

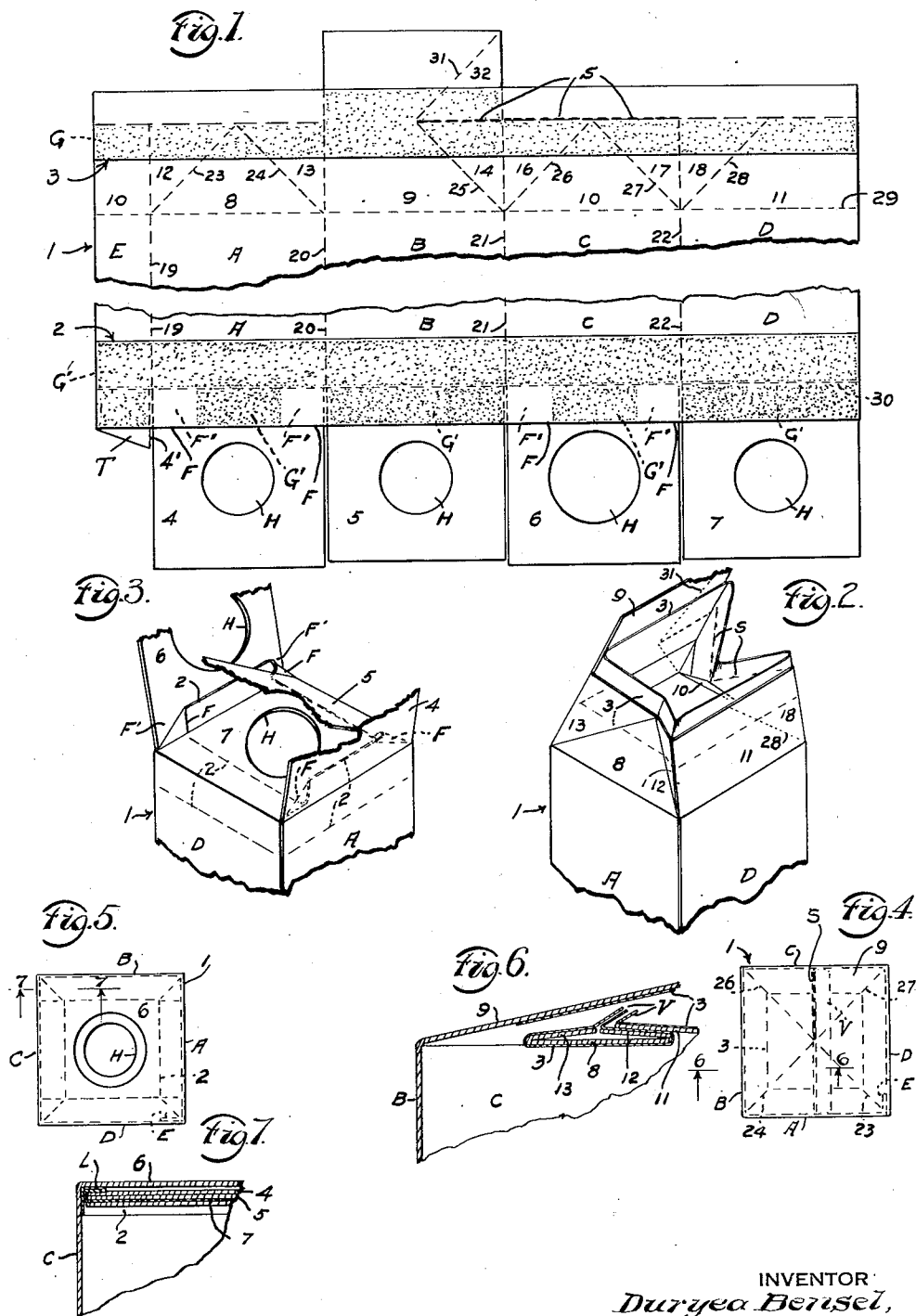
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SEALING FOR PAPERBOARD CONTAINERS

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SEALING FOR PAPERBOARD CONTAINERS

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4 Claims. (Cl. 229—17)

The present invention relates to an improvement in paperboard containers, and more especially to containers for packaging liquids and flowable pulverulent materials.

