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PAPERBOARD CONTAINER

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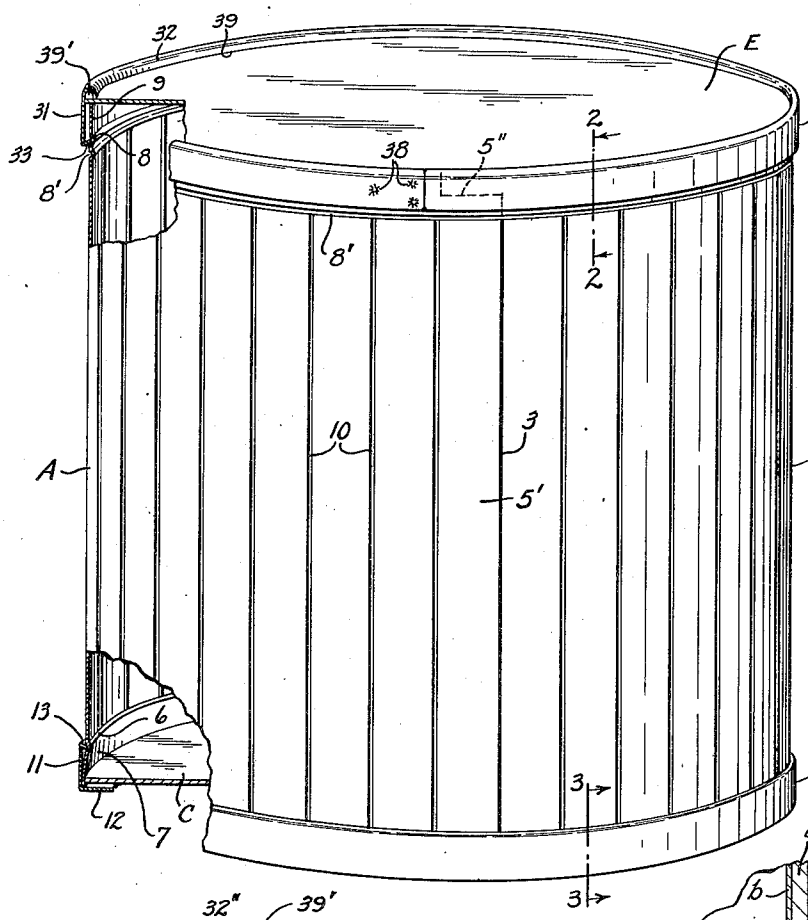


Fig. 1

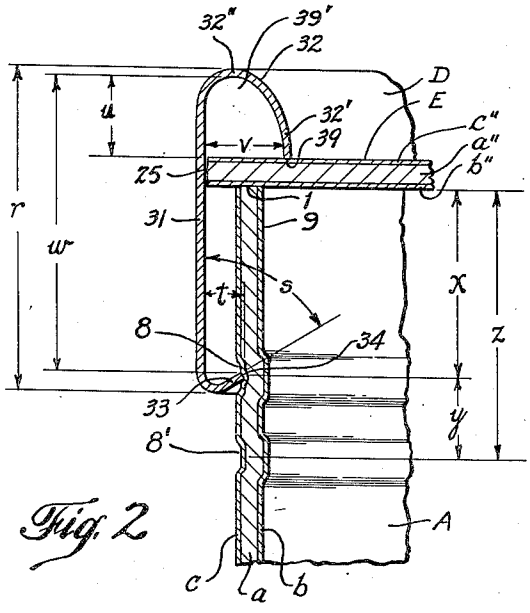


Fig. 2

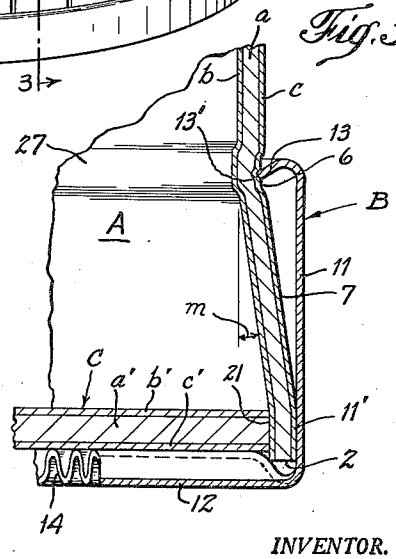


Fig. 3

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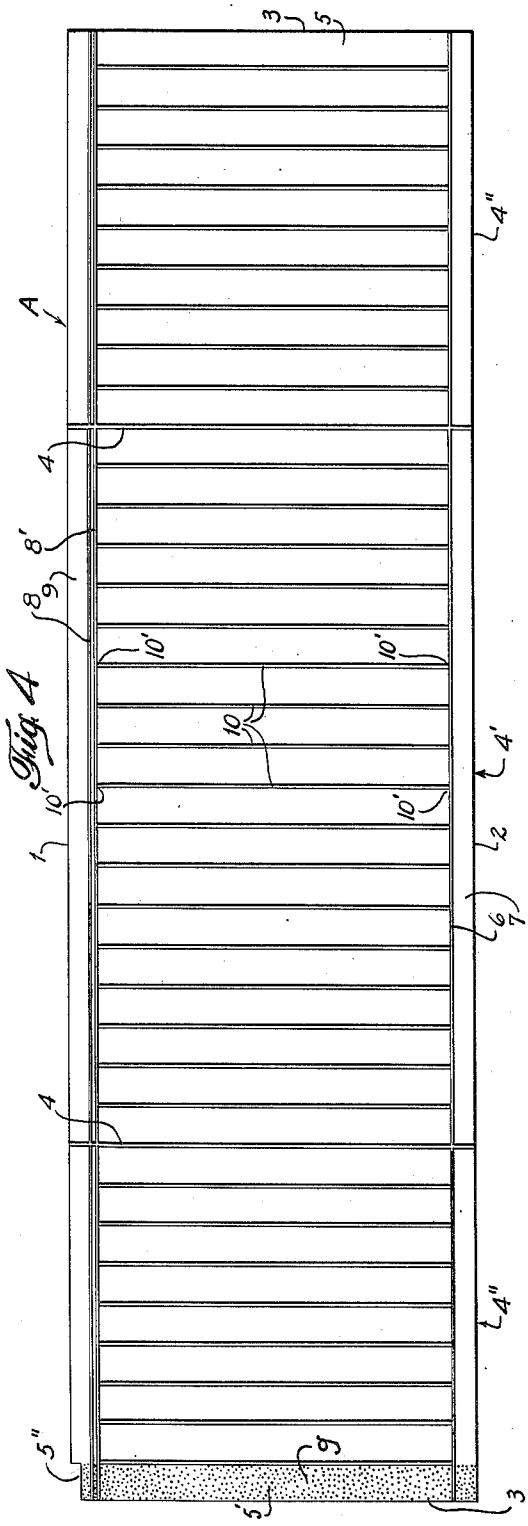


