls defining corner portions and having in the side of one upper corner portion thereof a substantially continuous horizontal slit that extends both ways from the corner, the corner portion below said slit adapted to define a V-shaped pouring spout when the corner portion above said slit is bent upwardly folding the flat top along a line diagonally of the corner and thereby opening said slit, and an adhesive strip applied to the outer side of said carton covering said slit and sealing the same while at the same time preventing upward bending of said upper corner portion, said strip having longitudinally extending weakening lines above and below the slit defining therebetween a tear portion overlying the slit removal of which preliminary to opening the slit uncovers the slit and weakens the structure so that the corner portion above said slit may be bent upwardly more easily in the opening up of the slit.

9. A liquid-tight, closed flat topped upright paperboard carton the body of which is made of paperboard material coated inside and out with thermoplastic material, said

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carton having flat side walls, defining corner portions and having in the side of one upper corner portion thereof a substantially continuous horizontal slit that extends both ways from the corner, the corner portion below said slit adapted to define a V-shaped pouring spout when the corner portion above said slit is bent upwardly folding the flat top along a line diagonally of the corner and thereby opening said slit, and adhesive strips coated with thermoplastic material adapted to bond with the coating on the carton under heat and pressure, said strips being applied under heat and pressure to the inner and outer sides of said carton covering said slit and sealing the same, the outer strip having a longitudinally extending tear portion overlying the slit removal of which preliminary to opening the slit uncovers the slit and weakens the structure facilitating the opening up of the slit, the inner strip adapted to tear lengthwise when the corner portion above said slit is forcibly bent upwardly to open the slit.

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