

Oct. 24, 1939.

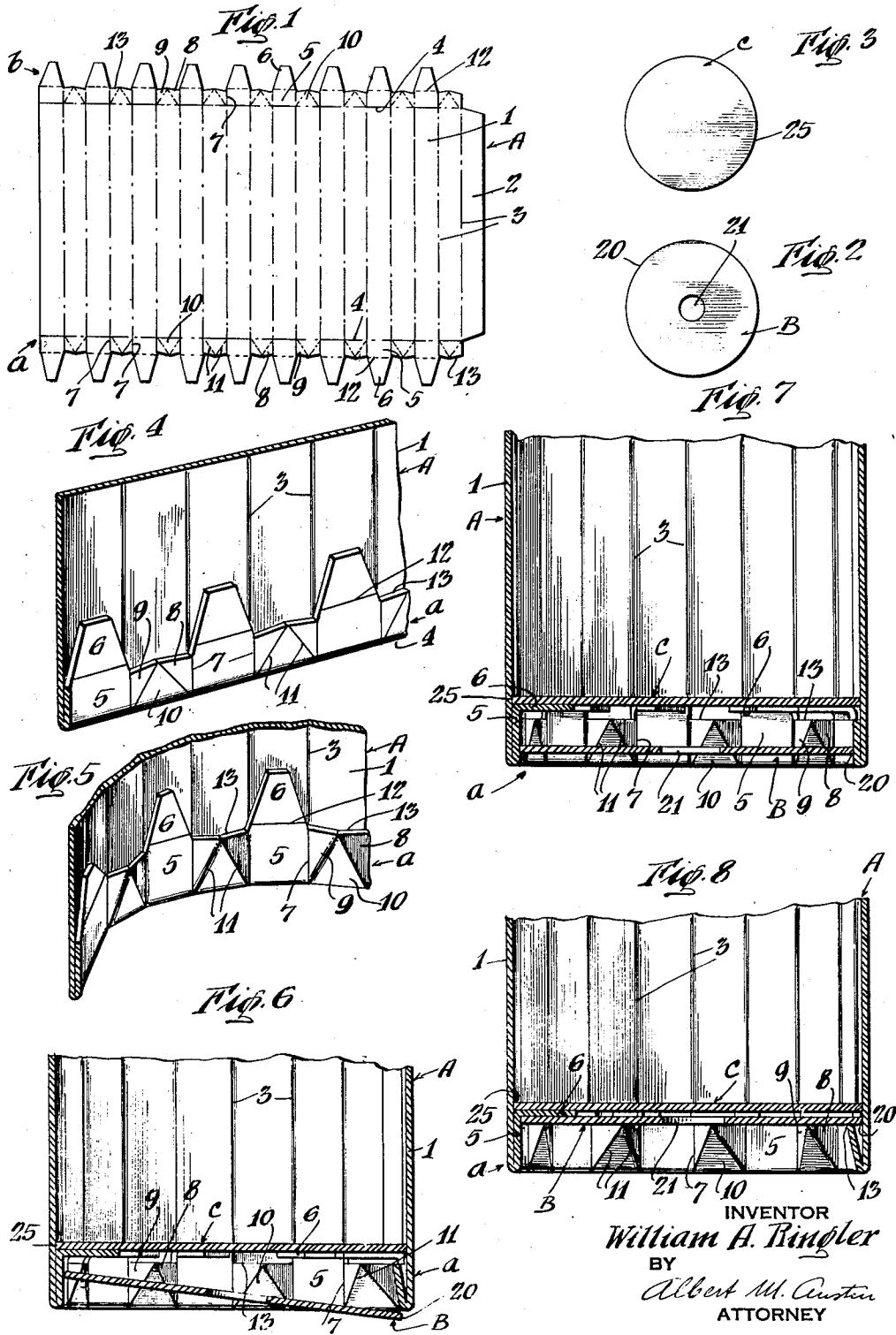
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CONTAINER

