SPIRALLY WOUND CONTAINER TUBE

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Application March 12, 1956, Serial No. 570,794

Claim. (Cl. 229—51)

This invention, relating as indicated to spirally wound container tubes, is more particularly directed to a single body container formed of a plurality of overlapping plies of paperboard or foil liner in a container tube. In one embodiment this invention is particularly adapted for bakery products which are prepared ready for the oven.

The invention further relates to sealed containers for containing prepared bakery dough products under pressure, said containers being structurally adapted for easy opening and having a spiral perforation adjacent a butt joint and a perforation between the plies.

An object of this invention is to provide improvements in container structure which increase the durability of the unit while at the same time facilitating easy opening.

A further object of this invention is to produce a new type spirally wound container tube for pilable materials held under pressure which may be readily opened.

Another object of this invention is to produce a new method of making and opening a spirally wound single body tube container for release of the materials within the container.

To the accomplishment of the foregoing and related ends said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claim, the following description setting forth in detail one approved means of carrying out the invention, such disclosed means, however, constituting but one of the various ways in which the principles of the invention may be used.

In the drawings:

Fig. 1 is a perspective view of a can with the tab ready for removal;

Fig. 2 is a perspective view of the label ply being uncovered to disclose the perforation line of the outer chip ply and the unglued sections of the label ply;

Fig. 3 is a fragmentary cut-away perspective view of the can showing the label ply and the outer chip ply uncovering the glue and unglued sections of the inner chip ply;

Fig. 4 is a reduced view of the back of the label ply, showing the unglued portion;

Fig. 5 is a reduced view of the outer and inner plies unfolded; and

Fig. 6 is an enlarged cross-sectional view along the lines 6—6 of Fig. 1, showing the relationship of the plies.

In the art of spirally wound tubular containers it is conventional practice to form a plurality of plies of paperboard, either with butt joints or lapped, and to form these fully glued to one another to form a tough spirally wound container to hold materials, in some instances, prepared dough for bakery products. These spirally wound tubes are sealed at the ends with a metal end seal, though there may be other types of end sealing means. To open said containers various efforts have been made to provide a weakened section so that the container can be spirally unwound for removal of the contents. Some degree of pressure may be present inside of the sealed container in certain cases, as, for example, the pressure which results when the yeast in food products becomes active due to exposure to room temperatures.

As a result of this, a new type of spiral container tube has been found to be necessary because experience has shown there is considerable waste in connection with the breakage of these containers and considerable dissatisfaction in the means for opening them. A new container is shown in Fig. 1, where 10 is generally the spirally wound container tube, 11 is a metal end seal having a rolled flange 12, and 13 is the lower end seal having a rim 14. The outer ply is more commonly referred to as the label ply designated 15, having a starting point shown at 16, a tab portion shown at 18, with the edge of the label ply being shown as it spirals about the can terminating at the base thereof as indicated at 20.

Fig. 2 shows the same can with the tab 18 pulled back, and the label ply 15 covering the outer ply of paperboard or chipboard 21. The outer ply 21 has a line of perforations 19 at intervals in a spiral extending from the rolled flange 12 to the lower rim 14, spiraling approximately 360° in the length of the can. The label ply has an unglued portion indicated at 31 in the region of the line of perforations 19, extending for about one-half inch in width to provide for indicia 32 to indicate the further instructions for opening the can. Without this unglued portion, the label ply would make such indicia and instructions unreadable and confuse the uninitiated person opening the can for the first time. To open, of course, it is only necessary to exert pressure on the line of perforations.

Fig. 3 is a perspective view showing the label ply 15 having the tab 18 pulled back and the outer ply 21 with its perforation line 19 shown on each side of the can. This covers the inner ply 22, which is also of paperboard or chipboard and is glued throughout its entire surface to the outer ply 21, except at the edges of the butt joint 23. For a section extending on either side of said butt joint to a point indicated at 33 on one side and extending to another point 34 on the other side, said inner ply is not glued to the outer ply 21. This section extends for approximately one-quarter inch on either side of the line of perforations 19 when the can is completely assembled. This provides a breakthrough point, in that the line of perforations may be broken as is seen in this view, and the butt joint is unglued adjacent thereto, but does not provide for a weakened section. The overlapping nature of the butt joint and the line of perforations holds the pressure internally of the can. This combination provides a tight seam capable of withstanding internal pressures of the order of 40 to 60 pounds per square inch with safety. At the same time, by uncovering the label ply 15, the perforation line of the outer ply shown at 19 can be broken by means of a blow of pressure from the hand or thumb, and this will break the seal in the can and permit the entire structure to open along the lines of the butt joint 23 and the perforation line 19.

