Jan. 23, 1968 K. L. PIKE 3,365,115

CONTAINER BOTTOM CLOSURE

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FIG. 1B.

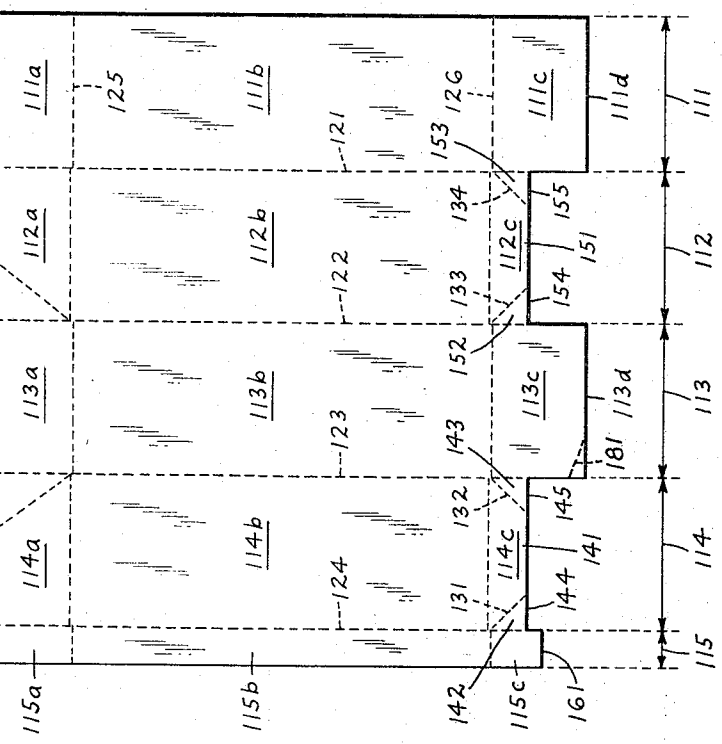
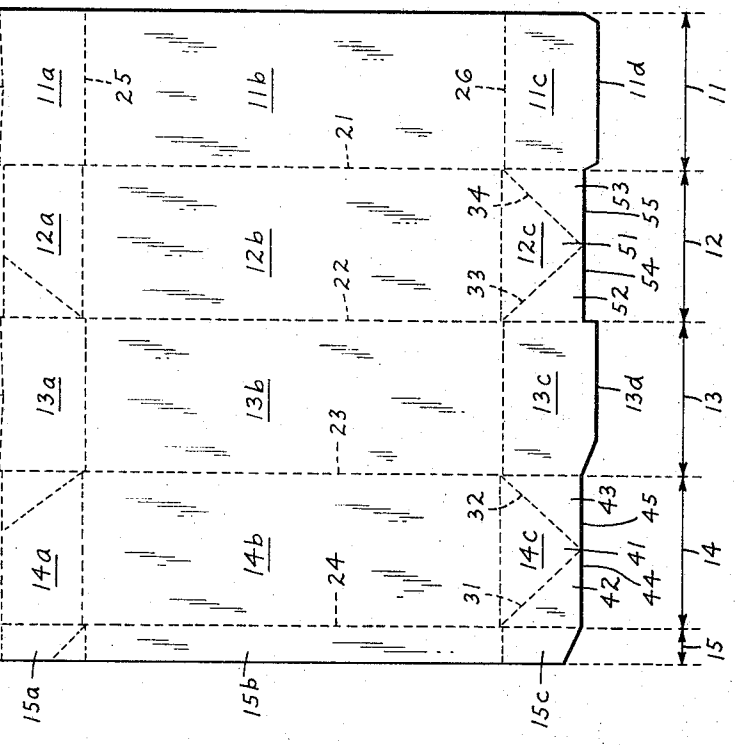



FIG. 1A. PRIOR ART



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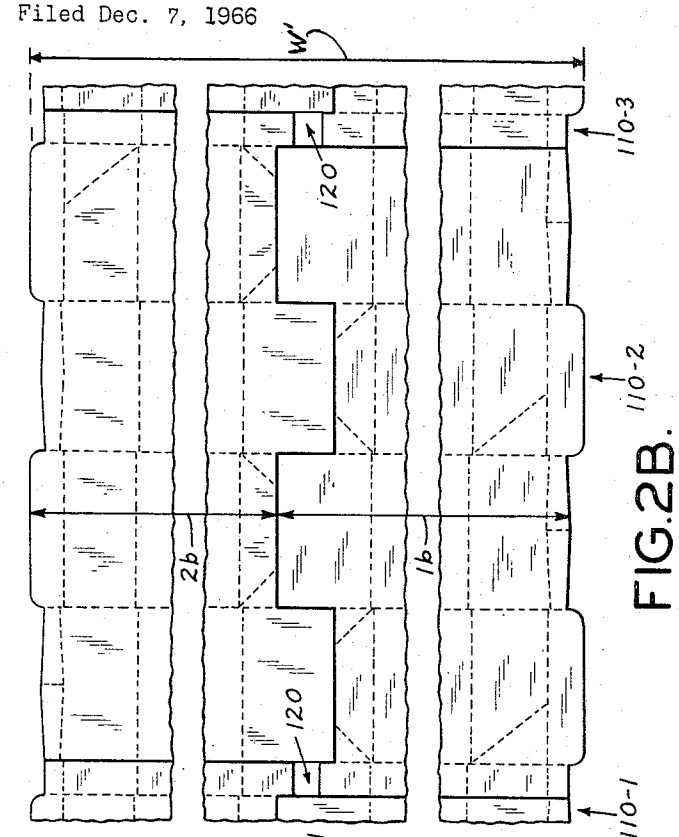



FIG.2B.