Filed Feb. 17, 1937

2 Sheets-Sheet 1



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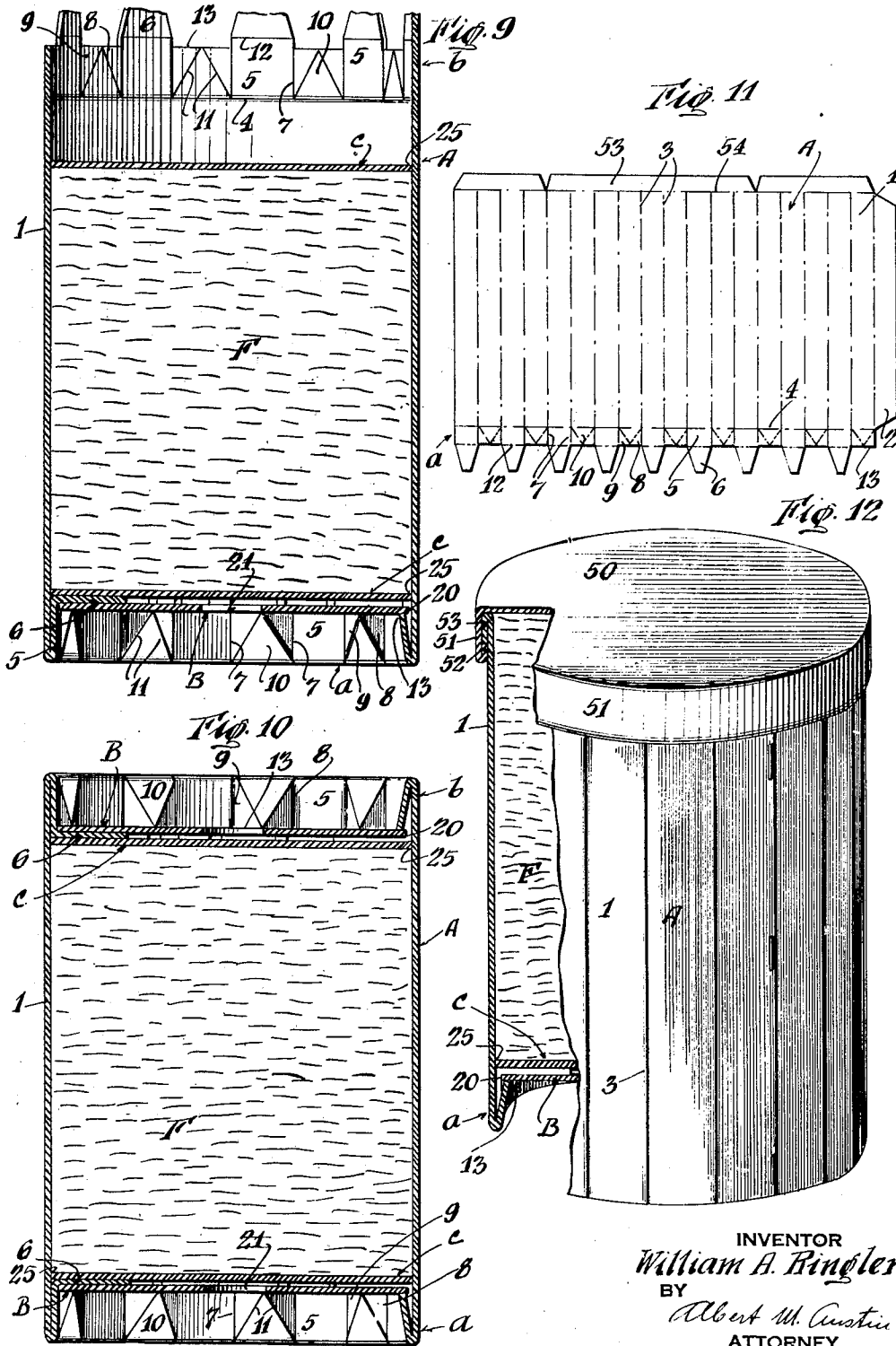
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UNITED STATES PATENT OFFICE

2,176,944

CONTAINER

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10 Claims. (Cl. 229—5.5)

This invention relates to containers, and more particularly to an improved container which can be shipped to and stored by the user in collapsed knockdown condition and thereafter set up by the user as needed.