Fig. 4

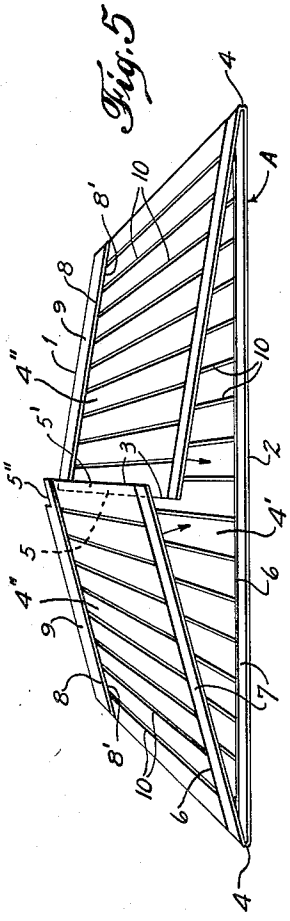


Fig. 5

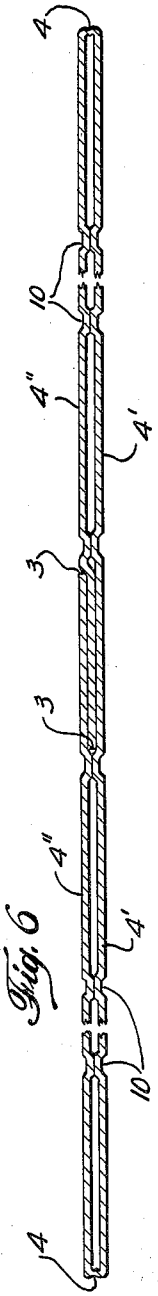


Fig. 6

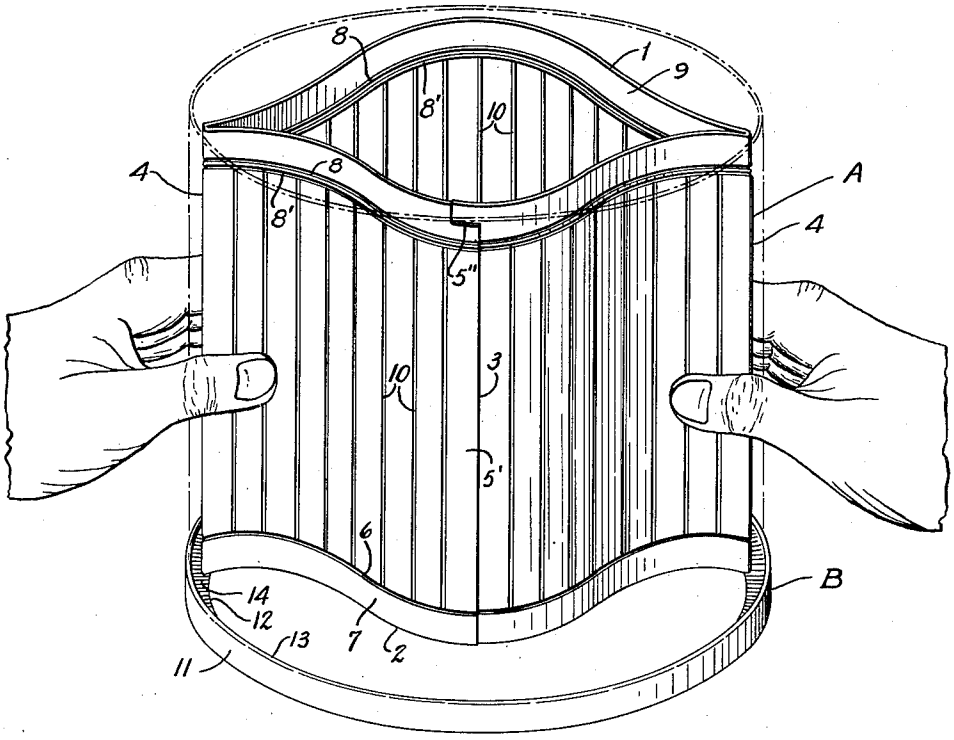
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Fig. 7



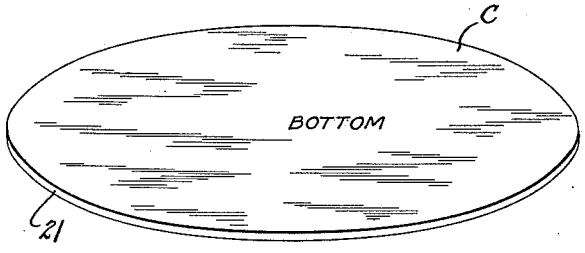


Fig. 8

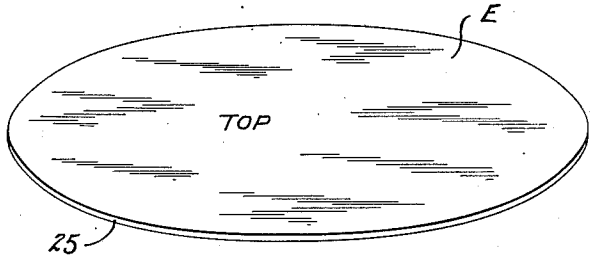


Fig. 9

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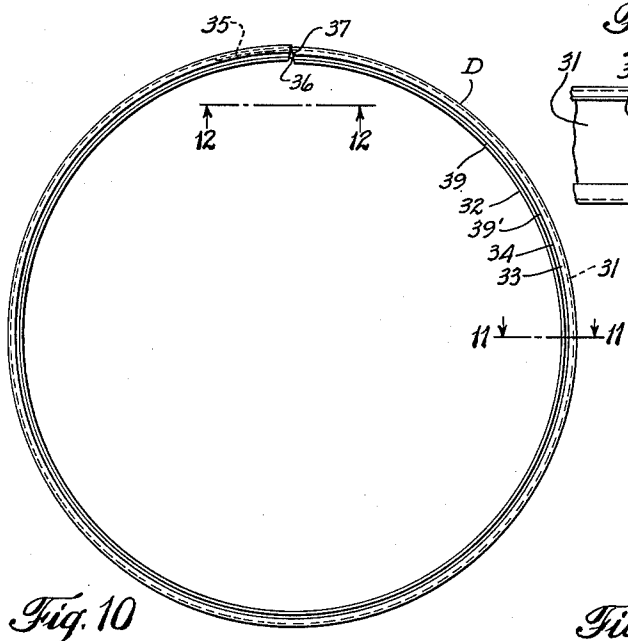
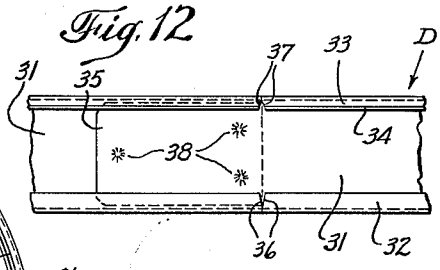