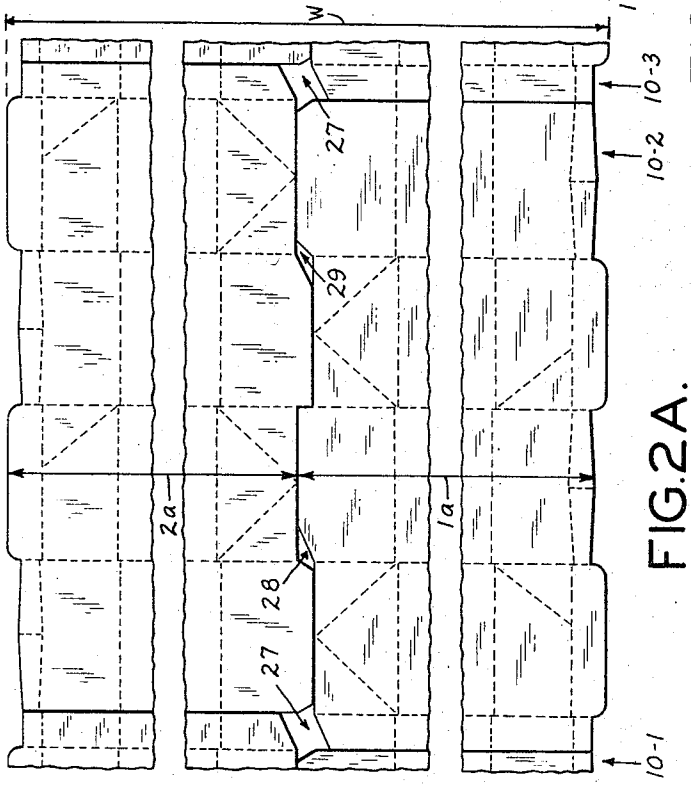



FIG.2A.
PRIOR ART

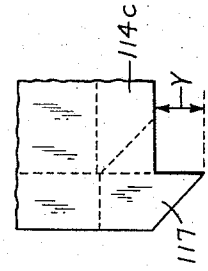



FIG.3E.

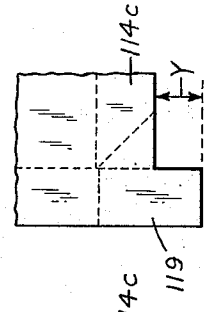



FIG.3D.

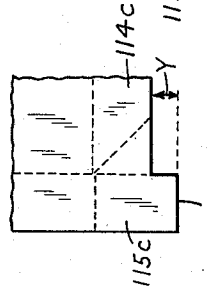



FIG.3C.

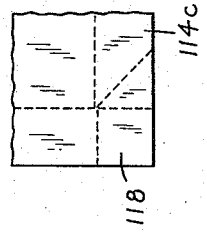



FIG.3B.

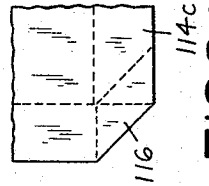



FIG.3A.

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FIG.4A.
PRIOR ART

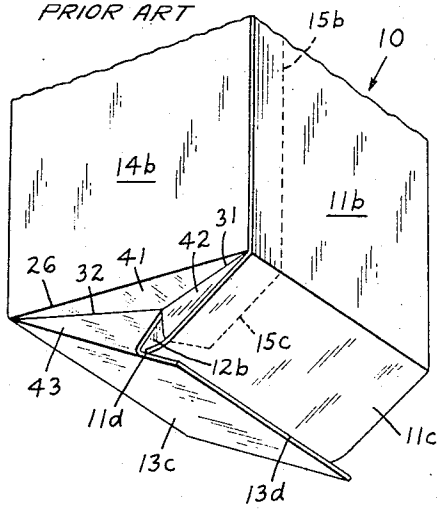



FIG.4B.

