

PATENT SPECIFICATION

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(54) PAPERBOARD CONTAINER

(71) We, EX-CELL-O CORPORATION, a corporation organized under the laws of the State of Michigan, one of the United States of America, of 1200 Oakman Boulevard, City of Detroit, State of Michigan, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to coated paperboard containers having flat end closures with a hidden pouring spout which can be moved to an open position and in which the pouring spout can be re-closed for protective storage.

An object of this invention is to provide a flat-ended paperboard container of improved construction.

In accordance with the invention, there is provided a coated paperboard container of the type including a tubular body having a flat end closure overlying said body, first and second triangular panel members folded flat over the end of said body, inner and outer roof panels which are folded over said triangular panel members, fold back panels flanking said triangular members and which join them to said inner and outer roof panels, first and second pouring panels as part of said fold back panels flanking said first triangular panel, and first and second closure panels as part of said fold back panels flanking said second triangular panel, a central sealing rib constituted by portions of said inner and outer roof panels, said first and second pouring panels, and said first and second closure panels, an outer sealing rib sealing the edge area of said outer roof panel to said inner roof panel at a position spaced outwardly of the termination of the inner roof panels and at least one line of perforations in said outer roof panel located between

said central sealing rib and said outer sealing rib.

Conveniently, the container may be provided with an end closure having full outer and partial inner roof panels extending over the container end as external members, and two triangular panel members each having a pair of fold back panels connecting them to the said roof panels, which are positioned under the roof panels in the closed position. Sealing may be provided for at two locations. A first sealing area is preferably a sonic seal at the central area and a second sealing area is preferably a heat seal between the free edge of the full outer roof panel and a connected edge of the partial inner roof panel.

A separation means in the form of a perforation line or lines may conveniently be provided between the first sealing area or the sonic seal and the second sealing area or the heat seal. When the contents of the container are to be dispensed, the perforation is broken which permits the central sealing area to stand up disclosing the pouring spout. The pouring spout can be opened similar to the standard gable top containers presently commercially available.

In the accompanying drawings:

FIG. 1 is a layout view of the inside surface of a container blank from which a liquid proof flat end container of the present invention is formed.

FIG. 2 is a layout view of the outside surface of a container structure after it is side seamed from the container blank illustrated in FIG. 1.

FIG. 3 is a fragmentary perspective view showing the side seamed blank illustrated in FIG. 2 in an open ended view prior to the closing of a flat end closure of the present invention.

FIG. 4 is a fragmentary perspective view showing the container of FIG. 3 in a par-

tially closed condition.

FIG. 5 is a fragmentary perspective view showing the container according to Figs. 3 and 4 with sealing panels of the blank in position to permit sonic sealing of a central area to provide a liquid-proof seal for the container.

Fig. 6 is a fragmentary perspective view showing the container of Figs. 3, 4 and 5 after said central area has been sonically sealed and a securing strip of an outer roof panel has been heat-sealed to the connecting edge of an inner roof panel to provide a flat end liquid proof container.

Fig. 7 is a fragmentary perspective view showing a container according to Fig. 6 with an opening strip partly removed.

Fig. 8 is a fragmentary perspective view of a container according to Fig. 7 after the opening strip has been completely removed.

Fig. 9 is a fragmentary perspective view showing the container of Fig. 8 with the pouring spout of the container in its opened condition.

Fig. 10 is a fragmentary perspective view showing the container of Fig. 9 after the container has been reclosed.

Fig. 11 is a partial layout view of the inside surface of a container blank illustrating a top member similar to that of Fig. 1, and illustrating an adhesive (i.e. adhesion-inhibiting pattern on the pouring panels of the pouring spout.

Fig. 12 is a partial layout view of the inside surface of a container blank similar to that of Fig. 1, illustrating an opening strip that extends only partially across the outer roof panel.

Fig. 13 is a fragmentary perspective view of a flat end closure container fabricated from the container blank shown in Fig. 12.

FIG. 14 is a fragmentary perspective view showing the container of FIG. 13 with the opening strip partly removed.