In the packaging of relatively bulky products, substantial savings can be effected if the container in which the products are to be packed can be shipped and stored in knockdown or collapsed condition and which are so constructed as to permit rapid and positive assembly into container-forming position by the user. Such containers should preferably be so constructed that a minimum of hand operations is required to assemble the same and which preferably can be assembled into a strong and rigid structure by the interlocking of the parts and without the use of glue, staples or other securing means.

In accordance with the present invention, a body member is provided which may be formed from a flat blank of paperboard material suitably secured together in tubular form, or which may be made into tubular form by forming a paperboard strip on a mandrel and thereafter scoring the tubular member to permit substantially flat collapse thereof. The end closure may comprise a flat disc or blank formed of relatively stiff paperboard or other material, which is inserted into one end of the body member and arranged to interlock with an intumed rim portion provided on the body member. The intumed rim portion is divided into predetermined sections by longitudinally extending scores, certain of the sections being arranged to bulge inwardly so that the free end portions of the sections provide a shoulder upon which the end closure is adapted to seat. The shape and extent of the inwardly bulging sections can be determined by providing the bulging sections with suitable score lines which will cause the bulge to attain a predetermined shape. Certain of the sections may be provided with tab portions against which the periphery of the end closure or end piece is adapted to abut to maintain the rim portion and its associated inwardly bulging sections in rigid end closure-supporting position. The tab portions can be turned inwardly to overlie the end closure and an insert disc positioned within the tubular body portion to overlie the tab portions providing a smooth and finished interior for the container. As thus arranged the tab portions are compressed between the end closure or end piece and the insert disc with the end piece adequately supported upon the inwardly bulging shoulders, providing a container which is unusually rigid and strong in

construction. Either the bottom end or the top end or both ends of the container may be formed as above described.

The container can be easily and quickly assembled by the user without the use of glue, staples, or other securing means, by simply bending the rim portion inwardly and inserting the end piece into the inwardly turned rim portion and inserting the insert disc through the body or containing portion of the container. My improved container is admirably adapted for the packaging of numerous products, either semiliquid, powdered, or granular in form, as well as other articles and merchandise. When assembled the ends of the container are provided with a rim portion which permits free circulation of air under and between the stacked containers and protects the contents from damage due to moisture and other conditions during storage.

An object of this invention is to provide an improved knockdown container which is strong and durable in construction, which can be shipped in collapsed flat condition, and easily and quickly set up by the user as needed.

Another object of this invention is to provide a container having an improved end closure construction whereby the bottom or top-forming pieces may be assembled and interlocked to the body member without the use of glue, staples, or other securing means to hold the parts assembled.

Other objects of this invention will become apparent as the disclosure proceeds.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings, forming a part of this application and illustrating certain possible embodiments of my invention.

Referring to the drawings:

Fig. 1 is a plan view of a paperboard blank used to form the container body;

Fig. 2 is a plan view of the end piece used to form an end closure for the container body;

Fig. 3 is a plan view of the insert piece which may be positioned within the container body;

Fig. 4 is a fragmentary perspective view of one end portion of the container body-forming blank having the end closure-supporting portion thereof of turned inwardly;

Fig. 5 is a fragmentary perspective view of a portion of the container body formed into arcuate shape, thereby causing the end closure-supporting portion thereof to assume a bulged position to support the end closure;