Fig. 10

Fig. 12



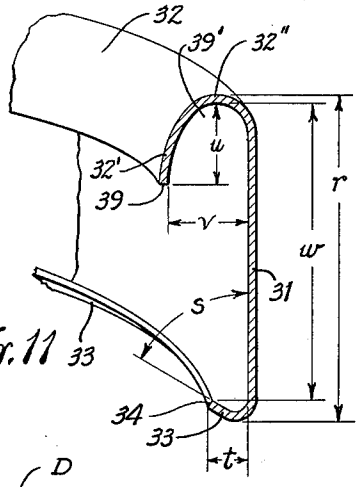


Fig. 11

Fig. 14

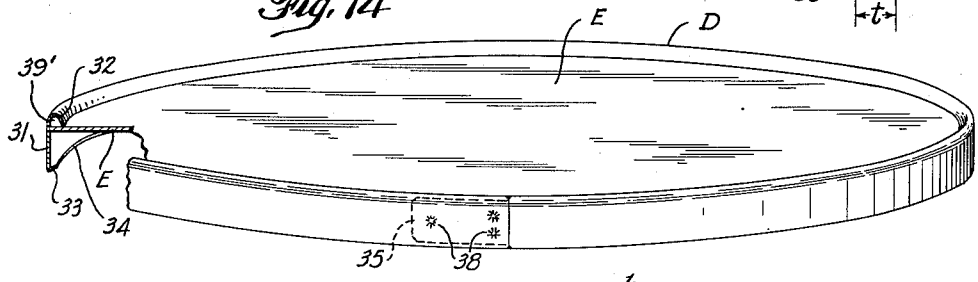


Fig. 15

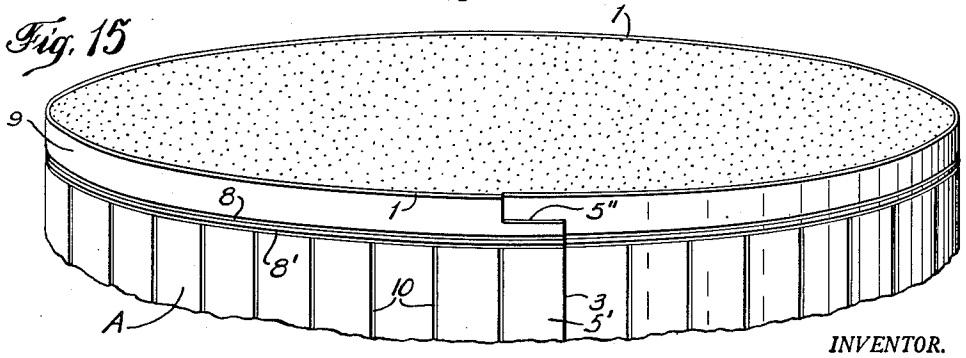
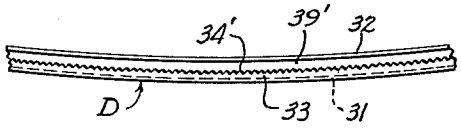


Fig. 13



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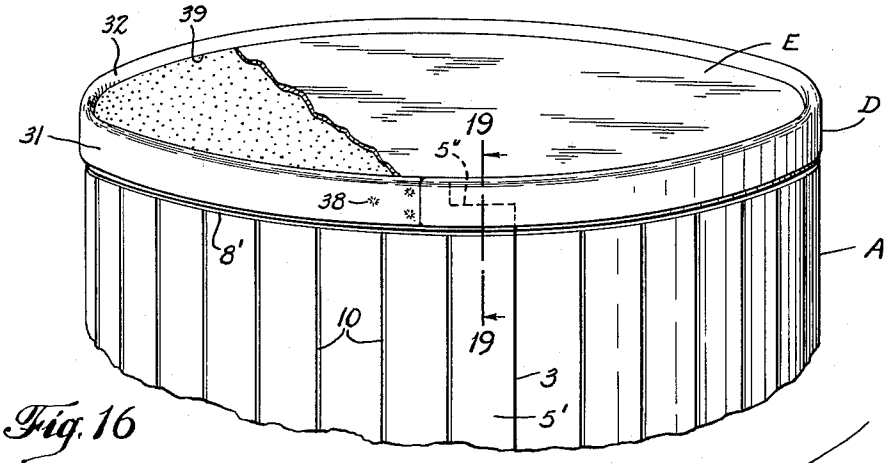