Fig. 4 shows a reduced view of the label ply with the central unglued section 31 extending approximately centrally thereof, which makes the indicia and the operating instructions readily visible when the can is opened.

Fig. 5 shows the plies opened and in reduced view, showing the relationship of the inner ply 22, outer ply 21 and perforation line 19 to one another. All of this is again visible in connection with Fig. 6. The metal end seal is shown at 11, the rolled flange at 12, and the label ply, which may be printed or otherwise marked, is shown on the left at 15. The outer ply is shown at 21 and between the label ply and the outer ply are the unglued sections shown particularly in connection with the other figures. In addition, there is a perforation line shown at 19.
in the said ply to permit easy opening. Said perforation line is adjacent to the butt joint of the inner ply 22, the butt joint being shown at 23. Between said inner and outer plies is the unglued section adjacent the line of perforations 19 and the butt joint 23 and extending either side of said line of perforations a short distance, as is shown particularly in connection with Fig. 3. On the inside of the can is a sealing ply of foil or the like, said ply being shown at 24. It will be seen that the plies are greatly exaggerated to illustrate their characteristics. All of the plies would be fully glued to the other plies except as indicated earlier and shown in connection with the drawings.

As an example of one of these containers, the following might be given for a prepared dough container: Said can might be 2 inches in diameter and 5 inches long, and the outer ply or label ply might be foil .00035 inch thick, which could well be sulphite backed paper foil, put on in strips about 4½ inches wide with a ¾ inch overlap and glued except for the two unglued portions previously mentioned. The outer ply of paperboard might be a second ply of the same thickness and the inner ply of chipboard and would generally be formed with a butt joint. The third ply from the exterior herebefore referred to as the inner ply would be of the same chipboard with an outer newline finish. This would be formed with a butt joint. The butt joint would be somewhat adjacent to the perforations that would be formed in the second ply. The connection between the inner ply and the outer ply, also referred to as a second ply, would be unglued as previously mentioned adjacent the butt joint and line of perforations. Similarly, there would be the unglued portion between the outer ply and the label ply for induction and instructions.

It will be appreciated that the relationship of the perforations to the butt joint of the inner ply may vary depending upon the length and diameter of the container and upon the type of contents or pressure within the container. With specific reference to prepared biscuit dough cans, it has been found that good results are achieved when the butt joint is within ¼ inch of the perforation line. However, for various other types of containers having different diameters, type of contents and the like, the relationship of the spacing of the butt joint to the perforations in the outer chipboard ply would normally not exceed one inch. In the embodiment shown for a prepared biscuit dough container, the apertures in the perforation line of the outer ply are about ¾ inch long and the ¼ inch connection between the apertures. The inner ply is a sulphite backed paper foil about .00035 inch in thickness with some amount of overlap. All of the plies are fully glued, except as referred to earlier. The label ply is, of course, held within the metal rim and unglued along the outer overlap. Other means for making an end of the label ply available for unwinding may be used.

For opening the can, the strip of the label ply, such as the tab, is pulled and unwound, thus removing the outer label and uncovering the perforation line of the outer chipboard ply. Since a portion of the label ply is unglued intermediate thereof along the line of perforations, instructions and indicias are not pulled away and destroyed in removing this ply. A blow or pressure exerted on and along the perforation line of the outer ply will break the sealing relationship and in view of the unglued section between said plies, the can may be spirally opened at this point. Twisting of the ends of the can in the opposite direction will then further open the container along the indicated break or separation line so that the contents can be removed. It will be appreciated, of course, that the lapped inner sealing ply of the container will not be an immediate extension to the opening seal of the container once the major intermediate structural chipboard layers are split.