Fig. 6 is a fragmentary cross-sectional view showing the bottom portion of the container in

the process of assembly, the insert disc having been inserted and the end piece in the process of being inserted into position;

Fig. 7 is a fragmentary cross-sectional view through the container at a further advanced stage of assembly;

Fig. 8 is a fragmentary cross-sectional view through the container showing the bottom fully assembled and fixed to the body thereof;

Fig. 9 is a vertical cross-sectional view through the container showing the top or cover portion in the process of being assembled to the body portion after the contents have been packed therein;

Fig. 10 is a vertical cross-sectional view through the completely assembled container having substantially identical bottom and cover portions;

Fig. 11 is a plan view of a paperboard blank used to form a container adapted to receive a telescoping or slip-on cover; and

Fig. 12 is a perspective view of the container fully assembled from the blank shown in Fig. 11 with a slip-on cover applied thereto, certain parts being broken away to more fully illustrate the construction.

Similar reference characters denote similar parts throughout the drawings and specification.

The structural members forming my improved container include a body member A, an end closure B, and an insert disc C. The end closure B and the insert C may be used to form either a bottom closure or a top closure, or both, as desired. The body member A, end closure B and insert C may be formed of paperboard or fiberboard material, and may be shipped and stored in flat collapsed condition and assembled into a container by the user as needed. The body member A may be formed from a blank of relatively tough, flexible fiberboard material having a body-forming portion 1. A flap 2 may be provided along one vertical edge of the body portion 1 which may be secured by adhesive, staples, or other securing means, to the other vertical edge of the body portion. The body member may be formed of generally circular shape by providing a series of spaced longitudinally extending score lines 3 transversing the body portion 1 thereof, which score lines also permit substantially flat collapse of the body member when assembled into tubular form.

Means are provided at the lower end of the body member to support and secure the bottom closure fixedly assembled to the body member. Similar means may also be provided at the upper end of the body member to secure the cover closure in fixed assembled position to the body member. The end closure securing means may be formed by providing an internal rim portion a defined by a score line 4 extending transversely along the bottom of the body blank, as shown in Fig. 1. The rim portion is adapted to be turned inwardly to seat against the inside face of the body portion 1. The intumed rim portion a is divided into a plurality of segments by vertically extending score lines 7. Certain of the segments 5 are provided with tab or tongue portion 6 which may be hinged to the segment 5 along the transverse score lines 12. Other segments are provided with inclined score lines 11 defining a triangular shaped portion 10 therebetween. Wing portions 8 and 9, at opposite sides of the triangular portion 10, are defined by the score lines 7 and 11. The score lines 7, defining the sections, may be spaced any desired distance apart. The sections 5 with which the tab portions 6 are as-

sociated may also be spaced any distance apart desired or they may be arranged to alternate with the sections having the triangular forming portions 10, as illustrated in Figs. 1, 4 and 5. To facilitate manufacture, the score lines 7 in the rim portion may be formed as a continuation of the score lines 3 in the body portion 1.

It will be noted that when the rim-forming portion a of the body member is turned inwardly so as to lie against the inside face of the body portion 1, the rim portion will lie substantially flat against the blank when it extends in the flat form shown in Fig. 4. When, however, the body portion is shaped into generally tubular form, as shown in Fig. 5, it will be appreciated that the rim portion must compact itself into a smaller circumferential space than the body portion 1, positioned outside of the rim portion. Consequently, there is a tendency for the rim portion to wrinkle or buckle. This tendency is taken advantage of in the present invention to provide a strong and rigid means to support the end closure.

When the rim portion is formed as shown in Fig. 1, and turned inwardly against the inside face of the body portion, as shown in Fig. 4, the triangular portions 10 and the wing portions 8 and 9 will buckle inwardly as shown in Fig. 5, when the body portion 1 is expanded or formed into tubular shape. The sections 5, however, will remain substantially flat against the inside face of the body portion 1, the excess material in the rim portion being relieved by causing the triangular portions 10 and the wing portions 8 and 9 to buckle inwardly. The free ends of the wing portions 8 and 9 thus provide, in effect, a shoulder upon which the end closure may be supported.