FIG. 15 is a fragmentary perspective view of the container of FIG. 14 after the opening strip has been removed.

FIG. 16 is a fragmentary perspective view showing the container of FIGS. 14 and 15 with the container spout in an open pouring position.

FIG. 17 is a perspective view similar to FIGS. 14, 15 and 16 illustrating the container with the closure in its reclosed position.

FIG. 18 is a partially fragmentary perspective view showing a container with an opening strip similar to the strip illustrated in FIGS. 12, 13 and 14, but having a continuous contact with the outer roof panel so that once the strip passes the perforation forming the pouring spout separation, the opening strip will remain attached to the container.

FIG. 19 is a fragmentary perspective view showing the container similar to the container blank of FIG. 6 but with a single perforated line extending the length of the outer roof panel and a second perforated line running parallel with it for short distance to facilitate initial opening.

FIG. 20 is a fragmentary perspective view showing a container similar to the container of FIG. 19, but having an opening notch with a single perforated line extending the length of the outer roof panel.

Referring now to the drawings, there is disclosed a container blank 10 comprising three sections, namely, a flat end closure 11, a body portion 12, and an end closure 13. A horizontal score line 14 extends across the container blank 10 and separates flat end closure 11 and body portion 12. A horizontal score line 15 extends across container blank 10 and separates end closure 13 and body portion 12. Body portion 12 has body panels 16, 17, 18 and 19 and side seam flap 20. The container blank 10 is defined on its sides by edges 21 and 22. The container blank 10 is further defined by vertical score lines 23, 24, 25, and 26.

The end closure 13 has external closure panels 27 and 29 which extend from body panels 16 and 18, respectively. Triangular closure panels 28, and 30 are part of end closure 13 and extend from body panels 17 and 19, respectively. Triangular closure panel 28 is defined by score line 15 and score lines 35 and 36. Triangular closure panel 28 is connected to external closure panels 27 and 29 by fold back panels 33 and 34. Triangular closure panel 30 is defined by score line 15 and score lines 39 and 40. Fold back panels 37 and 38 connect triangular closure panel 30 to external closure panel 29 and side seam flap 20. As will be discussed in more detail hereafter, the side seam flap 20 will be connected to external closure panel 27 placing fold back panel 38 adjacent to external closure panel 27 in the constructed container.

External closure panel 27 has a tuck-in flap 31 and external closure panel 29 has a tuck-out flap 32.

Flat end closure 11 is provided with an outer roof panel 41 and an inner roof panel 43 which are connected to body panel members 16 and 18, respectively. A triangular spout panel 42 and a triangular closure panel 44 are connected to body panels 17 and 19, respectively. A staggered horizontal score line 46 extends substantially parallel to horizontal score lines 14 and 15, and extends from edge 21 to vertical score line 26.

The outer roof panel 41 is divided in basically two parts, by the horizontal score line 46. A lower portion is called a closure

panel 47 and is defined by score lines 23, 46, and 14, and edge 21. An opening assist score line 49 extends substantially from the intersection of score line 14 and score line 23 to a point on score line 46 closer to score line 23 than to edge 21. An upper portion of the outer roof panel 41 as viewed in FIG. 1 has basically three elements; namely, a sealing panel 51, an opening strip 53 and a securing strip 54. The opening strip 53 is separated from the sealing panel 51 and the securing strip 54 by perforated score lines 57 and 58, respectively.

The inner roof panel 43 is divided into two parts by the score line 46. A closure panel 60 is provided between horizontal score lines 46 and 14 and vertical score lines 24 and 25. An opening assist score line 61 runs from the intersection of score line 14 and 24 to a point on score line 46. Said intersection on score line 46 is closer to score line 24 than score line 25 and is substantially the same distance from score line 24 as opening assist score line 49 is from score line 23 long score line 46.

The triangular spout panel 42 is connected to fold back panels 63 and 64 along score lines 65 and 66, respectively. Fold back panels 63 and 64 connect the triangular spout panel 42 to closure panels 47 and 60, respectively. Pouring panels 68 and 69 are connected to the fold back panels 63 and 64, respectively, and are connected to each other along a score line 70.