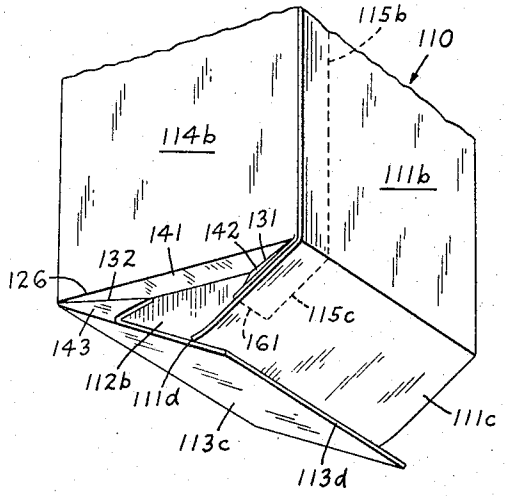



FIG.5A.
PRIOR ART

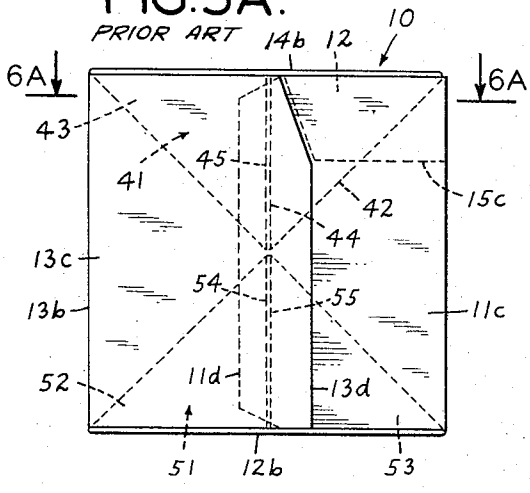



FIG.5B.

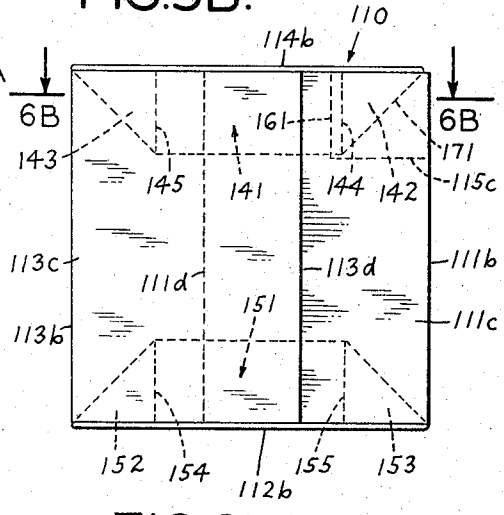



FIG.6A. PRIOR ART

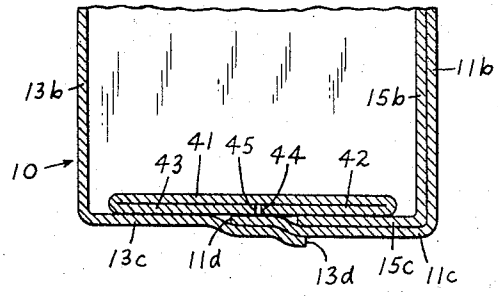
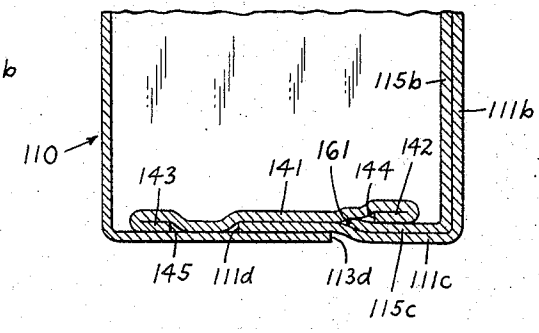



FIG.6B.



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Patented Jan. 23, 1968



3,365,115

# CONTAINER BOTTOM CLOSURE

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Filed Dec. 7, 1966, Ser. No. 599,774
2 Claims. (Cl. 229—38)

## ABSTRACT OF THE DISCLOSURE

A paperboard container constructed from an integral blank of foldable sheet material divided by score lines into five contiguous panels, four body panels including two pairs of opposing body panels, and a side seam panel; a group of top closure panels; and a group of bottom closure panels; the bottom closure panels including two opposing major flaps respectively contiguous with each of one pair of opposing body panels and having a length greater than half the width of the other pair of opposing body panels so that the bottom edges of the two major flaps overlap one another with the bottom closure panels in their assembled position; two opposing minor bottom flaps respectively contiguous with each of the other pair of opposing body panels, each minor bottom flap having a length selected to be from about 20 percent to about 75 percent of the length of the major bottom flaps; and a side seam bottom flap contiguous with the side seam panel and adjacent to one of the other bottom flaps, the side seam bottom flap having a rectangular shape and a length selected so that the bottom edge of said side seam bottom flap extends beyond the bottom edge of the adjacent bottom flap.

This invention relates to containers and in particular to the bottom closure structure of paperboard containers.

Paperboard containers are widely used for packaging a variety of products, including foods and beverages, one well known paperboard container being the so-called gable top container of the type shown in C. R. Alden Patent No. 2,750,095, issued June 12, 1956. Such containers are typically erected or assembled from blanks of a predetermined geometrical configuration which have been cut from a roll of paper sheet stock having a coating of a protective thermoplastic material such as wax or polyethylene. Also, score lines are impressed on the blanks to define the top closure, bottom closure, and side wall elements of the assembled container. Ordinarily, a paperboard container of this type is assembled on automatic machinery by folding and sealing a blank into a tubular body open at both ends, sealing together the bottom closure panels of the blank, filling the container with the desired product, and finally sealing together the gable top closure panels of the blank.