In assembling the bottom of the container to the body member, the bottom rim portion a is folded inwardly against the inside face of the body portion 1, either before or after the body member has been assembled into tubular form. An insert piece C, formed of relatively stiff, strong paperboard material and having a peripheral dimension which will cause it to snugly seat within the body member, is telescoped into the expanded body member, as shown in Fig. 6. The insert piece C is brought down to seat against the intumed tab portion 6, the rim portion 25 of the insert piece snugly seating against the inside face of the body portion 1, holding the body portion expanded in the desired cross-sectional shape.

An end piece B is then telescoped into the rim portion A, as shown in Fig. 6, and is forced inwardly until the peripheral edges thereof snap over the free ends of the wing portions 8 and 9, permitting the wing portions 8 and 9, and the triangular portions 10, to spring or bulge inwardly so that the outer portion of the end piece B will seat upon the shoulders 13 formed by the inwardly bulging wing portions 8 and 9. In this position the inside face of the end piece B will seat against the outside face of the tab portions 6. The end piece B is made of such size as to snugly fit within the rim portion when forced in by pressure. It will be noted that the end piece B forms, in effect, a brace or a strut, which prevents the rim portion A from collapsing inwardly and maintains the sections 5 of the rim portion pressed outwardly against the inside face of the body portion 1. The score line 12, which defines the tab portions 6 from the sections 5, is so spaced and arranged as to permit the tab portions 6 to fold snugly over the inside face of the end piece B and at the same time hold the end piece B snugly seated

against the shoulders 13 of the wing portions 8 and 9. The peripheral edge 20 of the end piece B snugly seats against the sections 5 of the inturned rim portion and seats over and against the shoulders 13 of the inwardly bulging wing portions 8 and 9. As thus arranged, it will be noted that the inturned tab portions 6 are clamped between the end piece B and the insert disc C, providing a strong and rigid container which may be assembled without the use of glue or other securing means. The end piece B and insert disc C mutually reenforce and strengthen one another, providing a bottom construction which is strong, durable and substantially leak-proof, rigidly and strongly bound to the body member. An opening 21 or other suitable means may be provided to facilitate grasping the end piece B while inserted in position. The opening 21 also provides a convenient means for forcibly removing the end piece B in the event that it is used as a closure cover for the container. The container is now ready to receive the contents F.

As shown more particularly in Figs. 9 and 10, the filled container may be closed by an end closure construction similar to the end closure construction heretofore described. As shown more particularly in Fig. 9, the body member A may be provided with a top rim portion b similar to the bottom rim portion a previously described. When the container is filled with the contents F, the top rim portion b is arranged as shown in Fig. 9. When the desired quantity of contents F has been inserted, an insert piece C is telescoped into the container through the open end thereof, the rim portion b is then folded inwardly until the tab portions 6 seat against the outside face of the insert disc C, as shown in Fig. 10. The insert disc C is made slightly oversize in dimension so that the peripheral edge 25 thereof will frictionally grip the inside face of the body portion 1, so that the insert disc C will be sustained in any position in which it is placed. Generally, the contents F extend to the point where top insert disc C would rest upon the contents F, in which position the inturned tab portions 6 will snugly seat thereagainst. The end piece B is then inserted in position to snugly seat against the outside face of the inturned tab portions 6 and rest against the shoulders 13 of the wing portions 8 and 9. The top end piece B is of somewhat oversize dimension so as to provide in effect a strut or brace which presses against the sections 5 of the inturned top rim portion b so that the marginal portion of the end piece B is firmly supported upon the shoulders 13 of the inwardly bulging wing portions 8 and 9. The top insert disc C and the top end piece B may be brought into firm pressing engagement against the inturned tab portions 6 by placing the filled container in an upside-down position so that the weight of the contents F will press against the top insert disc C.