Triangular closure panel 44 is connected to fold back panels 73 and 74 along score lines 75 and 76, respectively. The fold back panels 73 and 74 connect triangular closure panel 44 to closure panel 60 and side seam flap 20, respectively. Closure panels 78 and 79 are connected to the fold back panels 73 and 74, respectively, and to each other along score line 80.

The container blank 10 is formed into a side seam blank 100 as illustrated in FIG. 2 by having body panel 19 and side seam flap 20 rotated as a unit about score line 25 and having the inside surfaces of body panel 19 come in contact with the inside surface of body panel 18 and score line 26 positioned next to score line 24 and having the inside surface of side seam flap 20 contacting the inside surface of body panel 17 adjacent to score line 24. Then the body panel 16 is rotated about score line 23 so that its inside surface comes in contact with the inside surface of body panel 17. The inside surface of body panel 16 along edge 21 comes in contact with the outside surface of side seam flap 20 and the edge 21 is substantially positioned parallel and aligned with score line 26. The associated members with the flat end closure 11 and the end closure 13 will

make similar movements and the container will appear as illustrated in FIG. 2. The blank 10 is then side seamed where the inside area of body panel 16 comes into contact with the outside surface of side seam flap 20.

When the side seam blank 100 is ready to be formed into a container, it is opened up in a squared condition as illustrated in FIG. 3. The end closure 13 is formed in a manner well known in the art. Basically, triangular closure panels 28 and 30 are moved about score line 15 toward the middle of the container. Fold back panels 33-34 and 37-38 rotate about score lines 35-36 and 39-40, respectively and have their outside surfaces come in contact with the outside surfaces of triangular closure panels 28 and 30. At the same time, external closure panels 27 and 29 are moved towards each other. The tuck in flap 31 of external closure panel 27 will be positioned between the inside surfaces of external closure panel 29 and fold back panels 34 and 37. The various portions will be heat sealed forming a liquid tight bottom structure.

Referring now to FIGS. 3 through 6, after the end closure 13 is formed as stated above and as shown in FIG. 3, and a product has been put in the container, the various score lines are folded so as to form the pouring end structure or flat end closure 11. As shown in FIG. 4, the triangular spout panel 42 is moved around score line 14 over the end of the container and towards its center. At the same time, triangular closure panel 44 is moved toward the middle of the container about horizontal score line 14.

The outside surfaces of pouring panels 68 and 69 are rotated towards each other about score line 70, and the outside surfaces of closure panels 78 and 79 are rotated towards each other about score line 80. The inside surface of pouring panel 69 and the inside surface of closure panel 78 come in contact with sealing panel 62. The inside surface of pouring panel 68 and the inside surface of closure panel 79 come in contact with sealing panel 51.

As shown in FIG. 5, the elements 51, 62, 68, 69, 78, 79 have been moved to a position at an angle to the end of body portion 12 and sealed to each other. The sealing between the pouring panels 68 and 69, the closure panels 78 and 79, and the sealing panels 51 and 62 take place below the top edges of the panels 68, 69 and 78 and 79 between the various layers providing a liquid-tight seal. Additionally, the panels 51 and 62 are sealed to each other at a position above the top edges of the panels 68, 69 and 78, 79. In the preferred embodiment, the sealing is accomplished by

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sonic sealing apparatus, which is found to provide an efficient liquid-tight seal which is easily opened by the user.

After the sealing has been accomplished as just explained, the inside surface of the securing strip 54 is heat-sealed to the edge portion of closure panel 60 adjacent to score line 14, as shown in FIG. 6. The filled container now has the bottom end closure 13 closed and sealed and the flat top end closure 11 closed and sealed. The sonically sealed portion constitutes a central sealing rib 82, and the strip 54 heat-sealed to the panel 60 constitutes an outer sealing rib 84. The perforated score lines 57 and 58 are now positioned between the central sealing rib 82 and outer sealing rib 84.