Fig. 16

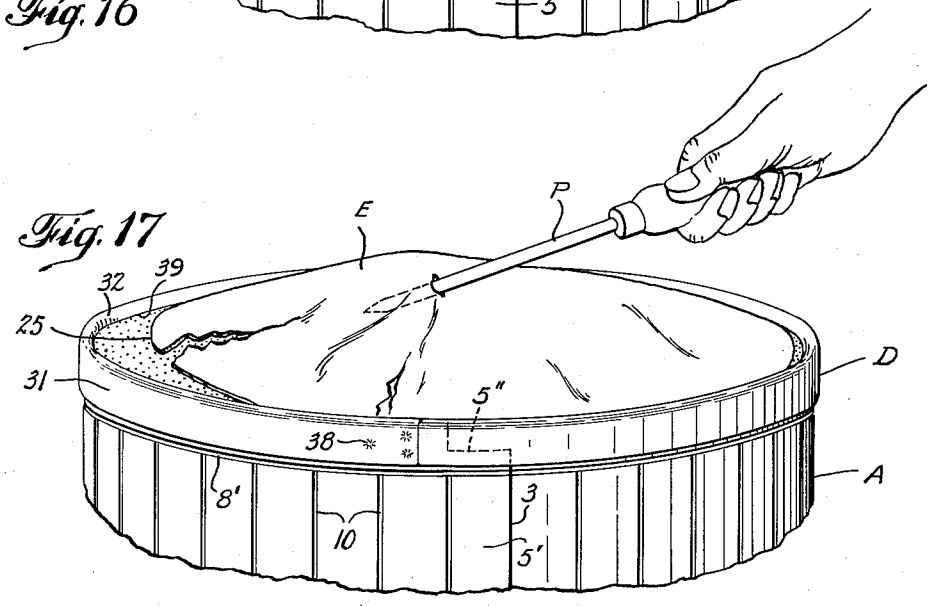


Fig. 17

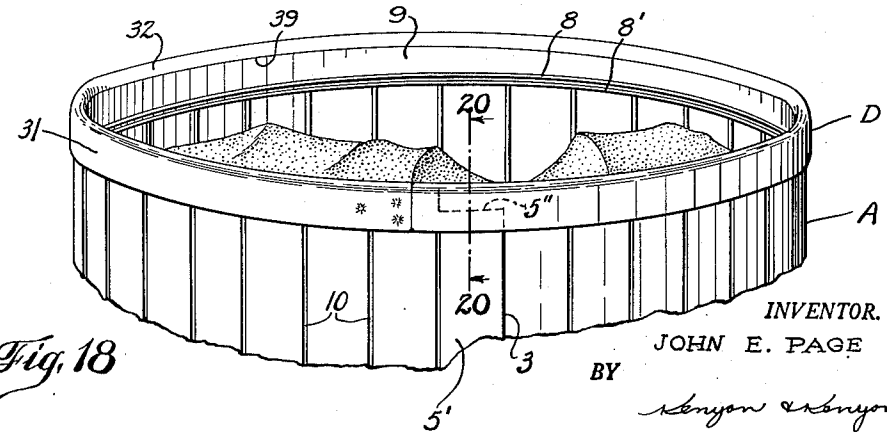


Fig. 18

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Fig. 19

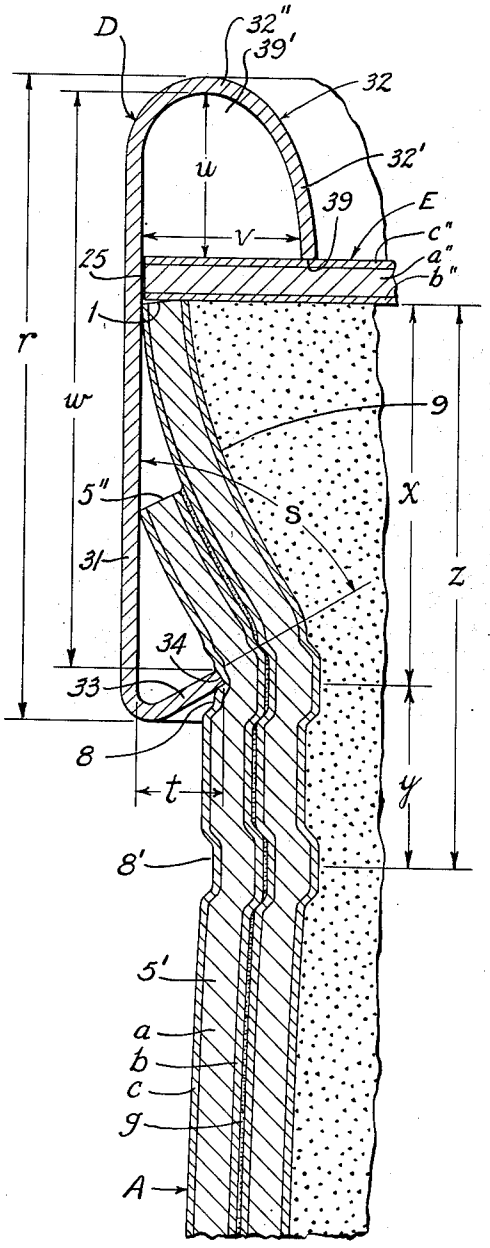
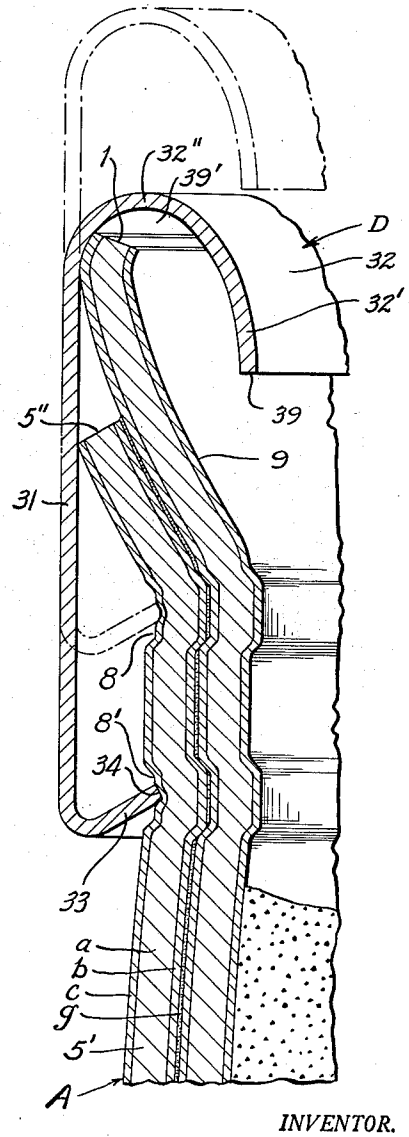


Fig. 20



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Patented Mar. 9, 1954

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UNITED STATES PATENT OFFICE

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PAPERBOARD CONTAINER

John E. Page, Cornwall, Conn., assignor to Gibson Patent Containers, Ltd., Sidney, Australia, a corporation of Australia

Application February 7, 1952, Serial No. 270,461

5 Claims. (Cl. 229—5.7)

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This invention relates to collapsible containers and more particularly to an improved container for bulk packaging whose component parts may be fabricated, shipped and stored in collapsed or knockdown condition and thereafter expeditiously assembled, erected, filled and closed by the product packer as the demand for the product requires.

In the packaging of bulk products such as ice creams, sherbets, and other semi-liquid, granular or powdered products, it has been customary to employ a collapsible tubular body made from paperboard or fiberboard, which can be shipped in substantially flat condition to the merchandise packer who then applies a bottom assembly to the expanded tubular body before filling, and after filling applies a closure assembly thereto. As commonly constructed, the collapsible container body is provided with outturned rim supporting flanges at the upper and lower ends thereof to provide support for the rims of the top and bottom end closure assemblies. In other cases, the product packer is required to employ fabricating or crimping operations to effect adequate attachment of the container body to the top and bottom rims of the end closure assemblies.

This invention is directed to the provision of an improved collapsible container, which is eminently satisfactory for the packaging of bulk products of semi-liquid or granular form, whereby substantial savings in materials, fabricating, assembly and packing labor and overhead, as well as valuable shipping and storing space, may be effected as compared with all other bulk packaging media heretofore known or used.

In accordance with this invention, a collapsible tubular body is provided, formed from inexpensive paperboard having a wastepaper or newsprint core laminated between paper facing sheets. The paperboard blanks from which the containers are made are truly rectangular in form. Except for the slight overlap required to effect securement of the side edges of the blank into tubular form, the entire surface area of the blank as formed into the tubular body, is employed to contain the product contents. Outturned flaps at each end of the container body and formed as an integral part of the body blank, or fabricating and crimping operations performed by the product packer, heretofore considered necessary to provide proper securement of the bottom rim and top rim to the container body, have been completely eliminated by this invention.

This invention includes the provision of a bottom construction which can be tenaciously and rigidly locked to the bottom edge of an expandable paperboard body which does not possess an outturned and upturned rim locking bottom flange, which requires no material fabricating, forming, shaping or clamping operations by the product packer, and which can be fully erected from its component parts by the product packer manually or automatically at a minimum cost.

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A bottom rim and a paperboard bottom disc are all that is required to provide a bottom construction for the unflanged collapsible paperboard body. The bottom rim can be inexpensively fabricated from a thin and narrow strip of fibre, plastic or sheet metal by the container manufacturer in the form of a circular hoop to present a side wall section, an inturned flange to support the bottom disc, and an inturned lip at the opposite edge of the side wall section presenting a free edge designed to abut against the outside face of the expanded tubular body when the lower edge of the body is seated against the inside face of the inturned disc supporting flange of the rim. The bottom disc can be economically made from inexpensive paperboard, die cut to provide a flat blank to accurate diametrical dimension. The bottom rim and bottom disc are tenaciously wedge-locked to the unflanged bottom end of the container body, without the use of any extraneous securing means whatsoever.

The cover end closure made in accordance with this invention comprises a rim member which may be inexpensively fabricated from a relatively narrow and light gauge strip of fibre, plastic or sheet metal or like relatively rigid material and shaped into a substantially circular hoop to provide a substantially circular side wall section designed to embrace the upper end of the container body, a lip section extending inwardly from one edge of the side wall section to an acute angle thereto and presenting a relatively sharp or serrated edge designed to tenaciously grip the expanded container body and thereby resist withdrawal thereof. A bead section inwardly overhangs the other end of the rim member and defines a continuous internal channel into which the end edge of the container body is designed to seat. A cover closure disc of paperboard or like material is shaped to seat against the free edge of the rim bead section to provide a strong and sturdy cover closure construction.

The cover closure as thus assembled may be readily telescoped over the upper end of the container body after the contents have been placed therein. The sharp or serrated edge of the rim

lip section will tenaciously grip the container body and retain the closure disc in container closing position. To obtain access to the contents, the cover disc is forcibly withdrawn through the opening defined by the rim bead section. The top rim member may then be pushed downwardly until the upper edge of the container body is seated within the internal channel of the bead section, with the bead section embracing the upper edge of the container body and thereby prevent inward collapse thereof. The rim lip section is shaped and formed to readily permit downward telescoping movement of the top rim member over the upper end of the container body, and to tenaciously resist upward withdrawal thereof.

By this invention, a substantial saving in paperboard stock normally required to provide the outturned rim locking flaps is effected, and a substantial saving in labor and machine overhead required to outfold the locking flaps and compress the same against the outside face of the blank is also thereby effected. Additionally, very substantial savings are effected in transportation and storage costs by the elimination of the outturned rim locking flanges from the collapsed container body, since collapsed container bodies having outturned locking flanges occupy, when compactly stacked together, approximately twice the space required for container bodies without such outturned rim locking flanges.