Since the bottom of a paperboard container is especially susceptible to damage, it is particularly important to construct the bottom closure of the container to have sufficient strength and leak resistance to maintain the integrity of the container even under severe conditions of use. In one well known container structure, a bottom closure with sufficient strength is obtained by providing a number of bottom panel elements or flaps which are folded, tucked and sealed together to form a bottom comprising several overlapping plies of paperboard. This type of bottom closure structure is exemplified by the containers disclosed in A. J. Seiple Patent No. 3,120,333 and H. B. Egleston et al. Patent No. 3,120,335, both of which issued on Feb. 4, 1964.

As shown in these patents, the bottom closure elements include four bottom panels or flaps of approximately rectangular configuration, two opposing major flaps and two opposing minor flaps. The lengths of the major and minor flaps differ primarily in that one of the major flaps is provided with a tuck-in extension and the other major flap is provided with a fold-over extension, whereas the minor flaps have no such extensions. The minor flaps are divided by score lines into a center triangular portion and two triangular gusset portions, one on either side of the center triangular portion. The bottom closure is formed by folding the opposing major and minor flaps toward each other and the center of the container. The folding of the minor flaps causes each of the gussets on each minor flap to be folded under a corresponding one of each of the opposing major flaps, so that gussets on opposing minor flaps which are folded under the same major flap cooperate to form a slot under each major flap. One of these slots forms a tuck-in slot under the major flap having the fold-over extension to receive the tuck-in extension of the opposing major flap when the two major flaps are brought sufficiently close together. At the same time that the tuck-in extension is being received in the tuck-in slot, the major flap having the fold-over extension is being placed on top of the major flap having the tuck-in extension so that the fold-over extension overlaps the tuck-in extension. In addition, when the assembly of the bottom closure is completed, the edges of the gussets folded under opposing major flaps are brought into close abutment but without crushing the edges against one another and thereby impairing the integrity of the container.

Because of the design of conventional bottom closure structures, special dies are required and close tolerances must be observed in cutting container blanks with the appropriate configuration of bottom flaps from a roll or web of paperboard. Also, automatic equipment for assembling containers with conventional bottom closures must be carefully adjusted to relatively close tolerances to ensure both proper formation of the tuck-in slot from the minor flap gussets, and accurate positioning of the tuck-in extension of the opposing major flap within the tuck-in slot.

In the present invention there is provided a strong, leak resistant bottom closure which may be assembled on existing automatic equipment which does not require the observance of the kind of close tolerances necessary in the assembly of conventional bottom closures. In addition, the bottom closure structure of the present invention permits a significant saving in paperboard to be realized, since container blanks provided with the bottom closure elements of this invention may be cut from a narrower roll of paperboard than that required for container blanks having a conventional bottom closure structure of the variety described above.

The bottom closure of the present invention also comprises two opposing major flaps and two opposing minor flaps, both of rectangular configuration, with each of the two major flaps being provided with a fold-over extension, and with each of the minor flaps being made substantially shorter than the major flaps. By constructing the minor flaps to be substantially shorter than the major flaps, it was discovered that several important advantages resulted without impairing the strength and leak resistance essential to a commercially acceptable container. In order to achieve these advantages without sacrificing strength and leak resistance, it was found that the length of each of the minor flaps should be on the order of 20 to 75 percent of the length of each of the major flaps, with the upper limit of this percentage range depending upon the size of the container, but in every case the maximum length of the minor flap is that which permits an overlapping rather than a tucking relationship between the two major flaps.

Each of the minor flaps in the bottom closure of this invention is divided by score lines into a central trapezoid shaped portion and two triangular gusset portions, one on either side of the central trapezoid portion. In forming the bottom closure of this invention, the two minor flaps and the two major flaps are folded toward the center of the container, and although the gussets are folded under the major flaps, the gussets are sufficiently short so that they extend but a relatively short distance toward the center of the container, hence no tucking is required to assemble the container of this invention, the fold-over extensions of the two major flaps being brought together by simply folding one over the other. In addition, because of the relative smallness of the gussets, the edges of the gussets folded under opposing major flaps are widely separated when the bottom closure of this invention is completely assembled, thereby competely eliminating potential impairment of the bottom integrity due to crushing of abutting gusset edges as in conventional bottom closures.

Another advantage resulting from the relatively short length of the minor flaps of the present invention is that container blanks with the short minor flaps of this invention can be cut from a narrower web of paperboard, thereby saving a significant amount of paperboard. This advantage was discovered by observing that the short minor flaps permitted the two streams of container blanks cut from each web to nestle together more closely than conventional container blanks so that the same number of container blanks can be cut from a narrower web.

The elimination of the tucking operation not only reduces the complexity of the assembling of the carton but also simplifies and reduces the cost of cutting container blanks from the web. In conventional bottom closures, it is customary to taper the corners of the major flap tuck-in extension in order to ensure proper tucking despite minor or transient variations in the adjustment of the container assembling equipment. In turn, providing tapered major flap corners requires cutting dies with relatively complex shapes to cut the container blanks from the web. Not only are these complex dies expensive, but their replacement from time to time requires stopping the production of an entire converting line. In one good embodiment of the present invention, on the other hand, the elimination of tucking also eliminates the need for tapered major flap corners; consequently, no dies for cutting tapered major flap corners are required in converting a paperboard web into container blanks having the bottom closure configuration of this embodiment.