The important feature herein is in the provision of means at the corners and score lines of the container whereby, when the carton is closed, the corners, folds and hinge scores of the closure are all rendered leak-, sift-proof and watertight.

In the present embodiment, the provision of means shown herein to accomplish the foregoing noted advantages, makes it possible to use a much thinner paperboard than is customary to use in cartons of this type, thus making for greater economy in the use of materials, in the manufacture thereof.

The sealing element, as will be seen, is in the form of a strip or ribbon of paper, which is glued on the carton blank to overlie the main flap defining score lines, which define all of the end closing flaps on each of said panels. It is a further advantage that the present sealing strip and its mode of attachment, permits its use on carton end-closures in which the flaps are cut-scored from each other, or on end-closures in which the flaps are uncut, but are defined from each other by score lines.

The foregoing, and other features of advantage will be apprehended as the herein description proceeds, and it will be obvious that modifications may be made in the structure herein without departing from the spirit of the invention or the scope of the appended claims.

In the drawing,

Fig. 1 is a plan view of the layout of a container blank partially broken away to save space;

Fig. 2 is a fragmentary perspective view of the container showing a scored, but uncut end closure;

Fig. 3 is a fragmentary, perspective view of another form of container end closure, comprising separate cut apart flaps;

Fig. 4 is an end view of Fig. 2, in reduced scale, showing the end closure of Fig. 2 sealed;

Fig. 5 is an end view, in reduced scale, of Fig. 3, in sealed end closure;

Fig. 6 is an enlarged, fragmentary, sectional view, taken on the line 6—6, Fig. 4, looking in the direction of the arrows; Fig. 7 is an enlarged fragmentary sectional view taken on the line 7—7, Fig. 5, looking in the direction of the arrows.

In Fig. 1, the container blank comprises four main body forming panels A, B, C and D and a body glue lap E, all defined from one another by

score lines 19, 20, 21 and 22. The glue lap E has flap extensions 10 and T and these are defined from their associate glue lap E by common score lines 29 and 30. Lap extension 10 is also defined from its associate end closure flap by a score line 19, and lap extension T is defined from its associated end closure flap 4 by a cut score 4'.

Main body panels A, B, C and D, at their upper end as viewed in Fig. 1, have each uncut, end closure flaps 9, 10 and 11, respectively, all defined from said body panels by a common score line 29. Each of said end closure flaps 8, 9, 10 and 11 are defined from one another by score lines 20, 21 and 22.

The end closure flap 8, Fig. 1, is provided with angularly disposed score lines 23—24 which extend inwardly from score lines 19 and 20 to the outer end of the flap 8, at which point they meet, forming two spaced apart diagonal sub-sections 12 and 13.

Flap 10 is similarly provided with angular score lines 26—27 forming two spaced apart diagonal sub-sections 16 and 17.

End closure flap 11 is provided with one diagonal score line 28, which extends from score line 22 to the end of flap 11, at its marginal mid-portion, and forms a diagonal sub-section 18. Flaps 8, 10 and 11 are half or sub-flaps, that is, they are equal in length to one half of the dimension of the set-up container.

Major end closure flap 9, is a full sized flap, and forms the main cover flap when over-folded on the sub-flaps, as indicated in Fig. 4.

Main flap 9 is provided with two angularly disposed score lines 25 and 31, line 25 extending from score line 21 to about the center of flap 9, and line 31 extending in an opposite angular direction from the end of score line 25 and ends in the upper right hand corner of flap 9, as viewed in Fig. 1.

Sealing strip 3 is glued, as shown by the stippling G, to the glue lap extension 10, and end closure flaps 8, 9, 10 and 11, in such a manner that half of its width is free and extends beyond the outer ends of connected sub-flaps 9, 10 and 11, but is fully glued to the major closure flap 9.

Thus, the sealing strip 3 on the sub-flaps 8, 10 and 11 has half of its area arranged to freely overhang the edges of said sub-flaps.

As indicated at Fig. 1, the major flap 9 and a portion of the sealing strip 3 are provided with a short, cut-score or perforated line S, which commences at the junction of the diagonal score lines 25 and 31 and ends at the sub-flap score line 21. The purpose of this line of weakening will be later described.