These improved containers are designed to be manufactured from relatively low cost materials employing low cost fabrication and assembly procedures, with the consumption of very minimum of materials, providing the ultimate in economy packaging of relatively bulky, heavy and semi-liquid products, and possess the leakproofness and strength which make them particularly desirable for the commercial packaging of such products as ice creams and sherbets.

Various other novel features and advantages of this invention will be apparent from the accompanying drawings, in which:

Fig. 1 is a perspective view of a collapsible container made in accordance with this invention, certain parts being broken away to illustrate certain details of the bottom and cover construction;

Fig. 2 is an enlarged fragmentary vertical cross sectional view of the upper part of the container as viewed along line 2—2 of Fig. 1 showing more particularly the cover end disc and its associated retaining rim as applied to an empty container body;

Fig. 3 is an enlarged fragmentary vertical cross sectional view of the lower part of the container as viewed along line 3—3 of Fig. 1 showing in further detail the bottom rim and associated bottom disc as wedge-locked to the container body;

Fig. 4 is a plan view of the outside face of the preferred form of the fully formed container body blank showing the expansion scoring, folding scores and circumferential skirt defining scores impressed therein ready to be folded to provide a tubular body;

Fig. 5 is a perspective view of the body blank shown in Fig. 3 in the process of being folded to provide a collapsed tubular body;

Fig. 6 is a horizontal cross sectional view of the container body as it would appear when fully assembled into flat collapsed form for stacking;

Fig. 7 is a perspective view illustrating the manner in which the bottom skirt section of the container body may be located and inserted into the bottom rim;

Fig. 8 is a perspective view of the bottom forming disc;

Fig. 9 is a perspective view of the cover forming disc;

Fig. 10 is a plan view of the rim member forming a part of the cover assembly for this improved container;

Fig. 11 is an enlarged fragmentary cross sectional view of the cover rim member as the same would appear when viewed along line 11—11 of Fig. 10;

Fig. 12 is a fragmentary elevational view of the inside face of the cover rim member showing the manner in which the ends of the band forming the rim may be joined together as the same would appear when viewed in the direction of the arrows 12—12 of Fig. 10;

Fig. 13 is an enlarged fragmentary plan view of a cover rim in which the free edge of the inturned body gripping lip thereof is saw-toothed or serrated to provide a roughened edge;

Fig. 14 is a perspective view of the closure cover showing the cover end disc positioned within the cover rim, certain parts being broken away to show structural details;

Fig. 15 is a fragmentary perspective view showing the upper part of the container body as it would appear when filled with contents ready to receive the closure cover shown in Fig. 14;

Fig. 16 is a fragmentary perspective view of the upper section of the filled container body with the closure cover applied thereto, the cover end disc being partly broken away to reveal structural details;

Fig. 17 is another fragmentary perspective view of the upper section of the filled container body with the closure cover applied thereto, this view illustrating the manner in which the cover end disc may be removed from the assembly to obtain access to the container contents;

Fig. 18 is a further fragmentary perspective view of the upper section of the container body showing the contents partly removed and the cover rim telescoped into firm gripping engagement with the upper skirt section of the container body to thereby firmly retain the upper end of the container body in fixed cylindrical form and prevent inward collapse thereof as the contents are removed;

Fig. 19 is a greatly enlarged fragmentary vertical cross sectional view of the upper portion of this improved container as viewed along line 19—19 of Fig. 16, illustrating the manner in which ice cream, fruit juices, and the like as frozen in the container body, will expand the upper skirt section of the container body into the cover rim of the applied closure cover; and

Fig. 20 is another greatly enlarged vertical cross sectional view of the upper portion of the container after the closure disc has been removed and the cover rim has been telescoped into embracing relation with the upper skirt section of the container body and as the same would appear when viewed along line 20—20 of Fig. 18, this view also showing the cover rim in dotted lines as it would appear prior to being telescoped into embracing relation with the upper skirt section.

Similar reference characters refer to similar parts throughout the several views of the drawings and specification.

As illustrated in Fig. 1, containers constructed

in accordance with this invention comprise a container body A formed from a rectangular blank of paperboard material. The bottom end closure comprises a hoop shaped rim member B which embraces the lower end of the container body. An oversize bottom disc C is forcibly telescoped into the container body to provide a strong and substantially leakproof wedge-locked bottom construction as illustrated in Fig. 1. The cover end closure comprises a rim member D within which a cover closure disc E is inserted, the cover closure disc being designed to seat against the top edge of the container body as illustrated in Figs. 1 and 2.

The container body A is formed from a rectangular blank of selected paperboard material economically sized and proportioned to eliminate waste in cutting body blanks from the sheet or roll of paperboard stock. While higher quality and more expensive fiber stock can be used in the fabrication of the container body, containers having bottom and cover assemblies made in accordance with this invention, permit the use of relatively inexpensive paperboard stock having an inner core *a* sheeted from wastepaper or newsprint; and laminated between a thin innerliner *b* sheet of bleached sulfite for sanitation, and a thin outerliner *c* sheet of unbleached kraft to give the container body a finished appearance and protection to the inner core *a*. Such paperboard stock is the least expensive fiber stock available to the container industry. However, such paperboard stock has definite limitations. In toughness and foldability it is substantially inferior to the more expensive virgin wood stock or long fiber stock, but it does possess substantial stiffness. The stiffness attribute of inexpensive paperboard is ingeniously employed in accordance with this invention to provide a strong, serviceable and leakproof shipping container meeting the low cost packaging needs and requirements of the ice cream industry.

Containers having the capacity to contain up to five or more gallons of ice cream and ices may advantageously and economically employ inexpensive paperboard stock for the container bodies which calipers from thirty to forty thousandths of an inch in thickness, and wherein the major thickness comprises the wastepaper pulp core *a* laminated between thin paper inner and outer liners *b* and *c* as above described. As shown in Figs. 4, 5 and 6, the container body is made from a paperboard blank which presents parallel extending top and bottom edges 1 and 2 and parallel side edges 3. A pair of parallel extending collapsing scores 4 traverse the entire length of the blank, thus dividing the blank into an intermediate section 4' and end sections 4''. The intermediate section 4' as defined between the collapsing scores 4 is of such width as to extend a distance of 180° around the expanded tubular body. The parallel extending collapsing scores 4 permit folding of the end sections 4'' to overlie the intermediate section 4' as shown in Figs. 5 and 6, the combined width of the end sections 4'' being slightly greater than the width of the intermediate section 4' to provide inner and outer overlap extensions 5 and 5' at the sides of the blank, so that the outer overlap extension 5 may be secured as by adhesive *g* to the inner overlap extension 5'. When the overlap extensions 5 and 5' of the end sections 4'' are adhesively secured together, a flat collapsed body as shown in Fig. 6 is provided. Collapsed container bodies formed as shown in Fig. 6 may thus be vertically stacked in compact relationship to occupy a very minimum of space in shipment and storage.

As shown in Figs. 1, 3, 4 and 5, the body blank may have a bending score 6 impressed into the paperboard spaced from and extending parallel to the bottom edge 2 thereof, to thereby define a bottom skirt 7 which has a width equal to the inside height of the bottom rim B of the container. As shown in Figs. 1, 2, 4 and 5, a circumferentially extending primary score 8 is impressed into the outer surface of the container body a distance *x* from edge 1 thereof to define a top skirt section 9. A secondary circumferentially extending score 8' is impressed into the outer surface of the container body directly below and parallel to the primary circumferentially extending score 8 a distance *z* from the top edge 1 of the container body. The center lines of the primary and secondary scores 8 and 8' are spaced apart a distance *y*.