When the consumer wishes to dispense the contents of the container, a tip 86 on the opening strip 53 is raised and the paperboard is ruptured along the perforated score lines 57 and 58 as shown in FIG. 7. After the opening strip 53 has been removed, as shown in FIG. 8, the container is ready for opening. As shown in FIGS. 9 and 10, to open the container the consumer will place his thumbs on the edges of score lines 23 and 24 and will push the fold-back panels 63 and 64 upwards. This causes the central sealing rib 82 to turn upwards, and causes the closure panels 47 and 60 to rotate about opening assist score lines 49 and 61, which, as earlier stated, are positioned closer to score lines 23 and 24, respectively, than the edge 21 and score line 25, respectively. This pushing will cause a popping action or a pulling action to pull the triangular spout panel 42 out of its closed position so that it can be extended in a pouring or dispensing position as viewed in FIG. 9. The container can be reclosed by moving the triangular spout panel 42 back towards its original position, and, when this is accomplished, the container would be as shown in Fig. 10.

In some applications it may be desirable to include a print of an adhesive material (i.e., adhesion-inhibiting material) on the mutually presented faces of the pouring panels 68, 69. A desirable adhesive pattern 102 is illustrated in Fig. 11. A wax based adhesive material is found to give satisfactory results.

Referring now to Fig. 12, there is illustrated a top structure similar to the above-mentioned preferred embodiment. The opening strip is designated as 53a and is defined by perforated score lines 58a and 57a. A cut member 59 is provided connecting the perforated score lines 57a and 58a. A perforated score line 91 is provided on sealing panel 51a connecting perforated score line 57a to score line 46. A per-

forated score line 92 is provided on sealing panel 62a and is aligned with perforated score line 91 when the container is formed and closed as illustrated in Fig. 13. To open the container, the tip 86a is raised and pulled back rupturing the perforated score lines 58a and 57a as shown in Fig. 14. When it reaches the cut member 59 the opening strip 53a can be removed as shown in Fig. 15 and thrown away. The spout half of the container will then be available for opening and the forward portion of the central sealing rib 82 can be raised through the assistance of perforated score lines 91 and 92 and the container pour spout can be opened as shown in Fig. 16, and then closed as shown in Fig. 17, in a similar manner to that described with respect to the embodiment illustrated in Figs. 9 and 10.

Fig. 18 illustrates another embodiment of the present invention and is a modification of the structure described with respect to FIG. 14. In FIG. 18 the perforated score lines 58a and 57a are not connected by a cut member 59. After the opening strip 53b has been moved past the perforated score lines 91 and 92, the pouring half of the central sealing rib 82a can be raised so that the pouring spout may be opened to facilitate dispensing of the product. The opening strip 53b will be retained by the container and not utilized or thrown away.

FIG. 19 shows another embodiment of the present invention employing a single full perforated score line 57c, and a tip 86c having a short perforated score line 58c. The consumer must start raising the tip 86c just enough to start the rupture along score line 57c. After it is started, the opener may move this rupture all the way across the container permitting opening and closing similar to those illustrated in FIGS. 8 through 10 of the present invention.

FIG. 20 shows a further embodiment of the present invention having a single full perforated score line 57d and a notch defined by an angled cut line 105 and score line 57d. The consumer can open the container by lifting the leading edge of the central sealing rib 82d adjacent the notch causing the perforated score line 57d to rupture its full length. The container will then be in condition to be opened and closed similar to the steps illustrated in FIGS. 8 through 10.

WHAT WE CLAIM IS:—

1. A coated paperboard container of the type including a tubular body having a flat end closure overlying said body, first and second triangular panel members folded flat over the end of said body, inner and outer roof panels which are folded over said triangular panel members, fold

sonic sealing apparatus, which is found to provide an efficient liquid-tight seal which is easily opened by the user.

After the sealing has been accomplished as just explained, the inside surface of the securing strip 54 is heat-sealed to the edge portion of closure panel 60 adjacent to score line 14, as shown in FIG. 6. The filled container now has the bottom end closure 13 closed and sealed and the flat top end closure 11 closed and sealed. The sonically sealed portion constitutes a central sealing rib 82, and the strip 54 heat-sealed to the panel 60 constitutes an outer sealing rib 84. The perforated score lines 57 and 58 are now positioned between the central sealing rib 82 and outer sealing rib 84.