While the top closure cover construction as illustrated in Figs. 9 and 10 has many advantageous features where a closed drum type container is desired, it is understood that the container may be provided with a top closure of any other desired construction. In Figs. 11 and 12 there is shown for purposes of illustration a container having a bottom constructed as hereinabove described and as illustrated in Fig. 8. The top of the body portion, however, is provided with a flange 53 which may be hinged to the body portion 1 along the transverse score line 54 and turned outwardly or inwardly against the body

portion. The flange portion 53, may, however, be separately formed and secured in any desirable manner to the upper end of the body portion 1. As shown in Fig. 12, a telescoping cover may be provided having a top portion 50 and a downwardly extending flange portion 51. An upturned lip 52 may be associated with the flange portion 51 to interlock or engage with the flange 53 associated with the body portion. The cover flange portion 51 may be made to telescope either within or outside of the body portion 1 as desired. Any other convenient and desirable cover construction may be provided for the container.

The container as herein disclosed may be formed entirely from paperboard material. The body members A, the insert discs C and the end pieces B may be cut and scored by automatic machinery at a high production rate. The body member A may be provided with longitudinally extending score lines 3 which permits flat collapse of the body member during shipment and storage, thus occupying a minimum of space. It is understood that the body member may be formed from a flat blank, as shown in Figs. 1 and 11, or may be formed by spiralling or otherwise forming the fiberboard on a mandrel so as to provide a substantially seamless tubular body member, which body member may be suitably scored to permit collapse thereof for shipment and storage purposes. The end pieces B may be provided with an opening 21 or a tab or other handle means may be provided, if desired, with which to grasp the end piece during insertion thereof. The paperboard material forming the container may be coated with wax or other material to render the same substantially liquid-proof. Due to the fact that the insert disc C is made of slightly oversize dimension to snugly seat and press against the interior of the body portion 1, and due to the further fact that the end piece B snugly seats against the inturned rim portion, a substantially liquid-tight and sift-proof container is provided adapted for the packaging of such materials as ice cream, frozen ices, viscous and semi-liquid materials, as well as powdered and granular materials of all kinds. The container may be made in any size or dimension and may be made generally circular, polygonal, elliptical, or arcuate in cross-section. The container may be manufactured at very low cost, so that it can be economically used but once and then thrown away. A container having similar top and bottom end closures, such as shown in Fig. 10, is admirably adapted for certain uses, particularly where a drum or barrel-type container is desired which is sealed and closed until opened by the user. For other uses containers having other forms of top closure construction, such as shown for purposes of illustration only in Fig. 12, may be provided. Containers constructed in accordance with this invention may be used for the packaging of numerous products, as will be evident to those skilled in the art.

While certain novel features of the invention have been disclosed and are pointed out in the annexed 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 the invention.

What is claimed is:

1. A container of the character described including, an end piece, a collapsible body member having a tubular body portion, a continuous rim portion extending inwardly from one end of said body portion, spaced projections extending from

said rim portion, spaced shoulders associated with said rim portion providing a seat for said end closure, said projections extending inwardly beyond said shoulders, the peripheral portion of said end closure abutting the spaced projections extending from said rim portion thereby to hold the body portion in expanded container-forming position and said shoulders against inward collapse when contents are placed in the container.

2. A paperboard container including, an end piece, a body member having a tubular body portion provided with longitudinally extending score lines permitting substantially flat collapse thereof, a rim portion extending inwardly from one end of said body portion, score lines extending generally longitudinally of the container dividing said rim portion into connected sections, certain of said sections having tab portions extending therefrom, other of said sections being scored to permit the same to bulge inwardly to provide inwardly projecting shoulder supports for said end piece, said end piece engaging said tab portions to retain said inwardly bulging sections in rigid supporting position.