To accommodate expansion of the freezing ice creams and ices, and to facilitate cylindrical shaping of the container body, expansion scorings 10 extending longitudinally of the container body are desirably provided as shown in Figs. 1 and 3. The parallel expansion scorings 10 may be uniformly spaced approximately three-fourths of an inch to one inch apart; each score having a width in the approximate order of three sixty-fourths of an inch and a depth in the approximate order of five to ten thousandths of an inch.

The collapsing scores 4 and the primary and secondary top scores 8 and 8' may have approximately the same width and depth as the expansion scorings 10. The bottom skirt defining score or fold line 6 may be very light and need not be more than five thousandths of an inch in depth. The circumferential scores 6, 8 and 8', the collapsing scores 4 and the expansion scorings 10 are all sunk into the outer face of the blank, producing corresponding protuberances or ribs on the inside face of the blank. It will be noted that the bottom skirt portion 7 and top skirt portion 9 are not severed or broken. The ends 10' of the expansion scorings preferably terminate at the bottom circumferential score 6 and the secondary top circumferential score 8', so that the bottom end top skirt portions 7 and 9 are not transversed thereby. As shown in Figs. 4, 5 and 7, the upper end of the outer overlap extension 5' is desirably cut away to present a cutout notch 5'' so that when the container body is fully assembled, the upper end of the double ply overlap will be of single ply thickness as shown in Figs. 7, 15, 19 and 20.

Body blanks made as illustrated in Fig. 4 are adapted to be cut to their true and final shape from selected sheets or rolls of paperboard stock and simultaneously scored as selectively desired, with substantially no waste of paperboard stock, and in a single pass through an automatic cutting and scoring machine. Such machine would be equipped with cutting knives set to cut and define the top and bottom edges 1 and 2 and side edges 3 of the blank, with notch cutout 5'', to accurate dimensional requirements, and with scoring blades dimensionally set and arranged to impress the horizontal scores 6, 8 and 8', the collapsing scores 4, the expansion scorings 10 therein to precise spacing and dimensions in a single pass operation.

After the body blanks have been cut and scored, the blanks are designed to be run through

a continuous strip gluing and folding machine equipped with a glue applicator which applies the strip of adhesive *g* to the inside face of the side edge portion 5' of successive blanks, with folding mechanism which alternately folds the end sections 4'' over the intermediate section 4' in rapid progression, and with a pressure roller which operates to firmly press the overlapped edge portions 5 and 5' of the blank into firm adhesive contact and simultaneously flatten the collapsed body into the compressed form shown in Fig. 6 for compact stacking. The folded and compressed blanks may thus be completely assembled economically and at high speed in a single pass through the gluing and folding machine, and as thus produced are ready for compact shipment to the product manufacturer for erection, filling and closing with the supplied bottom rims B, bottom discs C, cover rims D and cover discs E.

The bottom rim member B constructed and formed as illustrated in Figs. 1, 3 and 7 may be economically made from a relatively thin gauge strip of sheet metal. In the construction of containers approximating eight to ten inches in diameter and of a size to contain two and one-half to five gallons of creams or ices, the rim forming metal strip may measure approximately three-fourths to one inch wide and from ten to fifteen thousandths of an inch in thickness. As formed, the bottom rim is in the shape of a hoop, presenting a side wall section 11, an inturned supporting flange 12, and an inturned body gripping lip 13, with the ends of the strip welded together in a manner to provide a bottom rim of accurate circumferential dimension. To strengthen the rim construction and to stiffen the inturned flange 12 upon which the bottom disc C is supported, the flange 12 may be provided with radially extending corrugations 14. The inturned body gripping lip 13 may extend inwardly substantially parallel to the inturned supporting flange 12, or may be inclined at an acute angle of 60° to 80° towards the supporting flange 12 as shown in Fig. 3.

To achieve maximum wedging interlock between the bottom skirt 7 of the container body, the bottom rim B and bottom disc C, and thereby effect unyielding securement of the bottom rim to the container body, requires a definite dimensional inter-relationship between the parts. Thus the bottom rim should conform to definite diametrical and dimensional conditions to most effectively interlock with the container body and bottom disc of specified diameter.

The inner edge 13' of the lip 13 is dimensioned to snugly seat against the container body along the circumferential line about which the bottom skirt is flared outwardly when the container is fully assembled. In containers constructed in accordance with this invention, no circumferential extending bottom supporting groove need be impressed into the container body, since no groove or like abutment is required to provide support for the inner edge 13' of the inturned lip of the bottom rim. However, the lightly impressed circumferential score 6 may advantageously be applied to the container body to visibly define the line against which the inner edge 13' of the lip should seat when the container body and bottom rim have been properly assembled together. Thus the horizontal bottom score 6 may be used to facilitate accurate assembly of the container.

The bottom forming disc C as shown in Figs. 1, 3 and 8 may be formed from inexpensive paperboard having a wastepaper or newsprint core *a'*, an innerliner formed from a relatively thin sheet of bleached sulfite *b'* for sanitation, and an outerliner *c'* formed from a sheet of unbleached kraft for appearance and strength. The bottom disc C is circular to conform with the circular shape of the bottom rim, and its size is accurately interrelated to the diametrical dimension of the expanded container body and the inside diameter of the side wall section 11 of the bottom rim with which it is to be associated. The bottom disc C should also possess substantial stiffness and strength. Bottom discs for two and one-half and five gallon containers for ice creams and sherbets, will possess adequate stiffness if the bottom discs caliper sixty thousandths of an inch in thickness to adequately support and contain two and one-half to five gallons of creams and juices. The bottom discs may be die cut from a paperboard stock sheet in a single die cutting operation at high production speeds with a minimum of waste material resulting. The bottom discs are accurately shaped to dimensional requirements by the die cutting operation, so that no further fabricating operation thereon is required. The flat bottom discs may be compactly stacked together for shipment to the product manufacturer for use in assembling the container as required.

In assembling the container, the container body A is partially expanded as shown in Fig. 7 while the body is gripped adjacent the collapsing scores 4, and by exerting inward pressure thereon, the bottom skirt portion 7 thereof may be readily inserted into the bottom rim B. By the application of outward pressure applied to the inside face of the container body, the container body will then spring out into cylindrical form. Downward pressure is exerted against the top edge 1 of the container body to make sure that the bottom edge 2 thereof is snugly seated against the inturned supporting flange 12 of the bottom rim B. The width of the bottom skirt portion 7 is such as to seat between the free edge 13' of the inturned body gripping lip 13 and the inturned supporting flange 12 of the bottom rim. Full insertion of the bottom skirt portion 7 into the bottom rim may be made visibly evident by the provision of the circumferentially extending bottom score or marking line 6 therein, against which the inner edge 13' of the rim lip 13 is to abut.

The oversize bottom disc C is then telescoped into the expanded tubular body and skewed into position past the internal contracted throat 21 of the container body and forced into seating position against the corrugated flange section 12 of the bottom rim B. The relatively stiff oversize bottom disc C causes the bottom skirt section 7 to flare outwardly, as shown in Figs. 1 and 3, with the lower portion of the skirt section 7 pinched between the peripheral edge 21 of the bottom disc C and the adjacent inside surface 11' of the rim side wall section 11. The outward flare given to the bottom skirt section 7 is determined by the width of the rim lip section 13 and is limited by the stretch characteristics of paperboard body stock, the angle of flare usually being in the order of 8° to 12° as shown in Fig. 3.