When the consumer wishes to dispense the contents of the container, a tip 86 on the opening strip 53 is raised and the paperboard is ruptured along the perforated score lines 57 and 58 as shown in FIG. 7. After the opening strip 53 has been removed, as shown in FIG. 8, the container is ready for opening. As shown in FIGS. 9 and 10, to open the container the consumer will place his thumbs on the edges of score lines 23 and 24 and will push the fold-back panels 63 and 64 upwards. This causes the central sealing rib 82 to turn upwards, and causes the closure panels 47 and 60 to rotate about opening assist score lines 49 and 61, which, as earlier stated, are positioned closer to score lines 23 and 24, respectively, than the edge 21 and score line 25, respectively. This pushing will cause a popping action or a pulling action to pull the triangular spout panel 42 out of its closed position so that it can be extended in a pouring or dispensing position as viewed in FIG. 9. The container can be reclosed by moving the triangular spout panel 42 back towards its original position, and, when this is accomplished, the container would be as shown in Fig. 10.

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FIG. 19 shows another embodiment of the present invention employing a single full perforated score line 57c, and a tip 86c having a short perforated score line 58c. The consumer must start raising the tip 86c just enough to start the rupture along score line 57c. After it is started, the opener may move this rupture all the way across the container permitting opening and closing similar to those illustrated in FIGS. 8 through 10 of the present invention.

FIG. 20 shows a further embodiment of the present invention having a single full perforated score line 57d and a notch defined by an angled cut line 105 and score line 57d. The consumer can open the container by lifting the leading edge of the central sealing rib 82d adjacent the notch causing the perforated score line 57d to rupture its full length. The container will then be in condition to be opened and closed similar to the steps illustrated in FIGS. 8 through 10.

WHAT WE CLAIM IS:—

1. A coated paperboard container of the type including a tubular body having a flat end closure overlying said body, first and second triangular panel members folded flat over the end of said body, inner and outer roof panels which are folded over said triangular panel members, fold-



- back panels flanking said triangular members and which join them to said inner and outer roof panels, first and second pouring panels as part of said fold back panels flanking said first triangular panel, and first and second closure panels as part of said fold back panels flanking said second triangular panel, a central sealing rib constituted by portions of said inner and outer roof panels, said first and second pouring panels, and said first and second closure panels, an outer sealing rib sealing the edge area of said outer roof panel to said inner roof panel at a position spaced outwardly of the termination of the inner roof panels, and at least one line of perforations in said outer roof panel located between said central sealing rib and said outer sealing rib.
2. A container according to Claim 1, including a pair of perforated lines extending across said outer roof panel.
3. A container according to Claim 2, including an opening strip formed between said perforated lines, and a lift tip at one end of said opening strip.
4. A container according to Claim 1, including a single line of perforations in said outer roof panel located between said central sealing rib and said outer sealing rib, and a cut line on said outer roof panel extending inwardly from a side edge of said outer roof panel to said perforated line.
5. A container according to Claim 1 including a second perforated line substantially parallel to said first perforated line, said second perforated line starting at a side edge of said outer roof panel and extending partially across said outer roof panel.
6. A container according to Claim 5, in which said first perforated line starts at a side edge of said outer roof panel and extends more than half way across said outer roof panel, and a perforated line is positioned substantially perpendicular to and starting from said first perforated line and extends across said central sealing rib.
7. A container according to Claim 6, in which said second perforated line extends parallel to and starts at the same edge of said outer roof panel as said first perforated line.
8. A container according to Claim 7, including a cut line connecting the ends of said first and second perforated lines, said perpendicular perforated line contacting said first perforated line adjacent said cut line, and the distance from the outermost end of said first perforated line to said perpendicular perforated line being substantially the same as the height of said first triangular panel member.
9. A coated paperboard container, substantially as hereinbefore described with reference to the accompanying drawings.

MARKS & CLERK,
Alpha Tower,
A.T.V. Centre,
Birmingham, B1 1TT.
Agents for the Applicants.