The lower half of the container blank, as viewed in Fig. 1, is also provided with a sealing strip 2, and this is so glued, as to straddle the common score line 30, which defines the cut and scored closure flaps 4, 5, 6 and 7 from the body panels A, B, C and D, and extends over and is glued to the glue lap extension T. Each of the flaps 4, 5, 6 and 7 and the glue lap T are independently foldable of each other on their common score line 30. Each of the flaps is provided with a pouring or filling aperture H, which, when the flaps are overfolded and sealed in container closing position, register with each other to form a common aperture, as indicated at H in Fig. 5.

The sealing strip 2, as indicated by the stippling G' is fully glued to the glue lap E, and to the extension T, and is partially glued to the flap 4 and the panel A, leaving a glue spot G' and two unglued spots F'-F'; the strip is fully glued to the flap 5 and the panel B; and the flap 6 is provided with a glue spot G' with two unglued spots F'-F', while the strip portion on the panel C is fully glued and the strip is fully glued to the panel D and flap 7. These unglued portions on the flaps 4 and 6 are located adjacent the cut-score edges of each flap and lap, and such portions being free, allows the unglued strip portions F'-F' to adjust themselves to the infolding action of the flaps, to be later described in detail.

The preferred material for these sealing strips is an extremely thin paper, such as featherweight or onion skin, which are not only thin but durable and tough. Such thin papers require a minimum of space between the overfolded closure flaps and thus insure a true contact seal between said overfolded flaps.

In erecting and closing the container, the panels A, B, C and D are folded in the following order: glue lap E and its extensions are folded over and down flat onto the panel A on score line 19. Then glue is applied to the exposed surface. Then the panels C-D are folded over upon score line 21; forcing panel D and its flaps onto the glued glue lap E and its extensions.

After drying, the container is then brought to rectangular form by bending on the score lines 19, 20, 21 and 22.

Then the flaps 4, 5, 6 and 7, which are full sized flaps, are folded in the following order; flap 7 may be first closed in, Fig. 3, then flap 5 is glued and folded down upon 7, this action, as indicated in Fig. 3, pulls down the four glue-free sections F'-F', and F'-F' of strip 2 into natural angular corner folds F'-F', Fig. 3, with the remaining portion of the strip 2 adhered to flaps 6 and 4. Then the flaps 4 and 6 are glued and folded down, causing the adherent strip portions thereon to lie in face contact with the next successive index flaps, Fig. 6, at L. As these flaps are in full glued contact with each other, as folded, it is obvious that a fully closed contact is effected between the flaps and the sealing strip sections, and makes the scores and corner jointures sift- and leak-proof.

This last described end closure, may form a bottom filler closure for the present container and the aperture H to be closed with a closure cup such as is set forth in my pending patent application, Serial #758,820, filed December 22, 1934, Figs. 5 to 11. This end closure may also be used as a filling and sealed pouring closure for fluid holding or similar containers, and sealed as disclosed in Figs. 10 and 11.

In the upper closure, as viewed in Fig. 1, the closure flaps 8, 9, 10 and 11 are all connected

to one another, the scoring, straight and angular being so arranged as to permit of the flaps 8 and 10 to be angularly infolded, in closing, as indicated in Fig. 2, such infolding causing the simultaneous drawing in, to closing position, of the two flaps 11 and 9, flap 11 closing in on top of flaps 8 and 10 and their under sub-flaps 12-13, 16 and 17, and flap 9 finally closing down on flap 11 and being adhered thereto to form an outer cover closure. This closure is similar to that disclosed in my pending patent application, Serial #116,053, filed December 16, 1936, Figs. 1 and 10, with the exception of the herein described sealing strip 3.

In the folding down of the flaps 8, 9, 10 and 11, as above described, the overhanging unglued extension of strip 3, is automatically positioned sequentially from that shown in Fig. 2, to the position shown in Fig. 6, the said unglued extension and flaps taking the positions as shown in said figure at V and the final closure folds said portions V of strip 3 down flat upon the under flaps 8-11, 12 and 13, leaving the various folds V in contact with one another, in adhered relation. When this closure is opened as will be pointed out in detail later, the unglued position of strip 3 is torn at the line of weakened resistance S.

With the closure so formed, the main top closure flap 9, when glued down, then presents the perforated line of weakness S, best seen in Fig. 4. This closure, like the one previously described, is leak- and sift-proof.