Because of the angular inclination given to the rim lip section 13, its relatively sharp or serrated edge 13' will bite into the body stock at the circumferential bending score 6 thereof, and when the bottom skirt section 7 is additionally flared

outwardly by the oversize bottom disc C at an angle of from 8° to 12°, the bottom rim will be tenaciously secured to the container body by wedge-locking action. This wedge-locking action operates to drive the lower edge of the skirt section 7 against the inside face of the flange section 12, exerts a bending force on the bottom skirt section 7 which is resisted by its natural stiffness and finally exerts a lengthwise compressive force on the bottom skirt section 7 which is also resisted by its natural stiffness. As thus contructed, this bottom closure provides a strong and leakproof bottom construction for the paperboard container body which does not require the provision of any outturned and upturned rim supporting flange on the container body, but takes full advantage of the stiffness characteristics of the relatively inexpensive paperboard stock from which the container body is formed.

The top rim member D may be formed from a thin strip of relatively strong and rigid material, such as fibre, plastic or a light gauge metal strip, shaped into the form of a hoop to provide a substantially cylindrical side wall section 31 having an inturned curvilinear bead section 32 at one end thereof and in inturned lip section 33 at the other end thereof. As shown more particularly in Figs. 2 and 10 to 14 inclusive, the lip section 33 is bent at an acute angle of from 60° to 80° to the side wall section 31, and preferably at an angle of from 60° to 75° thereto.

Since the material from which the rim member is formed is relatively thin, the free terminal edge 34 of the lip section 33 presents a thin edge which serves to firmly grip the exterior circumference of the container body A to which it is applied. To further facilitate the gripping action, the lip section 33 may be provided with a saw toothed or serrated edge 34' as illustrated more particularly in Fig. 13.

The curvilinear bead section 32 of the rim member presents a downwardly extending leg portion 32' which is substantially parallel to the side wall section 31 and is connected thereto by a crown portion 32'' which may be curvilinear in shape to facilitate its formation. The ends of the strip may be connected together to form a substantial circular hoop by providing a side wall extension 35 at one end of the strip which smoothly overlaps the side wall section 31 at the other end of the strip, as shown in Figs. 9 and 11. The end extension has a lip section 33 and curvilinear bead section 32 removed therefrom when the hoop is fully formed, so that the terminal ends 36 of the bead section 32 and the terminal ends 37 of the lip section 33 will be closely adjacent and substantially in abutment. The rim forming strip may be secured together in fixed hoop shaped form by spot welds 38 applied to the end extension 35 as overlapped by the side wall section 31 at the other end of the strip.

The top rim member D should be made to accurate diametrical dimension and in accordance with the diametrical dimension of the container body to which it is to be applied. Accurate diametrical dimension of the rim forming hoop may be readily attained by making the length of the bead section 32 as measured between the ends 36 thereof, and the length of the lip section 33 as measured between the ends 37 thereof, to accurate and precise measurement. The terminal ends 36 of the bead section 32 and the terminal ends 37 of the lip section 33 may then be brought into abutment as the strip is shaped into hoop form, so that the terminal tends provide gauging edges which accurately determine the diametrical dimension of the hoop as the spot welds 38 are applied.

The cover disc E may be economically die stamped from a sheet of paperboard material which may caliper from thirty to forty thousandths of an inch in thickness. The cover disc as die stamped from the paperboard stock sheet thus presents a sheeted wastepaper or newsprint core a'' faced by a bleached sulfite innerliner sheet b'' for sanitation and an unbleached kraft outerliner sheet c'' for strength. As shown in Figs. 1 and 14, the cover disc E has a diametrical dimension which comfortably conforms to the inside diameter of the rim side wall section 31, with the peripheral edge 25 of the disc fitting within the side wall section 11 thereof. Where the cover disc E is made from paperboard material calipering thirty to forty thousandths of an inch in thickness, it is sufficiently flexible to permit insertion thereof through the opening defined by the inner free edge 34 or 34' of the rim lip section 33, and when fully assembled within the rim member D, is designed to seat against the terminal edge 39 of the rim bead section 32 as shown in Fig. 14.

When the cover end closure is to be applied to a paperboard container body measuring eight to ten inches in diameter, as used in the packaging of two and one-half and five gallons of ice cream and sherbets, the rim member D may be made from metal strip gauging from ten to fifteen thousandths of an inch in thickness or about twelve thousandths of an inch as an average, and having an overall height r as shown in Figs. 2 and 19 of approximately one-half inch. The lip section 33 is bent to present an acute angle s of from 45° to 80° with respect to the rim side wall section 31, and preferably in the order of 60° to 75°. The inside width t of the lip section 33, as measured perpendicularly to the side wall section 31, may be in the order of one-sixteenth of an inch to five sixty-fourths of an inch. The diameter of the lip section 33 as measured from the inner edge 34 or 34' thereof should closely conform to the normally expanded diameter of the container body.

The inner channel 39' formed by the bead section 32 thereof should present an inside width v at the mouth opening as shown in Figs. 3 and 19 sufficient to receive the maximum thickness of the upper edge of the body wall of the expanded container body. Thus, where the single ply stock thickness of the container body wall calipers from twenty-five to forty-five thousandths of an inch in thickness and a notch cutout 5'' of about three thirty-seconds of an inch is provided at the upper end of the outer overlapping portion 5', the width v of the mouth opening may be in the approximate order of one eighth of an inch, to easily receive the entire upper circumferential edge of the body wall. In order that the bead section 32 will adequately receive and grip the entire upper edge of the expanded container body when the cover disc E is removed and the rim member pushed down into body gripping position, the internal channel 39' should have an internal depth in the order of one eighth of an inch.

When the container body having the bottom construction assembled thereto as above described, is filled with contents to the top thereof as indicated in Fig. 15, the assembled cover closure having the cover disc E inserted within the rim member D as shown in Fig. 14, may then be applied to the filled container by telescoping

the inclined lip section 33 and side wall section 31 over the top skirt section 9 of the container body until the cover disc E seats against the top edge 1 of the top skirt section 9. As thus applied, the straight edge 34 or the serrated edge 34' of the rim member will grip the container body at the primary circumferential score 8 as shown in Fig. 18. Due to the angular inclination of the lip section 33 and the relatively sharp, roughened or serrated free edge thereof, the top rim will engage the container body with a tenacious grip. If creams and fruit juices are packed in the container body and subsequently frozen after the cover closure is applied, the top skirt section 7 will be flared outwardly as the contents freeze and expand as shown in Fig. 19, the portion of the container body adjacent the primary circumferential score 8 being prevented from expanding by the lip section 33 of the top rim D.

The top cover disc E is preferably made sufficiently thin so that it will flex when an upward pull is exerted thereon as by the use of an ice pick P as shown in Fig. 17, so that the cover disc E may thus be readily withdrawn through the opening defined by the bead section 32 of the rim member. After the cover disc E has been withdrawn, a downward push can be exerted against the bead section 32 of the top rim D so as to drive the rim side wall section 31 downwardly to the point where the free edge of the rim lip section 33 will seat within the secondary circumferential score 8' of the body as shown in Fig. 20. As thus positioned, the entire top circumferential edge 1 of the container body will be fully telescoped within the internal channel 39' so that the bead section 32 will retain the upper end of the container body against inward collapse as the contents are removed.