3. A paperboard container including, an end piece, a body member having a tubular body portion and a rim portion extending inwardly from one end of said body portion, score lines extending generally longitudinally of the container dividing said rim portion into connected sections, certain of said sections being arranged to bulge inwardly to provide a seat for said end piece, tabs extending from certain of said other sections adapted to overlie the inside face of said end piece, and an insert disc positioned within said body portion seated upon said tab portions.

4. A paperboard container including, an end piece, a body member having a tubular body portion, a rim portion extending inwardly from one end of said body portion, score lines extending generally longitudinally of the container dividing said rim portion into connected sections, certain of said sections being scored to permit the same to bulge inwardly to provide inwardly projecting shoulder supports for said end piece, and an insert piece of somewhat oversize dimensions inserted within said body portion holding said body portion in expanded container-forming position.

5. A paperboard container including, an end piece, a body member having a tubular body portion and a rim portion extending inwardly from one end of said body portion, score lines extending generally longitudinally of the container dividing said rim portion into predetermined connected sections, certain of said sections being scored to permit the same to bulge inwardly to provide inwardly projecting shoulder supports for said end piece, tab portions projecting from other sections against which a peripheral portion of said end piece is adapted to abut to maintain said inwardly bulging sections in rigid supporting position, and an insert piece positioned within said body portion overlying said tab portions.

6. A knockdown container including, a tubular body portion, rim portions extending inwardly from each end of said body portion, an end closure for each end of said body portion, said rim portions having score lines defining inwardly bulging sections and intermediate sections connected to and supporting said bulging sections in

fixed position, said bulging sections providing a seat for the respective end closures, and means extending from said intermediate sections and overlying the opposite face of the adjacent end closure for retaining said end closures in seating position against said bulging sections.

7. A container of the character described including, a tubular body portion, a rim portion extending inwardly from one end of said body portion, said rim portion comprising spaced inwardly bulging sections and intermediate sections connecting said bulging sections, an end closure member resting upon and supported by said inwardly bulging sections, and means extending from said intermediate sections inwardly beyond the closure member supporting edge of said bulging sections, the peripheral edge of said end closure member abutting said means thereby to retain said bulging sections in fixed closure member supporting position.

8. A container of the character described including, a tubular body portion, a rim portion extending inwardly from one end of said body portion, said rim portion being scored to provide inwardly bulging sections and intermediate sections connecting said bulging sections, an end closure member positioned within said body portion seated upon and supported by said bulging sections, and projections extending from said intermediate sections inwardly beyond the closure member supporting edge of said bulging sections, the peripheral edge of said closure member abutting said projections to retain said bulging sections in rigid contents supporting position.

9. A container of the character described including, a tubular body portion, a rim portion extending inwardly from one end of said body portion, said rim portion being scored to provide inwardly bulging sections and intermediate sections connecting said bulging sections, a separate end closure member seated on and supported by said inwardly bulging sections, and means for retaining said intermediate sections closely adjacent the inside face of said body portion so as to hold said bulging sections in rigid inwardly bulging position, said means including projections extending from said intermediate sections inwardly beyond the closure member supporting edge of said bulging sections and against which the peripheral edge of said closure member abuts.

10. A container including, an end piece, a collapsible tubular body portion having a plurality of spaced substantially parallel score lines extending longitudinally thereof, a rim portion hinged to one end of said body portion and extending inwardly so as to lie against the inside face of said body portion, said rim portion having score lines extending generally longitudinally thereof and as a continuation of the score lines in said body portion, the score lines in said rim portion dividing said rim portion into connected sections, certain of said sections having a projection extending therefrom and other sections bulging inwardly to provide inwardly projecting shoulder supports for said end piece, said projections extending inwardly beyond the end piece supporting shoulder of said bulging sections whereby said projections may be engaged by the peripheral edge of said end piece to retain said inwardly bulging sections in rigid end piece supporting position.

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