Those skilled in the art will immediately recognize from the following description and appended drawings that the principles of the present invention may be applied with advantage to containers of various sizes and constructed from various materials, it being understood that this description is intended for illustrative purposes only and in no manner to limit the invention.

The invention will be fully understood from the following detailed description of illustrative embodiments thereof taken in connection with the appended drawings, in which:

FIG. 1A is a layout view of one surface of a prior art container blank;

FIG. 1B is a layout view of one surface of a container blank provided with a bottom closure structure in accordance with the principles of this invention;

FIG. 2A is a layout view of two streams of prior art container blanks as they appear immediately after being cut from a roll of paperboard;

FIG. 2B is a layout view of two streams of container blanks of this invention as they appear immediately after being cut from a roll of paperboard;

FIGS. 3A, 3B, 3C, 3D, and 3E are layout views of alternative configurations for the bottom extension of the side seam flap in the bottom closure structure of this invention;



FIG. 4A is a bottom perspective view of a partially assembled prior art bottom closure;

FIG. 4B is a bottom perspective view of a partially assembled bottom closure of this invention;

FIG. 5A is a plan view showing the outside of a completely assembled prior art bottom closure;

FIG. 5B is a plan view showing the outside of a completely assembled bottom closure of this invention;

FIG. 6A is a sectional view showing the flaps of a prior art bottom closure in their completely assembled positions, taken along line 6A—6A of FIG. 5A; and

FIG. 6B is a sectional view showing the flaps of the bottom closure of this invention in their completely assembled positions, taken along line 6B—6B of FIG. 5B.

Referring now to the drawings, wherein like reference characters designate like parts throughout the several views, there is shown in FIG. 1A a flat blank **10** from which a container having a conventional bottom closure is assembled. Blank **10** is divided by vertical score lines **21, 22, 23, 24** into four body panels **11, 12, 13, 14** and a side seam panel **15**. Each panel **11** through **15** is divided by horizontal score lines **25** and **26**, which are approximately perpendicular to vertical score lines **21, 22, 23, 24**, into three sections, a top section, a side wall section and a bottom section. The top sections, which are denoted **11***a*, **12***a*, **13***a*, **14***a*, **15***a*, constitute the elements from which the well known gable top closure is formed, and the side wall sections, which are denoted **11***b*, **12***b*, **13***b*, **14***b*, **15***b*, constitute the elements from which the side walls of the completed container are formed. No further discussion of the gable top closure or side walls is included, since these portions of blank **10** are well known and do not enter into the explanation of the bottom closure of the present invention.

Bottom sections **11***c*, **12***c*, **13***c*, **14***c*, **15***c* of blank **10** collectively constitute the elements from which the bottom closure of a conventional container is assembled. Sections **11***c* and **13***c* are the major bottom flaps, sections **12***c* and **14***c* are the minor bottom flaps, and section **15***c* is the side seam bottom flap. It is observed that both the minor and major flaps are substantially rectangular in shape, with the minor flaps being somewhat shorter than the major flaps primarily because of the extensions **11***d* and **13***d* on the major flaps. As explained more fully below, one of these major flap extensions, **11***d*, forms a tuck-in extension in the completely assembled container, while the other major flap extension, **13***d*, forms a fold-over extension in the completely assembled container.

It is also observed in FIG. 1A that both corners of tuck-in extension **11***d* are tapered, thereby to facilitate the assembly of the bottom closure in which extension **11***d* is tucked into a slot under major flap **13***c* in the manner shown in FIG. 4A. Further, one of the corners of extension **13***d* is tapered to prevent the build up of excessive plies of paperboard which would otherwise occur if extension **13***d* overlapped side seam bottom flap **15***c*. Side seam flap **15***c* is also tapered to complement the corner taper on extension **13***d*, and as shown in FIG. 5A, it is apparent that these two tapered corners on major flap extension **13***d* and side seam bottom flap **15***c* must be carefully dimensioned in order to prevent unwanted overlapping in the finally assembled container.

The minor flaps **12***c* and **14***c* of container **10** are respectively divided by pairs of diagonal score lines **33, 34** and **31, 32** into triangular central portions **51** and **41** interposed between triangular gusset portions **52, 53** and **42, 43**. The spatial relationship of these central and gusset portions is illustrated in FIG. 4A in which blank **10** is shown in partially assembled form. Before the bottom closure is assembled, the blank **10** is formed into a tubular body by folding panels **11, 12, 13, 14** about vertical score lines **21, 22, 23, 24** and sealing together side seam panel **15** and vertical panel **11**. The bottom closure of the tubular shaped container is then assembled by folding the major and minor flaps about score line

26 so that the central portions of the flaps are moved toward the center of the container and opposing flaps are moved toward each other.