When employing this invention for containers for packaging two and one-half and five gallons of ice creams and sherbets employing a metal top rim D having an overall height r of about one-half inch and an interior body engaging height w of about seven sixteenths to fifteen thirty-seconds of an inch, and a bead section having an interior depth n of approximately one eighth of an inch, the mid-section of the upper primary score 8 would be spaced a distance x equal to approximately five sixteenths to eleven thirty-seconds of an inch below the top edge 1 of the container body, with the mid-section of the secondary circumferential score spaced a distance z of approximately seven sixteenths to fifteen thirty-seconds of an inch below the top edge 1 of the container body, and with the mid-sections of the primary and secondary circumferential scores 8 and 8' spaced apart a distance of approximately one eighth of an inch as indicated in Fig. 2. Thus, when the cover disc E is removed and the top rim D is pushed downwardly to seat the lip section 33 within the secondary circumferential score 8' as shown in Fig. 20, the upper edge 1 of the container body will be fully contained and seated within the internal channel 39' and embraced by the bead section 32 of the rim, thereby retaining the body in cylindrical form as the contents are removed.

Collapsible containers constructed in accordance with this invention may be shipped and stored as separate containers as needed for the packaging of ice cream, sherbets, and other semi-liquid, granular or powdered products. The end closures are so constructed as to permit the use of collapsible container bodies made from relatively inexpensive paperboard which have no out-turned rim supporting flanges, thereby effecting substantial savings in paperboard stock, as well as in body fabrication and shipping and storage costs.

The bottom rim B and the oversize paperboard bottom disc C are firmly secured to the bottom skirt 7 of the container body by a wedge-locking action. The inherent stiffness and resistance to bending and compression of this inexpensive paperboard stock, often considered an undesirable characteristic in the manufacture of cylindrical containers, is used to remarkable advantage in effecting this wedge-locking action, whereby a strong and tenacious locking securement of the metal bottom rim and bottom disc to the container body is achieved.

When the bottom closure has thus been wedge-locked to the bottom skirt section 7 of the container body and the container body filled with contents, the cover closure may be readily telescoped over the upper skirt section 9 of the container body. The sharp or serrated lip edge 34 or 34' will tenaciously grip the container body at the primary circumferential score 8 and retain the closure disc E in tight container closing position. When the cover disc E has been forcibly withdrawn through the opening defined by the rim bead section 32, the top rim member E may be readily pushed downwardly until the free edge 34 or 34' of its lip section 33 seats within the secondary circumferential score 8' and the upper edge 1 of the container body is embraced by the rim bead section 32, thereby preventing inward collapse of the container body as the contents are withdrawn. The top rim member D is so constructed as to readily permit downward telescoping movement thereof over the upper end of the container body even though the top skirt section 9 thereof has been expanded outwardly as shown in Figs. 18 and 19 by the frozen contents, so that the top rim member D will exert a tenacious grip on the container body when upward withdrawal thereof is attempted.

While certain novel features of this invention have been disclosed and are pointed out in the claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of this invention.

What is claimed is:

1. A container body and closure cover combination including, a paperboard container body and a closure cover adapted to telescope over one end of the container body, said closure cover including a relatively stiff rim member having a container body embracing side wall section and an inwardly extending lip section adapted to grip the container body, a removable cover disc associated with said rim member providing access to the contents when the cover disc is removed from said rim member, said rim member having a bead section for retaining said cover disc in body closing position, said bead section being so shaped that when the closure disc is removed said bead section may be forced into embracing engagement with the upper edge of the container body to prevent inward collapse thereof, and a pair of spaced parallel score lines extending circumferentially around the container body and impressed into the outer surface thereof, one of said score lines being positioned to receive the free edge of said rim lip section to thereby retain said rim member and cover disc in body closing position, said second score line being positioned to receive the free edge of said rim lip section when said

cover disc is removed to thereby retain the bead section of said rim member in embracing engagement with the upper edge of the container body.

2. A container body and closure cover combination including, a collapsible container body and a closure cover adapted to telescope over one end of the expanded container body, said closure cover including a preformed relatively stiff rim member of generally hoop shaped form having a substantially circular side wall section designed to embrace the container body, a removable cover disc associated with said rim member providing access to the contents when the cover disc is removed from said rim member, said rim member having an inwardly extending lip section at the lower end thereof adapted to grip the container body and a bead section at the upper end thereof for retaining said cover disc in container closing position, said bead section being so shaped that when the closure disc is removed said bead section may be forced into embracing engagement with the upper edge of the container body to prevent inward collapse thereof, and a pair of spaced parallel score line grooves extending circumferentially around the container body and impressed into the outer surface thereof, one of said grooves being positioned to receive the free edge of said lip section to thereby retain said rim member and cover disc in body closing position, said second groove being positioned to receive the free edge of said lip section when said cover disc is removed to thereby retain the bead section of said rim member in embracing engagement with the upper edge of the container body.

3. A container body and closure cover combination including, a collapsible container body and a closure cover adapted to telescope over one end of the expanded container body, said closure cover including a relatively stiff rim member presenting a substantially continuous side wall section designed to embrace the expanded container body, a lip section extending inwardly from one end of said side wall section presenting a free edge designed to grip the container body and an inwardly overhanging bead section at the other end of the rim side wall section, a removable closure disc contained within the rim side wall section removable through the opening defined by the rim bead section when said closure cover is applied to the container body, a primary external groove extending circumferentially around the container body and positioned to receive the free edge of said lip section when the cover disc is in container closing position, and a secondary external groove extending circumferentially around the container body substantially parallel and in spaced relation to said primary external groove, said rim bead section presenting a substantially continuous internal channel designed to embrace the adjacent edge of the container body when said closure disc is removed and said rim member has been forced downwardly to the point where the free edge of the rim lip section seats within said secondary groove of the container body.

4. A container body and closure cover combination including, a collapsible container body formed from paperboard material and a closure cover adapted to telescope over one end of the expanded container body, said closure cover including a relatively stiff rim member formed of sheet metal of relatively thin gauge presenting a substantially continuous side wall section designed to embrace the expanded container body, a lip section extending inwardly from one end of said side wall section presenting a free edge designed to grip the container body, an inwardly overhanging bead section at the other end of the rim side wall section, a removable paperboard closure disc contained within the rim side wall section removable through the opening defined by the bead portion of said rim member when said closure cover is applied to the container body, a primary external groove extending circumferentially around the container body and positioned to receive the free edge of said rim lip section when the cover disc is in container closing position, and a secondary external groove extending circumferentially around the container body substantially parallel and in spaced relation to said primary external groove, said bead section presenting a substantially continuous internal channel designed to embrace the adjacent edge of the container body when said closure disc is removed and said rim member has been forced downwardly to the point where the free edge of the lip section seats within said secondary groove of the container body.

5. A container and closure cover combination including, a collapsible container body formed from paperboard material and a closure cover adapted to telescope over one end of the expanded container body, said closure cover including a relatively stiff rim member formed of sheet metal of relatively thin gauge presenting a substantially continuous side wall section designed to embrace the expanded container body, a lip section extending inwardly from one end of said side wall section presenting a saw toothed free edge designed to grip the container body, an inwardly overhanging bead section at the other end of the side wall section of the rim member, a removable paperboard closure disc contained within the side wall section of said rim member removable through the opening defined by the rim bead section when said closure disc is applied to the container body, a primary external groove extending circumferentially around the container body and positioned to receive the saw toothed edge of said rim lip section when the cover disc is in container closing position, and a secondary external groove extending circumferentially around the container body substantially parallel and in spaced relation to said primary external groove, said bead section presenting a substantially continuous internal channel designed to embrace the adjacent edge of the container body when said closure disc is removed and said rim member has been forced downwardly to the point where the saw toothed edge of the rim lip section seats within said secondary groove of the container body.

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