One of the many advantages possessed by the container embodying the instant invention is that it is considerably easier to manufacture, and it is found to be very much stronger, in that all of the plies are glued to one another, except immediately adjacent the line of perforations and the butt joint. Herefore, prepared dough containers have employed one or more nonglued plies to facilitate the opening of the can, and these plies have been completely unglued, and this has, of course, weakened the structural rigidity of the container with another advantage is the elimination of the circumferential skive cut heretofore used in certain containers of this type. Those skilled in the art know that controlling the depth of a skive cut through an outer layer of chipboard is extremely difficult, and a great deal of waste has been encountered when the skive cut through the outer plies so weakens the inner plies that jarring of the containers during handling causes the containers to break open along the skive cut. It will also be apparent that in the case of biscuit dough containers, as the can is spirally opened, the biscuits at both ends of the can can be readily removed as the container unfolds.

It is possible that in connection with certain products, it may be desirable to have more than one perforation line spiralling around the can in the paperboard outer layer. Under some conditions it may not be necessary to have an inner sealing ply and an outer label ply. The principal combination is the inner and outer plies which are fully glued together, except in the immediate vicinity of the line of perforations of the outer ply and the butt joint of the inner ply.

It will be seen that the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claim are therefore intended to be embraced therein.

I claim:

In a multi-ply, spirally wound, tubular container having at least a semi-rigid wall construction and having rigid closure caps at each end of the container with the annular flange portion thereof seamed over the ends of the tubular container wall and holding the same in circumferential tension and radial compression, two adjacent independently flexible ply strips wound one upon the other and in the same direction, each of said strips being wound with its edges in abutment and each ply presenting internal and external lateral surfaces of uniform diameter, and with the abutting edges of one ply being spaced axially apart from the edges of the other ply to impart maximum rigidity to the container, the inner surface of the outer of said ply strips and the outer surface of the inner of said ply strips adhering one to the other in static bonded engagement, the outer of said ply strips having formed therein a spirally extending weakened zone of greater than hemispherical order and primarily circumferential in direction formed by a series of perforations in the ply strip disposed in adjacent offset substantial parallelism with the abutting edges of the inner ply strip, and with the confronting surfaces of the said ply strips in the spirally extending zonular area between the perforation zone of the outer ply strip and the adjacent offset abutting edge of the inner ply strip contacting each other in non-bonded pressure friction adherence only, a sealing ply strip in contact with said inner ply strip and being of substantially less thickness than said other ply strips and disposed in spirally wound relationship thereto, and being fully bonded to said inner ply strip with the edges of said sealing ply strip being placed in overlapping relationship, a second sealing ply strip adhesively bonded to the said inner ply strip and disposed to have thereon instructions and labeling, said second sealing ply strip being spirally wound in the same direc-
5 tion as the other ply strips and having at one end thereof a triangular tab lying against the lateral surface of the outer ply strip, disposed inwardly thereof and being adapted to be pulled away from said ply strip to uncover at least a portion of the perforation zone contained within said outer ply strip, the zonular area of said second sealing ply strip lying over said perforation zone being free of adhesive securement to said outer ply, whereby when an inwardly directed force is applied along at least a portion of the perforation zone of the outer ply strip, the inner surface adherence between the ply strips in the aforesaid zonular area will be broken, permitting the container to be opened hemispherically along the said weakened spirally extending zone.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Invention Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,912,900</td>
<td>June 6, 1933</td>
</tr>
<tr>
<td>1,936,417</td>
<td>Nov. 21, 1933</td>
</tr>
<tr>
<td>2,051,923</td>
<td>Aug. 25, 1936</td>
</tr>
<tr>
<td>2,260,064</td>
<td>Oct. 21, 1941</td>
</tr>
<tr>
<td>2,555,380</td>
<td>June 5, 1951</td>
</tr>
<tr>
<td>2,709,548</td>
<td>May 31, 1955</td>
</tr>
<tr>
<td>2,793,126</td>
<td>May 21, 1957</td>
</tr>
<tr>
<td>2,793,127</td>
<td>May 21, 1957</td>
</tr>
<tr>
<td>2,800,267</td>
<td>July 25, 1957</td>
</tr>
</tbody>
</table>

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