The partially assembled bottom closure shown in FIG. 4A illustrates how gusset 43 is folded about score line 32 to form part of a slot under major flap 13*c* which receives the tuck-in extension 11*d* of major flap 11*c*. A completely assembled bottom closure is shown in FIG. 5A, in which it is noted that the edges 45, 44 of gussets 43, 42 and the edges 54, 55 of gussets 52, 53 are folded under opposing major flaps to be brought into close abutment when the bottom closure is finally assembled. Thus edge 45 of gusset 43 and edge 44 of gusset 42 are brought into close abutment, while edge 54 of gusset 52 and edge 55 of gusset 53 are brought into close abutment. Because of the close proximity of the opposing gusset edges, it is necessary to cut and score the container blanks with precision and to maintain careful adjustment of the automatic assembling equipment so that opposing gusset edges do not crush one another during the assembly of the bottom closure.

Referring now to FIG. 1B, this drawing illustrates a container blank 110 embodying the bottom closure structure of the present invention. Blank 110 is divided by vertical score lines 121, 122, 123, 124 into four body panels 111, 112, 113, 114, and a side seam panel 115. Each panel 111 through 115 is divided by horizontal score lines 125 and 126, which are approximately perpendicular to vertical score lines 121, 122, 123, 124, into three sections, a top section, a side wall section, and a bottom section. The top sections, designated 111*a*, 112*a*, 113*a*, 114*a*, 115*a*, constitute the elements of a gable top closure which may be of any well known variety such as that shown in FIG. 1A, while the side wall sections, designated 111*b*, 112*b*, 113*b*, 114*b*, 115*b*, constitute the vertical side walls in the completely assembled container.

Bottom sections 111*c*, 112*c*, 113*c*, 114*c*, 115*c* of blank 110 collectively constitute the structural elements of the bottom closure of this invention. Sections 111*c* and 113*c* are the major bottom flaps, sections 112*c* and 114*c* are the minor bottom flaps, and section 115*c* is the side seam bottom flap. The two minor bottom flaps 112*c* and 114*c* are respectively divided by pairs of diagonal score lines 133, 134 and 131, 132 into trapezoid shaped central portions 151 and 141 interposed between triangular gusset portions 152, 153 and 142, 143. The spatial relationship of these central and gusset portions is illustrated in FIG. 4B.

As shown in FIG. 1B, minor flaps 112*c* and 114*c* are constructed to be substantially shorter than major flaps 111*c* and 113*c*, measuring from score line 126 to the bottom edges of the minor flaps and from score line 126 to the bottom edges of extensions 111*d* and 113*d* of the major flaps, thereby to obtain several unexpected advantages in the manufacture and assembly of containers embodying this structure. However, the amount by which minor flap length is to be made substantially shorter than major flap length is not critical, since minor flap length, expressed as a percentage of major flap length, may be selected from within the range of 20 to 75 percent. Thus both the minor flaps and the major flaps have a rectangular shape in which the width of each rectangle is equal the assembled container. If desired, the major bottom is contiguous. The length of the major bottom flaps is selected to be greater than one half of their width so that in the assembled position of the bottom closure, the edges of the two major flaps overlap one another by an amount sufficient to provide a relatively strong bottom for the assembled container. If desired, the major bottom flaps of this invention may have about the same length as the major bottom flaps of conventional bottom closure structures.

In the case of container blanks cut from a single layer of paperboard, the lower limit of 20 percent for the length of minor bottom flaps relative to the length of major bottom flaps in this invention is applicable to containers of gallon, half gallon, quart and smaller capacities, but the upper percentage limit depends upon the size of the cross-section of the container. Thus the upper percentage limit on the length of minor bottom flaps relative to the length of major bottom flaps is on the order of 75% for gallon containers, 69% for half gallon containers, and 62% for quart containers as well as smaller capacity containers having the same cross-section as quart containers. In the present invention, the two most important factors in determining the upper percentage limit on the length of the minor flaps relative to the length of the major flaps are the avoidance of tucking to assemble the bottom closure and the saving of container material. Examples of suitable minor flap lengths for single layer, thermoplastic coated, paperboard containers of various sizes, expressed in inches, are given in the following Table I:

TABLE I

| Blank Size | Minor Flap Length | | |
|---|---|---|---|
| | Maximum | Preferred | Minimum |
| Quart and Smaller | 1.070 | 2 1/32 | 0.345 |
| Half Gallon | 1.530 | 1 1/16 | 0.445 |
| Gallon | 2.300 | 2 3/32 | 0.615 |

It is to be understood, of course, that as the lower and upper limits of the above ranges are approached, certain qualities of the container are enhanced at the expense of other qualities. For example, at the lower limits of these ranges, the saving in material required to make container blanks is increased, but the strength of the bottom closure is reduced, it being understood that the exact degree of reduction in strength is a function of a number of structural features of which minor flap length is but one.