To open this closure to pour out the contained material, the perforated line of weakness on the cover 9 is broken, to the center of the cover, the two double triangular connected flaps 25 and 31 on each side of the break, being bent backwardly on the score lines 26-27 this action exposing the underlying triangular flap 10 and its two triangular sub-flaps 16 and 17.

Then the flap 10 and its appurtenant triangular sub-flaps 16-17 with triangular sub-flaps 14 and 18 are pulled upwardly and outwardly and thereby form a reclosable, extended pouring spout. During this opening action, the weakened line S on the sealing strip 3, Fig. 1, is torn, the extending edge of the strip beyond the edge of flap 10, having been adhered to the extending strip portion on flap 11 and its sub-flap 18, which extending portion, is itself adhered flat on top of flap 11 and its sub-flap 18.

What is claimed is:

1. A paperboard container having panels to which are hingedly connected a main outer closing flap, an opposite flap disposable under the main flap and having its free edge extending short of the hinged edge of the main flap, and a pouring flap under and joined to the other flaps by end scores; said pouring flap being provided with intermediate score lines arranged to permit it to be folded under the other flaps; said main flap having a line of perforations disposed over the pouring flap transverse to the hinged edge thereof, whereby when the main flap is broken along the perforated line, parts of said opposite and main flaps may be bent upwardly to allow the pouring flap to be extended; and a continuous sealing strip adhered across the flaps longitudinal to and covering said perforated line and the free edges of the other flaps, leaving overhanging marginal portions folded upon each other and turned over a margin of said opposite flap and the pouring flap; said strip having the multiple function of sealing the perforations and edges of

the opposite and pouring flaps, and affording a leak-proof weakened line at the perforated line and said edges, along which line the adjacent portions of the strip and main flap may be easily separated to allow the pouring flap to be projected, said strip also having the function of moving said adjacent portions from each other when the flaps are opened without the main flap being severed.

2. A paperboard container having panels to which are hingedly connected a main outer closing flap, an opposite flap disposable under the main flap and having its free edge extending short of the hinged edge of the main flap, and a pouring flap under and joined to the other flaps by end scores; said pouring flap being provided with intermediate score lines arranged to permit it to be folded under the other flaps; said main flap having a weakened line disposed over the pouring flap and along the free edge of said opposite flap; said opposite and main flaps having score lines disposed over the pouring flap and diverging from a part of the weakened line remote from the hinged edge of the pouring flap and extending toward such hinged edge; and a continuous sealing strip adhered across the flaps longitudinal to and covering said weakened line.

3. A paperboard container having panels to which are hingedly connected a main outer closing flap, an opposite flap disposable under the main flap and having its free edge extending short of the hinged edge of the main flap, and a pouring flap under and joined to the other flaps by end scores; said pouring flap being provided with intermediate score lines arranged to permit it to be folded under the other flaps; said main flap having a line of perforations disposed over the pouring flap and along the free edge of said opposite flap; said opposite and main flaps having score lines disposed over the pouring flap and

diverging from a part of the perforated line remote from the hinged edge of the pouring flap and extending toward such hinged edge; and a continuous sealing strip adhered across the flaps longitudinal to and covering said perforated line and the free edges of the other flaps, leaving overhanging marginal portions of the strip folded upon each other and turned over a margin of said opposite flap and the pouring flap; said strip having the multiple function of sealing the perforations and edges of the other flaps, and affording a leak-proof weakened line at the perforated line, along which line the adjacent portions and main flap may be easily separated to allow the pouring flap to be projected, said strip for moving said overhanging portions from each other when the flaps are opened without being severed.

4. A rectangular paperboard container having four body panels, and including a main outer closing flap to cover the end of the container; an opposite flap adhered to about half the lower face of the main flap; a pouring flap under the first named flaps and joined thereto by end score lines; said flaps joining respective panels by score lines; the ends of said pouring flap being provided respectively with diagonal score lines extending from the adjacent corners of the container to form a triangular section joined to the adjacent panel and triangular sub-sections lying against the section and joining the main and opposite flaps at said end score lines; said sub-sections having meeting edges disposed under the free edge of said opposite flap; said main flap having a perforated line disposed over said edges; said opposite and main flaps having diagonal score lines disposed over the diagonal lines of said pouring flap.

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