Turning to FIG. 4B, this drawing illustrates a container with a partially assembled bottom closure formed from a container blank with the structure shown in FIG. 1B. After blank 110 has been placed in tubular form, the bottom closure is assembled by folding the major and minor flaps about score line 126 so that the central portions of the flaps are moved toward the center of the container and opposing flaps are moved toward each other. Also, gussets 142, 143 and 152, 153 are folded about score lines 131, 132 and 133, 134, respectively, so that the inside surfaces of the gussets are moved toward the inside surfaces of the corresponding major flaps. FIG. 4B illustrates how gusset 143 is folded about score line 132 to be positioned under major flap 113*c*, and it is observed that by constructing the minor flaps 112*c*, 114*c* to be sufficiently short in length relative to the major flaps 111*c*, 113*c*, the slot formed between gusset 143 in its folded-under position and major flap 113*c* extends but a short distance toward the center of the container. As a result, assembling the bottom closure of this invention does not require the overlapping portions or extensions 111*d* or 113*d* of the major flaps to be tucked into a slot of any kind, but requires only that one major flap be folded over the other, as shown in FIGS. 4B, 5B, 6B. Also, because of the relative shortness of the gussets, there is a wide gap separating the edges 145, 144 and 154, 155 of respective opposing gussets 143, 142 and 152, 153, after being folded under the major flaps, thereby permitting the container blanks to be cut, scored and assembled with an accuracy substantially less critical than that required for conventional containers.

In addition to the advantages described above, constructing the minor flaps to be substantially shorter than the major flaps results in a significant saving in the material from which the container blanks are cut. This is illustrated by comparing FIG. 2A with FIG 2B. In FIG. 2A there is shown two streams 1*a*, 2*a*, of container blanks 10–1, 10–2, 10–3 immediately after having been cut from

a web or roll of container material, for example, single layer, paperboard sheet stock coated on both sides with a thermoplastic substance such as polyethylene or wax. It is noted that there is some degree of nestling between the two streams of blanks because of complementary indentations in the bottom edges of the two streams of blanks. However, this is to be compared with the degree of nestling obtained with the bottom closure of this invention, as shown in FIG. 2B, where because of the much shorter lengths of the minor flaps, the two streams 1*b*, 2*b*, of blanks **110–1, 110–2, 110–3** are able to nestle much more clasely together, thereby to permit the same number of blanks as shown in FIG. 2A to be cut from a narrower web of container material. This is illustrated by a comparison of the overall width W of the two streams of containers in FIG. 2A with the overall width W' of the two streams of containers in FIG. 2B, where $W' < W$.

A comparison of FIGS. 2A and 2B also reveals another advantage of the present invention. In cutting container blanks with conventional bottom closures, it is customary to taper the corners of the major flaps, also shown in FIG. 1A. In order to provide these tapered corners, there are special cutting dies designed to cut off the unwanted corners at the same time that the blanks are cut from the web. It is apparent from the areas designated **27, 28, 29** in FIG. 2A that dies of relatively complex shapes are needed to perform the necessary corner cutting. In contrast, the corners of the bottom closure elements of this invention are cut square, as shown in FIG. 1B. As a result, no special corner cutting dies of complex shapes are required in forming the blanks of this invention. This is clearly shown in FIG. 2B, where the only cutting die, other than those necessary for cutting the blanks from the web, is that provided to eliminate an excessively long side seam bottom flap as indicated by the rectangular areas designated by the reference numeral **120**. However, it is noted that the shape of this die is a simple rectangle, as compared with the complex shapes shown in FIG. 2A.

Turning next to FIGS. 3A through 3E, these drawings illustrate a number of alternative configurations for the shape of the side seam bottom flap in this invention. FIGS. 3B, 3C and 3D represent different varieties of a rectangular shape for the side seam bottom flap, with shapes **118** and **119** in FIGS. 3B and 3D respectively illustrating minimum and maximum lengths, and shape **115***c* in FIG. 3C illustrating the preferred length. If desired, the outside corner of a rectangular shaped side seam bottom flap may be removed to provide a tapered corner that abuts a complementally tapered corner on major flap **113***c*, as shown in FIG. 1B, or that meets the diagonally folded edge **171** of gusset **142** as shown in FIG. 5B. Specific maximum, minimum and preferred values, expressed in inches, for the extension Y of the side seam bottom flap beyond the bottom edge of the adjacent minor flap **114***c* are listed in the following Table II.

TABLE II

| Blank Size | Maximum | Preferred | Minimum |
|---|---|---|---|
| Quart and Smaller Capacity | 15/32 | 1/4 | 0 |
| Half Gallon | 29/32 | 5/16 | 0 |
| Gallon | 1 3/32 | 5/8 | 0 |

The preferred rectangular shape **115***c*, illustrated in FIG. 3C, is also shown as it appears in the assembled container in FIG. 5B, in which it is observed that the bottom edge **161** occupies a distinct and separate position in the assembled container, thereby permitting it to be separately and therefore more effectively sealed by embossing or staking the outside bottom surface of the container along a line defined by edge **161**.

By constructing the bottom closure of this invention to have minor flaps that are substantially shorter than the major flaps, it is apparent that their is significantly less container material in the bottom closure of this invention than in conventional bottom closures of the type illustrated in FIG. 1A. Therefore, in order to ensure that despite the smaller amount of material, the bottom closure of this invention has strength and leak resistance comparable to containers with conventional bottom closures, several innovations have been made in the apparatus for fabricating the bottom closure of this invention. These innovations in assembling and sealing the bottom closure, which are described in detail in the copending application of R. C. Mitzelfelt et al., Serial No. 599,768 filed on the same date together with this application. provide the assembled container with a bottom surface that is entirely flat, thereby improving the scuff resistance and the leak resistance of the container. A comparison of FIGS. 6A and 6B reveals that the bottom surface of a conventionally assembled container, shown in FIG. 6A, is characterized by a number of bulges caused by protruding areas or ridges which correspond to multiple layer areas of the bottom closure, whereas the bottom surface of the bottom closure of the present invention, shown in FIG. 6B, is substantially flat. Since bulges in the bottom surface of a conventional container are subject to greater scuffing, cause the assembled container to be relatively unstable, and make more difficult the sealing of potential leak paths between interior folded portions of the bottom closure, the elimination of such bulges in the present invention affords a container with superior durability. It is to be understood, of course, that the provision of a flat bottom surface is not limited to containers having the bottom closure of this invention, but that a flat bottom surface is a desirable feature for containers having any one of a variety of bottom closures.

The terms and expressions that have been employed herein are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions to exclude any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

**1.** A container constructed from an integral blank of foldable sheet material, in which a first group of four parallel score lines divides said blank into five contiguous panels including first, second, third, and fourth body panels of equal width and a side seam panel adjacent to said fourth body panel and smaller in width than said body panels, and in which a second group of parallel top and bottom score lines approximately perpendicular to said first group of score lines divides said panels into a group of top closure elements, a group of side wall elements, and a group of bottom closure elements, wherein each body panel is respectively divided by said top and bottom score lines into a side wall element interposed between a contiguous top closure element and a contiguous bottom closure element, said group of bottom closure elements comprising

first and second rectangular major bottom flaps respectively contiguous with the bottom of a corresponding one of the side wall elements of said first and third body panels, each of said first and second major bottom flaps having a width equal to the width of the corresponding side wall element and a length greater than half the width of said side wall elements so that the bottom edges of said first and second major bottom flaps overlap one another with said bottom closure elements in their assembled position,

first and second rectangular minor bottom flaps respectively contiguous with the bottom of a corresponding one of the side wall elements of said second and fourth body panels, each of said minor bottom flaps being divided by a third group of two diagonal score lines into a central trapezoid shaped portion interposed between two triangular gusset portions,

wherein the width of each of said minor bottom flaps is equal to the width of said major bottom flaps, and wherein the length of each of said first and second minor bottom flaps, as measured from said bottom score line to the bottom edge of each of said minor bottom flaps, is selected to be from about 20 percent to about 75 percent of the length of each of said first and second major bottom flaps, as measured from said bottom score line to the bottom edge of each of said major bottom flaps, so that in folding said gusset portions under said corresponding major bottom flaps to assemble said bottom closure elements, said gusset portions are sufficiently short to avoid tucking the bottom edge of either of said major bottom flaps into the slot formed between said gussets and the opposite one of said major bottom flaps, and

a side seam bottom flap contiguous with the bottom of said side seam panel and adjacent to said second minor bottom flap, wherein said side seam bottom flap is rectangular in shape and is provided with a length selected so that the bottom edge of said side seam bottom flap extends beyond the bottom edge of said second minor bottom flap.

**2.** A container constructed from an integral blank of foldable sheet material divided by a plurality of score lines into four contiguous body panels and a side seam panel contiguous with one of said body panels, each of said body panels and said side seam panel being further divided by said score lines into a group of top closure elements, a group of side wall elements, and a group of bottom closure elements, said group of bottom closure elements comprising

first and second opposing rectangular portions respectively divided by said score lines from two opposing ones of said body panels, the width of each of said rectangular portions being uniform and equal to the width of said body panels, and the length of each of said first and second rectangular portions being more than half the width of said first and second rectangular portions so that the bottom edges of said first and second rectangular portions overlap one another with said bottom closure elements in their assembled position,

third and fourth opposing rectangular portions respectively divided by said score lines from the other two opposing ones of said body panels, the width of each of said third and fourth rectangular portions being equal to the width of said first and second rectangular portions, and the length of each of said third and fourth rectangular portions being selected to be between about 20 percent and about 75 percent of the length of said first and second rectangular portions, and

a fifth rectangular portion divided by said score lines from said side seam panel, the width of said fifth rectangular portion being equal to the width of said side seam panel, and the length of said fifth rectangular portion being greater than the length of each of said third and fourth rectangular portions and shorter than the length of each of said first and second rectangular portions.



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# UNITED STATES PATENT OFFICE

# CERTIFICATE OF CORRECTION

Patent No. 3,365,115

January 23, 1968

Kenneth L. Pike

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 5, lines 63 and 64, strike out "the assembled container. If desired, the major bottom is contiguous."; column 7, line 12, for "clasely" read -- closely --; line 54, for "Y" read -- "Y" --; line 75, for "their" read -- there --; column 8, line 12, for "application." read -- application, --.

Signed and sealed this 24th day of June 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

WILLIAM E. SCHUYLER, JR.

Commissioner of Patents